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## DUES FOR 1934

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### ANNUAL DUES FOR 1934 ARE NOW PAYABLE

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This is the Treasurer's first notice to all members that dues for 1934 are now due and payable to the Treasurer

**Mr. W. M. Rosene,  
City State Bank,  
Ogden, Iowa.**

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.

<b>Life Members</b> .....	<b>\$100.00</b>
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The Club values the continued support of every member, and every resignation is received with regret.

The reports of the officers will be published as usual in the March number, but there will not be the usual "Proceedings". We are closing the year with a sufficient balance to cover the cost of printing the December issue of the BULLETIN, the preceding four issues having been paid for out of the income of the 1933 fiscal year. The coming year will still be an uncertain one financially, and if we know early in the year what our income is to be we may be able to enlarge the BULLETIN accordingly. Therefore, we hope that those who can will remit dues promptly.

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In behalf of the Officers of the Club the WILSON BULLETIN extends the greetings of the season to all of its readers, and wishes for everyone a realization of promised prosperity.

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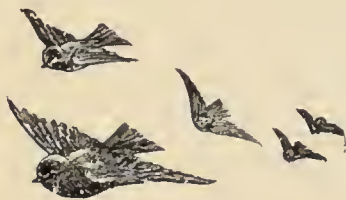
THE  
WILSON BULLETIN  
A Quarterly Magazine Devoted to the Study  
of Birds in the Field  
and the Official Organ of the  
WILSON ORNITHOLOGICAL CLUB

*Edited by*

T. C. STEPHENS

MYRON H. SWENK

L. W. WING



Volume XLVI

1934

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

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13,814

Vol. XLVI

MARCH, 1934

No. 1

# THE WILSON BULLETIN



A Magazine of Field Ornithology

Published by the  
**WILSON ORNITHOLOGICAL CLUB**  
at  
SIOUX CITY, IOWA

Entered as Second-class Mail Matter, July 13, 1916, at the Postoffice at  
Sioux City, Iowa, under Act of March 3, 1879.

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## THE WILSON BULLETIN

Published quarterly, in March, June, September, and December, as the official organ of the Wilson Ornithological Club, at Sioux City, Iowa.

The current issue of the WILSON BULLETIN is printed by the Verstegen Printing Company, Sioux City, Iowa.

The WILSON BULLETIN is sent to all members not in arrears for dues. The subscription price is \$1.50 a year, invariably in advance, in the United States. Outside of the United States the subscription rate is \$1.75. New subscriptions, change of address, and applications for membership should be addressed to the Secretary.

All articles and communications for publication, books and publications for notice, and exchanges, should be addressed to the Editor.

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

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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 membership dues are—Sustaining membership, \$5.00; active membership, \$2.50; associate membership, \$1.50 per year.

# THE WILSON BULLETIN

A QUARTERLY MAGAZINE OF ORNITHOLOGY

Published by the Wilson Ornithological Club

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Vol. XLVI

MARCH, 1934

No. 1

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Vol. XLI (New Series) Whole Number 166

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## RECOLLECTIONS OF THE PRAIRIE CHICKEN AND THE SHARP-TAILED GROUSE IN NORTHWESTERN MINNESOTA

BY CHARLES EUGENE JOHNSON

The particular locality here concerned lies in the southwestern part of Marshall County, Minnesota. What is referred to as the homestead is a quarter section of land (N. W.  $\frac{1}{4}$ , Sec. 20) situated about four miles northeast of the village of Warren in McCrea township. Its location is about two and a half miles east of the edge of the valley of the Red River of the North, and about the same distance north of the Snake River, a tributary of the Red.

In a previous paper (*Journal of Mammalogy*, Vol. XI, No. 4, 1930), on the mammals of Northwestern Minnesota, I have described the main physiographic features of the area, so that in the present article mention will be made of only such points as seem necessary for the immediate purpose.

The homestead is in the area of sandy loam stretching eastward from the valley of the Red River and which was, at the time referred to in this paper, characterized by a profusion of poplar-willow groves and thickets with intervening larger and smaller areas of open prairie covered with a luxuriant growth of grasses and flowering plants, and containing numerous sloughs and several coulees. On this homestead we lived continuously from 1889 to the close of 1902, the period with which the present account is particularly concerned. Larger areas of wild land bordered on the east, and less closely on the north, while cultivated lands and smaller areas of wild land lay on the other sides.

### THE GREATER PRAIRIE CHICKEN (*Tympanuchus cupido americanus*)

*Arrival and Departure.* The prairie chicken was a summer resident, only, in all the territory with which I was acquainted. Although I have no exact dates recorded, it arrived, as nearly as I can recall, about the middle of April. Its mating season came at about the time that the spring sowing was completed, and the newly seeded fields, particularly where these bordered wild prairie lands, were one of its

principal "dancing" or "playing" grounds, on and about our homestead. In addition to the fields, mowed areas of wild land, such as dry slough borders and coulee banks, were used for the same purpose. Every morning and evening at this season the booming of the prairie chicken could be heard at all points of the compass, the sound swelling to greatest volume in the stillness of the dawn.

The departure of the prairie chicken took place mainly in October, and the exodus was complete—at least I never saw a prairie chicken during the winter months in any of the territory with which I was familiar. While less noticeable southward movements doubtless had been going on earlier, it was toward the end of the season that definite migratory flights attracted my attention. These flights I observed particularly in the evening, from about sunset until dusk, but whether they extended farther into the night I do not know. Certain flights that occurred at other times of the day at that season may also have been part of the general migratory movement, though not certainly distinguishable from flights of purely local character. But there could be no question about the evening flights which I watched on many occasions. The direction was always straight southward, and the birds flew at a height that as a rule probably did not exceed fifty feet. At this height they cleared the tops of the taller groves in their path, but when passing between groves they often could be seen to be below the level of the tree tops. No sound came from the birds on these flights, other than the periodic whistle of their wings. In size, the migrating flocks varied considerably, from a few individuals to a score or more, just as flocks varied that were met with in the fields. Larger flocks were frequently so loosely grouped or strung out that many seconds might elapse before the last bird had passed a given point.

Although I watched many such passing flocks, and listened to many more that were not distinctly visible, I never happened to see or hear one alight in the period of the dusk. The distance or duration of these flights probably was considerable.

*Nesting.* Nests of the prairie chicken were to be found generally over the drier prairie areas. On our homestead one particular nesting ground that I remember, within the period that we lived there, was a tract of about ten or more acres bordering a coulee that traversed our land from east to west. Before this tract was broken up it was covered with a luxuriant growth of blue joint grass, amidst which the nesting birds ordinarily would not have attracted notice. But one season the dead grass—the accumulations of years—was set on fire, and



the greater part of the tract was burned over, revealing many nests of the prairie chicken, both old and new, the birds evidently having used this nesting site repeatedly. The damp nest materials next to the ground had resisted the flames more or less successfully, so that after the fire had passed one could stand in one's tracks and count the little heaps that represented the nests, over a considerable part of the area. Some of the nests of the season had been abandoned by their owners, while the eggs remained, more or less browned or scorched; but in a few instances the birds had returned and were found on their nests a day or two after the fire.

On the wild lands to the east, north, and northeast of our homestead, also, I found nests of the prairie chicken from time to time, though I made no systematic search for them here. However, considerable numbers of the birds nested on these lands, as was evidenced not only by the many that yearly were seen on the dancing grounds in these localities, but more particularly by the numerous broods of young that made their appearance later in the summer. These larger areas of wild land were the principal nesting grounds of the prairie chicken population of our immediate territory. Many smaller patches of prairie were found on practically every quarter section of occupied land, also, and on these the species nested to some extent, but such areas were probably of minor importance in comparison with the larger tracts of virgin prairie, mainly because of the proximity of man or his live stock.

It may be supposed, perhaps, that the stubble fields left unplowed in the fall might have served as suitable nesting grounds for the prairie chicken the following season; but this could have been true only of those relatively few such fields that were not spring-plowed. Many of the stubble fields left for spring plowing were turned under before or at about the time that the nesting of the prairie chicken began; hence any nests that might have been started were foredoomed to failure. The fields that were summer-fallowed were plowed later in the season, at a time when the prairie chicken broods would have been hatched, in many cases at least. However, although I was given to much roaming about, I do not recall ever having found nests of the prairie chicken in the stubble fields in our general locality, and I believe that these fields were of little or no significance as nesting grounds for this species.

*Hunting.* The hunting season on the prairie chicken opened September first, and although I do not recall that any official closing date existed, it terminated automatically when the species departed for

points farther south. By the opening date of the season a certain percentage of the birds were only about two-thirds grown, and many such were shot. More or less pre-season shooting also was done in our territory, when half-grown birds were bagged, but this practice was confined largely to certain individuals among the hunters and for that reason did not reach serious proportions. Much more serious from the point of view of conserving the supply was the absence of all restrictions on the daily or seasonal bag limits. Reduction of bag limits as a means of maintaining the supply was an idea that apparently had not occurred to anyone in that section, if elsewhere. In the period of plenty it was a daily event throughout the hunting season to meet parties of hunters returning from the field with all available space in their double buggies or light wagons packed full of prairie chickens; and at the railway station were to be seen large heaps of hay-stuffed birds ready for shipment, which attested clearly enough the general success of the visiting hunters.

On our homestead, during the years that we lived there, it was seldom really necessary to go beyond the boundaries of our own land to secure a mess of prairie chickens in season. This enabled us to do a little shooting even during the busy week days of harvest time. In the early morning, before the day's work began, or toward sunset, at its close, our watchful eyes rarely overlooked any flocks of prairie chickens that might be in the stubble or on the grain shocks in some undisturbed corner of our fields, when a hurried trip with the shotgun frequently resulted in a mess of game for the table; and these birds as an article of food were always highly valued.

Most of the village sportsmen, as well as the visitors, hunted with trained bird dogs, which were, of course, an important factor in their quantitative results. On the other hand none of the farmers known to me in our particular territory owned such dogs. The farmer's hunting was generally done on foot, unassisted, although occasionally he might be accompanied—and perhaps more or less handicapped—by a farmyard canine of undetermined usefulness. He might, also, now and then, make a round of his fields on a hay-wagon, but his horses were almost invariably gun-shy to a high degree, so that any such excursion meant that a strong-handed driver must be available if the farmer himself wanted to participate in the sport of actual shooting.

*Depletion.* As probably was true of all other areas in this section, the prairie chicken population in our particular territory was composed, in the fall or hunting season, in part of locally hatched birds and in part of flocks that continually dribbled in from other breeding

grounds, perhaps especially from points farther north. Only on that assumption could the continuous supply of "chickens" during the height of the shooting season be accounted for. What proportion was represented by each of these groups is wholly conjectural, but when the southward drift began, by the middle of September, perhaps, it is quite probable that, at least in the closing years of the period in question, the invading birds far outnumbered the local prairie chicken population. Therefore the intensive hunting that each year took place in our own and many other parts of this general territory, affected not only the next season's local prairie chicken crop, but also that of more distant places. Fewer and fewer birds were left to breed each succeeding season. The result that followed was the only one that could have been expected.

But with the decline in numbers of the prairie chicken there came, also, so far as our own general locality was concerned, a large falling off of visiting hunters, so that even at the close of the period there still remained a fair supply of this game, although in the light of future events it was not sufficient to hold out for many more years against such shooting as continued thereafter.

The question may be raised whether the gradual reduction of nesting areas due to the breaking up of the wild lands was not equally responsible with the large-scale, intensive hunting for the great decrease of the prairie chicken during this period. There is hardly a doubt, of course, that even without any hunting at all the species would have been reduced following widespread elimination of its nesting grounds. However, the birds would not have been killed off by the thousands over all this territory, and in all probability would have occupied to a much greater extent those natural nesting grounds that remained untouched by man. For as it was, aside from the innumerable smaller patches that dotted the cultivated areas, very considerable tracts of wild land remained, so that nesting grounds were available for a vastly greater breeding population of prairie chickens than actually returned to the territory in the last few years of the period. The relative scarcity of the breeding birds can be explained, I think, only by the excessive killing. The depletion had progressed to the point where there were not enough birds left to occupy more than a small part of the nesting areas available. The conclusion seems unavoidable, therefore, that excessive killing by hunters was the principal factor in the depletion of the prairie chicken in this territory.

THE PRAIRIE SHARP-TAILED GROUSE  
(*Pedioecetes phasianellus campestris*)

*Arrival and Departure.* The sharp-tailed grouse began to arrive in our area about the first of October and departed the following March, having disappeared about the time the prairie chicken returned. I never found any evidence of the sharp-tails nesting in the general territory here under consideration.

Upon its first arrival the sharp-tailed grouse was usually found in the stubble fields, where in habits and behavior it was essentially like the prairie chicken. As the fall plowing progressed it was to be seen more and more frequently in the open, on the plowed ground, but keeping as a general rule close to the edges of bordering stubble fields, thickets or wild grass lands. The birds were frequently to be seen, too, in larger or smaller companies, moving about or merely resting on the many little mowed sloughs or patches of dry prairie that adjoined the fields or nestled among groves in the vicinity of fields. On the wild lands more distant from field margins the sharp-tails were rarely seen at any time during the day; but night bedding grounds were numerous on such lands.

The sharp-tailed grouse in this territory was distinctly not a frequenter of the groves and thickets; it was a bird of the open fields, and with marginal preference only for the groves and thickets. This is not to say that it never entered groves or thickets, because in certain situations it often did, as will appear later; but in the average poplar-willow grove with its tangle of brush and dead sticks it was ordinarily not at home. The kind of habitat that here was ideal for the snowshoe rabbit, for example, was usually avoided by the sharp-tailed grouse.

In the late fall when frosty mornings became of regular occurrence, the sharp-tails began taking to the trees for a certain period of the day. This tree-perching took place mainly on clear mornings, just after sunrise. On cloudy mornings the grouse were to be seen in the trees less frequently, and then only provided the air was still. On breezy mornings, even though clear, it was as a rule useless to look for the sharp-tails in the trees; and if a breeze sprang up while they were in the trees, they soon flew down. The ideal morning for tree-perching was still and clear, with heavy white frost. The grouse were then sure to be found in the trees in numbers.

The length of the daily perching period, if the birds were undisturbed, varied considerably, from ten to fifteen minutes, perhaps, on some days, to an hour or more on the most favorable mornings. This

is without reference to individual birds that occasionally lit in the trees for a few moments before continuing their flight. On leaving the trees the birds might remain to feed in the immediate vicinity or fly away directly to more distant parts.

Occasionally a few sharp-tails were to be seen in the trees late in the forenoon, but I do not recall ever having seen one in a tree in the afternoon or evening. Their tree-perching was distinctly a "matutinal ceremony". It may have been an occasion for sunning and preening themselves, primarily, but their most notable performance during this perching period was a vocal one, leaving with the observer the impression rather that it was a "social hour". The birds kept up a continual cackle or chatter consisting of a variety of notes, some lower, some higher, shorter or longer, with now and then a more prolonged shriek. At a distance it all sounded much like a group of human beings engaged in desultory conversation or friendly argument. This vocalization was most lively on those clear, calm, and frosty mornings when the trees appeared most inviting to the birds, and it could then be heard at a distance of half a mile or more, coming from the groves in various directions and loudly advertising the whereabouts, its seemed, of every flock in the vicinity. In the leafless trees the birds could also be seen at long distances, and might have offered good opportunities for local population or census estimates if anyone had been interested in such an undertaking.

Not every grove was a perching site for the sharp-tails. There were many groves in our area in the trees of which I never saw one of the birds light, but these groves were all surrounded by wild lands—prairie grass, brush, and shrub growth, with no fields, either plowed or stubble, close by. Location with respect to fields seemed to be the determining factor in the selection of perching sites, for in other respects the groves were much alike. Some groves adjoining fields were of larger size, extending back two or three hundred feet or more from the field margin; but the sharp-tails kept to the trees nearest the fields and were never seen in the more distant parts of these groves. The only exception to this, in the localities in question, was found in our pastured area, where, however, as will be pointed out later, the ground conditions were quite different from those in the groves on the natural wild lands. In their tree-perching habits, therefore, the grouse again exhibited their marginal tendencies.

*Attractions of a Thicketed Pasture.* In connection with the tree-perching habit of the sharp-tails reference was made above to our pastured tract. Aside from the attractions of its groves as perching

sites, this pasture presented also certain other features that evidently made it a particularly favored resort for the sharp-tails during the latter part of the fall, for the birds were to be found here with greater regularity than in any other area of similar size known to me in the territory in question. This pasture comprised about forty acres and included one larger and two smaller poplar-willow groves, joined to one another by a lower and sparser growth of poplar saplings, willows, red-osier dogwood, service berry, choke-cherry, and smaller shrubbery consisting principally of the snowberry. A circular, relatively deep slough, about a hundred feet in diameter, occupied the southwest corner. This slough contained a thriving growth of willows, about six or seven feet high, with a canopy so dense that hardly any grass or other vegetation could grow on the deeply shaded, damp ground underneath. Parts of three larger grass- and willow-covered sloughs were included in another part of the pasture, while here and there were patches of upland prairie grass. The enclosed area was surrounded almost completely by poplar-willow groves and smaller thickets, grassy sloughs and upland, small strips of cultivated ground approaching it, merely, at three points.

The seasonal grazing, browsing, and ranging of the cattle kept the grass area cropped short, the understory of thicket more or less defoliated and most of the ground litter trampled flat. Cow trails led in all directions.

The sharp-tails began resorting to this pasture soon after their arrival in the fall. Although the birds did not show any pronounced shyness toward the cattle, the latter at this season were turned out to roam at large during much of the day and were returned to the pasture mainly for the night; the grouse consequently had the run of the area largely to themselves. The birds never spent the night anywhere within the pasture, its attractions being only such as concerned their daylight activities; but extensive bedding grounds lay immediately adjacent. Within the pasture a considerable amount of food was to be found, notably snowberry, with the fruit and leaves of which the crops of many grouse that I shot here each fall were filled. In addition to food, the birds found, especially in the sparsely thicketed part of the pasture, many dusting places in the dry, loose soil of cow paths and in the earth mounds around old badger burrows. These dusting places were much used.

Probably of equal importance with the food and dusting places, as an attraction, was the nature of the ground in the thicketed parts. As previously remarked, the surface here was free from the usual

tangle and litter, so that the birds could run about unhampered, and the cow paths offered inviting avenues along which they could travel in almost any direction. Visibility from the point of view of the birds on the ground was good, and the crown of the thicket was sufficiently dense, even after the leaves had fallen, to screen them rather effectively against sudden attack by enemies from above. The hunter, in order to get a reasonably clear view of the ground in his near vicinity, was obliged to stoop; and if he saw any sharp-tails at all, it was merely a passing glimpse of an individual here and there that already had become aware of his presence and at a safe distance was keeping close watch on his movements. Any birds that he might surprise in the open places were likely to scurry quickly into the thicket, filter through to some more open spot and fly away without exposing themselves again to his view.

During the tree-perching season the various groves in the pasture all became perching sites without apparent discrimination. Occasionally lesser flocks were to be seen in the different groves at the same time, but more generally the birds were congregated in some one part or another.

As a locality in which to find the sharp-tails with regularity during the mid-day hours, until snow came, I knew of none better than this pasture. Two parts of the area were particularly frequented at these hours, namely, the central part with its low, sparse sapling and shrub growth and dusting places, and the willow-grown slough in the southwest corner. In the first mentioned place I occasionally surprised the birds while sunning and dusting themselves, which seemed to be their principal mid-day activity aside from more or less leisurely moving about and feeding. The slough offered a shady retreat with excellent protection from above, where the grouse could run about freely and noiselessly over the deep-worn cow trails among the hummocks, and could command a good view of any larger enemy approaching on the ground. Many times when I tried to stalk the birds here they did not immediately take to flight, but scattered over the trails and from various points kept watch on my movements, exposing themselves for an instant here or there yet offering scant opportunity for a shot. If the hunter made a rush, the birds darted to the edge of the cover and flew away before he could get clear. The result of the situation was that the sharp-tails were very often to be found but seldom to be shot in this particular place. There was practically no food for the birds here, so that they apparently sought the spot merely as an inviting retreat during their resting periods.

When snow and actual winter came the pasture presented an aspect almost as bleak and desolate as the earlier one had been attractive, and few were the times that a sharp-tail then was to be found within its borders.

*Winter Season.* The winters in this part of the state varied more or less with respect to the amount of snow. Some were open, so called, with relatively little snowfall, while in others the snow might lie two feet on the prairie areas and in the stubble fields. Drifting was the usual thing, so that along the weedy margins of the fields and around the thickets and groves the snow was piled high in solid drifts over which a man could walk securely without snowshoes or skis.

The temperature during the coldest spells not infrequently fell to 35 and 40 degrees below zero Fahrenheit, and occasionally to near 50 degrees.

When snow covered the ground the sharp-tails became conspicuous objects as they roamed about, in larger or smaller companies, over the stubble fields and the plowed ground or on the snow drifts along the field margins. Many of the straw stacks out on the stubble fields were now heavily blanketed with snow, their bases surrounded by deep drifts and hence inaccessible to the grouse; but others were drawn upon by the farmer for stock needs and therefore were periodically opened up. The sharp-tails were quick to take advantage of these opened stacks, at which they gleaned a certain amount of food in the intervals, usually weekly, between the farmer's visits.

It was our practice each fall to set up two or three straw stacks in our barnyard for the benefit of the cattle, and these stacks were continually visited by the sharp-tails throughout late fall and winter. The most distant of these stacks was usually not more than about a hundred and fifty feet from the stable, but the farther side of the barnyard was bordered by an open field, a small slough and some brush, so that the approaches to the stacks from this direction were accordingly favorable, and the birds came daily to feed despite the fact that many were shot here for our table. These visits were made most regularly in the early morning, at sunrise and soon after, but also at other hours of the day, until late afternoon or early evening. On stormy winter days troops of the ghost-like forms of the grouse, half crouching, their heads held low, could be seen at intervals through the drifting snow as they came in loose formation across the wind-swept fields. On such days the cattle were usually in the stable, and if no human activity disturbed them the birds remained for a longer or shorter time to feed around the stacks, then departed as unobtrusively as they had come.



The size of the flocks that thus came to our barnyard vicinity varied considerably. On some mornings there would be only three or four individuals, and occasionally but a solitary bird; at other times, flocks of a dozen and more. One of the largest flocks that I remember counting, and that came later in the day, numbered somewhere between sixty and seventy. Single flocks of such size were not, however, frequent; twenty to thirty was more nearly the size of the average larger flock.

Although these birds were not infrequently to be seen moving about over the fields during the middle of the day, there generally came a lull in their activities at this period and one would find them, in fair weather, at the edge of some field-bordering grove or thicket; or on the drifts along weedy field margins, some individuals huddled up, resting, others moving leisurely about, picking up a particle of food here and there, but not straying far from the rest of the flock. In stormy weather when much snow was falling, and drifting heavily—times when it was most interesting to go hunting—I frequently came upon the sharp-tails on the leeward side of some grove where a strip of field adjoined. Here, where the fine snow drizzled and settled heavily upon the low bushes, the grouse found shelter from the gale and sat at rest or moved about, keeping near the edge, however, and not entering farther into the thicket. One or more birds were as a rule in the open, and since the hunter was inclined to fix his attention mainly upon the objects at the edge of the thicket, these “outposts” frequently were overlooked until they suddenly took wing, thereby warning their hidden companions at the thicket edge so that these, too, frequently eluded the gunner. Although the poor visibility, the noise of the gale and the soft snow conspired to make a closer approach of the hunter possible at such times, the birds were, nevertheless, remarkably alert and were not easily caught napping.

*Natural Enemies.* There is a very general notion that such predatory mammals as the coyote and the fox must find a ground-bedding bird like the sharp-tailed grouse an easy and frequent prey, even in winter when the bird buries itself in the snow. So far as my own experience and observations go this is by no means a certainty. Both foxes and coyotes were plentiful on our homestead as well as in all the surrounding territory and with little effort could be seen almost daily in late fall and winter. I hunted over these areas continually during these seasons, and in the winter on numerous occasions tracked both foxes and coyotes in an effort to discover what their prey might have been and how they had captured it. Tracks of one or the other

occasionally passed directly across the bedding grounds of a covey of sharp-tails, and sometimes within a few feet of the beds of individual birds; but the fact was plainly written in the snow that no capture had been made. Of course, even though signs indicated that the passage of the fox or the coyote and the bedding of the grouse were events of the same night, it does not necessarily follow that the birds were in their beds at the time of their enemies' visit. But the fact remains that the numerous snow beds of the grouse that I saw each winter revealed no telltale signs of tragedy for which either fox or coyote was clearly responsible. It is, of course, entirely probable that such evidence might have been found after more diligent and widespread search, but I believe it rather improbable that the capture of the sharp-tailed grouse by these carnivores was anything more than an occasional occurrence. Had it been common, signs undoubtedly would also have been common.

With regard to the question of the capture of bedded grouse, whether in the snow or on the ground, by fox or coyote, although it is one about which little is known that is based on actual observation, it seems likely that such capture is not the simple matter it might be thought to be. The birds, as I have found them, clearly are not given to heavy slumbers, and the approach of a larger enemy such as either of the two mentioned can hardly fail to reach their sharp ears; furthermore, it may be questioned whether it is within the powers of these mammals, wonderful though their noses be, to locate the exact spot on which the concealed bird lies before they have approached very near to it. The direction of the wind will, naturally, play an important part here, and also the matter of chance enters in. By the time the predator has approached dangerously near, the bird is probably fully aroused, and at the most unexpected moment bursts forth with such startling suddenness that neither the nimble-witted (so-called) fox nor the slower coyote would, I think, at that precise instant remain, as a rule, sufficiently self-possessed to make the properly timed pounce. If the snow should crust after the grouse had bedded, the situation might be different; but such crusting was not of common occurrence in this territory when the sharp-tails went under the snow.

Of other predacious species that might have preyed upon the grouse, goshawks and great horned owls were occasionally seen in winter, but in and about our homestead area neither was so much in evidence as the snowy owl. The snowy owl kept mainly to the open fields, where the straw stacks served as its perching or resting places, and I do not recall finding any certain evidence that it preyed upon

the sharp-tailed grouse. In the many instances where I examined its perching places on the straw stacks I found no signs that it had been feeding here. It would sometimes sit on a stack for longer periods—an hour or more—and was evidently only resting.

Neither do I recall any specific instances of capture of the sharp-tail by the goshawk or the great horned owl, yet it may be presumed that such captures were occasionally made by these powerful raptors, the numbers of which were, however, too few to be of any consequence in relation to the sharp-tailed grouse or other small game of the territory.

*Night Bedding Places.* The sharp-tailed grouse was a bird of the open by night as well as by day. I do not recall ever having found a night bedding place within a grove or a thicket, but frequently in grass patches among scant growths of low brush. In winter as in fall the bedding places were usually in the long grass on the upland prairie or in the sloughs. When a flock bedded for the night the individuals were well separated. On cold nights the birds buried themselves completely in the snow, if deep enough. Occasionally when skiing "across country" after nightfall I happened upon bedded sharp-tails, one or more of which then suddenly burst out from the snow almost under foot. This aroused other birds near by, which now likewise, one by one, whirred away, offering but a fleeting glimpse of their shadowy forms. But the entire flock of such bedded grouse apparently did not always depart, since the birds were sometimes scattered over a considerable area of the bedding ground, and some of the outliers might remain undisturbed. This was revealed at times as one continued on one's way after having started a flock from its bed. Just as one felt satisfied that the last bird had departed and that the bedding area had been passed, out bursts another, and perhaps still another, that happened to lie in his path.

How far the birds that thus are frightened from their beds at night may fly before again settling down, I sometimes thought to determine roughly by listening; but the sound of their wings died away gradually in the distance, and the question remained unanswered.

*Hunting.* Upon their first appearance in the fall the sharp-tails kept mainly to the stubble fields, where, like the prairie chicken, they were inclined to lie close before the approaching hunter. Later they became shyer and as a rule retreated openly, so that it was much more difficult to get within effective range. When flocks were trooping over the plowed ground they could be seen at a considerable distance, and the hunter then lost no time in the mere search for his game. If he

drove a horse or a team he was able to approach fairly close to the birds, but hunting on foot was a different matter.

In late fall and winter, because of their shyness, stalking the sharp-tails was generally necessary in order to get within shotgun range. When the birds were on the open fields, but near the edge of bordering wild land, it was frequently possible to get within range by making a longer detour and then crawling on hands and knees through some convenient grove, or even flat on one's stomach through the prairie grass, taking advantage of any taller shrubbery in one's path. It was rarely possible completely to surprise the birds by this method, but even after they had become aware that something was approaching, the ill-defined form of the hunter or the slight agitation of the vegetation was apparently not a recognizable cause for alarm, and the sharp-tails often reacted merely by retreating leisurely farther afield. When the hunter finally reached the edge of his cover, one or more of the birds might be within range and fall prey to his gun; but many were the occasions also when he got nothing for his pains—in the literal sense of the word.

When the grouse began perching in the trees the hunter was accommodated to the extent that the position of this game remained fixed. Stalking was then, too, the necessary procedure. Tedious detours again brought the hunter up, perhaps, on the far side of the grove, and from there it was hands and knees for the rest of the way. As soon as the grouse in the trees became aware of the hunter's presence, any cackling that had been going on ceased, and a silent alertness settled over the group. The hunter having now, perchance, got within satisfactory range of the nearest bird, finds himself confronted by a baffling assortment of tree trunks, boughs and twigs that obstruct his view. Then, just as he finally has succeeded, all tense and eager, in maneuvering into position for a clear line of sight, the intended victim, as likely as not, finds it just the right moment to depart. It was these difficulties in hunting the sharp-tailed grouse that made it, in my own estimation at least, the most thrilling sport to be had locally at that season.

*Status.* At the close of the period here under review the sharp-tailed grouse in our territory was in a comparatively better position, numerically, than the prairie chicken, although through the previous years its numbers at no time had been so great as those of the other species. There was now, however, a marked decline in the sharp-tails, too, but it could not well be attributed to local shooting. The species in this territory had been the subject of relatively light hunt-

ing, because it arrived, as before remarked, towards the close of the prairie chicken season, when the great majority of our hunters were turning their attention to the next number on their seasonal program, namely, waterfowl shooting. The fact that the sharp-tail was with us only during late fall and winter, therefore, saved it from such wholesale destruction as befell the prairie chicken; but elsewhere, in the territory whence our local sharp-tails came, these birds had, perhaps, become more and more a substitute for the prairie chicken in the sportsmen's quest, and this may possibly have been one reason for the reduced numbers of the sharp-tails wintering in our section.

ROOSEVELT WILD LIFE STATION,  
NEW YORK STATE COLLEGE OF FORESTRY,  
SYRACUSE, N. Y.

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## INCUBATION PERIOD OF THE KILLDEER

BY ALBERT F. GANIER

The unusually long incubation period of the Killdeer (*Oxyechus vociferus*), as well as other members of the plover family, has long been a matter of interest among ornithologists. When the bird student is first told that so small bird as the Killdeer has to incubate its eggs a week longer than does the ordinary hen, as likely as not he will ask, "What is the joke?" It may then be explained to him of course, that the process yields probably the most precocious day-old chick of any of our native birds.

Although I have found some thirty or forty Killdeer nests, it was not until 1929 that I had opportunity to personally make notes on their incubation period. The Knapp Farm pair is quite well known among our local bird group, some of whom might even claim to know them by their first names. Be that as it may, these Killdeers, year after year, nest on a rocky ledge in a well grazed pasture within 100 feet of a busy road. The nest can always be found within a space of thirty feet wide by 150 feet long and these birds are less wary than elsewhere.

The nest covered by the following observations was the third brood of the season and was found on June 13, at 6 P. M., when it held three eggs. The parent ran from the nest and the eggs were warm. On June 14, at the same hour, I visited the nest and found it to contain four eggs. These, when held in the cupped hand against the sun, showed only a trace of transparency, due to the very opaque nature of the shell. On my visit to the nest a week later this slight transparency had disappeared. I ceased my visits to the nest until the

eggs were nearly due to hatch. On July 12, at 6 p. m., I found the nest contained one egg and three very small young, apparently only a few hours old. They were entirely dry but their bills were laid flat on the ground as though they did not have strength as yet to lift their heads. The remaining egg was not pipped as yet. At 8 a. m. the following morning the egg had an aperture opened at the larger end on the top side. There were only two young in the nest and a brief search within a yard or so of the nest failed to reveal the missing youngster. At 2 p. m. I called and found the missing bird back in the nest. The young were perceptibly larger than they were the previous afternoon and held their heads clear of the ground. The egg was still unhatched and the aperture appeared to be no larger. I assume that this egg hatched during the late afternoon of that day, the 13th, for when I returned twenty-four hours later the nest was empty and no young were close by. While looking for the young I also searched for shells but neither on this nor on previous visits did I find that any had been left in or near the nest.

Assuming that incubation began on June 14, with the laying of the fourth egg, then the last egg took  $29\frac{1}{2}$  days to hatch while the others required 28. If, however, incubation commenced on June 13, with the laying of the third egg, then all required 29 to  $29\frac{1}{2}$  days to emerge from the shell. I think this is most likely what occurred. It is of interest to note that, although these eggs were incubated in mid-summer, with no benefit of shade and on a hot rocky situation, the incubation period was not at all shortened. It is likely that the three young first hatched were detained in the nest, perhaps a full day, to await the hatching of the last egg. Other observers record their leaving the nest within a few hours after hatching but I assume they meant after the hatching of the last egg.

On my last visit, the parents were not at the nest, as I walked briskly to it, but when I left a minute later one of them flew directly to it, presumably to tend the young hidden nearby. Ordinarily, Killdeers will not return to their eggs until the observer is entirely out of sight. With the Knapp Farm pair, however, the sitting bird has been observed to remain on the eggs until approached to within seventy-five feet and return to them when I had retreated to 150 feet, though remaining in full view.

I have previously mentioned that this was the third brood for this pair. On March 30, I found their first nest, when it contained four eggs, and on April 20 the parents were observed tending small young nearby. It is likely that incubation began about March 20, which was

the date of beginning in 1928 and which is about a week ahead of the average date here. Incubation of the second set of four eggs began about May 3, from which it appears that only two weeks elapsed from the hatching of one set to beginning incubation of the next. Many of our Killdeers abandon nesting after the first brood, due to the fact that their nesting places become overgrown with grass and weeds and it therefore becomes difficult for them to rear their young. I believe that three broods in one season is unusual for this species. Subsequent observations showed that a fourth brood was not attempted although the nesting area still remained nearly bare and therefore suited for the purpose.

I find the following data on the incubation period of the Killdeer, in recent volumes of the WILSON BULLETIN:

Bates (V. 18, p. 150); gives 26 days to hatch out.

Sherman (V. 18, p. 196); gives 28 days to hatch out.

Spurrell (V. 29, p. 101); gives 24 to 25 days to hatch out, and states that the eggs were pipped over three days before hatching.

Gabrielson (V. 34, p. 194); gives 25 days to hatch out.

NASHVILLE, TENN.

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## UNILATERAL AND BILATERAL OVARIES IN RAPTORIAL BIRDS

BY F. L. FITZPATRICK

Some time ago the writer called attention to the fact that bilateral development of ovaries occurs in Cooper's Hawk (*Accipiter cooperi*), and cited the works of several investigators who have observed similar phenomena in European and North American species.<sup>1</sup>

In the case of Cooper's Hawk it was found that the adult female had bilateral ovaries, but only one oviduct, the left. There may have been a vestigial right oviduct, but such a structure was not observed. The left ovary was somewhat larger than the right ovary, and the left ovary contained more large follicles than did the right ovary. However, the smallest follicles in the right ovary appeared to be larger than the smallest follicles in the left ovary. This differs somewhat from the condition found by Kummerlöwe<sup>2</sup> in the adult female of *Accipiter nisus*.

Since this report was made, the writer has examined the urinogenital structures of a number of other species, through the courtesy

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<sup>1</sup>Fitzpatrick, F. L. 1930. Bilateral ovaries in Cooper's hawk, with notes on kidney structure. *Anatomical Record*, Vol. 46, No. 4, p. 381.

<sup>2</sup>Kummerlöwe, Hans. 1931. Vergleichende untersuchungen über das gonadensystem weiblicher vögel, Teil III. *Zeitschrift für mikroskopisch-anatomische Forschung*, Bd. 24, Heft 4, S. 595-596.

of Director Homer R. Dill of the State University of Iowa Museum, and Curator W. F. Kubichek of the Coe College Museum, who have coöperated in the work by furnishing specimens.

Four female specimens of the Eastern Red-tailed Hawk (*Buteo b. borealis*) have been examined, among others. In three of these cases there was but one ovary, the left. In the other instance, however, a vestigial right ovary was present. This vestigial right ovary consisted of only twenty-three follicles, and of course was far smaller than the right ovaries observed in Cooper's Hawk. It was attached loosely to the mesentery which characteristically lies between the kidneys and the ovary or ovaries.

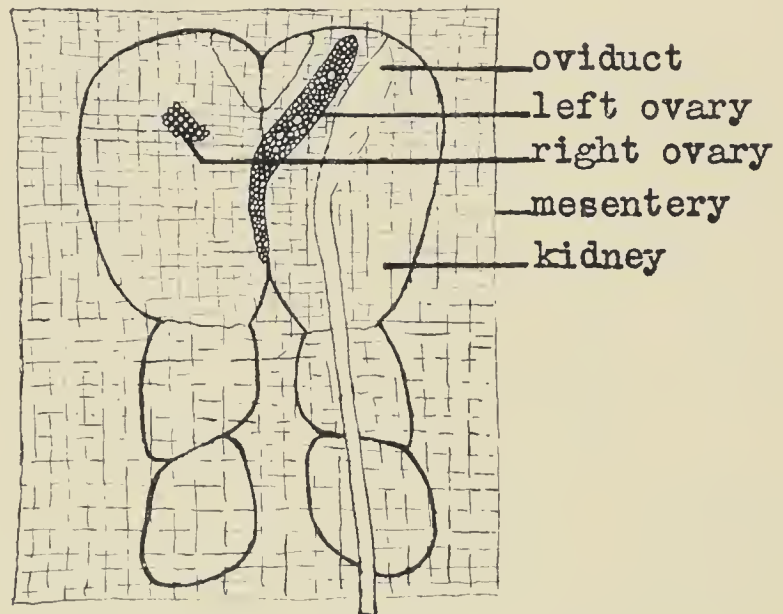


FIGURE 1. Diagram: relative positions and sizes of kidneys and reproductive structures in one specimen of *Buteo b. borealis* x 1/1.

It was suspected that this specimen of the Eastern Red-tailed Hawk having the vestigial right ovary might be an immature individual; that the vestigial right ovary might characteristically be present after hatching, but might be lost in later development. However, such did not appear to be the case in this instance at least. For a careful examination of the evidence indicated that all four specimens of the Eastern Red-tailed Hawk, including the individual with the vestigial right ovary, were in adult plumage.

Of course there also is the possibility that the presence or absence of a vestigial right ovary is a characteristic that is subject to variation in this species. Or perhaps the right ovary *does* develop in early stages, as in the embryos of the pigeon (*Columba livia domestica*) and the sparrow (*Passer domesticus*) reported upon by Kummer-



Other female hawks examined to date exhibited unilateral development of the ovaries. These were two adult specimens of the Northern Red-shouldered Hawk (*Buteo l. lineatus*), both in adult plumage. In addition, one adult female Turkey Vulture (*Cathartes aura septentrionalis*) also proved to have but one ovary, the left.

A number of female owls, all of which were adults, were examined, and in all cases these individuals had but one ovary, the left. There were no indications of right ovaries, even in vestigial form. The list is as follows.

Barred Owl (*Strix v. varia*)—2 specimens.

Great Horned Owl (*Bubo v. virginianus*)—2 specimens.

Snowy Owl (*Nyctea nyctea*)—2 specimens.

Western Horned Owl (*B. v. pallescens*)—1 specimen.

Screech Owl (*Otis asio*)—1 specimen.

Richardson's Owl (*Cryptoglaux funerea richardsoni*)—1 specimen.

As far as this evidence goes, it indicates that unilateral development of the ovaries is characteristic among adult females of the owl group.

Perhaps it is worthy of note that in all of the species referred to Löwe,<sup>3</sup> and that there is progressive tendency toward reduction of these structures as development proceeds. It is suggested that the degree of reduction at any age might be subject to individual variation. At any rate, we are unable to generalize upon the basis of the data now at hand.

Meanwhile Snyder<sup>4</sup> has reported finding "paired ovaries" in one specimen of *Buteo borealis*.

Above, there appeared to be but one oviduct, the left. The funnel of this oviduct opened adjacent to the mesentery on the ventral surface of the anterior lobe of the left kidney. From this point the oviduct extended posteriorly, held in place by the mesentery, to join the middle compartment of the cloaca (urodaeum).

Kummerlöwe's<sup>5</sup> more recent studies reveal that bilateral ovaries are developed during embryonic life in *Accipiter nisus* and that this condition also appears in the adult female. He reports bilateral ovaries in young females of *Accipiter gentilis* (L.), *Falco tinnunculus* (L.), and in an adult *Falco peregrinus* Tunst. (the right ovary probably could be called vestigial in this case). Snyder<sup>6</sup> has added to our data

<sup>3</sup>Krummerlöwe, Hans. 1930. Vergleichende Untersuchungen über das Gonadensystem weiblicher Vögel, Teil I und II. Zeitschrift für mikroskopisch-anatomische Forschung, Bd. 21, Heft 1/3. und Bd. 22, Heft 1/3.

<sup>4</sup>Snyder, L. L. 1931. The Auk, Vol. 48, N. S. No. 1, p. 117.

<sup>5</sup>Ibid., 1931, pp. 570-613.

<sup>6</sup>Ibid., pp. 147-148.

upon this subject the observation of bilateral ovaries in another specimen of the Marsh Hawk (*Circus hudsonius*), "approximately" thirty specimens of the Sharp-shinned Hawk (*Accipiter velox*), "fewer" specimens of Cooper's Hawk (*Accipiter cooperi*) and one specimen each of the Red-tailed Hawk (previously noted), the Broad-winged Hawk (*Buteo platypterus*), and the Sparrow Hawk (*Falco sparverius*).

In so far as the evidence now available is concerned, it is apparent that bilateral ovaries occur in adult female hawks of certain species. Apparently this condition is common or even usual in some species and less common or rare in others. The relative size of the right ovary, when it is represented, appears to vary among different species. It would seem that both European and North American members of the genus *Accipiter* frequently exhibit bilateral ovaries in the adult condition, but certainly this condition is by no means confined to the genus *Accipiter*. In none of the nine adult female owls (five species) examined by the writer was any indication of bilateral development of the ovaries found.

TEACHERS COLLEGE, COLUMBIA UNIVERSITY,  
NEW YORK, N. Y.

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## A LETTER TO THE GAME OFFICIALS OF THE STATE OF CONNECTICUT

BY MYRON E. STORY

The open duck season of the year 1933 is now a thing of the past and, as the result of my experience and observations, I am prompted to make a few comments about conditions in general, which I ask you to consider carefully as coming from a duck hunting sportsman, who is primarily interested in the saving of wild fowl from extermination and not "killing the limit" each time he goes after ducks.

My duck hunting is done in the territory near the mouth of the Connecticut River, in the vicinity of such places as Essex, Saybrook, and Great Island, and it is the "black duck" or "dusky mallard" to which my comments apply. The territory mentioned is typical of every other place on our coast where these ducks are found, and my statements will apply in general to all such places.

A few days before the season opened in October, I visited Great Island for the purpose of discovering where the ducks were most numerous and, although the Island has been so thoroughly drained that all of the old "saltholes" are now perfectly dry and the place is not nearly so attractive to the birds as it used to be, I found a generous supply of local ducks in the creeks on the Island. The birds were very

tame and unafraid and I found it possible to stalk a number of bunches of ducks in the creeks and approached some of them to within a very few yards before they took flight.

The first day of the open season (Monday) I found many groups of hunters in place, bright and early, and *live* decoys formed a part of the equipment of nearly every outfit. The shooting started at 11:40 A. M. and the poor birds were murdered unmercifully from then until dark, as they were tame and bewildered, and could not resist the lure of the live callers.

You know, of course, that the duck hunter who uses live decoys is almost invariably after his "limit" and he shoots all of the ducks he can while they are at rest on the water, and if he can kill several on the water with one shot he is greatly elated, and it frequently happens that he is able to do just that. The slaughter continued unabated during the week and when I again visited the place, the following Saturday afternoon, I saw very few ducks, probably about a dozen in all, and they were very wild.

I have been to the same place several times since then and have seen and shot very few ducks during the season (not more than three in any one day and some days not any; I do not use live decoys). Two of the days in particular were ideal as to weather but still the birds did not appear and I saw only six on one of those two days.

The last day of the season I talked with a member of one party who were hunting over live decoys, and he remarked how difficult it was for him to give away the birds he shot. That will just give you an idea how the man with live decoys will keep after the ducks even though he has no use for them.

My observations indicate that very few ducks came to us from the north, and it is my opinion that practically all of the ducks shot in our marshes this year were locally hatched and reared; thanks to the work of your Department in planting wing clipped birds for breeders last spring.

There is one conclusion to be drawn from the above and it is this: ducks are very scarce! Probably you have heard reports indicating that the ducks are plentiful, and some duck hunters do make that statement but, if they know anything about the matter, they know that it is not a fact, and they simply tell that tale in order to keep the season open and the limit high. All the talk about drought, disease, and vermin is partly true and, no doubt, the ducks would be more numerous the first of the season if we could completely control those things, but in the last analysis it is the *gun* and *live decoys* that are causing the rapid extermination of the black duck.

If this bird is to survive two things must be done now, and I call on you in the name of all sportsmen who are interested in preserving a reasonable amount of duck hunting for future years, to prohibit absolutely the use of live duck decoys and to limit the kill of each hunter to not more than four per day and twenty in the season.

The Grand Old State of Connecticut should take pride in being the first state to lead off in a movement to save the ducks and with such a leader the States of Maine, Massachusetts, Rhode Island, New York, and New Jersey would be glad to follow. Rigid enforcement of such restrictions would result in the rapid increase in the number of ducks and in three years' time they would be with us again in great numbers, and they would stay with us, if the restrictions were not removed.

Of course, you will say at once that if an attempt is made to enact laws to fix such restrictions the opposition will prove too great and that it can not be done. It is true that strong opposition would immediately develop from all commercial interests involved in duck killing, including some duck hunting clubs, but what of it? Such interests have had the upper hand long enough and I know that every sportsman worthy of the name would be in favor of a much smaller bag limit than the present one, and every duck hunter interested in saving the ducks, who has witnessed the slaughter resulting from the use of live decoys, would be in favor of prohibiting the use of them.

All the talk about "studying the situation" and the effort to obtain money at this time for that purpose is purely bunk; the ducks need real protection now and the only way to protect them is to stop nearly all or perhaps all of the killing at once, then nature will do the rest.

If the duck stamp tax idea should pass and the money thus obtained could be used to restore drained marshes, which were once duck breeding and feeding areas, it would no doubt help the duck crop wonderfully, if there are any ducks left to help when the drained areas are restored, but there will be no ducks left if we do not stop shooting them this year! The restoration of drained marshes will take years and the ducks can't wait.

It is a lamentable fact that a heavy percentage of the men who kill ducks consists of a class of men who are after ducks and dollars, regardless of anything else, and their voices have made more noise than ours in the past, but it is time that the Conservationists and the ducks now have all of the attention, and we look to you to make sure that the duck has this attention before the opening of the 1934 duck hunting season.

HARTFORD, CONNECTICUT.

FURTHER ADDITIONS TO THE LIST OF BIRDS VICTIMIZED  
BY THE COWBIRDBY HERBERT FRIEDMANN<sup>1</sup>

In a previous paper<sup>2</sup> I brought up to date (1931) what was known of the various birds parasitized by the cowbirds, as first presented in my book ("The Cowbirds", 1929). Since then I have gathered together a large amount of new data, based on unpublished material, chiefly in private collections. The following gentlemen have placed me deeply in their debt for the records they have generously sent to me:

Messrs. C. G. Abbott, San Diego, California; M. C. Badger, Santa Paula, California; Griffing Bancroft, San Diego, California; F. Bradshaw, Regina, Saskatchewan; J. C. Braly, Portland, Oregon; N. K. Carpenter, San Diego, California; H. W. Carriger, Oakland, California; B. W. Cartwright, Winnipeg, Manitoba; C. Cottam, Washington, D. C.; E. J. Court, Washington, D. C.; S. J. Darcus, Penticton, British Columbia; C. E. Doe, Gainesville, Florida; C. L. Field, National City, California; A. D. Henderson, Belvedere, Alberta; A. M. Ingersoll, San Diego, California; Guy Love, Santee, California; A. E. Price, Grant Park, Illinois; L. B. Potter, East End, Saskatchewan; T. E. Randall, Athabasca, Alberta; W. Rowan, Edmonton, Alberta; W. B. Sampson, Piedmont, California; M. Schönwetter, Gotha, Germany; E. E. Sechrist, San Diego, California; C. S. Sharp, Escondido, California; E. M. Tait, Summerland, British Columbia; R. W. Tufts, Ottawa, Ontario; Neal Weber, Grand Forks, North Dakota; L. R. Wolfe, Chicago, Illinois; H. Woodward, San Diego, California; and J. T. Wright, present whereabouts unknown (collecting in Mexico).

A relatively small number of new or interesting records have appeared in publications since January, 1931, and a few have been found in journals not previously available for search. All these have been included and are summarized here.

For convenience in publication, now so restricted everywhere, I have had to limit this paper to the North American species (*Molothrus ater*) alone. It is hoped that similar notes on the other cowbirds may find publication elsewhere.

The following are additions to the list of known victims of the North American Cowbird (all races). They bring the total of host species up to 238, an increase of 29.

<sup>1</sup>Published by permission of the Secretary of the Smithsonian Institution.

<sup>2</sup>Auk, 1931, pp. 52-65.

- Tyrannus vociferans* Swainson. Cassin's Kingbird.  
*Empidonax flaviventris* (Baird and Baird). Yellow-bellied Flycatcher.  
*Nuttallornis mesoleucus* (Lichtenstein). Olive-sided Flycatcher.  
*Psaltriparus minimus minimus* (Townsend). Coast Bush-tit.  
*Toxostoma bendirei* (Coues). Bendire's Thrasher.  
*Turdus migratorius achrusterus* (Batchelder). Southern Robin.  
*Sturnus vulgaris vulgaris* Linnaeus. Starling.  
*Vireo belli arizonae* Ridgway. Arizona Vireo.  
*Vireo solitarius cassini* Xantus. Cassin's Vireo.  
*Vireo philadelphicus* (Cassin). Philadelphia Vireo.  
*Dendroica auduboni auduboni* (Townsend). Audubon's Warbler.  
*Dendroica palmarum palmarum* (Gmelin). Western Palm Warbler.  
*Geothlypis trichas brachydactyla* (Swainson). Northern Yellowthroat.  
*Agelaius phoeniceus arctolegus* Oberholser. Giant Red-wing.  
*Agelaius phoeniceus californicus* Nelson. Bicolored Red-wing.  
*Euphagus carolinus* (Müller). Rusty Blackbird.  
*Piranga ludoviciana* (Wilson). Western Tanager.  
*Pyrrhuloxia sinuata sinuata* (Bonaparte). Arizona Pyrrhuloxia.  
*Guiraca caerulea interfusa* Dwight and Griscom. Western Blue Grosbeak.  
*Guiraca caerulea salicaria* Grinnell. California Blue Grosbeak.  
*Passerina ciris pallidior* Mearns. Texas Painted Bunting.  
*Spinus tristis pallidus* Mearns. Pale Goldfinch.  
*Pipilo maculatus curtatus* Grinnell. Nevada Towhee.  
*Pipilo fuscus mesoleucus* Baird. Cañon Towhee.  
*Passerculus sandwichensis nevadensis* Grinnell. Nevada Savannah Sparrow.  
*Melospiza melodia atlantica* Todd. Atlantic Song Sparrow.  
*Melospiza melodia beata* Bangs. Mississippi Song Sparrow.  
*Melospiza melodia fisherella* Oberholser. Modoc Song Sparrow.  
*Melospiza melodia morphna* Oberholser. Rusty Song Sparrow.  
*Melospiza melodia santaecrucis* Grinnell. Santa Cruz Song Sparrow.

From the previous list should be deleted *Guiraca caerulea lazula*, which is now restricted to southern Mexico, and the records of which must now be referred to *G. c. interfusa*.

Several of these new host records are due to the recognition of more subspecies in the Fourth Edition of the A. O. U. Check-List, but the majority are new discoveries.

In addition to these birds, a number of forms previously listed as victims of one race of the cowbird, have since been found to be parasitized by another race as well. Therefore, if we list the victims according to the subspecies of the cowbird, we get the following additions (including those mentioned above) :

- a. *Molothrus ater ater* (Boddaert). Eastern Cowbird.  
*Salpinctes obsoletus obsoletus* (Say). Rock Wren.  
*Turdus migratorius achrusterus* (Batchelder). Southern Robin.  
*Hylocichla fuscescens salicicola* Ridgway. Willow Thrush.  
*Sturnus vulgaris vulgaris* (Linnaeus). Starling.  
*Geothlypis trichas brachydactyla* (Swainson). Northern Yellowthroat.  
*Icteria virens longicauda* Lawrence. Long-tailed Chat.  
*Hedymeles melanocephalus papago* Oberholser. Rocky Mountain Grosbeak.  
*Oberholseria chlorura* (Audubon). Green-tailed Towhee.  
*Pipilo fuscus mesoleucus* Baird. Cañon Towhee.  
*Passerherbulus caudacutus* (Latham). Leconte's Sparrow.  
*Chondestes grammacus strigatus* Swainson. Western Lark Sparrow.  
*Melospiza lincolni lincolni* (Audubon). Lincoln's Sparrow.  
*Melospiza melodia atlantica* Todd. Atlantic Song Sparrow.  
*Melospiza melodia beata* Bangs. Mississippi Song Sparrow.

This brings the list of hosts of the Eastern Cowbird from 127 up to 141 forms.

- b. *Molothrus ater artemisiae* Grinnell. Nevada Cowbird.  
*Tyrannus tyrannus* (Linnaeus). Nevada Cowbird.  
*Sayornis phoebe* (Latham). Eastern Phoebe.  
*Empidonax flaviventris* (Baird and Baird). Yellow-bellied Flycatcher.  
*Empidonax trailli trailli* (Audubon). Alder Flycatcher.  
*Myiochanes richardsoni richardsoni* (Swainson). Western Wood Pewee.  
*Nuttallornis mesoleucus* (Lichtenstein). Olive-sided Flycatcher.  
*Corthylio calendula calendula* (Linnaeus). Eastern Ruby-crowned Kinglet.  
*Vireo olivaceus* (Linnaeus). Red-eyed Vireo.  
*Vireo philadelphicus* (Cassin). Philadelphia Vireo.  
*Vireo gilvus swainsoni* Baird. Western Warbling Vireo.  
*Mniotilta varia* (Linnaeus). Black and White Warbler.  
*Vermivora peregrina* (Wilson). Tennessee Warbler.

*Dendroica auduboni auduboni* (Townsend). Audubon's Warbler.  
*Dendroica palmarum palmarum* (Gmelin). Western Palm Warbler.  
*Setophaga ruticilla* (Linnaeus). Redstart.  
*Piranga ludoviciana* (Wilson). Western Tanager.  
*Agelaius phoeniceus arctolegus* Oberholser. Giant Red-wing.  
*Icterus galbula* (Linnaeus). Baltimore Oriole.  
*Euphagus carolinus* (Müller). Rusty Blackbird.  
*Carpodacus purpureus purpureus* (Gmelin). Eastern Purple Finch.  
*Spinus tristis pallidus* Mearns. Pale Goldfinch.  
*Pipilo maculatus curtatus* Grinnell. Nevada Towhee.  
*Passerculus sandwichensis nevadensis* Grinnell. Nevada Savannah Sparrow.  
*Junco hyemalis hyemalis* (Linnaeus). Slate-colored Junco.  
*Zonotrichia albicollis* (Gmelin). White-throated Sparrow.  
*Melospiza melodia fisherella* Oberholser. Modoc Song Sparrow.  
*Melospiza melodia morphna* Oberholser. Rusty Song Sparrow.

This increases the list of victims of the Nevada Cowbird by 27 forms to a total of 82 in all.

c. *Molothrus ater obscurus* (Gmelin). Dwarf Cowbird.

Although the last edition of the A. O. U. Check-List recognizes the California Cowbird (*Molothrus ater californicus* Dickey and van Rossem) as valid, I still adhere to my former opinion that it is too poorly characterized a race to be worthy of nomenclatural distinction. I still consider it the same as the Dwarf Cowbird (*M. a. obscurus*) and so in this paper it is merged with the latter race.

*Tyrannus vociferans* Swainson. Cassin's Kingbird.  
*Psaltriparus minimus minimus* (Townsend). Coast Bush-tit.  
*Toxostoma bendirei* (Coues). Bendire's Thrasher.  
*Vireo belli arizonae* Ridgway. Arizona Vireo.  
*Vireo solitarius cassini* Xantus. Cassin's Vireo.  
*Compsothlypis americana americana* (Linnaeus). Parula Warbler.  
*Agelaius phoeniceus californicus* Nelson. Bicolored Red-wing.  
*Pyrrhuloxia sinuata sinuata* (Bonaparte). Arizona Pyrrhuloxia.  
*Guiraca caerulea interfusa* Dwight and Griscom. Western Blue Grosbeak.  
*Guiraca caerulea salicaria* Grinnell. California Blue Grosbeak.  
*Passerina ciris pallidior* Mearns. Texas Painted Bunting.  
*Carpodacus mexicanus frontalis* (Say). House Finch.  
*Melospiza melodia santaecrucis* Grinnell. Santa Cruz Song Sparrow.



The victims of the Dwarf Cowbird now total 87 forms (an increase of 13).

In the following annotated list are included only forms, the status of which, with respect to the cowbirds, has been altered by recent discoveries.

*Coccyzus americanus americanus* (Linnaeus). YELLOW-BILLED CUCKOO. The single record, still unique, was known to me only by virtue of the fact that Bendire included this cuckoo in his list of victims of the cowbird. In my book (p. 206) I wrote that inasmuch as no parasitized set of Yellow-billed Cuckoo's eggs was ever in the U. S. National Museum, it was probable that Bendire got his record from a correspondent. This I have been able to verify recently. Among some of Bendire's papers I found a letter from W. E. Loucks of Peoria, Illinois, in which Loucks writes that he found the nest in question. Although he does not say where or when he found it, it is likely that the locality was somewhere near Peoria where most of his field work was done.

*Tyrannus tyrannus* (Linnaeus). EASTERN KINGBIRD. The parasitized nest of this species from near Wahpeton, North Dakota, mentioned in my book (p. 207) involves the Nevada Cowbird, not the eastern race as there intimated. To the very few records of parasitism of the kingbird may be added five more, a set of three eggs of the kingbird and one of the Eastern Cowbird, found at Glocester, Rhode Island, June 12, 1919, and now in the C. E. Doe collection in the Florida State Museum. Mr. T. E. Randall found a parasitized nest in Alberta and Mr. S. J. Darcus a similar nest in Saskatchewan (Nevada Cowbird involved). Mr. A. M. Ingersoll found a parasitized nest at Ithaca, New York. Mr. Guy Love found a victimized nest in Decatur County, Kansas.

*Tyrannus vociferans* Swainson. CASSIN'S KINGBIRD. A nest with three eggs of the Cassin's Kingbird and two of the Dwarf Cowbird, found in the Santa Rita Mountains, Arizona, June 29, 1884, is now in the C. E. Doe collection in the Florida State Museum. This is the only record I know of for this species.

*Myiarchus crinitus boreus* Bangs. NORTHERN CRESTED FLY-CATCHER. Mr. E. J. Court tells me that he once found a cowbird's egg in a nest of this species in Charles County, Maryland. Previously I knew of but one such instance—in Massachusetts.

*Sayornis phoebe* (Latham). EASTERN PHOEBE. Previously recorded as an abundantly victimized host of the Eastern Cowbird, it

is now known to act in this capacity for the Nevada Cowbird as well. Mr. T. E. Randall found two parasitized nests in Alberta.

*Empidonax flaviventris* (Baird and Baird). YELLOW-BELLIED FLYCATCHER. Three records. Mr. T. E. Randall found two parasitized nests and Mr. A. D. Henderson found one, all in Alberta.

*Empidonax trailli trailli* (Audubon). ALDER FLYCATCHER. The Alder Flycatcher is a new host for the Nevada Cowbird. Mr. T. E. Randall found two victimized nests in Alberta; Mr. E. M. Tait found two more near Trout Creek Point, British Columbia. The Alder Flycatcher is so rarely recorded as a molothrine victim that the following instances may be of interest. Mr. S. J. Darcus found a nest with four eggs of the flycatcher and one of the Eastern Cowbird, at Fredericton, New Brunswick, June 14, 1912. Mr. A. M. Ingersoll writes me that he once found a nest of this flycatcher with a cowbird's egg in it.

*Empidonax trailli brewsteri* Oberholser. LITTLE FLYCATCHER. Mr. E. E. Sechrist found two parasitized nests near San Diego, California; Mr. C. H. Woodward found two others in Mission Valley, San Diego County.

*Empidonax minimus* (Baird and Baird). LEAST FLYCATCHER. Racey (*Murrelet*, xi, 1930, p. 70) found a nest of the Least Flycatcher with three eggs of the owner and one of the Nevada Cowbird at Peace River Block, British Columbia. The relatively few previous records of parasitism on this species were all from the territory of the United States. Mr. T. E. Randall found a parasitized nest in Alberta.

*Myiochanes richardsoni richardsoni* (Swainson). WESTERN WOOD PEWEE. Not previously recorded as a host of the Nevada Cowbird. Mr. T. E. Randall found four victimized nests in Alberta, and Mr. E. M. Tait found one at Trout Creek Point, British Columbia.

*Nuttallornis mesoleucus* (Lichtenstein). OLIVE-SIDED FLYCATCHER. One record. Mr. A. D. Henderson writes me that he collected a nest of this bird containing three eggs of the flycatcher and one of the Nevada Cowbird, on June 27, 1925, near Belvedere, Alberta.

*Pyrocephalus rubinus mexicanus* Sclater. VERMILION FLYCATCHER. To the few previously recorded cases may be added two others: 1. A parasitized nest found by Mr. A. M. Ingersoll at Phoenix, Arizona. This nest contained an addled egg of the Dwarf Cowbird and some young flycatchers. 2. A nest found near Tucson, Arizona, by Mr. N. K. Carpenter.

*Otocoris alpestris leucolaema* (Coues). DESERT HORNED LARK. To the single previous record may be added two more, a parasitized nest found in Alberta by Mr. T. E. Randall, and another, with three

eggs of the lark and one of the Nevada Cowbird, found at Cypress Hills, Saskatchewan, June 8, 1920, by Mr. S. J. Darcus.

*Otocoris alpestris praticola* (Henshaw). PRAIRIE HORNED LARK. I had previously considered this bird as a relatively uncommon host of the cowbird. However, Mr. A. E. Preece, of Grant Park, Illinois, writes me that it is commonly parasitized. "Nests made in a hill of corn at any time in June are frequently found containing cowbird's eggs. I have found as many as four cowbirds in one nest." Piekwell (Trans. Acad. Sci., St. Louis, vol. 27, 1931, pp. 106-109) has given some very valuable data on the Prairie Horned Lark as a molothrine host. Out of thirty-two nests found by him only one was parasitized. His account does not include any records of other observers.

*Auriparus flaviceps flaviceps* (Sundevall). ARIZONA VERDIN. To the few recorded instances of this bird acting as a molothrine host we may add that Mr. E. J. Court found the Dwarf Cowbird parasitizing the verdin in southern Texas.

*Psaltriparus minimus minimus* (Townsend). COAST BUSH-TIT. One record. Mr. H. W. Carriger found a parasitized nest of this bird at Irvington, Alameda County, California, May 15, 1932. It contained eight eggs of the bush-tit and one of the Dwarf Cowbird. There were minute punctures in two of the bush-tit's eggs.

*Psaltriparus minimus californicus* Ridgway. CALIFORNIA BUSH-TIT. A second record has come to my notice. Ashworth and Thompson (*Oologist*, vol. 47, 1930, pp. 122-124) report an egg of the Dwarf Cowbird from a nest of this bird in Ventura County, California, March 29.

*Sitta carolinensis carolinensis* Latham. WHITE-BREADED NUTHATCH. I knew of three instances before; now another one has come to my attention, a set of six eggs of the nuthatch and one of the Eastern Cowbird, collected May 5, 1912, at State College, Pennsylvania, by R. C. Harlow, and now in the collection of Mr. H. W. Carriger. Thus, two of the four records come from State College, both found by Mr. Harlow.

*Chamaea fasciata henshawi* Ridgway. PALLID WREN-TIT. A third record has recently come to my attention, a parasitized nest found in San Diego County, California, by Mr. N. K. Carpenter.

*Thryothorus ludovicianus ludovicianus* (Latham). CAROLINA WREN. In view of the paucity of records of this bird as a molothrine victim, it is of interest to note that in Oklahoma it may be more commonly parasitized than elsewhere. Mrs. Niece (*Birds of Oklahoma*, revised edition, 1931, p. 136) lists four parasitized nests from Copan

and Vinita, these four comprising one-fourth of the nests found there.

*Salpinctes obsoletus obsoletus* (Say). ROCK WREN. To the single previous record may be added the following:

Captain L. R. Wolfe writes me that he collected a set of four eggs of the wren and two of the cowbird in Decatur County, Kansas, June 17, 1914, and now in his collection. Herr Schönwetter also informs me that he has a set of three eggs of the wren and one of the cowbird, taken in Kansas, May 12, 1913. Mr. Guy Love informs me that he collected twelve parasitized sets of this wren in Decatur County, Kansas, so it appears that the species is frequently victimized there. All these cases refer to *M. a. ater* and are the first ones for that race of the cowbird.

*Mimus polyglottos polyglottos* (Linnaeus). EASTERN MOCKINGBIRD. To the one record previously known to me (from Arkansas) may be added another. Mr. E. J. Court informs me that he found an egg of the Eastern Cowbird in a nest of the mockingbird in St. Mary's County, Maryland.

*Mimus polyglottos leucopterus* (Vigors). WESTERN MOCKINGBIRD. To the little previously recorded in my book (p. 252) of this host, may be added the following:

Oldright (The Ornith. and Ool. Semi-Annual, vol. 2, No. 2, July, 1890, pp. 33, 34) lists a set of three eggs of the mockingbird and one of the Dwarf Cowbird and writes that, "... Dwarf Cowbirds' eggs . . . are but seldom found in the 'Mocker's' nest, but this year several were found." Mr. E. J. Court found this bird parasitized by the Dwarf Cowbird near San Antonio, Texas.

*Toxostoma rufum* (Linnaeus). BROWN THRASHER. To the seven definite records may be added three more, all from Oklahoma—a new region in this connection. Mrs. Nice (Birds of Oklahoma, revised edition, 1931, p. 140) records them as follows: A nest with four eggs of the thrasher and one of the cowbird, from Copan, May 9; a set of five eggs of the thrasher and one of the cowbird, from Tulsa; a nest with three eggs of the thrasher and one of the cowbird, also from Tulsa.

*Toxostoma bendirei* (Coues). BENDIRE'S THRASHER. One record. A set of three eggs of the thrasher and one of the Dwarf Cowbird, collected by E. A. Mearns near Red Rock, Arizona, April 3, 1885, now in the U. S. National Museum.

*Toxostoma curvirostre oberholseri* Law. BROWNSVILLE THRASHER. The single record of this species previously known must be referred to this recently described race.

*Turdus migratorius achrusterus* (Batchelder). SOUTHERN ROBIN. Two records: Kirkwood (Trans. Maryland Acad. Sci., vol. 1, 1895, p. 322) found a nest of the Southern Robin in Maryland, on May 21, 1893, containing two eggs of the Eastern Cowbird in addition to three of the robin. Neff (Oologist, vol. 43, 1926, p. 149-151) found a parasitized nest in the Ozark Mountains, Missouri.

*Hylocichla fuscescens salicicola* Ridgway. WILLOW THRUSH. To the three records mentioned in my book (p. 258) may be added several others. Schorger (Trans. Wisc. Acad. Sci., Arts, and Letters, vol. 26, 1931, p. 39) found a nest of this bird in Bayfield County, Wisconsin, containing two eggs of the thrush and five of the cowbird. These constitute the first records for the Eastern Cowbird; the previous cases involved the Nevada Cowbird only. Mr. B. W. Cartwright found a nest of this thrush near Winnipeg, Manitoba, June 18, 1932, containing five cowbirds' eggs and one of the thrush. The cowbirds' eggs were laid by two different individuals, judging by their size and coloration. Mr. E. M. Tait found a parasitized nest at Trout Creek Point, British Columbia.

*Sialia sialis sialis* (Linnaeus). EASTERN BLUEBIRD. Seven additional records have come to my notice, ranging from Rhode Island to Oklahoma. Although the bluebird is still to be considered a rather infrequent victim of the cowbird, it is by far the most often parasitized of hole-nesting birds.

*Polioptila melanura melanura* Lawrence. PLUMBEOUS GNAT-CATCHER. Another record of this little known victim has been brought to my notice, a set of one egg of the host and two of the Dwarf Cowbird, found by Clyde L. Field, at Calixico, California, April 18, 1916. Still others—two sets from Santa Eulalia, Chihuahua, and Guaymas, Sonora, Mexico (G. Bancroft).

*Polioptila melanura californica* Brewster. BLACK-TAILED GNAT-CATCHER. Previously known from one record, two more may be added now. Mr. Clyde L. Field found a parasitized nest at National City, California, April 24, 1929, and Mr. N. K. Carpenter found a similar nest in San Diego County, California.

*Corthylio calendula calendula* (Linnaeus). EASTERN RUBY-CROWNED KINGLET. Previously recorded a single time as a victim of the Eastern Cowbird, this kinglet is now known to serve as a host of the Nevada Cowbird as well. Mr. A. D. Henderson found a parasitized nest near Belvedere, Alberta.

*Bombycilla cedrorum* Vieillot. CEDAR WAXWING. Previously I had but one record of this form as a victim of the Nevada Cowbird.

A second one, a parasitized nest found in Alberta by Mr. T. E. Randall, has now come to my notice; and a third, a similar nest found at Trout Creek Point, British Columbia, by Mr. E. M. Tait.

*Sturnus vulgaris vulgaris* (Linnaeus). STARLING. One record. Mr. E. J. Court informs me that Mr. A. H. Hardisty found a cowbird's egg in a nest with eggs of the Starling near Beltsville, Maryland.

*Vireo atricapillus* (Woodhouse). BLACK-CAPPED VIREO. Previously recorded but once as a victim of the Eastern Cowbird (and several times as a host of the Dwarf Cowbird), this vireo is known to be occasionally victimized by *M. ater ater* in Oklahoma, according to Mrs. Nice (Birds of Oklahoma, revised ed., 1931, p. 150), who lists three instances.

*Vireo griseus griseus* (Boddaert). WHITE-EYED VIREO. Mr. S. J. Darcus found two parasitized nests at Fredericton, New Brunswick, in May, 1909, and 1910. These are of interest because of the far northeastern locality.

*Vireo huttoni huttoni* Cassin. HUTTON'S VIREO. To the few previously listed instances may be added two more records, a nest with four eggs of the vireo and one of the Dwarf Cowbird, and a nest containing one large young cowbird, both found by Mr. H. W. Carriger near Oakland, California.

*Vireo belli arizonae* Ridgway. ARIZONA VIREO. This subspecies is now officially recognized in the last edition of the A. O. U. Check-List (p. 276). In my book (p. 238) I wrote that the Arizona records there given would have to be referred to this race if it should be considered valid. Two additional records have come to my notice, a parasitized nest found near Tucson, Arizona, by Mr. N. K. Carpenter, and one found near Oracle, Arizona, by Mr. Clyde L. Field.

*Vireo belli pusillus* Coues. LEAST VIREO. To the little previously recorded by me may be added three parasitized nests found in Mission Valley, San Diego County, California, by Mr. C. H. Woodward and Mr. E. E. Sechrist, and another found by Mr. N. K. Carpenter, also in San Diego County. Mr. Carpenter writes that it is now difficult to find a nest of this bird without one or more eggs of the cowbird, although the parasite was unknown in San Diego County thirty years ago.

*Vireo solitarius plumbeus* Coues. PLUMBEOUS VIREO. A second record has come to my attention. Mr. Alex Walker found a nest with three eggs of the vireo and one of the Dwarf Cowbird at an elevation of 5100 feet in Montezuma Canyon, Huachuca Mountains, Arizona, June 15, 1932.

*Vireo solitarius cassini* Xantus. CASSIN'S VIREO. Mr. W. B. Sampson writes me that he found a nest of this bird with two eggs of the vireo and one of the Dwarf Cowbird, four miles east of Milton, San Joaquin County, California, May 30, 1932. This is the first record of this vireo as a cowbird host.

*Vireo olivaceus* (Linnaeus). RED-EYED VIREO. Mr. T. E. Randall found three victimized nests in Alberta. These are the first definite records for this species as a victim of the Nevada Cowbird known to me. Mr. S. J. Darcus found this vireo to be a host of the Eastern Cowbird at Fredericton, New Brunswick, close to the northern limit of the cowbird's range (two records).

*Vireo philadelphicus* (Cassin). PHILADELPHIA VIREO. Mr. T. E. Randall found a nest of this bird with a cowbird's egg in Alberta. It is the only record for this species.

*Vireo gilvus swainsoni* Baird. WESTERN WARBLING VIREO. A parasitized nest found in Alberta, by Mr. T. E. Randall, is the first definite record for this bird as a host of the Nevada Cowbird. Mr. E. M. Tait found three victimized nests at Trout Creek Point, British Columbia. Mr. H. W. Carriger writes me that he found a nest of this vireo with two eggs of the vireo and one of the Dwarf Cowbird near Oakland, California, June 2, 1929. This is the second record known to me of this vireo with Dwarf Cowbird eggs. A third is a parasitized nest found in San Diego County, California, May 26, 1921, now in Mr. G. Bancroft's collection.

*Mniotilta varia* (Linnaeus). BLACK AND WHITE WARBLER. Not previously known as a victim of the Nevada Cowbird. Mr. T. E. Randall found a parasitized nest in Alberta.

*Vermivora peregrina* (Wilson). TENNESSEE WARBLER. Mr. T. E. Randall collected a parasitized nest in Alberta. This is the first record for this warbler as a victim of the Nevada Cowbird. Previously it was known as a victim of the Eastern Cowbird on one record.

*Vermivora ruficapilla ruficapilla* (Wilson). NASHVILLE WARBLER. A sixth record has come to my attention, a set now in the U. S. National Museum, collected at Holland Patent, New York, June 2, 1888.

*Compsothlypis americana americana* (Linnaeus). PARULA WARBLER. Mr. H. P. Attwater collected a set of one egg of the warbler and one of the Dwarf Cowbird in Kerr County, Texas, May 10, 1895. This is the first record for this warbler as a host of the Dwarf Cowbird. This set is now in the U. S. National Museum.

*Compsothlypis americana pusilla* (Wilson). NORTHERN PARULA WARBLER. To the few previous records from New York, New Jersey,

Connecticut, and Pennsylvania, may be added two others, from Oklahoma, recorded by Mrs. Nice (Birds of Oklahoma, revised edition, 1931, p. 157).

*Dendroica aestiva aestiva* (Gmelin). EASTERN YELLOW WARBLER. This is reported to be a very common victim of the Nevada Cowbird in Alberta by Rowan and Randall (in litt.) and in British Columbia by Tait and Darcus. If the western form of the Yellow Warbler (*D. a. morcomi*) is recognized in the future, these records will have to be considered as of that race.

*Dendroica aestiva brewsteri* Grinnell. CALIFORNIA YELLOW WARBLER. One additional record, a set found in San Diego County, California, by Mr. N. K. Carpenter.

*Dendroica caerulescens caerulescens* (Gmelin). BLACK-THROATED BLUE WARBLER. The late Dr. W. L. Ralph collected three parasitized sets of this warbler in New York State. They are now in the U. S. National Museum. These bring the total number of records up to six.

*Dendroica coronata* (Linnaeus). MYRTLE WARBLER. Besides the two definite records previously listed, a third one has come to my notice. C. H. Morrell collected a set of one egg of the warbler and three eggs of the cowbird at Pittsfield, Maine, May 26, 1891. This set is now in the U. S. National Museum.

*Dendroica cerulea* (Wilson). CERULEAN WARBLER. Previously I knew of seven cases of parasitism of this warbler. To these may be added two more, as follows: a set of two eggs of the warbler and two of the cowbird collected at Saginaw, Michigan, June 23, 1900, by R. A. Brown; and a set of three eggs of the warbler and one of the cowbird, taken in Beaver County, Pennsylvania, by W. E. C. Todd. Both sets are in the U. S. National Museum.

*Dendroica auduboni auduboni* (Townsend). AUDUBON'S WARBLER. Mr. E. M. Tait found this warbler to be parasitized by the Nevada Cowbird at Trout Creek Point, British Columbia. It is the first record for the species.

*Dendroica discolor discolor* (Vieillot). PRAIRIE WARBLER. This is one of those cases where recorded literature is misleading. In my book (p. 246) on the basis of published data, I wrote that this warbler is a very uncommon victim of the Eastern Cowbird. However, correspondence and conversation with several experienced and reliable egg collectors indicate that in localities where the warbler occurs it is a very frequently parasitized species. It has been recorded as a molothrine victim west as far as Arkansas (my previous data were all from the eastern seaboard states).

[To be continued]



THE BIRDS OF BERLIN AND HARWOOD TOWNSHIPS,  
CASS COUNTY, NORTH DAKOTA

BY GALE W. MONSON

The following paper represents eight years' work in the field, from January, 1925, to December, 1932. Of these years, 1927, 1928, 1929, and 1930 were characterized by particularly intensive work. During the last two of the eight years, 1931 and 1932, really close observational work was confined to the summer months, although sufficient time was spent in the field the remainder of the year to acquire representative migrational data. The migration records for practically the whole period, 1925-1932, are very complete, the writer being in the field on the majority of the days, his observations as a rule taking place in a comparatively small area of two to three square miles within the area considered, that of Berlin and Harwood Townships in Cass County, North Dakota.

Complete daily records, including a list of birds seen, are available for the entire period. In addition, a day's bird census, taken eleven times a year and covering about three square miles within whose boundaries are representative physiographic and floral conditions of the two townships, contributes much in extending migration dates and in giving the writer a good idea of the relative abundance of different species at various times of the year. Bird-banding work carried on during the last two years has also helped enlarge the writer's data.

None of the records presented in this paper are based on collected specimens, field observation being the only source. A pair of twelve-power Astra binoculars has given valuable assistance in this respect, together with various bird-lists and ornithological books, such as Taverner's "Birds of Western Canada", Chapman's "Handbook of the Birds of Eastern North America", Bent's "Life Histories of North American Birds", and Roberts' "The Birds of Minnesota". Larson's "Birds of Eastern McKenzie County, North Dakota" (WILSON BULLETIN, March, 1926) and Williams's "Birds of the Red River Valley of Northeastern North Dakota" (WILSON BULLETIN, March and June, 1926), have proven valuable in comparative studies.

The seventy square miles, more or less, comprising the two townships consist almost entirely of cultivated farm land. The land is a part of the flat Red River Valley, once the bottom of glacial Lake Agassiz, with an elevation of approximately 900 feet above sea level. The Red River borders the eastern side of Harwood Township, with the Sheyenne River emptying into it in the northeastern part of the

township. The Sheyenne flows north through the midwestern part of Harwood Township before turning east to empty into the Red River. These two rivers are narrow, winding, often sluggish streams, seldom exceeding fifty feet in width, and cutting no depressions of any consequence, their high water level being only a few feet below the level of the surrounding country.

The average annual rainfall is slightly more than twenty inches. The summers are warm, temperatures of over 90° not being uncommon, and the winters cold, the mercury frequently sinking to 20° F. below 0° F., rarely to 30° below. Prevailing winds are northwest and southeast.

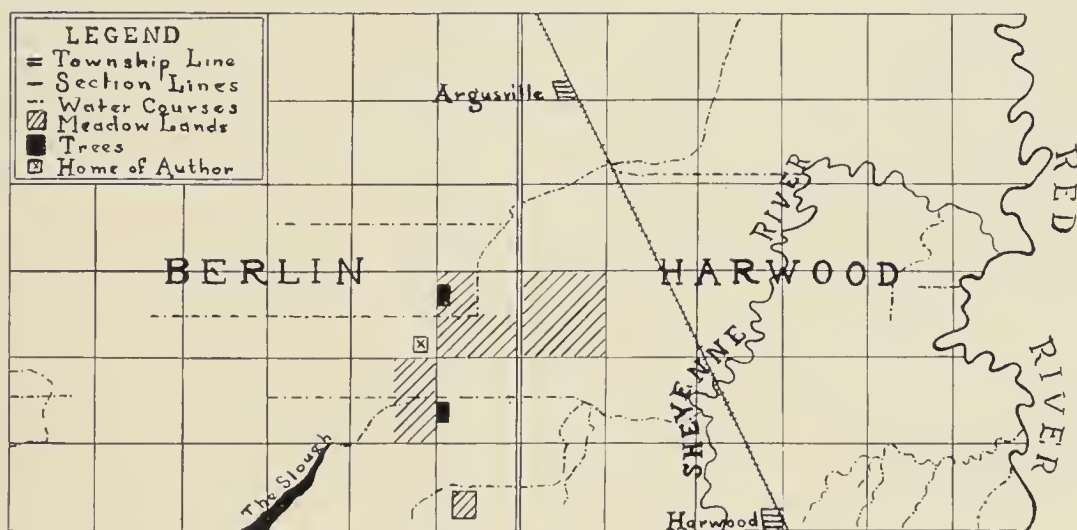
Much of the observational work has been done in the low meadow lands of two and a half square miles' area immediately adjoining the writer's home. Part of these are virgin prairie, being too low to have any practical value as farm land. The plant growth of these meadows consists mainly of Kentucky blue grass (*Poa pratensis*), false red-top (*Poa palustris*), timothy (*Phleum pratense*), cord grass (*Spartina michauxiana*), and the various sedges (*Carex* spp.). Among the more common herbs are Indian hemp (*Apocynum hypericifolium*), narrow-leaved sunflower (*Helianthus maximiliani*), prairie asters (*Aster multiflorum* and *A. paniculatus*), Canada goldenrod (*Solidago canadensis*), white sage (*Artemisia ludoviciana*), dandelion (*Taraxacum taraxacum*), and wolfberry (*Symphoricarpos occidentalis*). There are occasional patches of willows (*Salix discolor*, *S. petiolaris*, *S. interior*, *S. cordata*) in the wetter places. In ordinary years, over half of these meadow lands are mown for hay, but are not pastured.

The survival of an area of natural grassland in a region so completely under the plow is unusual. Were it not present, species such as the Marbled Godwit, the Upland Plover, the Sprague's Pipit, and the Baird's and Leconte's Sparrows would not be found, while Bobolinks, Western Meadowlarks, Prairie Hens, and Savannah and Grasshopper Sparrows are much more common because of it. Due to the fact that the writer has spent so much time in these meadows, they have had a more significant influence upon his data than perhaps any other portion of the two townships.

Tree growth in the townships consists of a few acres on every farmstead and scattered "tree claims", species most commonly planted being boxelder (*Acer negundo*), cottonwood (*Populus deltoides*), green ash (*Fraxinus pennsylvanica*), and golden willow (*Salix vitellina*). Along the Red and Sheyenne Rivers are narrow fringes of timber, consisting for the most part of elm (*Ulmus americana*), boxelder, green ash, bur oak (*Quercus macrocarpa*), peach-leaved willow

(*Salix amygdaloides*), basswood (*Tilia americana*), and choke cherry (*Prunus virginiana*). Tree growths, though forming a very small part of the area under consideration, are, however, important as centers of bird life.

There are no permanent bodies of water in the two townships, aside from the Red and Sheyenne Rivers. During the spring months and following heavy rains, much of the farm land may be covered by water, especially the above-mentioned meadowlands, where the water has a tendency to remain longer than elsewhere. A low area a mile long and from one to two hundred feet wide in the south central part of Berlin Township, known locally as "The Slough", usually contains water from March to July or August, forming a small center for water birds. During wet summers, favorable spots for water birds can be



found over the entire area, particularly in the meadowlands. As a rule, however, all traces of standing water have gone by the middle of August, resulting in a dearth of autumn records for water birds. The fall of 1928 stands out as an exception, when heavy rains in late August and September caused much of the land to lie under a few inches of water.

This lack of any permanent bodies of water in the region, again excepting the Red and Sheyenne Rivers, is naturally a considerable deterrent to the observation of water birds. The writer has no doubt that his list of birds would be extended fifteen or twenty species or more if there were such a body of water present. It would also result in more accurate data on water birds, especially in the fall. That there would be water birds present in the fall if such were the case is shown by the large numbers that appeared in the fall of 1928.

With reference to the occurrence of certain species of birds, the influence of the Red and Sheyenne Rivers is not to be disregarded, the water present at all times of the year bringing about the presence of such birds as the Spotted Sandpiper and the Belted Kingfisher, and the continuous, often unpastured woodland along the rivers resulting in favorable nesting conditions for such birds as the Sharp-shinned Hawk, the Great Horned Owl, the Ruby-throated Hummingbird, the Yellow-bellied Sapsucker, the Downy and Hairy Woodpeckers, the Crested Flycatcher, the Blue Jay, the White-breasted Nuthatch, the Chickadee, the Red-eyed Vireo, the Indigo Bunting, and the Rose-breasted Grosbeak.

The writer again wishes to call attention to the fact that the type of field work which enabled him to gather the data summed up in this paper has been very persistent and very localized (about ninety per cent within an area of three square miles). Because of this, he feels that this one differs from most bird lists, which as a rule cover a far larger territory and do not represent a continual and unbroken period of observation in the field.

The writer also wishes to acknowledge his indebtedness to Prof. O. A. Stevens, of North Dakota State College, without whose counsel and encouragement this paper would not have been written.

The following annotated list of birds, in which special attention is paid to migratory data, contains 187 named forms. The nomenclature used is that of the A. O. U. Check-List of North American Birds, Fourth Edition. The names of subspecies are as given in Roberts' "The Birds of Minnesota", since the locality treated in this paper would be expected to contain the same subspecies as are found in Minnesota.

HORNED GREBE. *Colymbus auritus*. Rare; two records, September 29, 1926, and April 24, 1927.

PIED-BILLED GREBE. *Podilymbus podiceps podiceps*. Rare, seen only in wet fall of 1928, August 30 to September 15.

GREAT BLUE HERON. *Ardea herodias herodias*. Occasionally seen flying over, evidently between the Red and Sheyenne Rivers and the Slough, and, in late summer, along the Red and Sheyenne Rivers. Three spring records, May 8, 1926, April 24, 1927, and May 11, 1930. Scattered records for fall, earliest July 3, 1929, latest October 8, 1926.

BLACK-CROWNED NIGHT HERON. *Nycticorax nycticorax hoactli*. Rare, one date only, August 22, 1932, when two immature birds flew into the farmyard trees.

AMERICAN BITTERN. *Botaurus lentiginosus*. Fairly common summer resident, varying in numbers according to wetness of year. Earliest

arrival, April 20, 1929, average April 29. Latest departure October 21, 1928.

EASTERN LEAST BITTERN. *Ixobrychus exilis exilis*. Rare, one seen June 10, 1930, at the Slough.

WHISTLING SWAN. *Cygnus columbianus*. Rare, one flock seen flying over on October 18, 1930.

COMMON CANADA GOOSE. *Branta canadensis canadensis*. Fairly common migrant. Earliest spring arrival March 17, 1930, average March 26; latest spring departure May 12, 1925, average April 30. Earliest fall arrival September 26, 1925, average October 10; latest fall departure November 14, 1931, average November 6.

LESSER SNOW GOOSE. *Chen hyperborea hyperborea*. Occasional spring migrant, usually seen in company with Canada Geese. I have the following dates: May 5, 1926; April 2 and May 11, 1927; April 1, 1928; April 4, 5, and 18, 1929.

BLUE GOOSE. *Chen caerulescens*. Rare, a small flock on April 16, 1929, being the only ones seen.

COMMON MALLARD. *Anas platyrhynchos platyrhynchos*. The most common wild duck, breeding in small numbers every year. Earliest arrival March 15, 1930, average March 19. Most birds leave by July 15, thereafter are seen only in migration. Latest fall date November 1, 1929.

BALDPATE. *Mareca americana*. Rare; one date only, September 15, 1928.

AMERICAN PINTAIL. *Asya acuta tizithoa*. Very common spring migrant, occasional summer resident, rare in fall. Earliest arrival March 15, 1927 and 1930, average March 18. Latest fall departure October 22, 1928.

GREEN-WINGED TEAL. *Nettion carolinense*. Occasional migrant. I have the following dates: May 4, 1926; May 20 and 30, 1927; April 20 and May 12, 1929; September 3 and 7, October 2, 1928.

BLUE-WINGED TEAL. *Querquedula discors*. Fairly common spring migrant, occasional summer resident, rare in fall. Earliest arrival April 20, 1926, 1927, and 1930; average April 23. Latest departure September 30, 1928.

SHOVELLER. *Spatula clypeata*. Uncommon migrant, rare summer resident. Spring arrival dates, April 14, 1929, and May 1, 1932 (present only two years). A common bird in the wet fall of 1928.

WOOD DUCK. *Aix sponsa*. Rare; only two records, April 20 and May 1, 1926.

RING-NECKED DUCK. *Nyroca collaris*. Rare, only two records, April 14 and 21, 1929.

EASTERN GOSHAWK. *Astur atricapillus atricapillus*. Uncommon winter visitant, seen on December 3 and 22, 1925; November 15 and 27, December 21, 1926.

SHARP-SHINNED HAWK. *Accipiter velox velox*. Perhaps breeds along the Red and Sheyenne Rivers. I have seen it only in the latter part of summer and in early fall. Earliest fall date July 30, 1929, latest September 20, 1930.

COOPER'S HAWK. *Accipiter cooperi*. This *Accipiter* also very likely breeds along the Red and Sheyenne Rivers, although none have been seen there in early summer as yet. Only three spring dates: April 7, 1929; May 15, 1930; and April 23, 1932. A fairly common late summer and fall bird. I have three July records: July 12, 1928, and July 16 and 21, 1929. All other records are for August and September; earliest August 26, 1927, and latest September 30, 1929.

EASTERN RED-TAILED HAWK. *Buteo borealis borealis*. A common migrant and an occasional nesting species along the Red and Sheyenne Rivers. Earliest arrival March 25, 1925, average April 1. Latest departure October 28, 1925, average October 18.

SWAINSON'S HAWK. *Buteo swainsoni*. Rare; one record for September 14, 1930.

AMERICAN ROUGH-LEGGED HAWK. *Buteo lagopus s. johannis*. A common late fall and late winter migrant, occasional winter resident. Earliest fall arrival September 26, 1930, average October 5. Latest spring departure April 14, 1928, average March 25.

GOLDEN EAGLE. *Aquila chrysaetos canadensis*. Rare; only two dates, September 12 and October 18, 1931.

MARSH HAWK. *Circus hudsonius*. Common summer resident, nesting two to four pairs to a section of meadowland. Arrives early in spring; date of departure in fall depends on weather conditions. Earliest arrival February 21, 1930, average February 27. Latest departure November 24, 1925, average November 15. Have records for December 23, 1928, and January 5, 1929.

PRAIRIE FALCON. *Falco mexicanus*. Rare; one record for September 18, 1932.

DUCK HAWK. *Falco peregrinus anatum*. Rare transient, seen on May 19, 1929; October 20, 1929; September 19, 1931; and September 14, 1932.

EASTERN PIGEON HAWK. *Falco columbarius columbarius*. Erratic migrant. Earliest spring arrival March 13, 1926, average April 10; latest spring departure May 3, 1929, average April 30. Earliest fall arrival September 12, 1929, average September 16; latest fall departure October 21, 1926, average October 14.

EASTERN SPARROW HAWK. *Falco sparverius sparverius*. Common migrant but rare breeding species. Earliest arrival April 2, 1928, average April 14. Latest departure October 12, 1930, average October 5.

GREATER PRAIRIE HEN. *Tympanuchus cupido americanus*. A common permanent resident and the finest of our game birds. The farmers' cornfields are favorite winter feeding places, with the deep snow in the meadowlands providing excellent sleeping quarters. I do not believe that their numbers are decreasing.

RING-NECKED PHEASANT. *Phasianus colchicus torquatus*. A foreign game bird recently introduced here. They first appeared in 1928 and are now almost as common as the prairie hen. They do not seem to survive the severe winters as well as the latter bird, however.

SANDHILL CRANE. *Grus canadensis tabida*. Rare, a small flock being seen on April 10, 1925, and one bird April 15, 1926.

VIRGINIA RAIL. *Rallus limicola limicola*. Occasional spring migrant and a rare summer resident, with a nesting record for June, 1925. Earliest spring arrival May 18, 1929. Latest date seen July 7, 1925.

SORA. *Porzana carolina*. A common summer resident at the Slough. Earliest arrival May 7, 1926, average May 13. Latest departure September 25, 1927, average September 16.

AMERICAN COOT. *Fulica americana americana*. Occasional migrant, nesting once (1929) at the Slough. Earliest spring arrival April 21, 1929, average April 28; latest spring departure May 18, 1930, average May 15. Rare in fall, latest departure October 20, 1928.

SEMIPALMATED PLOVER. *Charadrius semipalmatus*. Rare. Small flocks seen on May 11, 1930, and May 18, 1930.

KILLDEER. *Oxyechus vociferus vociferus*. Common summer resident, usually a pair to every barnyard. Earliest arrival March 15, 1927, average March 28. Latest departure October 16, 1928, average October 12.

AMERICAN GOLDEN PLOVER. *Pluvialis dominica dominica*. A not uncommon migrant, apparently increasing in numbers. Earliest spring arrival April 29, 1929, average May 1; latest spring departure May 18, 1932. Earliest fall arrival September 3, 1928, average September 18; latest fall departure November 2, 1928, average October 20.

BLACK-BELLIED PLOVER. *Squatarola squatarola*. Rare spring migrant, seen three times: May 24, 1925; May 31, 1926; and May 24, 1931.

WILSON'S SNIPE. *Capella delicata*. Common spring migrant, rare in fall except in 1928, when it was a common bird from September 3

to October 28. Other autumn records are September 22, 1926 and October 11, 1931. Earliest spring arrival April 13, 1930, average April 22; latest spring departure May 11, 1930, average May 5.

UPLAND PLOVER. *Bartramia longicauda*. A summer resident, one or two pairs present every year. Earliest arrival May 3, 1927, average May 9. Latest departure August 28, 1927, average August 22.

SPOTTED SANDPIPER. *Actitis macularia*. Occasional summer resident along the Red and Sheyenne Rivers, never seen elsewhere. Earliest arrival May 10, 1928, latest departure August 21, 1927.

EASTERN SOLITARY SANDPIPER. *Tringa solitaria solitaria*. Fairly common migrant. Earliest spring arrival May 1, 1930, average May 6; latest spring departure May 17, 1929, average May 15. Earliest fall arrival July 2, 1929, average July 10; latest fall departure September 25, 1928, average August 20.

GREATER YELLOW-LEGS. *Totanus melanoleucus*. Rare. I have the following dates: May 24, 1925; May 29, 1926; September 9 and 10, 1927; September 7, 1928.

LESSER YELLOW-LEGS. *Totanus flavipes*. A fairly common migrant. Earliest spring arrival April 20, 1927 and 1930, average April 23; latest spring departure June 3, 1925, average May 17. Earliest fall arrival July 5, 1928, average July 12; latest fall departure September 29, 1928, average August 20.

PECTORAL SANDPIPER. *Pisobia melanotos*. The most common sandpiper migrant. Earliest spring arrival April 26, 1930, average May 1; latest spring departure May 19, 1929, average May 18. Earliest fall arrival July 14, 1931, average July 21; latest fall departure September 15, 1928, average August 23.

LEAST SANDPIPER. *Pisobia minutilla*. Uncommon, seen only on May 5, 1926 and August 16, 1931.

MARbled GODWIT. *Limosa fedoa*. A large wading bird that is still holding its own in the vicinity. One or two pairs breed every summer, and as many as a dozen are often present in the spring. I have seen these birds only once after June 30, so it is evident that they leave with their young as soon as the latter can fly. They will often breed on the open meadowland where there is no water about for several miles. Earliest arrival April 19, 1926, average April 24. Latest departure July 15, 1932, average June 26. No fall records.

WILSON'S PHALAROPE. *Steganopus tricolor*. Occasional spring migrant, often staying well into June. Earliest spring arrival May 7, 1926, average May 20. Latest spring departure June 17, 1930, average June 5. One record for June 22, 1926, but no fall records.

HERRING GULL. *Larus argentatus smithsonianus*. An occasional



spring migrant, seen in five years out of eight. Earliest arrival March 27, 1932, average April 9; latest departure April 28, 1928, average April 16.

RING-BILLED GULL. *Larus delawarensis*. Rare; one record for April 14, 1929.

FRANKLIN'S GULL. *Larus pipixcan*. Common transient. Earliest spring arrival April 26, 1927, average May 3; latest spring departure June 13, 1927. Earliest fall arrival July 1, 1927, average July 20; latest fall departure September 26, 1925, average September 14.

FORSTER'S TERN. *Sterna forsteri*. Rare, one record for June 19, 1932.

BLACK TERN. *Chlidonias nigra surinamensis*. A common transient, occasional individuals appearing during the breeding season. Earliest spring arrival May 11, 1930, average May 18; latest spring departure May 29, 1926, average May 28. Earliest fall arrival July 9, 1930, average July 20; latest fall departure August 31, 1928, average August 21.

WESTERN MOURNING DOVE. *Zenaidura macroura marginella*. A very common summer resident. Earliest arrival April 3, 1925, average April 9. Latest departure October 21, 1928, average October 13. One was seen December 22 to 26, 1928.

BLACK-BILLED CUCKOO. *Coccyzus erythrophthalmus*. Common summer resident. Earliest arrival May 27, 1927, average May 30. Latest departure September 22, 1929, average September 12.

EASTERN SCREECH OWL. *Otus asio uaeuius*. Fairly common permanent resident, seen most commonly in August, September, October, February, and March. Nests infrequently.

GREAT HORNED OWL. *Bubo virginianus virginianus*. One seen November 10, 1925; a pair was seen occasionally along the Sheyenne River between May 25 and August 21, 1930, perhaps nesting.

SNOWY OWL. *Nyctea nyctea*. A not uncommon winter visitant, quite common some years. Earliest fall arrival November 28, 1929 and 1931, average December 7. Latest spring departure April 4, 1930, average March 15.

AMERICAN HAWK OWL. *Surnia ulula caparoch*. Rare, one record for November 16, 1927.

WESTERN BURROWING OWL. *Speotyto cuicularia hypugaea*. A pair nested in the southern part of Berlin Township for several years, but have not been seen since 1929. Earliest arrival May 1, 1926, average May 3. Latest departure September 25, 1927, average September 24.

NORTHERN BARRED OWL. *Strix varia varia*. One record for March 8, 1930.

GREAT GRAY OWL. *Scotiaptex nebulosa nebulosa*. One record for December 26, 1926. This is not a positive record, as later observation indicates that the bird may have been an immature or female Snowy Owl.

LONG-EARED OWL. *Asio wilsonianus*. Transient. Uncommon in spring, common in fall, loving the growth of willow on the meadowlands. Spring records: May 5, 12, and 17, 1927; April 14, 1928; April 20, 1929. Earliest fall arrival July 10, 1926, average August 15; latest fall departure November 18, 1928, average November 1. One record for January 20, 1929.

SHORT-EARED OWL. *Asio flammeus flammeus*. A permanent resident, varying considerably in numbers from year to year and from season to season. It is a lover of low sedge patches in the meadowlands.

EASTERN NIGHTHAWK. *Chordeiles minor minor*. Fairly common migrant. Earliest spring arrival May 11, 1930, average May 24; latest spring departure June 15, 1929, average June 10. Earliest fall arrival August 15, 1925 and 1928, average August 22; latest fall departure September 21, 1927, average September 12.

CHIMNEY SWIFT. *Chaetura pelagica*. Occasional summer resident, nesting in the chimneys of country churches and of the larger buildings in the villages of Argusville and Harwood. Earliest arrival May 3, 1930, average May 15. Latest departure September 4, 1930, average August 25.

RUBY-THROATED HUMMINGBIRD. *Archilochus colubris*. Common migrant and a rare summer resident along the Red and Sheyenne Rivers. Earliest arrival May 15, 1929, average May 24. Latest departure September 18, 1927, average September 6.

EASTERN BELTED KINGFISHER. *Megaceryle alcyon alcyon*. An occasional pair nests along the Red and Sheyenne Rivers where the water has cut into the banks. Earliest arrival April 29, 1929, average April 30. Latest departure September 18, 1927, average September 8.

NORTHERN FLICKER. *Colaptes auratus luteus*. Easily the most common woodpecker, a pair to every grove. Earliest arrival March 29, 1925, average April 6. Latest departure November 1, 1927, average October 16.

RED-HEADED WOODPECKER. *Melanerpes erythrocephalus*. A species not yet common but increasing decidedly in numbers. Earliest arrival May 7, 1926, average May 12. Latest departure September 7, 1927, average August 30.

YELLOW-BELLIED SAPSUCKER. *Sphyrapicus varius varius*. Fairly common migrant, breeding rarely along the Red and Sheyenne Rivers. Earliest arrival April 21, 1929, average April 24. Latest departure October 1, 1926, average September 27.

EASTERN HAIRY WOODPECKER. *Dryobates villosus villosus*. A common permanent resident of the woods along the Red and Sheyenne Rivers, often coming to outlying farm groves in the fall.

NORTHERN DOWNY WOODPECKER. *Dryobates pubescens medianus*. A common permanent resident along the Red and Sheyenne Rivers, more so than the hairy. It is seen in outlying farm groves in late summer, fall, and winter.

EASTERN KINGBIRD. *Tyrannus tyrannus*. A very common summer resident, more so than the following species. Earliest arrival May 11, 1930, average May 16. Latest departure September 16, 1931 and 1932, average September 8. Most birds leave before August 31.

ARKANSAS KINGBIRD. *Tyrannus verticalis*. A very common summer resident. Earliest arrival May 3, 1930, average May 9. Latest departure September 19, 1931, average September 11. Most birds leave before August 31.

NORTHERN CRESTED FLYCATCHER. *Myiarchus crinitus boreus*. Occasionally nests along the Red and Sheyenne Rivers. Earliest arrival May 22, 1927, average May 23. Latest departure August 25, 1926, average August 17.

EASTERN PHOEBE. *Sayornis phoebe*. My belief that this species nests along the Red and Sheyenne Rivers is based on the presence of a pair about a bridge over the Sheyenne in the summer of 1929, although no nest could be found. Earliest arrival April 4, 1925, average April 17. Latest departure October 18, 1925, average September 28.

YELLOW-BELLIED FLYCATCHER. *Empidonax flaviventris*. Occasional transient, seen in May (four years out of eight) and in August (seven years out of eight). Earliest spring arrival May 11, 1925, average May 20; latest departure May 29, 1925, average May 25. Earliest fall arrival August 1, 1926, average August 14; latest fall departure August 27, 1932, average August 23.

ALDER FLYCATCHER. *Empidonax trailli trailli*. A rather uncommon nesting species in tree claims and along the Red and Sheyenne Rivers. Earliest arrival June 4, 1930, average June 5. Latest departure August 22, 1928, average August 15.

LEAST FLYCATCHER. *Empidonax minimus*. A common summer resident. Earliest arrival May 3, 1930, average May 11. Latest departure September 26, 1927, average September 17.

EASTERN WOOD PEWEE. *Myiochanes virens*. Common summer resident in tree claims and along the Red and Sheyenne Rivers. Earliest arrival May 11, 1930, average May 26. Latest departure September 24, 1929, average September 12.

OLIVE-SIDED FLYCATCHER. *Nuttallornis mesoleucus*. Has been seen only in August, with dates ranging from August 11, 1932, to August 26, 1932. Seven were present in one small tree claim on August 23, 1931.

PRAIRIE HORNED LARK. *Otocoris alpestris praticola*. This is evidently the nesting subspecies, but I have not been able to satisfy myself yet as to other subspecies. The birds are present at times throughout the winter, but usually are gone by the middle of November, not to return again until February. Frequently migrate in large numbers. Those that stay to breed usually raise two broods, a corn field forming a favorite place for the second nest.

TREE SWALLOW. *Iridoprocne bicolor*. Very common spring migrant, returning again early in the fall in much smaller numbers. Earliest spring arrival April 24, 1927, average April 28; latest spring departure May 29, 1925, average May 24. Earliest fall arrival July 28, 1932, average August 8; latest fall departure August 30, 1928, average August 20.

BANK SWALLOW. *Riparia riparia riparia*. A common nesting species in vertical banks of the Red and Sheyenne Rivers. Earliest arrival May 3, 1925, average May 11. Latest departure September 12, 1927, average August 31.

BARN SWALLOW. *Hirundo erythrogaster*. Our most common and best known swallow. Earliest arrival April 23, 1926, average May 2. Latest departure October 4, 1930, average October 1.

NORTHERN CLIFF SWALLOW. *Petrochelidon albifrons albifrons*. An erratic visitor, regular but uncommon in spring migrations. Dates range from May 11, 1930, to June 16, 1929; and in late summer, from July 7, 1931, to August 23, 1932.

PURPLE MARTIN. *Progne subis subis*. Not uncommon migrant. The only nesting pairs in the area are two or three that return to Argusville village every year. Earliest arrival April 20, 1932, average April 30. Latest departure September 20, 1929, average August 30.

NORTHERN BLUE JAY. *Cyanocitta cristata cristata*. Occasionally nests along the Red and Sheyenne Rivers, now and then seen in outlying farmyards. Rarely winters.

EASTERN CROW. *Corvus brachyrhynchos brachyrhynchos*. A common summer resident and occasional permanent resident. One or two are usually about in the winter unless the weather is very severe. Mi-

gration dates for years when none were present in the winter: earliest arrival February 18, 1930, average February 22. Latest departure December 7, 1930, average November 23. The bulk of the birds migrate in March and October.

BLACK-CAPPED CHICKADEE. *Penthestes atricapillus atricapillus*. A common winter visitant, breeds rarely along the Red and Sheyenne Rivers. The winter influx takes place in the latter part of August and in September; the birds leave again in March and in early April.

WHITE-BREASTED NUTHATCH. *Sitta carolinensis carolinensis*. A common permanent resident along the Red and Sheyenne Rivers, occasionally visiting outlying farm groves.

RED-BREASTED NUTHATCH. *Sitta canadensis*. An erratic fall transient, absent in 1926, 1927, 1928, and 1932. Earliest fall arrival September 23, 1929, average October 3. Latest fall departure October 24, 1925, average October 18.

BROWN CREEPER. *Certhia familiaris americana*. A common transient. Earliest spring arrival March 23, 1928, average April 3; latest spring departure May 6, 1928, average April 26. Earliest fall arrival September 18, 1925, average September 30; latest fall departure November 4, 1928, average October 23.

WESTERN HOUSE WREN. *Troglodytes aedon parkmani*. Common summer resident. Earliest arrival April 30, 1929, average May 8. Latest departure October 12, 1925, average September 30.

EASTERN WINTER WREN. *Nannus hiemalis hiemalis*. Rare migrant, seen only on April 9, 1930, September 15, 1928, and November 5, 1925.

SHORT-BILLED MARSH WREN. *Cistothorus stellaris*. Fairly common summer resident of low spots in the meadowlands, and the Slough. Earliest arrival April 27, 1929, average May 14. Latest departure October 21, 1928, average September 20.

CATBIRD. *Dumatella carolinense*. Fairly common summer resident. Earliest arrival May 11, 1930, average May 18. Latest departure September 30, 1925, average September 20.

BROWN THRASHER. *Toxostoma rufum*. Common summer resident. Earliest arrival May 2, 1928, average May 6. Latest departure September 23, 1927, average September 19.

EASTERN ROBIN. *Turdus migratorius migratorius*. Very common migrant and summer resident. Earliest arrival March 16, 1927, average March 27. Latest departure November 7, 1925, average October 23.

EASTERN HERMIT THRUSH. *Hylocichla guttata faxoni*. Fairly common transient. Earliest spring arrival April 10, 1929 and 1930, average April 16; latest spring departure May 18, 1929, average May

1. Earliest fall arrival September 17, 1932, average September 26; latest fall departure October 21, 1928, average October 12.

OLIVE-BACKED THRUSH. *Hylocichla ustulata swainsoni*. The most common thrush migrant, occurring in large numbers at times in the spring and fall of each year. Earliest spring arrival May 5, 1931 and 1932, average May 7; latest spring departure May 30, 1929 and 1930, average May 29. Earliest fall arrival August 25, 1928, average August 28; latest fall departure October 5, 1930, average September 27.

GRAY-CHEEKED THRUSH. *Hylocichla minima aliciae*. Much less common than the preceding species, only a few individuals being seen each year. Earliest spring arrival May 9, 1930, average May 14; latest spring departure June 10, 1928, average May 28. Earliest fall arrival August 22, 1928, average September 10; latest fall departure September 19, 1931, average September 17.

WILLOW THRUSH. *Hylocichla fuscescens salicicola*. The least common of the thrushes. Does not nest. I have the following dates: May 20 to June 3, 1928; May 19 to May 28, 1929; May 16 to May 18, 1930; May 24 to June 2, 1931; and September 9, 1928.

EASTERN BLUEBIRD. *Sialia sialis sialis*. Uncommon migrant and rare summer resident. Earliest arrival March 27, 1925, average March 28. Latest departure October 18, 1930, average October 8.

EASTERN GOLDEN-CROWNED KINGLET. *Regulus satrapa satrapa*. An erratic spring migrant, regular and common fall migrant. Earliest spring arrival March 30, 1925, average April 8; latest spring departure April 28, 1927, average April 25. Earliest fall arrival September 26, 1929, average October 4; latest fall departure November 10, 1928, average October 28.

EASTERN RUBY-CROWNED KINGLET. *Corthylio calendula calendula*. Common transient. Earliest spring arrival April 14, 1931, average April 20; latest spring departure May 24, 1927, average May 18. Earliest fall arrival August 31, 1925, average September 9; latest fall departure October 18, 1925 and 1931, average October 13.

AMERICAN PIPIT. *Anthus spinoletta rubescens*. Occasional spring migrant, common fall migrant, with a particular liking for burnt-over fields. Earliest spring arrival April 28, 1928, average May 6; latest spring departure May 19, 1929, average May 18. Earliest fall arrival September 13, 1930, average September 25; latest fall departure November 1, 1931, average October 24.

SPRAGUE'S PIPIT. *Anthus spraguei*. This bird has a rather peculiar local history. It was first seen July 24, 1927, and did not appear again until July 17, 1929, when several birds appeared and haunted

the meadowlands as late as September 14. None appeared again next year (1930) until July 14; again the species was here until September 14. The next year, arriving on May 2, two pairs stayed the summer through until September 13, evidently nesting. In the spring of 1932 they arrived May 1 but had left again by May 18. Reappearing July 22, they stayed until September 18. When present there are usually from four to ten about. The males are constant singers from their arrival in May until one or two weeks into August.

BOHEMIAN WAXWING. *Bombycilla garrula pallidiceps*. Rare, seen only on December 1, 1928.

CEDAR WAXWING. *Bombycilla cedrorum*. An infrequent visitor. I have the following records: June 4 and 9, 1927; June 6, 7, and 8, 1929; June 1, 18, and 19, 1930; August 25 and September 28, 1929; August 23, September 16 and 22, 1930; August 28 and September 5, 1931; and August 23, 1932.

NORTHERN SHRIKE. *Lanius borealis borealis*. An uncommon winter visitant. I have the following dates: January 3 and 17, February 11, 1925; February 1, October 16, 25, 26, and 30, November 3, 8, and 17, and December 5, 1927; and October 21 and 29, 1928.

MIGRANT SHRIKE. *Lanius ludovicianus migrans*. Common summer resident. Earliest arrival March 31, 1928, average April 10. Latest departure October 5, 1930, average September 20.

YELLOW-THROATED VIREO. *Vireo flavifrons*. Frequent summer resident in the trees along the Red and Sheyenne Rivers and in "tree claims". Earliest arrival May 15, 1928, average May 23. Latest departure August 23, 1932, average August 22.

BLUE-HEADED VIREO. *Vireo solitarius solitarius*. Occasional migrant. Earliest spring arrival May 10, 1929, average May 21; latest spring departure June 13, 1927, average June 1. Earliest fall arrival August 29, 1929, average September 8; latest fall departure September 19, 1932, average September 17.

RED-EYED VIREO. *Vireo olivaceus*. Frequent migrant and an occasional nesting species in the woods along the Red and Sheyenne Rivers. Earliest arrival May 28, 1932, average May 30. Latest departure September 22, 1929, average September 16.

EASTERN WARBLING VIREO. *Vireo gilvus gilvus*. The most common summer resident vireo. Earliest arrival May 15, 1928, average May 20. Latest departure September 21, 1925, average September 12.

BLACK AND WHITE WARBLER. *Mniotilta varia*. Frequent transient. Earliest spring arrival May 5, 1926, average May 10; latest spring departure May 29, 1926, average May 19. Earliest fall arrival August

10, 1932, average August 22; latest fall departure October 2, 1929, average September 17.

TENNESSEE WARBLER. *Vermivora peregrina*. Common transient. Earliest spring arrival May 10, 1926, average May 13; latest spring departure June 6, 1928, average May 30. Earliest fall arrival September 3, 1930, average September 11; latest fall departure September 28, 1926, average September 22.

ORANGE-CROWNED WARBLER. *Vermivora celata celata*. Common transient. Earliest spring arrival April 23, 1932, average May 4; latest spring departure May 29, 1926, average May 22. Earliest fall arrival August 23, 1931, average September 3; latest fall departure October 11, 1931, average September 27.

NASHVILLE WARBLER. *Vermivora ruficapilla ruficapilla*. Occasional transient. Earliest spring arrival May 10, 1929, average May 14; latest spring departure May 28, 1925, average May 23. Earliest fall arrival August 29, 1929, average September 13; latest fall departure September 28, 1929, average September 25.

This and the two preceding species are very hard to distinguish in the fall, and some of the above fall records may be questionable.

EASTERN YELLOW WARBLER. *Dendroica aestiva aestiva*. Common summer resident, liking especially the willow patches on the meadows. Earliest arrival May 5, 1926, average May 11. Latest departure September 19, 1927, average September 12.

MAGNOLIA WARBLER. *Dendroica magnolia*. Transient, occurring most commonly in the spring. Earliest spring arrival May 11, 1931, average May 17; latest spring departure June 12, 1927, average May 28. Only two fall records: September 18 and 19, 1926.

CAPE MAY WARBLER. *Dendroica tigrina*. Rare, seen only in 1930, May 11-15, 18.

BLACK-THROATED BLUE WARBLER. *Dendroica caerulescens caerulescens*. Rare, only two records, August 29 and September 12, 1932.

MYRTLE WARBLER. *Dendroica coronata*. The most common transient warbler. Earliest spring arrival April 18, 1929, average April 25; latest spring departure May 30, 1928, average May 23. Earliest fall arrival September 5, 1927, average September 13; latest fall departure November 5, 1927, average October 15.

BLACK-THROATED GREEN WARBLER. *Dendroica virens virens*. Rare. Five records: May 7-8, 1928; May 19 and September 13, 1929; May 11-12, 1930; and September 19, 1931.

BLACKBURNIAN WARBLER. *Dendroica fusca*. Rare; one record for August 23, 1932.



CHESTNUT-SIDED WARBLER. *Dendroica pensylvanica*. Uncommon; seen on May 25 and August 27, 1925; May 23 and June 3, 1928; May 28 and August 25, 1929; and May 24, 1931.

BAY-BREASTED WARBLER. *Dendroica castanea*. Uncommon; records for May 18-21, June 3, 1928; May 23, 28, 1929; May 13, 1930; and August 16, 1932.

BLACK-POLL WARBLER. *Dendroica striata*. Common spring migrant, but thus far I have been unable to satisfactorily identify any autumn birds. Earliest spring arrival May 8, 1930, average May 12; latest spring departure June 10, 1928, average June 1.

WESTERN PALM WARBLER. *Dendroica palmarum palmarum*. Common transient. Earliest spring arrival April 30, 1931, average May 7; latest spring departure May 24, 1931, average May 19. Earliest fall arrival September 8, 1928, average September 13; latest fall departure October 16, 1927, average September 30.

OVEN-BIRD. *Seiurus aurocapillus*. Common transient. Earliest spring arrival May 10, 1929, average May 16; latest spring departure June 3, 1925 and 1928, average May 26. Earliest fall arrival August 23, 1931, average September 3; latest fall departure September 26, 1927, average September 20.

GRINNELL'S WATER-THRUSH. *Seiurus noveboracensis notabilis*. Very common transient, especially in the fall. Earliest spring arrival April 30, 1929; average May 16; latest spring departure June 3, 1927, average May 25. Earliest fall arrival August 13, 1925, average August 16; latest fall departure September 23, 1929, average September 18.

CONNECTICUT WARBLER. *Oporornis agilis*. Infrequent transient. Records for June 10 and 14, 1928; May 25, 1930; August 22, 1927; and August 16, 1932.

MOURNING WARBLER. *Oporornis philadelphia*. Occasional migrant. Earliest spring arrival May 22, 1927, average May 25; latest spring departure June 12, 1927, average May 29. Earliest fall arrival August 22, 1927 and 1931, average August 30; latest fall departure September 18, 1926, average September 13.

NORTHERN YELLOW-THROAT. *Geothlypis trichas brachidactyla*. Common summer resident. Earliest arrival May 11, 1930, average May 14. Latest departure October 10, 1927, average October 1.

YELLOW-BREASTED CHAT. *Icteria virens virens*. Only one record, May 17, 1927.

WILSON'S WARBLER. *Wilsonia pusilla pusilla*. Common migrant, especially in the fall. Earliest spring arrival May 11, 1930, average May 17; latest spring departure May 28, 1930, average May

25. Earliest fall arrival August 16, 1928 and 1932, average August 21; latest fall departure September 19, 1931, average September 15.

CANADA WARBLER. *Wilsonia canadensis*. Uncommon spring migrant, common fall migrant. Spring records are May 24, 1925; May 24-25, 1926; May 31, June 3, 1928; May 24, 1929. Earliest fall arrival August 16, 1932, average August 24; latest fall departure September 6, 1929, average September 1.

AMERICAN REDSTART. *Setophaga ruticilla*. Fairly common migrant. Earliest spring arrival May 7, 1926, average May 14; latest spring departure June 14, 1927, average June 1. Earliest fall arrival August 20, 1928, average August 27; latest fall departure September 23, 1929, average September 17.

ENGLISH SPARROW. *Passer domesticus domesticus*. A very common bird and a great nuisance about all farmyards.

BOBOLINK. *Dolichonyx oryzivorus*. Abundant summer resident of the meadowlands. Earliest arrival May 4, 1928, average May 12. Latest departure September 22, 1927, average September 12.

WESTERN MEADOWLARK. *Sturnella neglecta*. Very common summer resident. Earliest arrival March 15, 1927, average March 19. Latest departure November 5, 1932, average October 26. One record for November 24, 1925.

YELLOW-HEADED BLACKBIRD. *Xanthocephalus xanthocephalus*. Nests at the Slough in the wetter summers, a fairly common bird. Earliest arrival April 21, 1926, average May 4. Latest departure September 16, 1927, average August 20. Uncommon after July 15.

GIANT REDWING. *Agelaius phoeniceus arctolegus*. The most abundant breeding bird in the vicinity. Earliest arrival March 6, 1925, average March 19. Latest departure November 25, 1927, average November 15. Individual birds frequently feed in our barnyard during the winter.

ORCHARD ORIOLE. *Icterus spurius*. A pair of these birds nests at our grove every summer. Have not found them elsewhere. Earliest arrival May 25, 1929, average May 27. Latest departure August 23, 1932, average August 15.

BALTIMORE ORIOLE. *Icterus galbula*. Common summer resident. Earliest arrival May 11, 1930, average May 16. Latest departure September 14, 1930, average September 3.

RUSTY BLACKBIRD. *Euphagus carolinus*. Common transient. Earliest spring arrival March 24, 1927 and 1928, average March 29; average spring departure about May 15. Earliest fall arrival September 16, 1925 and 1928, average September 21; latest fall departure

November 18, 1928, average November 14. Also have records for November 25, 1925, and December 28, 1929.

BREWER'S BLACKBIRD. *Euphagus cyanocephalus*. Occasional summer resident. Earliest arrival March 27, 1925, average March 29. Latest departure November 3, 1929, average November 1. An individual seen November 26, 27, and 28, 1931. For some reason they seem to be less common here than in the general region.

BRONZED GRACKLE. *Quiscalus quiscula aeneus*. Common summer resident. Earliest arrival March 27, 1925, average April 1. Latest departure November 3, 1927, average October 20.

NEVADA COWBIRD. *Molothrus ater artemisiae*. Common summer resident. The bulk of the birds leave in August. Earliest arrival April 26, 1925, average April 29 (record for April 8, 1930). Latest departure September 9, 1925, average August 26 (records for September 23, 1926, and October 4, 1931).

SCARLET TANAGER. *Piranga erythromelas*. Rare, seen only on May 26 and 29, 1926.

ROSE-BREASTED GROSBEAK. *Hedymeles ludovicianus*. An occasional nesting pair along the Red and Sheyenne Rivers. Earliest arrival May 8, 1926, average May 14. Latest fall departure September 16, 1932, average August 31.

INDIGO BUNTING. *Passerina cyanea*. Nests occasionally along the Red and Sheyenne Rivers. Earliest arrival May 24, 1928, average May 28. Latest departure September 14, 1930, average September 11.

DICKCISSEL. *Spiza americana*. A species that varies greatly in abundance from year to year. They were numerous in 1925, 1927, and 1928. In 1926 and the years following 1928 only a few individuals appeared. Earliest arrival May 17, 1928, average May 29. Latest departure September 19, 1931, average August 25. Also have records for May 8 and 9, 1928.

EASTERN PURPLE FINCH. *Carpodacus purpureus purpureus*. An erratic bird, seen only occasionally, except in the fall of 1927 when it was present in numbers from October 3 to November 9. Records exclusive of the fall of 1927 are: October 3, 1925; May 12, 1926; May 12, 1928; May 10, 1929; April 26-27, 1930; May 12, 1931; May 11 and October 16, 1932.

COMMON REDPOLL. *Acanthis linaria linaria*. Winter visitant, common some years and in others comparatively rare. 1925-26 and 1927-28 were good redpoll winters. Earliest fall arrival October 16, 1932, average October 21. Latest spring departure April 10, 1930, average April 1.

NORTHERN PINE SISKIN. *Spinus pinus pinus*. Another erratic finch, apt to appear at any time. Records for May 12, 1928; September 3-October 23, 1928; May 27-June 6, 1929; October 14-27, 1929; June 25, 1930; September 27, 1930; May 16, 1931; and September 2-October 9, 1932.

EASTERN GOLDFINCH. *Spinus tristis tristis*. Common summer resident. Earliest arrival May 10, 1930, average May 17. Latest departure October 20, 1927, average October 17. Records for November 9 and 15, 1930.

RED CROSSBILL. *Loxia curvirostra pusilla*. Rare. Records for October 9 and 10, 1931, are the only ones I have.

RED-EYED TOWHEE. *Pipilio erythrophthalmus erythrophthalmus*. Uncommon; have records for May 23, 1926; September 23, 1927; May 11, 1929; September 14, 1929; and May 4, 1929.

LARK BUNTING. *Calamospiza melanocorys*. Uncommon; records for May 19 and 27, 1925; June 2, 1930; May 24, July 1 and August 3, 1931.

EASTERN SAVANNAH SPARROW. *Passerculus sandwichensis savanna*. Abundant summer resident of the meadowlands. Earliest arrival April 13, 1925, average April 17. Latest departure October 27, 1926, average October 20.

WESTERN GRASSHOPPER SPARROW. *Ammodramus savannarum maculatus*. Common summer resident of the meadowlands. Earliest arrival April 26, 1927, average May 12. Latest departure September 14, 1929, average September 10.

BAIRD'S SPARROW. *Ammodramus bairdi*. Fairly common summer resident of the meadowlands. No records after the end of the singing season in late July and early August, the latest date being August 5, 1928. Earliest arrival May 6, 1930, average May 17.

LECONTE'S SPARROW. *Passerherbulus caudacutus*. A frequent migrant and rare summer resident, at least one pair having nested in the meadowlands in 1930. Earliest arrival April 27, 1929, average May 8. Latest departure October 18, 1931, average September 26.

EASTERN VESPER SPARROW. *Pooecetes gramineus gramineus*. Common summer resident of roadsides and pastures. Earliest arrival April 9, 1930, average April 17. Latest departure October 18, 1930, average October 14.

EASTERN LARK SPARROW. *Chondestes grammacus grammacus*. Rare; a pair bred near a certain "tree claim" in the summers of 1927 and 1929. Earliest arrival May 4, 1929, latest departure July 30, 1929.

SLATE-COLORED JUNCO. *Junco hyemalis hyemalis*. Common transient. Earliest spring arrival March 15, 1927, average March 21; latest spring departure May 27, 1927, average May 16. Earliest fall arrival September 5, 1930, average September 13; latest fall departure November 15, 1926, average November 11.

EASTERN TREE SPARROW. *Spizella arborea arborea*. Common transient, seen rarely during winter. Earliest spring arrival February 23, 1930, average March 10; latest spring departure May 5, 1927, average April 29. Earliest fall arrival October 1, 1932, average October 6; latest fall departure November 24, 1925, average November 12. Winter records are January 3, 1925, and January 9, 1928.

EASTERN CHIPPING SPARROW. *Spizella passerina passerina*. Nests commonly along Red and Sheyenne Rivers. Earliest arrival April 28, 1927, average April 30. Latest departure October 1, 1928, average September 20.

CLAY-COLORED SPARROW. *Spizella pallida*. Common summer resident of "tree claims" and scrub willow growths. Earliest arrival April 28, 1927, average May 2. Latest departure October 6, 1930, average September 26.

HARRIS'S SPARROW. *Zonotrichia querula*. Common transient. Earliest spring arrival April 27, 1925, average May 6; latest spring departure May 29, 1926, average May 27. Earliest fall arrival September 12, 1926, average September 16; latest fall departure October 24, 1925, 1927, and 1930, average October 21. Also have records for June 24, 1925; June 7, 1927; and August 22, 1928.

WHITE-CROWNED SPARROW. *Zonotrichia leucophrys leucophrys*. Occasional transient. Earliest spring arrival April 29, 1928, average May 4; latest spring departure May 25, 1926 and 1930, average May 22. Earliest fall arrival September 18, 1926, average September 22; latest fall departure October 9, 1927, average October 7. Record for June 15, 1932.

GAMBEL'S SPARROW. *Zonotrichia leucophrys gambeli*. Fairly common migrant. Earliest spring arrival May 2, 1930, average May 6; latest spring departure May 22, 1931, average May 21. Earliest fall arrival September 14, 1932, average September 19; latest fall departure October 11, 1931, average October 6.

WHITE-THROATED SPARROW. *Zonotrichia albicollis*. Very common migrant. Earliest spring arrival April 22, 1925 and 1931, average April 26; latest spring departure May 26, 1925, average May 23. Earliest fall arrival September 5, 1930, average September 10; latest

fall departure October 21, 1928, average October 17. Have a record for June 12, 1927.

EASTERN FOX SPARROW. *Passerella iliaca iliaca*. Fairly common transient. Earliest arrival March 25, 1928, average April 6; latest spring departure May 2, 1930, average April 27. Earliest fall arrival September 16, 1930, average September 18; latest fall departure October 18, 1931, average October 13.

LINCOLN'S SPARROW. *Melospiza lincolni lincolni*. Common transient. Earliest spring arrival April 27, 1929, average May 1; latest spring departure May 30, 1928, average May 24. Earliest fall arrival August 22, 1927, average August 26; latest fall departure October 21, 1928, average October 5.

SWAMP SPARROW. *Melospiza georgiana*. Common transient. Earliest spring arrival April 13, 1930, average April 19; latest spring departure May 25, 1930, average May 22. Earliest fall arrival September 11, 1929, average September 15; latest fall departure October 28, 1928, average October 18.

DAKOTA SONG SPARROW. *Melospiza melodia juddi*. Very common transient and an occasional summer resident along the Red and Sheyenne Rivers. Earliest arrival March 25, 1928, average April 2. Latest departure November 1, 1925, average October 24.

LAPLAND LONGSPUR. *Calcarius lapponicus lapponicus*. The most abundant migrant, and frequently the most common winter species. Winters when they were absent are 1926-27, 1929-30, and 1931-32. Earliest fall arrival September 10, 1926, average September 18. Latest spring departure May 21, 1925 and 1926, average May 18.

SMITH'S LONGSPUR. *Calcarius pictis*. Uncommon; records for April 28, 1928; May 8, 1929; and October 18, 1931.

CHESTNUT-COLLARED LONGSPUR. *Calcarius ornatus*. Uncommon; records for April 22, 1926; August 4, 1928; and May 24, 1931.

EASTERN SNOW BUNTING. *Plectrophenax nivalis nivalis*. Common winter resident. Earliest fall arrival October 16, 1932, average October 20. Latest spring departure April 3, 1932, average March 18. Have records for April 18, 1925, and April 18 and 26, 1930.

ARGUSVILLE, NORTH DAKOTA.

# 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; L. W. Wing, Ann Arbor, Michigan.

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## EDITORIAL

BY RECENT ACTION of the W. O. C. Council the next annual meeting has been set definitely for December 28 and 29 (Friday and Saturday), at Pittsburgh, Pa., in conjunction with the A. A. A. S. meeting. The meeting for 1935 will be held during the Convocation Week, with the A. A. A. S., at St. Louis, Mo. The 1936 meeting has been tentatively set for early fall at Sioux City, Iowa. The 1937 meeting will probably go with the A. A. A. S. to Indianapolis, Ind., though no action has been taken on this date.

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WE HAVE BEEN very much impressed by the recent discussion in the *Canadian Field-Naturalist* on the matter of making field identifications of subspecies of birds. The question is of sufficient importance and interest to justify a detailed review in this place. It is a matter of fundamental importance to all who undertake to prepare a list of birds based upon field identification—the so-called “sight records”. Is the student justified in listing subspecies on the basis of field identification?

The discussion began as the result of the publication (*Canadian Field-Naturalist*, March, 1933, page 56) of a Christmas Census (referred to in the discussion as the Comox Census) in which subspecies were enumerated. In the same periodical (for September, 1933, page 112) Mr. Hamilton M. Laing offers criticism which brings the question to an issue. Following this Dr. Harrison F. Lewis, as Chairman of the Bird Census Committee, makes a defense for editorial correction of the original manuscript. And on page 116 (*ibidem*) Mr. P. A. Taverner comments as the ornithological editor of the magazine. The discussion is continued in the December number (pp. 176-177) by Mr. W. E. Saunders and by Mr. Theed Pearse, author of the original Comox Census. We may now briefly summarize the contentions of the several authors.

The gist of Mr. Laing's criticism is that it is impossible to make the fine distinctions in the field necessary for identification of subspecies. Dr. Lewis republished the original Comox manuscript *verbatim et literatim*. By comparison of the original manuscript with the published list it is evident that the editor made certain vital changes. For example, “Chickadee” was changed to “Oregon Chickadee”; “Robin” was changed to “Northwestern Robin”; “Golden-crowned Kinglet” was changed to “Western Golden-crowned Kinglet”; “Purple Finch” was changed to “California Purple Finch”.

Thus, the author did not attempt to identify subspecies in the field, but was made to appear to do so by editorial prerogative. The reader may decide for himself which subspecies is more likely to be found in the given area, but the author did not make a decision on this point. It is many times a question how far it is proper for an editor to go in changing the author's meaning; but it is probably a safe rule for the editor to change to a weaker, rather than to a

stronger statement. The proper balancing of the rights of the author with editorial rules and style requires some care, possibly some skill. However, this is not the main point at issue. The main point is expressed by Mr. Taverner in the following words:

“The discussion brings prominently into view one of the most serious defects of the Fourth Edition of that Check-List [the A. O. U. Check-List]. It does not provide specific entities for just such uses as this . . . there is no way, without awkward circumlocution, of referring to many groups of subspecies or to designate forms whose subspecific status may be uncertain. . . . In formal use the scientific binomial is always available to the instructed but the general public who have little occasion to familiarize themselves with scientific technicalities are given no vernacular alternative but to make exact subspecific designation whether they are justified in doing so or not.”

Continuing the discussion Mr. Saunders asks, “Why, then, should we carry on the farce of naming the sub-species of birds seen in the field? . . . Sub-species are for the closet student, not for the field worker.”

Possibly these excerpts will give a sufficient idea of the trend of the discussion. We will not attempt to foretell what our own future editorial policy will be, except that we will try to be more careful. But we are disposed to recommend to prospective authors that faunal lists based upon field work should be reported in binomial terms rather than in trinomials. It is so perfectly evident that subspecific identification made in the field is pure guess work, that it really ought to be abandoned. We believe that writers usually assume that a bird belongs to a certain subspecies because it occurs within the usual range of that subspecies. This assumption is unscientific. As Mr. Taverner has said (WILSON BULLETIN, XL, December, 1928, page 263), “It gives a pleasing appearance of scientific acumen and accuracy that is lacking in fact. If we base our distributions on determinations in faunal lists and other records, and then make those determinations from such supposed distributions we work in a vicious circle that gets nowhere and confirms what error there is without a chance of correcting it.”

We may say that the WILSON BULLETIN, for the present, will not decline to publish such lists in trinomials if the author so prefers; but we strongly recommend and urge that binomials be used. Of course this presents certain difficulties. It will not be difficult, in most cases, to form the technical name of the species by simply dropping the third term in the trinomial name as given in the A. O. U. Check-List. But this Check-List as now written is utterly useless in providing specific vernacular names for our birds. It seems very strange now that the A. O. U. Committee should have been so short-sighted in failing to supply so obvious a need. The situation places upon each writer the responsibility of forming as best he may an appropriate vernacular name for each species.

The following extracts from a letter written to an author within the past year further explain our editorial position on the matter of publication:

“One can easily recognize a Bohemian Waxwing in the field, but one can not possibly say with scientific accuracy that it belongs to the subspecies *pallidiceps*: all that can be said is that there is a strong probability that it belongs to this race. And the reader can make this assumption as well as the author can. Hence, why not let the reader take the responsibility? And in cases where



there are several subspecies on the same continent the uncertainty becomes all the greater.

“However, until our editorial policy is shaped up more definitely, the author will have full sway with trinomials. . . . Please remember, that the proposition is that you can not recognize subspecies in the field in *any* case; that in every case listing subspecies in the field is guess work. This enables one to be consistent. The one difficulty is the lack of an English name for the species, and this is because the last edition of the Check-List pre-empted the old vernacular names and applied them to subspecific units.” We hardly see how there can be an argument on this point. Because a given subspecies *ought* to be in the geographical range assigned to it, it is not valid scientific evidence that it is the one actually found there except where the specimen is taken and demonstrated. And the case permits of no generalization in fact beyond the fact that a given area is one where a given subspecies normally occurs. That every individual of the species found within the area belongs to the expected subspecies by virtue of its presence there is an unwarranted conclusion. If birds possessed less efficient locomotor organs the case might not be so clear. But even plants get out of their range by one means or another. How much more likely are animals to do so, and birds above all others! If birds were less motile, and if subspecies were more easily identifiable there would probably be less uncertainty in the assumption of identity on the basis of geographic incidence.

Since the last issue of the BULLETIN was distributed we have received several communications calling attention to the fact that often species can not be identified in the field. Our remarks on page 208 (December, 1933) were unfortunately phrased if they implied that species might always be recognized in the field. At once we grant the point that some species are not readily identifiable in the field, possibly not at all by many observers, and perhaps in some cases not at all by any observers. We were more intent on the proposition that subspecies are not identifiable in the field.

The difficulty has been forced upon us by a sort of orthogenetic bias of the taxonomic specialists who conceive the subspecies unit to be the *summum bonum*, and who, apparently, in their zeal to emphasize subspecies, have carelessly scuttled the species concept. The American Ornithologists' Union could perform a great service, if they would, by preparing a supplement giving vernacular specific names. This would tend to preserve uniformity, which under present conditions is likely to suffer.

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THE NORTH DAKOTA list in this issue is published by the aid of a subsidy. This paper received the Sigma Xi certificate of award for undergraduate research, to which a reference is made, without names, in *Science*, February 2, 1934.

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READERS of this magazine will be much pleased to know that Mrs. Nice has just published a very extensive paper on the natural history of the Song Sparrows in the *Journal für Ornithologie*. The first instalment appeared in the October number (Vol. LXXXI, No. 4, pp. 552-595); the second instalment has just appeared in the January number (Vol. LXXXII, No. 1, pp. 1-96). This paper presents a full account, in the German language, of Mrs. Nice's work to date on this species.

## GENERAL NOTES

Conducted by M. H. Swenk

**The Starling in Day County, South Dakota.**—I have two records of the Starling (*Sturnus vulgaris*) in this vicinity. On May 14, 1933, I saw one in company with some blackbirds near Lake Minnewashta, Day County, South Dakota. On December 27, 1933, I shot one across the alley from the Hospital here in Webster, also in Day County.—ARTHUR R. LUNDQUIST, *Webster, S. D.*

**The Starling at Sioux City, Iowa.**—On October 1, 1933, I saw four Starlings (*Sturnus vulgaris*) in North Morningside, Sioux City. This is the first record that I have of the species in Woodbury County. A pair of the birds was seen on April 22, 1933, near Ida Grove, Iowa, which is about fifty miles southeast of Sioux City.—WM. YOUNGWORTH, *Sioux City, Iowa.*

**The American Egret in Martin County, Minnesota.**—During August, 1932, the Rev. Harold W. Wager, of Dell Rapids, South Dakota, while visiting at his father's farm, eight and one-half miles southeast of Fairmont, Martin County, Minnesota, saw eight American Egrets (*Herodias alba egretta*) associating with Black-crowned Night Herons (*Nycticorax nycticorax hoactli*) at a small lake on the farm. The night herons were nesting, but there was no evidence that the egrets were. However, he did state that both species were roosting at night in the same trees.—W. H. OVER, *Museum of the University of South Dakota, Vermillion, S. D.*

**Field Notes from the Sioux City, Iowa, Region.**—On July 4, 1933, I found a pair of the Lazuli Bunting (*Passerina amoena*) at Yankton, South Dakota. This town is about fifty air miles from Sioux City. The actions of the birds indicated nesting, and brings the species still closer to the Iowa border, as a summer resident. A male Blue Grosbeak (*Guiraca caerulea*) was noted at Honey Creek, Iowa, on July 24, 1933. This location is a short distance north of Council Bluffs, Iowa. The Song Sparrow (*Melospiza melodia*) has been found at Sioux City again this year, and since young birds have been seen, the writer has put the species down as a regular summer resident, although it is found in but very limited numbers.—WM. YOUNGWORTH, *Sioux City, Iowa.*

**Migrant Nelson's Sparrows in Central Iowa.**—Six Nelson's Sparrows (*Ammospiza caudacuta nelsoni*) were collected by the writer at Little Wall Lake, Hamilton County, Iowa, September 30, 1933. Of these six, a juvenal and an adult male are now mounted in the Bullock collection, Des Moines, and the other four, an adult female, two juvenal males, and a juvenal female, remain in my collection. Eight others were identified but not collected. These birds were found among the wild rice and cat-tails. When flushed, they usually flew but a short distance, towards deeper cover, alighted in the tops of the vegetation, and almost immediately dropped to the lower stalks.—PHILIP A. DUMONT, *Des Moines, Iowa.*

**A Late Iowa Record for an American Bittern.**—About 11 A. M. on November 11, 1932, I encountered an American Bittern (*Botaurus lentiginosus*) near the northwest shore of Spirit Lake, in Dickinson County, Iowa, not far from the Minnesota line. It was perched in brushy vegetation in the lee of a cut bank, and was partially covered with drifting snow. Suspecting that the bird might be a cripple I collected it for examination, but a thorough plucking and post-mortem failed to reveal any sign of injury; indeed, the specimen was in

very good condition. The stomach was about half full of fish remains in a rather advanced state of digestion. At this time the lakes were well frozen over, with the exception of occasional patches of open water.—PAUL L. ERRINGTON, *Ames, Ia.*

**Some Bird Notes from Idaho.**—On July 31, 1933, I noted five or six Snowy Egrets (*Egretta thula* subsp.) and a single White-faced Glossy Ibis (*Plegadis guarana*) at a ditch along a road near Roberts, Idaho. Three days later, on returning to the same locality with O. J. Murie, the egrets and the ibis were again seen along the same ditch. After being flushed several times, the egrets finally took refuge in an adjoining reed marsh. The ibis did not tarry, but at once flew off into the distance. In a flooded grain field near by we noted several Ring-billed Gulls and Greater and Lesser Yellowlegs, a single Western Willet and a Solitary Sandpiper.—ADOLPH MURIE, *Museum of Zoology, University of Michigan, Ann Arbor, Mich.*

**An Odd Result of a Kinglet's Accident.**—I collected near Benicia, Solano County, California, on October 22, 1933, a female Western Ruby-crowned Kinglet (*Corthylio calendula cineraceus*) from a live oak tree, where it was flitting about with several of its companions. I found that the bird had at one time suffered a broken right leg about one-fourth inch above the hind toe. The fractured bone had completely healed together, but in nearly reverse position, so that the hind toe served as a front toe and the three front toes were in the position of the hind toe. I was unable to determine whether or not the bird, when grasping a twig, was able to manipulate the toes of this injured foot. However, the toes had not stiffened and the tendons appeared to be functioning satisfactorily. The left leg was normal.—EMERSON A. STONER, *Benicia, Calif.*

**Early Fall Migration Notes from Virginia.**—There is still much to be learned concerning the southward migration of birds in the fall, so the following brief notes from the northeastern corner of Virginia may be of interest. On August 16, 1933, while passing through the military reservation at Fort Humphreys, approximately ten miles south of Alexandria, my attention was attracted to a restless flock of warblers feeding on a wooded ridge facing the Potomac River. After following them for a short distance, I was able to identify them as being largely early fall migrants, relatively few being species that nest here. Chestnut-sided Warblers were the most numerous, while Golden-winged Warblers were noted several times, and a male Blue-winged Warbler and a Canada Warbler in immature plumage were likewise seen. A small stream flowed through a ravine here, and feeding at the water's edge, I found three Northern Water-Thrushes. One of these last was collected, and proved to be the western form, *Seiurus noveboracensis notabilis*.—THOS. D. BURLEIGH, *Asheville, N. C.*

**The Western Harlequin Duck in Central Iowa.**—An adult male Western Harlequin Duck (*Histrionicus histrionicus pacificus*), in full breeding plumage, was collected by Mr. James R. Harlan, December 27, 1932, on the Des Moines River, southeast of Adelphi, Polk County, Iowa. The bird was alone when killed. The specimen was mounted by Prof. J. Steppan, and is now contained in the State Historical Museum, at Des Moines.

Since *H. h. pacificus* was described by Brooks as recently as 1915 (*Bull. Mus. Comp. Zool.*, LIX, No. 5, p. 393), the previous Iowa records were all recorded under the binomial *Histrionicus histrionicus* Linn. Until this specimen was secured there were no Iowa specimens. Measurements in millimeters of this specimen taken by the writer are as follows: wings (chord), 209 and 210; ex-

posed culmen, 28.1; width of bill at base of culmen, 16.0; height of bill at base of culmen, 14.5. Measurements and head markings of this specimen were checked with Atlantic and Pacific Coast specimens contained in the University of Iowa Museum of Natural History. The writer wishes to thank Mr. Harlan for permission to publish this record.—PHILIP A. DUMONT, *Des Moines, Iowa*.

**Baltimore Orioles Destroying Trumpet Vine Blossoms.**—My attention was called this past season to what seemed to be a trait of the Baltimore Oriole (*Icterus galbula*) that I do not remember to have noticed mentioned in any of the works on ornithology that I have read. Standing about ten feet from our house is a small arbor that was covered with trumpet vines this past season. The blooms of this vine appear in terminal bunches of bell-shaped flowers, a little less than two inches in length. One day I noticed that all the bunches of bloom had been totally wrecked, each trumpet having been split from near the outer end down to the extreme base. The next day I discovered this to be the work of the Baltimore Orioles, and caught them in the act of tearing the blooms to pieces. An examination of an untouched bloom disclosed a drop of nectar in the base of each trumpet, and, as there were no insects in evidence, I inferred that the drop of nectar was what they were after. There were plenty of ants working on the wrecked blooms of the day before, presumably cleaning up the remains of the wrecks. None were to be found on the untouched blooms. This work of the orioles was witnessed by three other persons.

I would be interested in learning whether this is a somewhat common trait of the bird, or is it something rather out of the ordinary. I might add that the birds continued to wreck the blooms all the balance of the season.—F. W. GEORGE, *Aberdeen, S. D.*

**Some Notes on Indiana Plovers.**—I noticed in the WILSON BULLETIN for June, 1933, that Mr. William Youngworth, of Sioux City, Iowa, reports the Golden Plover as having been seen near that place on October 20 and 21, 1931. That was a surprise to me, as I had always heard that this bird is seldom if ever found in the interior in the fall, but goes through the middle states only in the spring, to the north, and in the fall returns by way of the eastern route, leaving Nova Scotia and flying straight south over the Atlantic, to the coast of Brazil, then going the rest of the way by land to Chili and Argentine. I never before have heard of the fall return of these birds through the central states, so I am interested in getting the facts about them. Are there other records concerning the migration of this bird through the central states in autumn? I would like to hear from any others who have actually seen them going south in the fall through the interior.\*

I have seen the Golden Plover in the spring, about twenty-six miles north of this place, where the heavy spring rains had flooded a last year's corn field and the cut corn stubs were still standing. About fifty of these rare birds lingered

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\*The southward fall migration of the Golden Plover over the Atlantic Ocean represents only the main migration route of the species, for it occurs also regularly in the interior in the fall (see Cooke, Bull. 35, Biological Survey, U. S. D. A., p. 84, and Bent, Bull. 146, U. S. Nat. Mus., pp. 190-191). At the salt lake near Lincoln, Nebraska, individuals or small flocks of the Golden Plovers are to be seen nearly every fall, between the middle of September and the middle of October, most commonly during the third week in September. Earliest and latest dates for the fall migration in Nebraska are August 3 and November 14.—Ed.

about the shallow water, resting or walking about hunting food. We were very close to them in the car and sat still and watched them with binoculars for some time, as they seemed fearless and calm. A Semipalmated Plover was seen near them, probably being a traveling companion enroute to the northern nesting grounds. I was thrilled at the sight of these Golden Plovers, as they are not often seen in our state, according to reports; but in the last three years Black-bellied Plovers have been reported by ornithologists at intervals over the state.

A fine specimen of the Black-bellied Plover was picked up by the game warden near Anderson, Indiana, on May 24, 1933. I was called to identify it. It had a crippled wing which made it impossible for it to continue on its journey to its summer nesting site within the Arctic Circle. These birds were formerly quite common in spring and fall migrations, but for a number of years have been considered quite rare, thanks to civilization and the gunners who considered them fine game birds. Now they travel singly or in pairs, or sometimes with other birds it is said, but Amos W. Butler, author of "Birds of Indiana", says that within the last three years these birds have been seen occasionally passing through Indiana in the spring, which may prove that they are increasing in numbers.

In captivity this bird ate cottage cheese, ground lean beef, hard boiled eggs and earthworms when they could be had. It liked to eat its food from the shallow water. It ate from the hand, and when let out to exercise, ran like a Killdeer, as these plovers all have the same general habits. It bathed often, and seemed to enjoy itself, even though a wild shy bird when in the open. It gave a peculiar sound occasionally, something like a young rooster learning to crow, generally but once, but sometimes as many as three times together, three notes each time. I cured the bird's wing, but it would never have been normal again and able to migrate with its kind. It died in August, 1933, probably because I could not give it a proper diet.—MRS. HORACE P. COOK, *Anderson, Ind.*

#### **Further Notes on the Birds of Cranberry Glades, West Virginia.—**

In the WILSON BULLETIN for December, 1930, I published a list of birds observed at Cranberry Glades, Pocahontas County, West Virginia. Since the time of writing that list I have had four other opportunities to visit this high mountain swamp, and have added a number of species to my list. The observations follow:

Eastern Green Heron (*Butorides virescens virescens*). A single individual seen flying along one of the branches of Cranberry River on October 15, 1933.

American Bittern (*Botaurus lentiginosus*). Two of these birds were feeding in an alder swamp lining the glades on September 27, 1931.

Common Canada Goose (*Branta canadensis canadensis*). A large flock of wild geese flew over us when we were visiting the glades on October 15, 1933.

Eastern Goshawk (*Astur atricapillus atricapillus*). The 1933 wave of Goshawks struck West Virginia just before our trip into the glades in October, and we saw two individuals, one flying above Big Glade, and another along the trail near the top of Cranberry Mountain.

Eastern Pigeon Hawk (*Falco columbarius columbarius*). On October 15, 1933, while we were having lunch on the site of the old Frank Houtchens cabin, a landmark for visitors to the glade region, one of these small falcons lit in the top of a dead spruce tree just a short distance from us. It was carefully observed with 6x glasses. This bird is not common in West Virginia.

Eastern Turkey (*Meleagris gallopavo silvestris*). Twice as we climbed Cranberry Mountain on October 15, 1933, we heard Wild Turkeys calling, and a hen was flushed from a *Crataegus* thicket as we circled a ridge above the glades.

Sora (*Porzana carolina*). One was seen at the edge of the alders on September 27, 1931.

Killdeer (*Oxyechus vociferus vociferus*). A number of these birds were seen on September 27, 1931. They do not seem to be common in the region.

Eastern Mourning Dove (*Zenaidura macroura carolinensis*). Seen and heard at the glades in May, 1932.

Black-billed Cuckoo (*Coccyzus erythrophthalmus*). Careful observation shows these birds to be somewhat common in the region, perhaps more so than the Yellow-billed species.

Prairie Horned Lark (*Otocoris alpestris praticola*). Above the glades on the side of Black Mountain are some open spaces where cattle pasture. Several of these birds were seen in this region on September 27, 1931.

Purple Martin (*Progne subis subis*). Observed in May, 1932.

Brown Creeper (*Certhia familiaris americana*). Mr. Thomas D. Burleigh, of the U. S. Biological Survey, was kind enough to send me the record of a specimen of this bird which he took at the glades in June, 1931. I saw the bird many times on October 15, 1933.

Eastern Ruby-crowned Kinglet (*Corthylio calendula calendula*). Common in October, 1933.

Starling (*Sturnus vulgaris vulgaris*). Even back in the mountain fastnesses Starlings are now to be found. Numbers were seen in October, 1933.

Tennessee Warbler (*Vermivora peregrina*). Observed in migration on September 27, 1931.

Northern Parula Warbler (*Compsothlypis americana pusilla*). Not uncommon on the slopes above the glades, where it seems to breed.

Cape May Warbler (*Dendroica tigrina*). In migration at the glades on September 27, 1931.

Myrtle Warbler (*Dendroica coronata*). Very common in migration on October 15, 1933.

Eastern Meadowlark (*Sturnella magna magna*). Found on the grassy uplands above the glades.

Rusty Blackbird (*Euphagus carolinus*). Migrating here in October, 1933.

Northern Pine Siskin (*Spinus pinus pinus*). We were fortunate enough to see a flock of siskins near the top of Cranberry Mountain on October 15, 1933. These birds are only periodically common in the state.

White-crowned Sparrow (*Zonotrichia leucophrys leucophrys*). Seen October 15, 1933.—MAURICE BROOKS, *French Creek, W. Va.*

## PROCEEDINGS

## REPORT OF THE SECRETARY FOR 1933

Columbus, Ohio, December 31, 1933.

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

During the past year, the intensive campaign for new members was continued by the Secretary, to aid in offsetting the unusual membership and financial losses due to present economic conditions. The work was handicapped by the continued high postal rates, which made solicitation on a large scale impossible, by the banking situation of the early part of the year, and by the further retrenchments of expenditures, which prevented dozens of interested prospects from affiliating with our organization. The membership as a whole rendered valuable assistance by sending in nominations. If the members of the Wilson Ornithological Club, during the coming year, make a special attempt to acquaint friends with the benefits of the organization and forward to the officers the names of several membership prospects, it is believed that the 1934 report will show a gain instead of a loss in total members. Also a little encouragement will induce many present members to carry on in spite of financial difficulties.

The membership campaign was quite successful considering the difficulties involved. In 1932, 113 new members were secured. In 1933, 114 new members were added to our rolls as follows: Sustaining, 3; Active, 18; Associate, 93. These new members were distributed through 34 states and provinces: Ohio, 17; Michigan, 14; New York, 10; Illinois, 8; Iowa and Massachusetts, 6 each; Indiana, Vermont, and Ontario, 5 each; California, 4; Missouri and New Jersey, 3 each; Pennsylvania, Texas, Wisconsin, Nebraska, Connecticut, and Maine, 2 each; Idaho, Georgia, Louisiana, Maryland, Montana, Minnesota, North Dakota, New Mexico, Tennessee, South Dakota, Utah, District of Columbia, Alberta, West Virginia, Quebec, and Wyoming, 1 each. Records of new subscribers are kept by Editor Stephens and Treasurer Rosene. Disregarding some duplications in nominations, the various members responsible for the applications of the new members, were as follows: Lawrence E. Hicks, 99; T. C. Stephens, 13; W. M. Rosene, 4; Jesse M. Shaver, 3; L. H. Walkinshaw, 2; William B. Taber, Jr., Lynds Jones, Rudolf Bennett, Maurice Brooks, Miles D. Pirnie, Mrs. Stanley B. Mulaik, and Harold C. Jones, one each.

In spite of these increases, the Wilson Ornithological Club has fewer members than last year, due to the unusually large number of resignations and delinquencies for 1933 forced by present conditions. The list of drops is larger than that of last year, partly because fewer delinquents have been retained on the rolls past the first of the year. The total number of members lost during the year 1933 was 189, 32 being Sustaining, 21 Active and 136 Associate. Life members increased by 2. Thus there has been a total loss of 73 members during 1933.

This leaves the present membership of the Club at 661, distributed as follows: Honorary, 7; Life, 12 (two also are Honorary); Sustaining, 46; Active, 172; Associate, 426.

Respectfully submitted,

LAWRENCE E. HICKS, *Secretary*.

## REPORT OF THE TREASURER FOR 1933

From November 21, 1932 to December 30, 1933

## RECEIPTS FOR 1933

November 21, 1932, Balance on hand as per last report.....\$ 547.52

The following was collected as dues from members:

1 Active member for 1931.....	\$ 2.50
2 Associate members for 1932.....	3.00
2 Active members for 1932.....	5.00
322 Associate members for 1933.....	483.00
138 Active members for 1933.....	345.00
35 Sustaining members for 1933.....	175.00
44 Associate members for 1934.....	66.00
8 Active members for 1934.....	20.00
2 Associate members for 1935.....	3.00
1 Active member for 1935.....	2.50
1 Active member for 1936.....	2.50
Life membership of L. E. Hicks in instalments.....	100.00

Total from membership dues.....	1,207.50
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The following was collected from subscribers:

1 Subscriber for 1932.....	1.50
76 Subscribers for 1933.....	114.00
20 Subscribers for 1934.....	30.00
1 Subscriber for 1933 at.....	2.50
19 Foreign subscribers and members.....	35.29
12 Fractional subscriptions .....	13.65

Total from subscriptions.....	196.94
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The following were miscellaneous receipts:

Total donations for the year 1933.....	12.50
Sale of extra copies of Bulletin.....	31.60
Publication fund .....	15.00

Miscellaneous receipts .....	59.10
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Total receipts .....	\$2,011.06
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## ENDOWMENT FUND

November 19, 1932, Balance on hand from last report.....	\$1,142.71
December 1, 1932, Interest from City State Bank.....	18.23
June 1, 1933, Interest from City State Bank.....	18.65
Life Membership, Charles H. Rogers.....	100.00
Life Membership, Lawrence E. Hicks.....	100.00
December 30, 1933, Balance on hand.....	\$1,379.59

This balance is deposited in the Savings Department of the City State Bank of Ogden, Iowa, at 3 per cent interest, and is covered by the Federal Deposit Insurance. Nothing has been paid out of this fund during the year.



DISBURSEMENTS FOR 1933

Printing four issues of Bulletin.....	\$754.73	
Cost of halftones, zincs, etc.....	49.27	
Other expenses in Editor's office.....	80.13	
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Publication costs .....		\$ 884.13
Expenses, President's office .....	4.69	
Expenses, Secretary's office .....	230.65	
Expenses, Treasurer's office .....	53.75	
Expenses, Library (freight, drayage).....	32.35	
Subscriptions refunded .....	2.35	
Exchange on Canadian checks.....	1.72	
Membership in Ecological Society.....	1.00	
Transferred to Endowment Fund (Life membership).....	100.00	
Check returned .....	1.50	
U. S. Tax on 52 checks at 2 cents each.....	1.04	
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General costs .....		429.05
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Total disbursements .....		\$1,313.18
Balance on hand, December 30, 1933.....		697.88
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Total .....		\$2,011.06

(An itemized list of disbursements with vouchers is attached for the Auditors)

Respectfully submitted,

W. M. ROSENE, *Treasurer.*

Ogden, Iowa, January 22, 1934.

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REPORT OF AUDITING COMMITTEE

Winthrop, Iowa, January 27, 1934.

We, the undersigned Auditing Committee, have examined the report of the Treasurer of the Wilson Ornithological Club for the fiscal year ending December 30, 1933, and have found it correct in all details. The statement of receipts and disbursements is accurate and the accounts are balanced. The vouchers as submitted to us have been checked against the itemized list of disbursements and the latter has been found correct. We commend to the attention of the membership the painstaking work and ability of Treasurer Rosene in handling the Club's funds, which stand at a very satisfactory figure at this time.

Respectfully submitted,

(Signed) FRED J. PIERCE.  
OSCAR P. ALERT.

## REPORT OF LIBRARIAN FOR 1933

Ann Arbor, Michigan, January 30, 1934.

I have the honor to present herewith the third report of the Librarian of the Wilson Ornithological Club.

EXCHANGES. During the past year the Library has received regularly on exchange *Iowa Bird Life* and the University of Iowa *Studies in Natural History*. In January, 1933, the Editor sent to the Library the following titles which he receives on exchange:

*Natural History, Condor, Bulletin Société Zoologique de Geneve, Ibis, Beiträge zur Fortpflanzung-biologie der Vogel, Vogelzug, Kocsag, Danske Fugle, Journal of the Tennessee Academy of Science, Cardinal, Yearbook of the Milwaukee Public Museum, Alauda, Journal für Ornithologie, Transactions of the Kansas Academy of Science, Annalen, Naturhistorischen Museum, Vienna.*

The exchange of the Bulletin for not only domestic but also foreign journals will be of inestimable scientific value to the Club and its Library in the field of research. In this field the exchanges may quite naturally become the very backbone of the research library.

BINDING. Many of the journals received from the Editor have been bound by the University bindery in green cloth at no expense to the Club. In this way we hope to properly preserve these periodicals, many of which are irreplaceable.

REPRINTING. On the matter of reprinting out-of-print numbers of the Bulletin some progress has been made. With funds available from the sale of back numbers, the Librarian has negotiated with the firm of Edwards Bros., of Ann Arbor, for the reprinting of Bulletin No. 10 (September, 1896). One hundred copies are being made by the new lithoprint process and will be ready for sale before the appearance of the March Bulletin at \$1.00 per copy to non-members and 80 cents to members. Members may recall that Bulletin No. 9 was reprinted in 1932 by the same firm and is available at the same price as No. 10.

STOCK. During 1933 the stock of Bulletins in the custody of the Librarian was augmented by a shipment from the Editor of Bulletins covering 1925-32, with certain few exceptions.

BOOK PLATE. As yet no book plate has been adopted by the Club, although several have been submitted.

DONORS. The Librarian takes pleasure in acknowledging gifts to the Club Library from the following during 1933:

- Mr. F. L. Burns, Berwyn, Pennsylvania.
- Mr. W. E. Collinge, York, England.
- Mr. Leon Kelso, Washington, D. C.
- Miss Margarette Morse, Viroqua, Wisconsin.
- Mr. W. J. Willis, New York City, N. Y.

The gifts to the Library for 1933 total 36 bound volumes and 298 separates, reprints, and unbound numbers of periodicals. This makes a total for the three-year period of the existence of the Library of 156 bound volumes and 1,145 separates.

Respectfully submitted,

F. P. ALLEN.

## COMMUNICATIONS

To the Editor of the WILSON BULLETIN: May I suggest to your readers as an unusually interesting subject for field-study the inter-relationships of breeding Purple and Bronzed Grackles in any part of that area, from Massachusetts to Louisiana (and probably Texas), where these two species hybridize.

When I began a study of these birds, forty-odd years ago (Bull. Amer. Mus. Nat. Hist., Vol. IV, 1892, pp. 1-20), transportation facilities were comparatively limited and I had but few specimens and fewer field-notes from the region mentioned. Today, the field-student with a motor car at his command, defies distance. I hope, therefore, that he will defy it early during the coming breeding season and visit grackle colonies anywhere in the region I have referred to, but especially in the lower Mississippi Valley and more especially in southwestern Louisiana and northeastern Texas.

Full series of males should be secured and when the collector has finished his own researches, I should be greatly obliged if he would loan these birds, and any other pertinent material to me for resumption of the studies I began in 1891 and continued at the last A. O. U. meeting.

Yours truly,

FRANK M. CHAPMAN.

American Museum of Natural History, New York City.

February 14, 1934.

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To the Editor: The Editor's Note on page 207-8 of the December, 1933, WILSON BULLETIN is of great interest to anyone who, like the writer, must judge other people's sight-records—an invidious, seldom-dared, but indispensable service to Ornithology! While I agree with the tenor of this Note, my experience has shown that there is peril in *any* departure from the “verifiable specimen” rule. Last spring, for instance, a strange bird appeared at a farm in West Springfield, Massachusetts. The first bird-student who saw it, a woman of long experience, with several unique but believable sight-records to her credit, identified it as an Arkansas Kingbird, and as such it was accepted by a great many observers during the next two days, who compared it with the plate in *The Birds of Massachusetts*. It seems that I was the only bird-student in this region who had ever *seen* an Arkansas Kingbird, and not until it had stayed three days was I taken to see this one. A long search was necessary, on a numbingly cold morning, and I almost missed it. If I had, if the wanderer had disappeared, a letter, already written and shown me, would have been sent to *The Auk*, recording the *first vernal* Arkansas Kingbird ever occurring in New England. Confirmed by numerous witnesses, this would undoubtedly have been accepted and passed into “science”. But the moment I set eyes on the bird I knew it was *not* an Arkansas Kingbird but either a Fork-tailed or Scissor-tailed Flycatcher—I could not say which as I had never seen either and had no distinct memory of their pictures. Reference to books immediately showed that it was a female Scissor-tail. Collected next day (April 29), it is now mounted in the Boston Museum of Natural History.

That was an instance of a conspicuously-marked, easily identifiable species being mistaken, from lack of prior acquaintance, by several truly expert amateurs—by which I mean students who know only living birds. On the other hand, what can we make of a still more recent local record like this? A well-grounded scientist, with thorough acquaintance (in Greenland) with the Black Guillemot, is traveling from Worcester to Springfield on January 2, 1934. His bus stops close to a narrow stream, and he sees through its window, within forty or fifty yards, three Black Guillemots lying on the ice at the edge of the current and a fourth moving awkwardly, characteristically, beside them. One of the prone ones is mostly or wholly in summer plumage. He does not note the red legs but recognizes the species instantly. The bus drives on, no other bird-student can confirm the record—and the Black Guillemot has *never before*, that I can find, been seen on fresh water anywhere in Massachusetts. These birds were sixty-five or seventy miles from the sea (Boston Harbor). Are they recordable?

The editor rightly stresses the preservation of verifiable specimens. Several Rails shot here in the 1880s were then recorded as the Clapper. Re-examination, a generation later, of two fortunately existing skins showed them to be the King. Specimens of a Plover taken in 1884 were then listed, warily, as "Piping or Ring-neck". Lower on the same page they were referred to as "Ring-neck", but since "Piping" had been mentioned first, and its scientific name, only, added, the next recorder of Amherst birds took this as establishing the occurrence of the Piping Plover there, and all our bird-books have copied from him; so when another small Plover was collected many years later it was thus identified. Now the 1884 skins have disappeared but the later one is an immature Semi-palmated Plover, and since many sight-records of that species but none whatever of the Piping have recently accumulated, all the Piping Plover records founded on the 1884 ambiguity must be discredited.

As to the relative identifiability of subspecies and species, I must differ from the editor. In these parts, where subspecies do not much bother us, it is *easier* to distinguish the two races of Black Duck than the two species of Scaup, or females of the two Golden-eyes or of the American and King Eiders. It is *much* easier to tell extreme examples of Acadian and Nelson's Sparrows (subspecies) apart, than silent Flycatchers (species) of the genus *Empidonax*. It is no harder to distinguish the Prairie from the Northern Horned Lark than the Olive-backed from the Gray-cheeked Thrush; and the two forms of Palm Warbler seem as unlike as the two water-thrushes. In the West, what with intergrades, etc., this is doubtless untrue, but there as well as here a number of "paired species" must occur which tax the discrimination of the field observer.

Humanity's aptitude for error is infinite.

SAMUEL A. ELIOT, JR.

Smith College, Northampton, Mass.

## 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.

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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.

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## Annual Meetings of the Wilson Ornithological Club

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|--|-----------------------|
| 1914—Chicago. February 5.<br>Chicago Academy of Sciences.                |                       |
| 1914—Chicago. December 29-30.<br>New Morrison Hotel.....                 | T. C. Stephens        |
| 1915—Columbus. December 28-29.<br>With the A. A. A. S.....               | T. C. Stephens        |
| 1916—Chicago.....December 27-28.<br>New Morrison Hotel.....              | T. C. Stephens        |
| 1917—Pittsburgh. January 1-2, 1918.<br>With the A. A. A. S.....          | W. F. Henninger       |
| 1918—No meeting on account of the<br>exigencies of war.....              | M. H. Swenk           |
| 1919—St. Louis. December 29-30.<br>With the A. A. A. S.....              | M. H. Swenk           |
| 1920—Chicago. December 27-28.<br>With the A. A. A. S.....                | R. M. Strong          |
| 1921—Chicago. December 26-27.<br>The Field Museum.....                   | R. M. Strong          |
| 1922—Chicago. October 26.....  | T. L. Hankinson       |
| 1923—Cincinnati. Dec. 31, 1923-Jan. 1, 1924.<br>With the A. A. A. S..... | T. L. Hankinson       |
| 1924—Nashville. November 28-29-30.<br>Peabody College.....               | A. F. Ganier          |
| 1925—Kansas City. December 28-29.<br>With the A. A. A. S.....            | A. F. Ganier          |
| 1926—Chicago. November 26-27.<br>Chicago Academy of Sciences....         | A. F. Ganier          |
| 1927—Nashville. Dec. 30, 1927-Jan. 1, 1928.<br>With the A. A. A. S.....  | Lynds Jones           |
| 1928—Ann Arbor. Nov. 31-Dec. 1, 1928.<br>Museum of Zoology.....          | Lynds Jones           |
| 1929—Des Moines. December 27-28.<br>With the A. A. A. S.....             | Lynds Jones           |
| 1930—Cleveland. December 29-30.<br>With the A. A. A. S.....              | J. W. Stack           |
| 1931—New Orleans. December 28-29.<br>With the A. A. A. S.....            | J. W. Stack           |
| 1932—Columbus. November 25-26.<br>The Ohio State Museum.....             | Jesse M. Shaver       |

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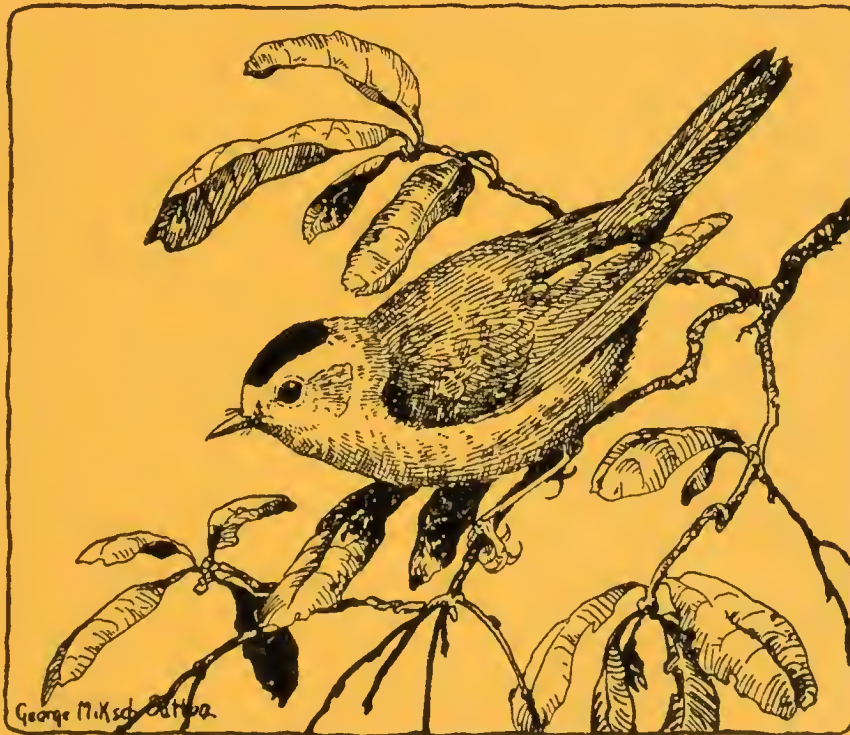
Vol. XLVI

JUNE, 1934

No. 2

Vol. XLVI, 41

# THE WILSON BULLETIN



A Magazine of Field Ornithology

Published by the  
**WILSON ORNITHOLOGICAL CLUB**  
at  
SIOUX CITY, IOWA

14

Entered as Second-class Mail Matter, July 13, 1916, at the Postoffice at  
Sioux City, Iowa, under Act of March 3, 1879.

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## THE WILSON BULLETIN

Published quarterly, in March, June, September, and December, as the official organ of the Wilson Ornithological Club, at Sioux City, Iowa.

The current issue of the WILSON BULLETIN is printed by the Verstegen Printing Company, Sioux City, Iowa.

The WILSON BULLETIN is sent to all members not in arrears for dues. The subscription price is \$1.50 a year, invariably in advance, in the United States. Outside of the United States the subscription rate is \$1.75. New subscriptions, change of address, and applications for membership should be addressed to the Secretary.

All articles and communications for publication, books and publications for notice, and exchanges, should be addressed to the Editor.

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

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

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# THE WILSON BULLETIN

A QUARTERLY MAGAZINE OF ORNITHOLOGY

Published by the Wilson Ornithological Club

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Vol. XLVI

JUNE, 1934

No. 2

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Vol. XLI (New Series) Whole Number 168

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## FIELD OBSERVATION IN ECONOMIC ORNITHOLOGY

BY E. R. KALMBACH

Since the beginning of serious studies in economic ornithology in this country stomach examination has served as the backbone of the advance of that science. As early as 1858, Prof. J. W. P. Jenks examined the stomachs of Robins in Massachusetts and, on the basis of that work, he may be considered the American pioneer in that method of research.<sup>1</sup> Twenty years later Prof. Samuel Aughey's paper on "Notes on the Nature of the Food of the Birds of Nebraska" appeared.<sup>2</sup> He also employed stomach analysis as a means of obtaining data on which to base opinions. This published work was the result of researches extending "over a period of thirteen years on ninety different species, and an examination of more than 630 stomachs."<sup>3</sup> Soon thereafter appeared the memorable work of Prof. S. A. Forbes on the food of certain birds in Illinois.<sup>4</sup> This and other papers by the same author, who used stomach analysis as the foundation of much of his study, have established his name in the annals of economic ornithology as the founder of its modern phase. Other workers followed. There were Prof. F. H. King, in Wisconsin, Dr. B. H. Warren, in Pennsylvania, E. V. Wilcox, in Ohio, Prof. C. M. Weed, in New Hampshire, and through subsequent years, the various workers in the United States Department of Agriculture. The leaders in this group included Dr. W. B. Barrows, Dr. A. K. Fisher, Dr. S. D. Judd, Prof. F. E. L. Beal, and W. L. McAtee. All of these workers availed themselves of stomach analysis as a basis for deductions.

In Europe events in the field of economic ornithology followed a somewhat parallel course. The work of Prevost, Schleh, Rörig, Herman, Newstead, Gilmour, and Collinge attests to the almost universal adherence among these workers, to the belief that the examination of

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<sup>1</sup>Trans. Mass. Hort. Soc. 1859.

<sup>2</sup>U. S. Entomological Commission, First Annual Report. (1878).

<sup>3</sup>Palmer, T. S., A Review of Economic Ornithology in the United States. Yearbook, U. S. Department of Agriculture, 1899: 259-292.

<sup>4</sup>Bull. Ill. State Lab. of Natural History (1880).

stomachs furnishes the most reliable data on which to base deductions concerning the general utility of birds.

With the passing of the years since stomach examination became the *sine qua non* of research in the field of economic ornithology, public confidence in its reliability has increased. It has acquired, in both the scientific and lay mind, a status of finality shared by no other method of approach. To call attention at this time, therefore, to what may be termed limitations in this well-established procedure, especially as applied to destructive species of birds, may appear presumptuous and even a bit late on the part of one who has spent nearly half of his life delving into the secrets of bird food through this very means. It is my intention, however, to do this very thing and in defense I may simply state that my object is not to detract from what has been done, well done in fact, nor to discredit in the least stomach examination as a fundamental procedure in the solution of problems in economic ornithology. Instead I wish to point out merely certain limitations of method and of application of data obtained by this means especially when species capable of inflicting severe damage are involved and to emphasize the importance in those cases of availing ourselves of pertinent data obtainable largely through field observation and experimentation.

It is fitting to explain at this point that the Biological Survey has for years taken cognizance of the points I am raising and has made decisions with these circumstances well in mind. The writer lays no claim to originality of argument or to discovery of method in the subject matter on which this paper is based. The limitations of which I speak are as old as economic ornithology and vexed even the pioneers in the field. I have ventured, however, to offer some modern aspects of these difficulties and have tried to show why at times the dictates of sound economic logic as well as the appeal of fair treatment for our birds compel us in special cases to leave the laboratory and go to the field for our answers.

The points raised are essentially only two; each has ramifications and varied aspects; and, as previously stated, they have their most pertinent application in the study of species capable of inflicting direct and severe damage. They may be outlined in the following language. Each will be discussed in turn and illustrated by a recital of incidents that have arisen largely in the writer's own experience.

1. *One concerns the difficulty in placing correct interpretations on some of the economically more important items that are revealed by stomach examination.*

2. *The other centers about our helplessness in attempting to convert abstract percentages of bird food items into terms of agricultural, horticultural, and other forms of modern, human economics.*

### 1. THE INTERPRETATION OF FOOD ITEMS

Knowledge of field conditions and the circumstances surrounding the collecting of stomach material is the key to the proper interpretation of food items. Were it possible for the examiner of bird stomachs personally to collect every specimen which he later examines, many of the uncertainties of our work would never arise. Yet even the keenest of observers cannot hope to know what has transpired previous to his observance of a bird, the stomach of which is later examined and found to contain remnants of food eaten several hours previous to its collection. Much is left to the examiner's own judgment in the light of general conditions, and, when material is examined by some one other than the collector, reliance must be placed on such notes and appraisal as the collector may have made, which, experience has shown, are usually woefully inadequate. The Biological Survey has aimed to reduce this element of doubt by giving its laboratory investigators all possible opportunity for field work.

As an illustration of the point at issue, let us cite the case of a crow's stomach—not an isolated or peculiar stomach—but simply one of many that may be encountered in the examination of a large series. The examination, in this case, was made by the writer some years ago. The bird, apparently an adult, was collected at Meriden, Connecticut, on June 2, 1915. The collector had submitted no notes of help in interpreting the items found and the examiner was placed on his own resources in their interpretation. The examination record first lists numerous insects of several different families, totalling 31% of the food. It then continues, "shell of hen's egg, 4%; feathers of a small bird, 1%; bones and flesh of a fish, 60%; trace of a batrachian; hulls of corn, 1%; vegetable debris, 3%."

Three of the six items mentioned, the hen's egg, feathers of a small bird, and corn are of more than ordinary importance from an economic viewpoint. The remains of the fish and the batrachian are of less interest, and the "vegetable debris" need not concern us. Every one of the six items, save the last, may have more than one perfectly plausible interpretation placed upon it.

The hen's egg may have been pilfered from some unguarded nest; it may have been an addled egg; or the fragments of shell may have been found as such by the Crow and eaten for the mineral matter contained—a habit of many female birds during the breeding season. By

applying the first interpretation this particular crow would be subject to censure; with either of the other interpretations the food item becomes of no economic importance.

The item, "feathers of a small bird" brings up a similar problem. Is the presence of these feathers indicative of an act of vandalism against some smaller species, or does it reflect simply the carrion-feeding habit of the crow which has found the body of a bird killed by flying into wires, by an onrushing automobile, or by some other cause?

A similar dual interpretation also may be advanced to explain the items of fish and a batrachian. The crow is somewhat of a fisherman and frog-catcher; he is just as energetic a scavenger of the lake shore and marsh.

Corn, in the particular stomach cited, formed only one per cent of the food, and since the crow was collected in early June, the probability is that the grain was waste gleaned from some previous year's corn field or from kernels left uncovered at the last planting. Yet there is the possibility that it may have come from a feed lot where the grain was being fed to stock, or even to poultry. At other seasons of the year the difficulty of interpreting correctly the corn found in crow stomachs is greater. Once the grain has been digested to the point where nothing but the seed coat remains, a condition found in many stomachs, there is no way known to the writer to differentiate sprouting corn in the spring of the year from waste of the previous autumn's crop. Later in the year we find in many stomachs that corn torn from the standing grain in the milk or dough stages is indistinguishable from that picked up after the harvest or that being fed to farm animals. With such uncertainties presenting themselves in the course of even the most painstaking examinations the investigator soon realizes that correct interpretation easily may be a *matter of greater significance than the identification of the item itself*.

From the crow we may pass to another of the Corvidae, the magpie, which presents a complicated problem in economic ornithology. It is more insectivorous than the crow but has many traits in common with that bird. It preys on other birds and their eggs, it raids hens' nests, feeds on carrion, attacks maimed or sickly livestock, and obtains a portion of its sustenance from farm produce. Illustrative of the difficulties arising in attempts to appraise the bird through stomach examination, inadequately supplemented with pertinent field observations, may be cited the following record of analysis.

The specimen, a nestling, was collected by the writer in May, 1912, in Utah, and is typical of a considerable series secured at the same time. With the exception of five per cent of vegetable debris, the food was entirely animal in character. Forty-seven per cent of it was obtained from the insect world and included certain coprophagous forms which lent circumstantial evidence of the character of mammal remains found. The items of greatest importance in the present discussion were "fragments of the shell of a hen's egg, 5%;" and "remains of a young *Microtus* sp., 43%". The question arising concerning the hen's egg is whether it conveyed evidence of a robbed nest or whether it meant merely the consumption of discarded shell fragments or a decayed egg. The fact that it had been fed to a nestling magpie lends credence to the former interpretation. But notwithstanding the fact that the writer personally collected and examined the specimen he cannot state beyond a reasonable doubt that the act of feeding on this material should be charged against the bird. A similar situation arises in connection with the remains of the *Microtus* eaten. Was the presence of this rodent in the stomach indicative of the predatory or scavenger habits of the magpie? The presence in the same stomach of a *Silpha ramosa* and twenty-four histerids gave strength to the latter contention, yet I have no evidence to show that the coprophagous beetles may not have been obtained from other carrion.

Evidence of the detestable habit of the magpie of attacking and feeding on young, sickly, or freshly branded livestock is unobtainable through stomach analysis. There is no satisfactory means of differentiating in stomach material between a mass of flesh and hair torn from the body of a helpless animal and that rent from a fresh carcass. When confronted with such a problem of appraisal the investigator, if unaided by pertinent field evidence, must resort to personal judgment which, candidly stated, often may be nothing more than a guess. The writer has himself examined many winter stomachs of magpies containing flesh and hair, which, for lack of evidence to the contrary, was construed as carrion. A pardonable bias in favor of a most interesting, though at times despicable species, no doubt played a part in this charitable interpretation. How much of this material was in fact torn from the backs of helpless animals one could not determine by stomach examination. It may readily be seen, therefore, that whenever the investigator is in a similar frame of mind this trait of the magpie will consistently be minimized when an appraisal of it is made through the laboratory. Later in this paper evidence will be cited in connection with another species, the red-winged blackbird,

in which the reverse is true—a tendency to obtain an exaggerated idea of damage when stomach analysis is employed as the means of approach.

Another bird possessing great individual and collective capacity for either good or harm and in an economic study of which the Biological Survey has made full use of the field method of approach is the Starling. The problem of interpretation arising in an appraisal of its insect food may, because of its extreme complexity, be omitted from the present discussion. There are no great difficulties in judging its diet of wild fruit, but in its feeding on cultivated fruit, the bird presents problems that vex the food analyst. I refer particularly to its consumption of late fruits—apples and pears. These items are detectable in the stomach in the shape of bits of fruit skins or masses of pulp. The Starling may obtain this either from marketable fruit in paying orchards, from isolated and abandoned trees, or from fallen fruit of no value, or from garbage. In each case the evidence revealed by stomach analysis would be essentially the same and were the bird not observed feeding on the controversial item at the time of its collection or shortly previous thereto, the examiner would find himself at a loss to appraise the situation. In this connection I recall having examined a series of Starlings collected near Adelphia, N. J. A large proportion of them contained the skin and pulp of apples which field observations indicated were obtained from a few abandoned trees, the fruit of which was of no commercial value, or at least was not being harvested. Another group of Starlings in the stomachs of which apple remains were found, was collected at Freehold, N. J. Here field observation indicated that the fruit might or might not have had marketable value. A third lot was obtained near Brookdale, N. J., under conditions that made it appear real damage was being inflicted by the birds. Stomach examination gave the same ambiguous answer in all three instances; field observation supplied the necessary information for a proper interpretation of the evidence. It might be added furthermore that field observation also brought to light the fact that damage to late fruit by Starlings is consistently greater in old, poorly kept orchards than in young, thrifty ones, supplying the bulk of the higher grade, marketable fruit.

The ubiquitous English Sparrow presents numerous problems in economic ornithology that are difficult of solution by the laboratory method alone: One of these arises from its insect-eating habits. If judgment were based solely on stomach analysis we would be led to believe that, during the balmy days of May and June, this bird (at

least the urban portion of its race) is a potent factor in the control of May beetles (*Phyllophaga*). In small towns of the Middle West, May beetles form a conspicuous portion of the diet of the young. Individual stomachs containing the remains of several of the bulky insects are not unusual, yet the seemingly commendable activity is severely discounted when a little field observation discloses the fact that the parent birds are obtaining many of the insects from beneath city arc lights where on mornings dead beetles may be found littering the pavement. In this manner the energetic destroyer of insects may suddenly assume the prosaic rôle of a scavenger of doubtful utility.

In judging the English Sparrow's vegetarian diet difficulties comparable to those mentioned under the discussion of other species arise. Are the oats found in the stomach of an adult female collected in the town of Independence, Iowa, in June, to be judged as waste gleaned from the street or were these kernels rustled from some suburban poultry yard? The wheat found in the crop of a sparrow shot on a roadside in Ohio, in July, may have been pilfered from the standing or shocked crop, picked up from waste in the stubble or along the road, or stolen from chicken feed. The pulp and skin of fruit may have come from a number of sources, each indicative of a different economic factor; yet all this material may have essentially the same appearance in the stomach contents.

This discussion might be carried on to include many other species, the economic influence of which is important and direct, and about which modern decisions are being demanded. Comparable cases showing the inadequacy of stomach analysis as the sole or dominant means of approach could be cited for such birds as the red-winged blackbird and ducks when feeding in rice areas; some of the hawks that at times develop habits akin to those of the carrion feeders, and, conversely, the vultures themselves that, in certain sections of the South, have been known to prey on living animals, such as newly born calves. Without substantiating field evidence, the fish in the stomach of an Alaskan bald eagle may be interpreted either as stream-polluting carrion or what might have been the contents of just one more can of salmon. The fingerling trout in the stomach of a kingfisher may be either an illustration of nature's normal control or it may represent an inroad on some hatchery, a favorite rendezvous for these birds during migration in August. Even the shells of rail eggs in the stomach of a Fish Crow collected on the Virginia coast may signify robbery or just plain frugality, according to whether the bird had destroyed a nest or was

engaged in making an honest, though lowly living by feeding on rail eggs destroyed by some unusually high tide.

From the foregoing one comes to the conclusion that the solution of some of our more important problems in economic ornithology depends largely on exact and pertinent field observation, without which much of our stomach examination data would have little significance. More than ever in these days of local adjustments in problems of wild life there is need for a correct interpretation of facts. To be able to identify items with specific exactness, items of utmost importance in the economic relations of the bird, and yet be unable to state whether those items should be placed in credit, debit, or neutral categories with respect to the economy of man plainly indicates that other methods of approach must at times be invoked. By all means there must be no slackening in laboratory research, but wherever it is evident that this method is incapable of accomplishing the object sought, there should be no hesitancy in adopting also some other plan that will give corroborative or other evidence of the status of the species. This the Biological Survey has endeavored to do throughout its work and only recently has placed even greater emphasis on field aspects of the economic study of birds and mammals by the establishment of a sublaboratory of its Division of Food Habits Research at Denver, Colo., where closer field contact may be had with western problems.

Let it not be inferred, however, that stomach examination, despite certain inherent weaknesses or limitations, does not play a most important, yes, indispensable rôle in our science. Aside from the legitimate demands of pure research in food habits to which stomach examination has and will continue to contribute bountifully, certain of the practical problems of economic ornithology lend themselves to direct solution solely or largely through this method of approach. I have in mind, particularly, those in which the identification of food items constitute the major objective. By that I mean that whenever we are seeking the *identity* of food items, irrespective of the economic significance of the bird's having fed on them, or whenever we aim to determine merely the presence or absence of particular items of diet, analysis of stomach contents is the only direct and reliable method of approach. And what a convincing method of demonstration it may be! Well do I recall experiences in 1919 when, after the enactment of the Migratory Bird Treaty Act making illegal the destruction of night herons, an inventive genius of the State Legislature of Louisiana, with fond longings for his favorite fried *grosbec*, contended that these birds



were highly destructive to the frogging industry of the State and hence legitimate objects of control. Investigation was made and in its course I had my first and most interesting contact with the ornithology and human inhabitants of modern Acadia. Night herons were collected, old and young, in the very county and with the aid of the very persons most affected by the alleged destructive habits of the birds. To a marked degree the specimens collected were "hand picked" to emphasize if possible their frog-eating propensities. Stomachs were examined later and in more than 100 studied, no trace of a frog was found, crawfish comprising practically the entire food. Needless to say the evidence acquired through stomach examination was amply sufficient to perpetuate the protection of the night herons.

In like manner stomach examination has yielded most convincing testimony in instances where field observations have been superficial or where circumstances have conspired to confuse the issue. I recall cases in which crop or timber damage has been charged against birds where, as a matter of fact, actual injury was inflicted by insects more or less concealed, which served as a lure and in that manner incriminated the more conspicuous birds. Stomach examination usually puts matters aright in such cases by revealing the identity of food items and thus places the blame for damage where it belongs. In this capacity, the laboratory channel of approach never will be excelled.

Stomach analyses of extensive and representative material is the only means, furthermore, of creating a background for proper appraisal of the general economic status of birds, something that is needed as a check upon every local or specific study.

## 2. FOOD PERCENTAGES AND ECONOMIC STATUS

Workers in economic ornithology freely admit that food percentages, however computed, still must be interpreted by the investigator before decision on the status of a species may be determined. Abstract decimal or fractional values can not be subjected to mathematical formulae and results computed therefrom as can be done in problems of engineering or chemistry. One estimated percentage indicating a beneficial activity cannot be construed as offsetting an equivalent designation of opposite economic significance. After all the painstaking examination and computation of food percentages of a species have been completed, what we have is simply a somewhat more tangible and understandable picture of food preferences. The conversion of this into terms of human economics is a matter resting largely on the personal judgment of the investigator. The wider his field experience and the sounder his logic, the more accurate will be his

appraisal. A sympathetic understanding of agricultural problems will add much to the value of his decision. Yet, at best, in the attempt to convert abstract food percentages into terms of human economics, the ornithologist still is confronted with a problem of no mean proportion or complexity.

With all the afore-mentioned data before him, how satisfactorily can the investigator answer questions such as the following propounded, we will say, by some practical farmer: "With crows, as you tell us, subsisting on corn to the extent of thirty-eight per cent of their diet, what percentage of crop loss may I expect from this species on my farm in southern Illinois?" or, on the other side of the question, "Is the practical good done by the crows feeding on white grubs, which were found in one out of every twenty-four stomachs, sufficient to warrant my allowing them to go unmolested and 'pull' five per cent of my sprouting corn?" Again, from the rice growers of the Gulf Coast, he may hear, "Now that food analysis has shown that somewhat more than half of the food of the red-winged blackbird of the Gulf Coast is rice, is it sound economy for us to attempt wholesale blackbird destruction in the rice area?"

The inadequacy of stomach analysis alone to produce data with which to answer queries similar to the last and the necessity for field appraisal in meeting such problems was forcibly brought to light a few years ago in work in the coastal rice area of Louisiana. Two seasons' field study of the rice-blackbird problem supplemented by the examination of more than a thousand stomachs brought forth enlightening data. The stomachs showed that rice in one form or another—as seed, as ripening grain, as part of the harvest, or as scattered waste in the stubble—served as a year round article of diet, the staff of life of the redwing of southwestern Louisiana. During the milk and dough stages of the crop and during the harvest, rice supplied nearly the entire sustenance of these birds. The insects eaten by them, though in fair proportion during the breeding season, were not those of importance to the grower of rice. The problem as viewed through the laboratory microscope and as judged from the tenor of written complaints could be answered in only one way—by an unqualified condemnation of the redwing in that region.

What, however, were the findings of field study? Briefly they were these. As a feeder on rice in any of its stages, the redwing of the Gulf Coast is outstanding; the findings of the laboratory were reflections of what the individual blackbird was doing in the field; the damage complained of was real and severe—real and severe, how-

ever, *only along a narrow strip of rice country bordering on the coastal marshes*. At the short distance of two miles from the border the damage was less frequent, at four miles it was seldom experienced, and in the center of the rice area it was never mentioned. Yet the individual redwing in the center of the rice area ate just as much rice as the bird on the borderline and under the microscope its stomach contents told a story identical with that of the borderline bird. The difference in conditions came about through the fact that the daily flight of the enormous flocks from the roosts in the coastal marsh to the feeding ground in the rice area stopped on or near the first line of fields, leaving only small squads, stragglers, or local roosting birds to frequent the center of the rice area where their feeding in the extensive fields went wholly unnoticed. It can be seen that here is a case, in direct contrast with that of the magpie previously mentioned, where a judgment, guided largely by the results of stomach analysis, would tend to exaggerate to an undue degree, the damage done.

From the rice fields of Louisiana let us pass to the barley fields of the Imperial Valley, California, for another illustration of the necessity of field appraisal. The writer's contact with this problem occurred in the winter of 1921-22, a season during which the damage was by no means as severe as in previous winters, yet in some instances serious enough to force the replanting of fields, with the attendant losses of seed, labor, irrigation water, and time. From the very nature of the case the damage was local but severe. If for some reason, as a low head of water, or lack of sufficient farm help, the process of irrigation after seeding was prolonged, dire results were likely to follow. "Puddle" ducks of several species were quick to locate the banquet and after a night or two of reconnoitering, enormous flocks made short work of the submerged barley.

How much of the economic and conservation aspects of this problem did the examination of stomachs supply? On the basis of about 150 stomachs of four species of ducks it revealed that pintails ate a greater percentage of barley (43%) than the other ducks, a fact quite generally recognized by local sportsmen and farmers. It also verified the generally accepted belief that widgeons ate more sprouting alfalfa than any of the other species. It also showed that the little Green-winged Teal ate less barley (22.0%) than the widgeon (24.5%).

What, however, did field studies show? In the first place, they told something of the extent of the devastation wrought. They shed light on the acreage of damaged fields and the fact that, in addition to the immediate injury, the ducks often so puddled and de-aerated

the fine silt of the grain fields that an unfavorable soil condition was created that lasted for several seasons. They revealed that the thirty per cent of young alfalfa eaten by the widgeon meant at times a severe economic loss in uprooted plants. They disclosed the fact that the widgeon, a more abundant and more voracious feeder, far out-stripped the diminutive teal as a destroyer of barley seed, although stomach examination showed only slight disparity between the proportions of barley found in each. And back of all that, they told the vital story that, so severe had the damage been in some winters that illegal shooting to protect crops was frequently resorted to; that honest efforts to protect grain were being discredited by abuses on the part of hunters who offered "their services in the cause of crop protection", that game law administration became a real problem, and that the whole fabric of the game protective movement in this locality was jeopardized largely because of a lack of understanding of what ducks can sometimes do. All in all, in the study of this local but vital problem of economic ornithology, field studies played a decidedly important rôle.

Not to confine the discussion to grain-eating species consider, for a moment, the irksome question of the ruffed grouse and its disbudding operations in apple orchards in New England, and the part that stomach analysis may play in clarifying the problem. Despite the fact that this can not be considered among the more serious of the problems in economic ornithology, it has been of enough consequence to result in state legislative provisions for the payment of damages locally.

For a basis of discussion let us take the contents of twenty-four crops of ruffed grouse collected in orchards in New Hampshire in 1923, at a time when there was much agitation against this species. Apple buds were present in nineteen of the crops and constituted 43.5% of the food. They were present at an average of 173 for each of the 19 crops in which they were found. One contained as many as 819. The remaining food consisted of buds, catkins, and browse of several species of wild trees and shrubs. That was the evidence contributed to the problem by stomach analysis; it tended to incriminate the ruffed grouse, but it in no way conveyed the graphic picture obtained by field observation. There was no doubt as to the correctness of the identification of the food items but one could not tell therefrom whether the indulgence of the grouse in this article of diet resulted in great damage, moderate damage, or possibly even in good through a process of desirable pruning. Such evidence was contributed, however, by horticulturists and zoologists of the New Hampshire State College of Agriculture. A detailed inspection of a representative

series of trees in an area whence reports of damage had come revealed a bud loss of forty-four per cent attributable to the work of grouse. Since some of this pruning would not result in an actual reduction in the crop the estimated crop loss, provided all other factors were equal, was placed at thirty-five per cent in the orchards inspected. There also came to light the attendant evidence that almost invariably damage of consequence occurred only in orchards situated near brush.

How well this illustrates the point that there is no tangible means whereby data on food preferences as revealed in stomach contents can be translated directly into terms of horticultural economy. Though we may say that under average conditions a ruffed grouse prefers an aggregate of buds of wild species to those of cultivated fruit, to measure and express the economic significance of its having fed on apple buds to the extent of thirty or forty per cent of its diet, is biologically and statistically impossible.

Few who know the meadowlark in the North have a realization of its capabilities for harm in sprouting corn fields of the South Atlantic States. Two factors, a predilection for the soft, sprouting kernel aggravated possibly by an early season scarcity of insects, and a flocking habit that tends to emphasize the effect of this trait, combine to make the meadowlark a distinct agricultural pest in the March planted corn in some sections of the Southeast.

Let me quote briefly from notes taken during a field study of the problem in 1919, when censuses were taken of the damage inflicted on early planted corn fields. "One of these, north of Manning, South Carolina, had been frequented by a flock of twenty-five larks for several days. Part of the field had been replanted but on a portion of the original stand I counted 298 healthy plants and 275 that had been either removed entirely or so badly damaged that they had little chance of surviving. A portion of a neighboring field revealed 168 missing plants, 231 damaged, and 172 untouched. While these counts were made in the most severely damaged sections there was injury throughout such fields that necessitated either replanting with the hoe or reploting and replanting with a planter. Whenever the proportion of damaged plants approached one-third of the total stand it was considered more economical to replot, which had the added advantage of an even stand."

"The replanting of portions or all of fields of early corn is an almost universal misfortune for the planter in parts of South Carolina. At times the replanted seed meets the same fate as the first sowing

and it requires a third planting to insure a stand with the loss of about three weeks of the best corn growing weather.”

How much of this pertinent economic information is obtainable from stomach analysis and, in fairness it may be added, how much other information not discernible from field observation is to be had from the laboratory source? Unfortunately there is not available a representative series of stomachs of meadowlarks collected exclusively in corn fields of the Southeastern States. We do know, however, that the examination of 890 stomachs of meadowlarks collected under varied conditions in the Southeast revealed the fact that grain (corn, wheat, and oats) constituted a little less than nine per cent of the annual food.\* Most of this was eaten during the winter months, indicating that it was waste. *No sprouting grain was found.* No doubt had more stomachs been collected in newly planted fields abstract evidence of this trait would have been revealed, but at best one could expect merely an indication of the habit, not an adequate idea of its economic significance and seriousness. Such an estimate necessarily must rest on careful, methodical, and often arduous, but none the less scientific work through field estimates and appraisals. In the case in point, field studies conducted by the Biological Survey revealed conditions that warranted the issuance of permits, locally, for the suppression of meadowlarks.

But what of that part of the story not readily acquired through field observation, that dealing with the insectivorous habits of these meadowlarks of the Southeast? Field observations usually yield little more than the fact that insects are being eaten. Stomach examination on the other hand has divulged the identity of these insect items, often with specific and subspecific precision. It has afforded data on the numbers eaten in the course of the bird's last “meal”. It has estimated the proportion of the diet formed by each component and it has given us data from which a visual idea of the birds' insectivorous habits can be drawn, a picture of the food preferences of the species and the *part each group of items plays in furnishing sustenance for the bird.*

But may it not logically be asked, even as has been done in the case of those food items, the consumption of which represents a direct loss to man, how complete an understanding of the *economic effect of these insectivorous habits* have we other than that obtained through a more or less theoretical process of deduction in which the judgment of

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\*U. S. Dept. of Agri., Farmers' Bulletin 755. Common Birds of Southeastern United States in Relation to Agriculture, by F. E. L. Beal.

the investigator plays an all important, yet uncertain part? Does not stomach examination alone, though far-reaching in its accomplishments, fall short of the goal in the economic appraisal of insect food, as in the appraisal of losses to farmers' crops?

Let us try to simplify the picture by omitting, for the present, the highly involved interrelations existing between the varied insect forms commonly entering into the diet of a bird, or, if preferred, let us assume that we have a complete understanding of all these interrelations and that there is nothing left for the stomach examiner to "interpret" among the food items he discloses—truly an all-embracing assumption. Let us grant that he has identified all items, computed the proportions of each and understands the abstract economic significance of the destruction of each insect item by the bird. Yet consider for the moment what chasms still are to be spanned. With all these data before him can the stomach examiner answer the direct and plausible inquiry, "Is it sound agricultural practice to allow meadowlarks full freedom of the corn field during sprouting time with the expectation that their destruction of wireworms is service well rendered at the price of one or two replantings of the field because of their corn pulling activities?"

To cite another case, who can state what degree of suppression of the alfalfa weevil is exerted by the English Sparrow in Utah by reason of the fact that about twenty-eight per cent of the food of the young and thirteen per cent of that of the adults during three months of the year is obtained from this source? The answer to this will remain undetermined until some estimate is had of the weevil-destroying capacity of the race as a whole in relation to the total weevil population. To say that twenty-eight per cent of the food of young English Sparrows is composed of alfalfa weevils is significant in the laboratory appraisal of the *food preferences* of that species, and might, in the judgment of some, place the balance in the bird's favor. Protection might even be urged as reward for commendable service. Yet, without an understanding of the effect of this destruction on the total weevil population, no one is able to say whether this service is considerable or insignificant. One might as well aim to answer the query, "How rapidly are our national timber resources being depleted?" by stating that one per cent of the average man's yearly expenditure (or power to consume) is spent for lumber.

Other illustrations may be cited, but the foregoing, coming to mind by reason of the writer's personal contact with most of the problems mentioned, will suffice to emphasize the inadequacy of stomach analysis alone in solving many of the modern problems in economic

ornithology. It is a truism, however, that stomach examination, carefully conducted, gives the best possible index to the food items of a bird, and in the light of many such examinations, an idea of the food preferences of a species. By it the general *tendencies* for good or harm can be shown; variations due to seasonal changes and those connected with environmental factors can be indicated in the abstract. It is even possible, by computing from the capacity of individual stomachs, and the daily dietary needs of birds, to obtain some rather hypothetical idea of their consuming powers, be it in relation to insect food or kernels of grain. Yet, withal, the results attained largely are those viewed from the standpoint of the bird itself. They fail to meet the issue when we are seeking *the effect of feeding habits*, which, in the final analysis, is the actual goal in many modern problems of economic ornithology.

#### THE SEQUEL

Repeated contacts with problems similar to those dealt with in the foregoing recital lead one to the simple and evident conclusion that determination of the economic status of a bird, its relation to the interests of man, calls for something more than a knowledge merely of food habits or food preferences. Economic status and food habits are, by reason of their fundamental aspects and definitions, antithetic. In seeking the economic status of a species one aims to determine and to express in understandable form the effect of its feeding and other habits on agriculture, horticulture, forestry, and other human interests. On the other hand, a record of the food habits of a species, as obtained through stomach analysis, is an expression of the part that grain, fruit, truck crops, poultry, and various other products of the farm, as well as the weed, insect, and rodent pests of the land play in furnishing the sustenance of the bird. The one discloses the influence exerted by the species on man and his welfare: the other shows the manner and extent to which the product of nature's and man's activities affect the species. The one indicates what should or may be done to improve the interrelationship to the advantage of man; the other reveals in what manner conditions may be altered with respect to the well-being of the bird.

With all this evident distinction between the two, how frequently do we encounter a confusion of ideas on the subject! Primarily the objective in our problems is one of economics; yet the product of much research into the economy of birds is purely biological. This product, the result of painstaking stomach examination, often is looked upon as the end sought or, if not actually the goal itself, so close an ap-



proach to it that the intervening gap is but a step in a simple process of deduction. Therein lies a fallacy that has served as the theme of much of this paper.

Two points have been stressed in this discussion, (1) the importance of correct interpretation of the items found in stomach contents, and (2) the need of a method or procedure helpful in bridging the gap between abstract food percentages and the economic objective, the effect of the birds' feeding habits. As I see it there is only one course open to the attainment of these objectives, possibly not completely, but in a substantial manner, and that is through intensive and extensive application of field observations and experimentation.

It may be stated at this point that this very principle has been recognized in ornithological work in the Biological Survey for some years and is destined to play an even more important rôle in future studies. The needs and opportunities ahead are great. Although, in many problems the field has scarcely been touched, a beginning has been made which, as time goes on, should lead to marked advancement in the science.

One need not speak in detailed terms to set forth the general course open to a fuller, a fairer, and, withal, a scientific appraisal of the economics of bird life. Intensive field observations, which, in the attainment of their own peculiar objectives, may be conducted just as accurately and yield a product just as scientific as the painstaking work of the laboratory, come foremost. There are estimates to be made on a substantial and representative scale of the extent of injury done by species feeding on buds, fruit, grain, and truck crops. Likewise we should have more data on the actual insect and rodent destruction effected by birds, revealed by close inspection of infested areas. In the verification of such data the use of representative quadrats, some bird-frequented and others devoid of birds, should lead to convincing facts. There is much yet to be learned of the direct and aggregate effect for good or harm of several common species that appear at some seasons of the year in great flocks; and then, of prime importance is the ever present need of a close study of environments in which material is collected for subsequent stomach examination in order that the factor of uncertainty in interpretation may be kept at a minimum.

As time goes on the economic ornithologist will find himself confronted with an ever broadening field of work. His problems will become more complex and any attempted aggressive action is bound to be closely scrutinized by an increasingly more watchful public.

Already there is a real and appealing need for extensive study in methods of preventing or reducing bird damage through means less drastic than wholesale destruction. There is missionary and experimental work to be done, largely of the farm demonstration type, to meet certain situations in which the most practical and economical solution seems to be, not in attempts at bird control, but in the avoidance of damage by a well planned change in the crops being raised. It will take time and patience and a sympathetic understanding of the viewpoint of those affected to reach a satisfactory solution in matters such as these. To deny a fair hearing or to minimize a just complaint may cause irreparable harm to the very cause we hold most sacred. An open-mindedness, and a willingness to study and decide each problem on its merits should characterize every attempt at appraisal or adjustment. Much of this can be done only in the field, and it is there, as I see it, whence our most important missions in economic ornithology now beckon.

U. S. BIOLOGICAL SURVEY,  
DENVER, COLORADO.

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## NINETY MINUTES WITH ROBERT RIDGWAY

BY DAYTON STONER

Contacts with the masters lend inspiration and enthusiasm to the efforts of those who would learn. Such a contact serves as the basis for the present brief narrative.

In the course of an automobile trip from Denver, Colorado, to Gainesville, Florida, taken in October, 1927, by Mrs. Stoner and the writer, we recalled, as we neared Olney, Illinois, that this was the home town of Robert Ridgway, who, at the time of his death in 1929, without doubt was entitled to the distinction of being the Dean of living American ornithologists. Accordingly, it was decided to halt at this shrine for a passing visit.

Upon inquiry in the town we learned that the home of Mr. Ridgway was about a half mile from the business district and easily accessible. Driving south over the railroad tracks the visitors approached on their left a slight elevation, "Larchmound". This tract was well fenced in and presented a trimly cut lawn whercon the great profusion and variety of trees and shrubbery at once attracted attention. And, well back from the highway, beneath two tall and symmetrical larch trees nestling among this dense growth and more or less hidden by vines and shrubs, reposed an old and unpretentious, though well pre-

served, brick structure, the commodious and comfortable home of the great ornithologist.

A winding brick walk invited one toward the house and the visitor was prone to stop frequently to examine a plant or to catch a more intimate glimpse of a flitting bird. But his enthusiasm received somewhat of a jolt when upon reaching the door he beheld a neatly written notice posted thereon and stating that "Mr. Ridgway is not available to visitors between 9:00 A. M. and 5:00 P. M., except by appointment."

I had never met Mr. Ridgway and having no "appointment" I was about to retreat in good order when it occurred to me that even if I did attempt to intrude upon his presence I would receive only a verbal denial or at most be accused of inability to read. Thus mustering up my courage, I pushed the bell. After a short wait there appeared in the doorway a rather slightly built and somewhat stooped elderly gentleman who upon inquiry admitted that he was Robert Ridgway. The seeming affability of the man gave me confidence and I explained that I had been a student of a well known professor of Zoology with whom Mr. Ridgway formerly had been associated in field work, and that, being interested in birds myself, I had taken the liberty of dropping in on him for an impromptu visit. "Just walk about in the yard for a bit; I shall be right out", he said. And in a short while, having donned coat and hat, Mr. Ridgway presented himself to us on the spacious lawn.

Then followed an hour of inspection of his horticultural endeavors which had occupied much of his time during recent years. Failing eyesight, Mr. Ridgway stated, had compelled him to forego in some measure research in ornithology and in order to satisfy his naturalist's proclivities he had taken up botanical pursuits.

A great profusion of native and exotic plants from many places had been accumulated at Larchmound by Mr. Ridgway. India, China, the South Sea Islands, the West Indies, and South America were among the distant regions represented in this vegetational display. It was a pleasure to note the great joy that the owner experienced in explaining this or that plant; occasionally he varied the procedure by quickly breaking off a twig or a bit of fruit from one, to present as a gift. The matter of fact way in which he employed botanical phraseology was something to admire and indicated an unusual degree of familiarity with the plant kingdom.

Now and again a bird bath or half-concealed feeding place for birds was disclosed during our ramble which included an inspection of the large open area between the house and barn. Cardinals, Blue

Jays, Robins, and other birds were observed as they accepted the advantages of this proffered hospitality.

Being reminded that volume nine of his latest masterpiece "The Birds of North and Middle America" was yet to be completed, the author quietly, indifferently, admitted the allegation and continued his discussion of some interesting native or exotic plant.

The honors having been done for the outdoor attractions, an invitation was extended to enter the house. We stood not on formality and were ushered into a comfortable sitting room by the back way. Immediately following introduction to his sister, Mrs. Lida Palmatier, who had lived with him since the passing of Mrs. Ridgway, Mr. Ridgway brought forth a box of Perfectos, offered a cigar and chose one for himself.

Then resting comfortably in his chair and serenely blowing faint rings of blue smoke, the noted ornithologist recalled for us some of the changes that had taken place in the local native bird and plant life of the territory about Olney since he had known it. This reminiscent mood was full of action, life, and an occasional bit of humor; and no small amount of interest was furnished the occasion by Mrs. Palmatier's quite supplementary observations.

To an ornithologist, perhaps the item of greatest interest outside the host and his sister was the bird feeding station which extended the full width of the ledge of a large east window. This permitted a flood of autumn sunlight to enter the room and at the same time a view of the flights and foibles of the feathered tribe that found here an abundant daily repast. While we looked and talked, Blue Jays, Robins, a White-breasted Nuthatch, a Cardinal, Black-capped and Carolina Chickadees, and a Mockingbird graced the board with their presence.

Too soon the cigars had burned; time had flown. Conversation had not lagged but the journey must be resumed.

This brief and informal yet pleasant and intimate contact with a leader in his chosen profession has left its ineffaceable imprint on the recipient of the benefaction, who, previous to this meeting, was quite unknown to the benefactor except through the medium of a few publications. The personal charm of Robert Ridgway will ever be recognized as one of his finest attributes. It is an attribute that we all can afford to cultivate.

NEW YORK STATE MUSEUM,

ALBANY, N. Y.

## A HAWK CENSUS FROM ARIZONA TO MASSACHUSETTS

BY MARGARET MORSE NICE

On June 18, 1933, our family left Ohio for a motor trip to Chicago, Oklahoma, New Mexico, and Arizona, returning to Columbus July 24. During twenty-one of the thirty-five nights we camped out in the open, in woods, pastures, or deserts. On August 7 and 8 we drove from Columbus to Pelham, Mass. A record was kept of all hawks, owls, and vultures seen, and also all owls heard while camping. The results are given in Table I.

TABLE I  
CENSUS OF RAPTORES THROUGH TWELVE STATES

STATE	Nights Camping	Mileage	NUMBERS SEEN				NUMBER OF MILES TO A BIRD			
			Hawks	Owls	Vultures	Total	Hawks	Owls	Vultures	Total
Massachusetts .....	0	71	0	0	0	0	0	0	0	0
New York .....	0	391	3	0	1	4	130	0	391	98
Pennsylvania .....	0	47	0	0	0	0	0	0	0	0
Ohio .....	0	410	1	0	4	5	410	0	102	82
Indiana .....	1	310	0	0	1	1	0	0	310	310
Illinois .....	1	656	1	1	2	4	656	656	328	164
Missouri .....	1	626	0	0	1	1	0	0	626	626
Kansas .....	0	26	0	0	0	0	0	0	0	0
Oklahoma .....	7	1480	7	6	20	33	211	247	74	39
Texas .....	2	557	7	7	16	30	79	79	38	19
New Mexico .....	6	1606	28	12	23	63	57	134	69	25
Arizona .....	3	678	6	6	3	15	113	113	226	45
Total .....	21	6858	53	32	71	156	129	214	96	44

On the 6858 miles we recorded 53 hawks, 32 owls, and 71 Turkey Vultures. This gives one owl every 214 miles, one vulture every 96 miles, and one hawk every 129 miles.

The states east of the 94th meridian have a much worse showing than those west of it, for in these seven states only 5 hawks, one owl and 15 vultures were noted on our drives of 2511 miles; i. e., one vulture to every 168 miles and one hawk to every 502 miles!

In the western states—from Oklahoma to Arizona—conditions were not so dismal. Here on drives of 4347 miles we saw 48 hawks, 31 owls, and 56 vultures, or one owl to every 140 miles, one vulture to every 77 miles, and one hawk to every 90 miles. Yet New Mexico was the only one of the twelve states where hawks did not seem scarce.

The weather was oppressively hot during the drive west until New Mexico was reached, the thermometer reaching 107° F. in the shade in western Oklahoma on June 30. The heat made most birds inactive

and perhaps reduced the numbers of raptors to be seen. Yet on our thousand mile return journey from Oklahoma to Ohio, July 22 to 24, when the weather was not uncomfortably hot, exactly one hawk and one vulture were recorded.

As to the kinds of hawks seen, there was one Marsh Hawk (*Circus hudsonius*), 2 Prairie Falcons (*Falco mexicanus*), 16 Sparrow Hawks (*Falco sparverius*), while the rest were *Buteos*. No Cooper's or Sharp-shinned Hawks (*Accipiter cooperi*, *A. velox*) were noted, although undoubtedly present in the wooded regions.

Owls were heard on only seven of the twenty-one nights on which we camped out, and twice these were Burrowing Owls (*Speotyto cunicularia hypugaea*). There were 25 of the latter on our list, 3 Screech Owls (*Otus asio*), one Horned Owl (*Bubo virginianus*), and 5 of whose identity we were not sure.

Oklahoma is the only state for which I have earlier records for comparison. From 1920 to 1923 we took 1689 miles of "Roadside Censuses" (Nice, 1921, 1922) in the nesting season, in which all birds seen from the motor car were recorded (but not those met in camp). These trips covered all parts of the state, something which was not true in 1933. The earlier censuses showed 16 hawks, 31 owls, and 105 Turkey and Black Vultures (*Cathartes aura septentrionalis*, *Corygyps atratus atratus*), i. e., one hawk to every 106 miles, one owl to every 55 miles, and one vulture to every 16 miles. If the trips were strictly comparable, it would appear that hawks have decreased by nearly one-half, and owls and vultures have shrunk to one-fifth their numbers ten years ago!

I do not believe the facts are as bad as this; if our former trips were to be repeated, it is to be hoped that the reduction in numbers would not prove as great as in these sets of figures. The owls in the earlier censuses were all Burrowing Owls, but in 1933 there were only two of this species. These birds are very dependent on the prairie dog as host in Oklahoma, and as this delightful little animal is exterminated, the owls disappear. The striking falling off in vultures may perhaps be partly due to lack of sufficient food.

In 1926 a hawk killing contest was staged in Oklahoma in which single men shot as many as 277 and 321 hawks. More than 4000 hawks must have been slaughtered (Nice, 1931, p. 68). It is not surprising that only a few of these fine birds are left, especially as their persecution never ceases.

The numbers of hawks in England and on the Gold Coast are compared by Winterbottom ('33a) in a discussion of censuses taken

from trains and motor-cars, the mileage in each country amounting to approximately 2700 miles. In another paper ('33b) he reports on a census of 352 miles in southern Africa. In both sections of Africa there was one hawk to every 82 birds, in England one to every 1060\*. (In Oklahoma in the 1920 to 1923 censuses there was one hawk to every 626 birds). "That our English avifauna was impoverished has long been known", writes this author (1933a, p. 90), "but that hawks should be reduced to one-tenth of their numbers under more natural, if climatically different conditions, is somewhat surprising."

We are accustomed to pointing to England as a horrible example of a country where most of the raptorial birds have been exterminated. How do we compare with her? On the Gold Coast Winterbottom found one hawk to every 11 miles, in southern Africa one to every 15 miles, in England one to every 81 miles. We found one to every 129 miles.

The average for the three states west of the 100th meridian—Arizona, New Mexico, and Texas—is a little better than England.—one hawk to every 70 miles; if we include Oklahoma we are a little worse—one hawk in every 90 miles. *But the average of the states from Missouri to Massachusetts is six times worse than in England.*

Of course a main highway is not the best place in the world for seeing hawks, yet if the birds were not pitifully rare, one should have the pleasure of seeing several in a day's trip.

Our hawks are in a perilous position, and those who love nature must come to their rescue.

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COLUMBUS, OHIO.

\*Mr. Winterbottom in a letter informs me that his figure of 36 hawks and owls in England included 33 of the former, 3 of the latter.

OBSERVATIONS ON A FEW BREEDING BIRDS IN  
NORTHEASTERN OHIO\*

BY JOHN W. ALDRICH

Judging from the published records, little is known about the breeding status of certain species of birds in Ohio. For this reason it seems desirable to place on record the pertinent unpublished material of this character which has been accumulating during the past few years in the files of the Cleveland Museum of Natural History.

The data presented here were obtained mainly during the course of field work by the writer, often in company with Mr. Herbert W. Brandt, Mr. Omar E. Mueller, or Mr. John H. Dittrick. Some of the material is contained in the unpublished works of the writer's colleagues, Mr. Arthur B. Williams, who is conducting ecological studies in Cleveland's North Chagrin Metropolitan Reservation, and Mr. B. P. Bole, Jr., who is carrying on similar studies at Little Mountain.

To facilitate the following discussion of the distribution of the species concerned, and to aid those who may wish to use these records, the following definition of localities is included:

*Bradley Pond.* In Geauga County, Burton Township, 28 miles southeast of Cleveland; elevation 1100 feet.

*Bratenahl.* In Cuyahoga County, eastern suburb of Cleveland; elevation 600 feet.

*Gates Mills.* In Cuyahoga County, Mayfield Township, 14 miles east of Cleveland; elevation 1040 feet.

*Kirtland Hills.* In Lake County, Kirtland Township, 23 miles northeast of Cleveland; elevation 900 feet.

*Little Mountain.* In Lake and Geauga Counties, Concord and Chardon Townships, 26 miles northeast of Cleveland; elevation 1260 feet.

*Mayfield.* In Cuyahoga County, Mayfield Township, 13 miles east of Cleveland; elevation 1080 feet.

*Mechanicsville.* In Ashtabula County, Austinburg Township, 45 miles east of Cleveland; elevation 800 feet.

*Mentor Headlands.* In Lake County, Mentor Township, 28 miles northeast of Cleveland; elevation 600 feet.

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\*This paper was in the hands of the Editor at the time of the publication of the article "The Breeding Birds of Ashtabula County, Ohio", by Lawrence E. Hicks (WILSON BULLETIN, XLV, pp. 168-195, 1933). This fact accounts for the absence of reference to this article in the present paper and for the crediting of certain records as new for the State, which claims are nullified by Dr. Hicks' paper.



*North Chagrin Reservation.* In Cuyahoga County, Mayfield Township, 15 miles east of Cleveland; elevation 900 feet.

*Pymatuning Swamp.* In Ashtabula County, Andover Township, 60 miles east of Cleveland; elevation 1000 feet.

*Richmond.* In Lake County, Painesville Township, 28 miles northeast of Cleveland; elevation 600 feet.

*Snow Pond.* In Geauga County, Burton and Troy Townships, 28 miles southeast of Cleveland; elevation 1000 feet.

*Solon Bog.* In Cuyahoga, Geauga, Summit, and Portage Counties; Solon, Bainbridge, Twinsburg, and Aurora Townships; 20 miles southeast of Cleveland; elevation 1000 feet.

The following annotated list includes such species as the writer deems sufficient interest because of the scarcity of published information concerning their breeding distribution in northeastern Ohio.

**YELLOW-BELLIED SAPSUCKER.** *Sphyrapicus varius varius.* There have been a few published records for the breeding of this species in Ohio, such as those of Oberholser (1) and Baird (2). The number of these records is so limited, however, that it seems desirable to report the following specimens collected in a red maple-yellow birch swamp forest section of Pymatuning Swamp; two males and one female, June 9, 1931; one female June 22, 1931; and one male July 19, 1932. These records, of course, do not constitute a definite proof of breeding, but the presence of the several birds of both sexes in the same area and in different years is fairly strong evidence for such a case, particularly as Sutton (3) has found this species nesting in the Pennsylvania section of this great swamp.

**RED-BREADED NUTHATCH.** *Sitta canadensis.* It is believed that this nuthatch has never been reported as occurring in Ohio except in winter and during migration. Therefore the writer wishes to present as the first presumable breeding record for the State, the capture of a juvenal female on July 7, 1931, by John H. Dittrick, at Mentor Headlands. The bird was discovered in company with a White-breasted Nuthatch in the top of a tall tree at the edge of a small pond which forms part of a rather long, narrow wooded swamp known as Mentor Marsh. There are no hemlocks or other evergreen trees in this swamp nor anywhere else in the immediate vicinity of the place where the specimen was taken. This is interesting as it would seem likely that if the species bred in the State at all it would be in some of the hemlock ravines which most closely approximate the evergreen forests, the bird's normal breeding habitat in the north. It is quite

possible, of course, that this particular bird was raised in the splendid hemlock wood of the Chagrin or Grand River valleys seven or eight miles south of the point where it was captured.

SHORT-BILLED MARSH WREN. *Cistothorus stellaris*. Because of the localized distribution of the species in Ohio, as well as elsewhere throughout its range, due to its exacting habitat requirements, it was rather pleasing to find it nesting in good numbers in scattered sedge-meadow areas about the higher land bordering Pymatuning Swamp. On June 22, 1931, three birds were flushed but none were in song. On July 23, twenty pairs were located by the songs of the males in an area approximately a mile long by a quarter of a mile wide. Three pairs were located at Bradley Pond, June 14, 1932. On July 8, 1932, a breeding colony of twelve pairs were located by the songs of the males in a rather extensive meadow of pure sedge, *Carex* sp. and seed-box, *Ludwigia alternifolia*, at Solon Bog. Frequent observations carried on the same year in another open marsh area of ten and one-half acres at Solon Bog failed to produce any signs of Short-billed Marsh Wrens until July 23, when three males appeared and began to sing in a narrow belt of sedge-meadow bordering the marsh. On August 20, a nest containing recently hatched young was found in a clump of sedge overshadowed by jewel-weed and marsh grasses. Although both areas were scoured in the summer of 1933 at the same times of year that Short-billed Marsh Wrens were heard singing in 1932, not a single individual was found.

PROTHONOTARY WARBLER. *Protonotaria citrea*. Although reported as a common breeding bird at Buckeye Lake in the central part of the State by Walker, Trautman, and Thomas (4), this striking warbler is rare as a nesting species in any part of northeastern Ohio. Breeding records are reported from the vicinity of Wooster by Stevenson (5), from Huron by Morse (6), and from near Chardon by Cook (7). On June 3, 1931, a pair of Prothonotary Warblers was collected by the writer at the edge of an alder-buttonbush area in a swamp at Richmond.

MAGNOLIA WARBLER. *Dendroica magnolia*. Wheaton (8) credits this species with being "a summer resident in small numbers in northeastern Ohio", but no other mention of the breeding status of this warbler seems to have been forthcoming since that time. In view of this fact the writer wishes to place on record the capture of a specimen at Pymatuning Swamp on July 19, 1932. The bird was a male which was heard singing in the low, second growth hemlocks at the edge of the swamp.

BLACK-THROATED GREEN WARBLER. *Dendroica virens virens*. Although not generally credited with being an Ohio breeding bird, this warbler is apparently the most abundant in the northeastern part of the State during the nesting season of any of the typically boreal breeding species. Even here, however, it seems to be confined in its choice of nesting habitat to the hemlock woods, being most common where the hemlock stands are most extensive. Harper and Roth (7) reported this warbler breeding in the Roosevelt Game Preserve in Seioto County, and Doolittle (9) recorded it for Lake County. The writer found a single singing male Black-throated Green Warbler in the tall hemlocks at the edge of Pymatuning Swamp on June 9, 1931. On July 12, 1931, another was seen at North Chagrin Reservation. On the same date two more were seen at Kirtland Hills. During the breeding season of 1932, Mr. A. B. Williams (10) found three pairs nesting at North Chagrin Reservation in the "Beech-Hemlock association only". On June 24, 1933, the writer found three singing males in a bog at Meehaniesville, where hemlock was very abundant. During the entire summer of 1933 Mr. B. P. Bole, Jr. had fourteen pairs of Black-throated Green Warblers under observation in the white pine-hemlock forest on top of Little Mountain.

BLACKBURNIAN WARBLER. *Dendroica fusca*. Similar to the preceding species in its choice of nesting habitat, the Blackburnian Warbler is apparently less common in northeastern Ohio than the Black-throated Green Warbler. On June 9, 1931, two males of this species were collected in the last remaining stand of tall hemlocks on the Ohio border of Pymatuning Swamp. On June 22, two more of these warblers were collected. One was a male and the other a female, the latter showing by the bare condition of the abdomen unmistakable signs of nesting. During the breeding season of 1933, Mr. B. P. Bole, Jr. found two pairs of Blackburnian Warblers nesting in the pine-hemlock forest of Little Mountain.

CHESTNUT-SIDED WARBLER. *Dendroica pensylvanica*. Wheaton (8) called this warbler a summer resident in the northeastern part of the State, and Oberholser (1) recorded two summer occurrences of this species near Wooster. Jones (11), however, was unable to add any further information on this matter. Since then it has been reported as breeding at Jefferson in Ashtabula County by Sim (12) and by Campbell (13) at Oak Openings in Lucas County. The writer found a single bird on July 9, 1931, at Pymatuning Swamp and another on June 22, 1931, at the same place. On June 22, 1933, two singing males were found at Solon Bog and one was collected. In every case the

birds were found in the low, second growth trees bordering the swamps.

GRINNELL'S WATER-THRUSH. *Seiurus noveboracensis notabilis*. During visits to Pymatuning Swamp on June 9 and 22, 1931, this species was much in evidence in the red-maple-yellow birch swamp forest, and on June 9, ten singing males were counted. On June 22, four males were heard and two juveniles were collected. On June 11, 1932, one singing male was heard. In 1932, three singing males were found several times during the breeding season at Bradley Pond and three more at Solon Bog. In 1933, one singing male was discovered in a swamp forest at Mechanicsville. In a twenty-three acre area of red maple-yellow birch swamp forest at Solon Bog, one pair nested in 1932 and 1933. In the latter year young birds, just out of the nest, were seen on June 4.

Three adult breeding specimens taken June 10, 1931, and two juveniles taken June 22, 1931, at Pymatuning Swamp, and one adult breeding specimen taken June 14, 1932, at Bradley Pond, were examined by Dr. Harry C. Oberholser who considered them closer to *Seiurus noveboracensis notabilis* than to the eastern race, *Seiurus noveboracensis noveboracensis*. The presence of Grinnell's Water-thrushes in northeastern Ohio as migrants has already been recorded by Oberholser (14). Of the five migrant specimens present in the Cleveland Museum's collection from Ohio, all are *notabilis*, so it seems that this must be the common migrant as well as the breeding form of this species in this State.

PURPLE FINCH. *Carpodacus purpureus purpureus*. Concerning the breeding status of the Purple Finch in Ohio, Kirtland (15) said: "Saw several at Kinsman on the last of June of the present year" (1838). Neither Wheaton (8) nor Jones (11) give any further records. Doolittle (16) found a singing male in Lake County during June and July, 1917. The finding of a nest and eggs of this species in 1925 at Gates Mills was reported by Kendeigh (17), and the "Bird Calendar" (18) for 1932 records the presence of Purple Finches at Gates Mills during the breeding season in every year since 1925. Another positive breeding record for Gates Mills is represented by a female specimen carrying a fully developed egg, taken June 26, 1933, and now in the Cleveland Museum collection. Mr. B. P. Bole, Jr. reported the presence of four Purple Finches on July 3 and July 10, 1933, at Little Mountain, but weekly observation there prior to those dates had failed to disclose the presence of this species.

EASTERN SAVANNAH SPARROW. *Passerculus sandwichensis savanna*. There has been some discussion about the distribution of breeding Savannah Sparrows in Ohio. Campbell (19) pointed out that this species seems to be increasing as a breeding bird in northern Ohio and is apparently gradually extending its range southward. He came to these conclusions from published records for the State and from his own observations in the northwestern section near Toledo. In northeastern Ohio the Savannah Sparrow apparently breeds more or less commonly wherever very extensive meadows occur. It was heard singing on the outskirts of Cleveland throughout the breeding season of 1931. It was also found to be very common in the extensive meadows bordering Pymatuning Swamp. On June 22, 1931, ten singing males were counted there and several adults and juveniles were taken on that date and on July 23. In a low sedgy meadow at Solon Bog, one specimen was collected on June 2, 1930, another was taken at Bradley Pond, June 14, 1932, and another at Mayfield, June 7, 1933, in similar habitats.

SLATE-COLORED JUNCO. *Junco hyemalis hyemalis*. Kirtland (15) in referring to the junco said: "It breeds in great numbers in the dark beech woods of the Connecticut Western Reserve." Wheaton (8) called it a "resident throughout the year in northeastern Ohio" and had a definite record of its occurrence in July in Portage County. Hicks (20) found juncos breeding in surprisingly large numbers in Wayne, Andover, Richmond, Denmark, and Monroe Townships of Ashtabula County from 1928 to 1933. The "Bird Calendar" for 1931 (21) announced the presence of five juncos on Little Mountain on August 21, 1931. To add to these published records, during the breeding season of 1933, Mr. B. P. Bole, Jr. had a pair of juncos under observation in the pine-hemlock forest on top of Little Mountain. The young were found out of the nest on June 19, 1933.

WHITE-THROATED SPARROW. *Zonotrichia albicollis*. Another breeding record for this species has come to light to add to those of Jones (22) for Marblehead and Cedar Point, and those of Hicks (20) for Wayne and Andover Townships. Mr. B. P. Bole, Jr. reported the finding of adult White-throated Sparrows with young birds just out of the nest in June, 1929, among cultivated red pines and hemlocks at Bratenahl, an eastern suburb of Cleveland.

SWAMP SPARROW. *Melospiza georgiana*. It is strange that this species is not generally recognized as an Ohio breeding bird, as is evidenced by the statement of its range in the Fourth Edition of the A. O. U. Check-List, since there is no doubt about its nesting com-

monly in all favorable locations in the northeastern triangle of counties. Published records for the breeding of Swamp Sparrows in Ohio are very few. The first set of eggs was taken by Dr. Howard Jones at Circleville, twenty-five miles south of Columbus in May, 1881, and reported by Jones (11) in his catalogue of "The Birds of Ohio". The writer believes this is considerably farther south than the bird has been found breeding since. Kimes (23) reported the Swamp Sparrow as breeding near Canton, "seven or eight pairs" were found by Walker and Franks (24) breeding in a cranberry bog in southwestern Huron County, and Baird (25) reported this species as fairly common and nesting in Columbiana County east of Salem. It is interesting to note that Jones (26) did not find the Swamp Sparrow breeding in the extensive marshes of the Cedar Point region. The writer has found it definitely breeding in Cuyahoga, Lake, Geauga, Portage, and Ashtabula Counties. In one twelve-acre area of cat-tail marsh at Richmond three nesting pairs were under observation during June and July, 1931. One nest containing fresh eggs was found in a cat-tail clump on June 25, 1931. At Bradley Pond and Snow Pond it was found breeding commonly in 1931. At Pymatuning Swamp during June and July, 1931, it was abundant even rivaling the Song Sparrows in numbers. In 1930 it was found breeding commonly at Solon Bog. At the same locality in a ten and one-half acre area of common rush-woolgrass marsh, ten pairs were recorded nesting in both 1932 and 1933. Nearby, in a twenty-three acre red maple-yellow birch swamp forest, five pairs were recorded in 1932 and seven in 1933.

From these data it seems evident that the northeastern corner of Ohio should be included in the regular breeding range of the Swamp Sparrow. This species apparently breeds in other parts of the State only in scattered, extremely favorable localities.

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THE CLEVELAND MUSEUM OF NATURAL HISTORY,  
CLEVELAND, OHIO.

FURTHER ADDITIONS TO THE LIST OF BIRDS VICTIMIZED  
BY THE COWBIRD

BY HERBERT FRIEDMANN

[Continued from page 36 of the March number]

*Dendroica palmarum palmarum* (Gmelin). WESTERN PALM WARBLER. The Western Palm Warbler has not been recorded as a molothrine host before. Mr. T. E. Randall found two parasitized sets in Alberta.

*Dendroica palmarum hypochrysea* Ridgway. YELLOW PALM WARBLER. A set of two eggs of the warbler and one of the cowbird, collected by C. H. Merrill at Pittsfield, Maine, May 27, 1891, and now in the U. S. National Museum, is the fourth record known to me.

*Seiurus motacilla* (Vieillot). LOUISIANA WATER-THRUSH. Previously known as a cowbird host in the eastern seaboard states, it is now also recorded in that capacity as far west as Michigan, where a nest was found in Monroe County, May 26, 1882, containing five eggs of the owner and two of the cowbird. The eggs are now in the C. E. Doe collection in the Florida State Museum.

*Seiurus noveboracensis noveboracensis* (Gmelin). WATER-THRUSH. To the few instances previously listed may be added the following record: Starr (Oologist, vol. 48, No. 11, Nov., 1931, p. 154) found a nest of this bird with three eggs of the owner and one of the cowbird, near Woodville, Ontario.

*Oporornis tolmiei* (Townsend). MACGILLIVRAY'S WARBLER. A second record has been brought to my attention. Mr. S. J. Darcus found a nest containing one egg of the warbler and two of the Nevada Cowbird at Penticton, British Columbia, July 3, 1928. A third record is that of a young cowbird being fed by one of these warblers in the Yosemite Valley, California, reported by A. B. Stephens (Gull, vol. 14, No. 9, Sept., 1932, p. 2). The cowbird in question is probably *M. a. artemisiae*.

*Geothlypis trichas brachidactyla* (Swainson). NORTHERN YELLOW-THROAT. The New England and New York records, hitherto considered as typical *trichas* must now be looked upon as *brachidactyla* as this form is now granted recognition. Mrs. Nice (Birds of Oklahoma, revised edition, 1931, p. 162) records three victimized nests from Copan, Oklahoma. Mr. S. J. Darcus found a parasitized nest near Fredericton, New Brunswick.

*Geothlypis trichas occidentalis* Brewster. WESTERN YELLOW-THROAT. A parasitized nest found in Alberta by Mr. T. E. Randall is the second



one known to me of this bird acting as a host of the Nevada Cowbird. The previous record was from Utah. Mr. E. M. Tait found two parasitized nests at Trout Creek Point, British Columbia, making four records in all.

*Geothlypis trichus scirpicola* Grinnell. TULE YELLOW-THROAT. A third record has recently come to my notice, a set collected by Mr. N. K. Carpenter, in San Diego County, California.

*Icteria virens longicauda* Lawrence. LONG-TAILED CHAT. To the little previously recorded of this bird as a victim of the Nevada Cowbird, may be added three parasitized nests found at Trout Creek Point, British Columbia, by Mr. E. M. Tait. Mr. Guy Love writes me that he found a parasitized nest in Decatur County, Kansas, June 22, 1908. This record refers to the eastern form of the cowbird and is the first one for that race.

*Wilsonia canadensis* (Linnaeus). CANADA WARBLER. To the four records previously known to me may be added a fifth, a nest with four eggs of the warbler and one of the Eastern Cowbird, found by Mr. S. J. Darcus, near Fredericton, New Brunswick, June 10, 1910.

*Setophaga ruticilla* (Linnaeus). AMERICAN REDSTART. Previously known as a common victim of the Eastern Cowbird, it is now also known to be parasitized by the Sagebrush Cowbird (*M. a. artemisiae*) in the Dakotas, and commonly, according to Mr. T. E. Randall, in Alberta. In British Columbia Mr. E. M. Tait found a parasitized nest at Trout Creek Point.

*Sturnella neglecta* Audubon. WESTERN MEADOWLARK. Previously known as a molothrine victim in North Dakota and Montana, it is now known in this capacity in Idaho as well. In the files of the Biological Survey is a record of a nest with four eggs of the meadowlark and one of the Nevada Cowbird, found in June, 1912, at Dickey and Thousand Springs Valley, Idaho, by L. E. Wyman. I am indebted to Mr. George B. Saunders for this information. It is also parasitized in Saskatchewan, according to information received from Mr. F. Bradshaw of the Provincial Museum at Regina. Mr. T. E. Randall found a parasitized nest in Alberta.

*Agelaius phoeniceus phoeniceus* (Linnaeus). RED-WINGED BLACKBIRD. In view of the scarcity of records of this bird being victimized in New England, as compared with the frequency of such cases in the Middle West, it may be recorded that a nest with three eggs of the blackbird and one of the cowbird was found at Bristol, Rhode Island,

and is now in the C. E. Doe collection in the Florida State Museum. Mr. E. J. Court found another parasitized nest in Maryland.

*Agelaius phoeniceus arctolegus* Oberholser. GIANT RED-WING. The records from Alberta, Saskatchewan, and North Dakota, included in my book (p. 212) under *A. p. fortis* should be referred to this race which is now recognized in the A. O. U. Check-List.

*Agelaius phoeniceus fortis* Ridgway. THICK-BILLED RED-WING. Previously I knew of but one instance of this form acting as a host to *M. a. ater* (*Auk*, 1931, p. 61). Since then Captain L. R. Wolfe has informed me that in Decatur County, Kansas, this bird is very frequently parasitized. "Probably ninety per cent of the red-wing nests contained one or more eggs of the cowbird and I remember frequent extended searches to find a nest without eggs of the parasite. During the years 1909-1914 I probably collected twenty or more sets of the Thick-billed Red-wing with cowbird eggs."

*Agelaius phoeniceus californicus* Nelson. BICOLORED RED-WING. One record, a nest containing two eggs of the red-wing and one of the Dwarf Cowbird, found thirteen miles southwest of Stockton, California, by W. B. Sampson.

*Icterus spurius* (Linnaeus). ORCHARD ORIOLE. A set of three eggs of the oriole and one of the cowbird, taken at Warwick, Rhode Island, June 6, 1887, and now in the C. E. Doe collection in the Florida State Museum, is the first record for Rhode Island and the second one for New England.

*Icterus cucullatus nelsoni* Ridgway. ARIZONA HOODED ORIOLE. In addition to Scott's data, given in my book (p. 214) may be recorded a nest with four eggs of the oriole and one of the Dwarf Cowbird, found in Hidalgo County, Texas, May 22, 1878, and now in the C. E. Doe collection in the Florida State Museum.

*Icterus galbula* (Linnaeus). BALTIMORE ORIOLE. Mr. T. E. Randall found a nest, containing two cowbird eggs in addition to those of the oriole, in Alberta. This is the first record for this species as a host of the Nevada Cowbird.

*Icterus bullocki* (Swainson). BULLOCK'S ORIOLE. Mr. Griffing Bancroft has a set of five eggs plus one of the Dwarf Cowbird, taken in Imperial County, California, May 18, 1921. This is the first California record, the previous cases being from Arizona and Oklahoma.

*Euphagus carolinus* (Müller). RUSTY BLACKBIRD. Mr. T. E. Randall found two nests of this bird in Alberta, each with eggs of the

Nevada Cowbird. Mr. A. D. Henderson writes me that he found this species victimized in Alberta. These are the first records for this bird as a molothrine victim.

*Euphagus cyanocephalus* (Wagler). BREWER'S BLACKBIRD. Previously known as a common victim in Montana, Colorado, and Idaho, it is now recorded as one of the chief host species in Alberta. As many as three cowbird's eggs have been found in one nest.

*Piranga ludoviciana* (Wilson). WESTERN TANAGER. Not previously known as a molothrine host. Mr. E. M. Tait found two parasitized nests at Trout Creek Point, British Columbia. One contained young of both the victim and the parasite (Nevada Cowbird); the other contained eggs of the two species. Mr. A. D. Henderson found this tanager to be victimized in Alberta.

*Piranga rubra rubra* (Linnaeus). SUMMER TANAGER. To the few previous records (actually only five) may be added three more from Oklahoma, recorded by Mrs. Nice (Birds of Oklahoma, revised edition, 1931, p. 173). Mr. E. J. Court tells me that he has found cowbirds' eggs in nests of this tanager near Washington, D. C.

*Pyrrhuloxia sinuata sinuata* (Bonaparte). ARIZONA PYRRHULOXIA. Two records: a parasitized nest found near Tucson, Arizona, by Mr. N. K. Carpenter, and forwarded to me by Mr. C. G. Abbott; and one from Guaymas, Sonora, Mexico, June 25, 1928, G. Bancroft.

*Hedymeles melanocephalus papago* Oberholser. ROCKY MOUNTAIN GROSBEAK. Mr. Guy Love found two parasitized nests of this bird in Decatur County, Kansas, one on May 25, 1912, and one June 11, 1909. These are the first records I have of this grosbeak as a victim of the eastern form of the cowbird.

*Guiraca caerulea caerulea* (Linnaeus). EASTERN BLUE GROSBEAK. To the little that was definitely known of this bird as a molothrine victim, may be added a record of a nest with three eggs of the grosbeak and one of the cowbird, in the Wichita Mountains, Oklahoma, June 6, 1926, and a record of a young cowbird and a young grosbeak reared together at Norman, Oklahoma. Both are recorded by Mrs. Nice (Birds of Oklahoma, revised edition, 1931, pp. 174-175). Mr. E. J. Court once found this bird to be parasitized in southern Maryland.

*Guiraca caerulea interfusa* Dwight and Griseom. WESTERN BLUE GROSBEAK. The record mentioned by Simmons from Austin, Texas, and referred by me (The Cowbirds, p. 230) to *G. c. caerulea*, really relates to *G. c. interfusa*. Mr. Guy Love informs me that he has in

his collection five parasitized sets of this bird, all taken in Woods County, Oklahoma.

*Guiraca caerulea salicaria* Grinnell. CALIFORNIA BLUE GROSBEEK. Hanna's southern California record, listed by me (The Cowbirds, p. 230) as *G. c. lazula* should be referred to this race. One additional record, a parasitized nest found by Mr. N. K. Carpenter, near Fresno, California.

*Passerina amoena* (Say). LAZULI BUNTING. Previously known to be victimized on the basis of a few records from California and Colorado; it is also parasitized in Idaho. Bendire listed the Lazuli Bunting as a molothrine victim but did not publish his data. The set which he collected is now in the U. S. National Museum and was taken by him in Idaho, June 21, 1871.

*Passerina versicolor versicolor* (Bonaparte). VARIED BUNTING. In the collection of Mr. J. C. Braly of Portland, Oregon, there is a set of eggs of this bird with an egg of the Dwarf Cowbird. This is the second record of which I have learned. I had previously merely stated (*Auk*, 1931, p. 63) that there was one record of this bird as a cowbird host. Since then, Mr. J. Hooper Bowles has kindly sent me the data for this record, a nest with three eggs of the bunting and two of the Dwarf Cowbird, taken in Cameron County, Texas, June 4, 1927, by R. D. Camp.

*Passerina ciris ciris* (Linnaeus). PAINTED BUNTING. This bird was previously known to be parasitized in Mississippi and Texas. Mrs. Nice (*Birds of Oklahoma*, revised edition, 1931, p. 176) records it in this connection in Oklahoma.

*Passerina ciris pallidior* Mearns. TEXAS PAINTED BUNTING. This race, although not officially recognized in the A. O. U. Check-List, is perfectly valid. The San Antonio and Austin, Texas, records listed in my book (p. 231) as *P. ciris* belong to this race.

*Carpodacus purpureus purpureus* (Gmelin). EASTERN PURPLE FINCH. The purple finch has been known as a victim of the Eastern Cowbird, but until the present records, was not recorded as a host of the Nevada Cowbird. Mr. T. E. Randall found two parasitized nests in Alberta. Two parasitized nests found in Rhode Island are the first ones for that state and are of interest in view of the paucity of records of the purple finch as a molothrine host. Both sets are now in the C. E. Doe collection in the Florida State Museum. Both contain three eggs of the finch and one of the cowbird—the localities are Warwick (June 13, 1882) and Cranston (May 30, 1902).

*Carpodacus mexicanus frontalis* (Say). HOUSE FINCH. Robertson (*Condor*, 33, 1931, p. 138 and p. 205) reports a Dwarf Cowbird laying in a nest of a House Finch at Buena Park, California. This is the first record for this bird as a victim of the Dwarf Cowbird. There is an earlier record of its being victimized by *M. a. ater* in New Mexico. (*The Cowbirds*, p. 216).

*Spinus tristis pallidus* Mearns. PALE GOLDFINCH. Mr. F. Bradshaw, director of the Provincial Museum, Regina, Saskatchewan, informs me that he has found this bird to be victimized by the Nevada Cowbird (*M. a. artemisiae*) in Saskatchewan. Mr. E. M. Tait found a parasitized nest at Trout Creek Point, British Columbia.

*Spinus psaltria hesperophilus* (Oberholser). GREEN-BACKED GOLDFINCH. To the two records previously known to me may be added the following, kindly supplied by Mr. A. M. Ingersoll: a set of three eggs of the host with one of the Dwarf Cowbird, found near San Diego, California, April 27, 1920. Mr. Ingersoll informs me that he has found other parasitized nests of this goldfinch as well. Mr. Griffing Bancroft has a parasitized set from San Diego County, California, also.

*Oberholseria chlorura* (Audubon). GREEN-TAILED TOWHEE. To the few previous records may be added one more, a nest with an egg of the Nevada Cowbird, found in Mono County, California, by Mr. N. K. Carpenter. In my book (p. 228) I referred what records I had to the Nevada Cowbird, but they all really involve the eastern race, *M. a. ater.*, and are the only records for the Eastern Cowbird.

*Pipilo maculatus montanus* Swarth. SPURRED TOWHEE. A set of two eggs of this bird and one of the Nevada Cowbird, collected at Beaver Creek, Colorado, June 6, 1897, now in the collection of Mr. G. Bancroft, is the second record known to me.

*Pipilo maculatus arcticus* (Swainson). ARCTIC TOWHEE. A fourth record has come to my attention. Prof. William Rowan writes me that he has an Alberta-taken set of this bird with three cowbird eggs.

*Pipilo maculatus curtatus* Grinnell. NEVADA TOWHEE. Mr. E. M. Tait found a nest of this towhee at Trout Creek Point, British Columbia, containing two eggs of the owner and one of the Nevada Cowbird.

*Pipilo fuscus mesoleucus* Baird. CANON TOWHEE. Mr. Griffing Bancroft informs me that he has in his collection two parasitized sets of eggs of this towhee, both from Santa Fé County, New Mexico, June

4 and 12. and a third similar set without data. This bird was not previously known as a molothrine victim.

*Passerculus sandwichensis savanna* (Wilson). SAVANNAH SPARROW. Snyder and Logier (Trans. Roy. Canad. Inst., XVII, 1930, pp. 194-195) saw an adult Savannah Sparrow feeding a young cowbird in York County, Ontario. This is the fifth record for this species.

*Passerculus sandwichensis nevadensis* Grinnell. NEVADA SAVANNAH SPARROW. In addition to the previously recorded instances of this bird acting as a molothrine host in Dakota, Montana, Colorado, and Saskatchewan, I may note a parasitized nest found near Utah Lake, four miles west of Provo, Utah, May 17, 1928, by Clarence Cottam, who kindly informed me of it. The cases recorded in my book were listed as *P. s. alaudinus*, but are all *P. s. nevadensis* in the light of present knowledge of the ranges of the forms of the savannah sparrow. Mr. J. C. Braly informs me that he has two parasitized sets in his collection.

*Passerculus sandwichensis alaudinus* Bonaparte. WESTERN SAVANNAH SPARROW. I had previously listed only one record from Alberta, but Mr. T. E. Randall found two other parasitized nests there.

*Ammodramus savannarum australis*. EASTERN GRASSHOPPER SPARROW. I had previously recorded this bird as a victim of the cowbird on the sole basis of Watkins (1st Rept. Mich. Acad. Sci., 1900, p. 71) who lists it as a host of the parasite in Michigan, but I had no definite nest records. Recently I have had an opportunity to run through Willard's "The Oologist" (published in Utica, New York, a very different journal from Lattin's serial of the same name published at Albion) and find that an anonymous author (the editor?) records (Vol. 3, No. 6, Aug., 1877, p. 44) finding a nest of the grasshopper sparrow with three eggs of the owner and one of the cowbird in northeastern United States (locality not definitely stated).

*Ammodramus savannarum bimaculatus* Swainson. WESTERN GRASSHOPPER SPARROW. Captain L. R. Wolfe writes me that he has a set of this bird with a cowbird's egg, taken in Decatur County, Kansas. This is the second record for *M. a. ater* parasitizing the Western Grasshopper Sparrow. Mr. B. W. Cartwright tells me that he found this bird parasitized by the cowbird near Winnipeg.

*Ammodramus bairdi* (Audubon). BAIRD'S SPARROW. In addition to the two records given in my book (p. 219) four others have since come to my notice. Mr. B. W. Cartwright, who is monographing this sparrow, writes me that Dr. T. S. Roberts found a nest with four eggs

of the sparrow and two of the cowbird in northern Sargent County, North Dakota, June 18, 1883. Mr. B. W. Cartwright informs me that his co-worker Mr. R. D. Harris, found eight nests of this sparrow in Manitoba, in 1931, and one of them contained a cowbird's egg in addition to three of the sparrow, July 8. On July 14 Mr. Harris, watching another nest from a blind saw a female cowbird approach the nest at 4:50 P. M. It inspected the blind but only came within two feet of the nest. Just then the female Baird's Sparrow appeared, flew to the nest and fed the young. The Baird's Sparrow now flew to the top of the blind. From its elevated position it saw the cowbird and flew at it. The cowbird flew away pursued by the Baird's Sparrow, which soon after returned to the nest and began to brood. Dr. L. B. Bishop collected two parasitized nests near Devil's Lake, North Dakota.

*Passerherbulus caudacutus* (Latham). LECONTE'S SPARROW. Previously known to be parasitized in Minnesota and Saskatchewan, this sparrow may now be recorded in this capacity in Alberta as well, where Mr. A. D. Henderson has found it acting as a host. The Minnesota records given in my book (pp. 219-220) refer to the Eastern Cowbird, the Saskatchewan and Alberta records to the Nevada Cowbird.

*Passerherbulus henslowi susurrans* Brewster. EASTERN HENSLOW'S SPARROW. To the few previously recorded instances of this bird as a molothrine victim may be added the following data: Mr. E. J. Court informs me that out of seven nests of this sparrow found in southern Maryland in 1932, two contained eggs of the cowbird, and that out of about fifteen nests found in previous years several were victimized. He considers the Henslow's sparrow a locally common host.

*Poocetes gramineus confinis* Baird. WESTERN VESPER SPARROW. Previously recorded as a host in Montana, Idaho, and Texas, and now also known in this capacity in Wyoming, Saskatchewan, and Alberta. There is a set of one egg of this sparrow and three of the Nevada Cowbird, taken by W. L. Carpenter at Cheyenne, Wyoming, June 29, now in the U. S. National Museum. Mr. T. E. Randall found five parasitized nests in Alberta, and Mr. S. J. Darcus found one at Cypress Hills, Saskatchewan.

*Chondestes grammacus grammacus* (Say). EASTERN LARK SPARROW. To the little previously recorded of this bird as a victim of the Eastern Cowbird may be added the statement that Mr. Guy Love found nine parasitized nests in Decatur County, Kansas.

*Chondestes grammacus strigatus* Swainson. WESTERN LARK SPARROW. Mrs. Nice (Birds of Oklahoma, revised edition, 1931, p. 183)

records five parasitized nests (out of 23) in Oklahoma. The cowbird in question is the eastern race, *M. ater ater*. Previously the Western Lark Sparrow was known as a host of the Nevada Cowbird and of the Dwarf Cowbird, but not of the eastern form.

*Aimophila carpalis* (Coues). RUFIOUS-WINGED SPARROW. So little has been recorded definitely about this sparrow as a molothrine host that it may be well to put in print the fact that Bendire's statement of its being frequently victimized is based on two parasitized sets collected by him, now in the U. S. National Museum. A third, hitherto unpublished, set, also in the same museum, is one collected by H. P. Attwater at San Antonio, Texas, June 5, 1899.

*Aimophila cassini* (Woodhouse). CASSIN'S SPARROW. In addition to the three previously known records, we may add two parasitized sets of eggs of this bird, taken at San Antonio, Texas, by H. P. Attwater, and now in the U. S. National Museum. Mr. E. J. Court also found this sparrow to be victimized by the Dwarf Cowbird near San Antonio.

*Junco hyemalis hyemalis* (Linnaeus). SLATE-COLORED JUNCO. Previously known as a victim of the Eastern Cowbird, it is now recorded in like capacity for the Nevada Cowbird. Mr. F. Bradshaw of the Provincial Museum, Regina, Saskatchewan, informs me that there is in his museum a set of two eggs of the junco and one of the cowbird, taken at Big River, Saskatchewan, June 5, 1922. Mr. T. E. Randall found two victimized nests in Alberta, and Mr. A. D. Henderson also found it to be parasitized in Alberta.

*Spizella passerina arizonae* Coues. WESTERN CHIPPING SPARROW. To the relatively few records (Washington) previously known, may be added five more, all from Alberta, collected by Mr. T. E. Randall, and seven from British Columbia, found by E. M. Tait and S. J. Darcus.

*Spizella pallida* (Swainson). CLAY-COLORED SPARROW. Prof. William Rowan writes me that he has a series of nearly twenty sets of this bird (taken in Alberta) with eggs of the cowbird. He and Mr. T. E. Randall consider this sparrow the commonest victim in Alberta.

*Spizella breweri breweri* Cassin. BREWER'S SPARROW. Mr. Grifing Bancroft writes me that he has a parasitized set of this species from Santa Fé County, New Mexico, June 7, 1919. Owing to the paucity of data on this bird I include it in this paper.

*Zonotrichia albicollis* (Gmelin). WHITE-THROATED SPARROW. A fourth record for the Eastern Cowbird has come to my attention. Snyder and Logier (Trans. Roy. Canad. Inst., XVII, 1930, pp. 194-



195) found a nest with three eggs of the sparrow and one of the cowbird in York County, Ontario, on June 3. Previously this sparrow was known as a victim of the Eastern Cowbird only, but it may now be recorded in that regard for the Nevada Cowbird as well. Mr. T. E. Randall found no fewer than six parasitized nests in Alberta; as many as four cowbird eggs were in one nest and three in another. Mr. A. D. Henderson also found it to be parasitized in Alberta.

*Melospiza lincolni lincolni* (Audubon). LINCOLN'S SPARROW. To the two previous records may be added four more, all from Alberta, collected by Mr. T. E. Randall. Mr. A. D. Henderson writes me that he too has found this sparrow to be parasitized in Alberta. Since the above was written Mr. G. Bancroft informs me that he has a victimized nest from Monroe County, New York, June 1, 1903. This is the first record for the Eastern Cowbird.

*Melospiza georgiana* (Latham). SWAMP SPARROW. In view of the paucity of records for this bird it may be of interest to note two victimized nests found in Alberta by Mr. T. E. Randall. One of them contained three cowbirds' eggs.

*Melospiza melodia atlantica* Todd. ATLANTIC SONG SPARROW. The records from Long Island, New York, south along the coast to Virginia, previously considered *M. m. melodia* should be placed under *M. m. atlantica*, now that the latter race has been officially recognized.

*Melospiza melodia beata* Bangs. MISSISSIPPI SONG SPARROW. The records from Illinois, Minnesota, Michigan, and Ohio, previously referred to *M. m. melodia* must now be considered as of this race.

*Melospiza melodia juddi* Bishop. DAKOTA SONG SPARROW. The record from Alberta given in my book (p. 226) for *Melospiza m. melodia* refers to *juddi*. The nominate race of the Song Sparrow should be deleted from the list of victims of the Nevada Cowbird. This race is a common victim in Alberta (many records, T. E. Randall, A. D. Henderson, etc.).

*Melospiza melodia fisherella* Oberholser. MODOC SONG SPARROW. One record, a set of two eggs of the sparrow and one of the Nevada Cowbird, found at Malheur Lake, Oregon, June 7, 1929, by W. B. Sampson.

*Melospiza melodia morphna* Oberholser. RUSTY SONG SPARROW. Mr. E. M. Tait found a nest of this bird with four eggs of the sparrow and one of the Nevada Cowbird, at Trout Creek Point, British Columbia.

*Melospiza melodia santaecrucis* Grinnell. SANTA CRUZ SONG SPARROW. One record. Mr. H. W. Carriger writes me that he has a set of two eggs of this bird plus one of the Dwarf Cowbird, collected near Irvington, Alameda County, California, June 30, 1929. Incubation was slight in all three eggs.

*Melospiza melodia cooperi* Ridgway. SAN DIEGO SONG SPARROW. In my book (p. 226) I reported four records. To these may be added the following data: Robertson (*Condor*, vol. 33, 1931, p. 205) found Dwarf Cowbirds' eggs in nests of this sparrow in West Orange County, California. Mr. M. C. Badger of Santa Paula, California, writes me that the San Diego Song Sparrow is a common victim of the Dwarf Cowbird. Mr. A. M. Ingersoll informs me that he has a set of two eggs of this sparrow with two of the Dwarf Cowbird, taken in San Diego County, early in June. Mr. E. E. Sechrist and Mr. N. K. Carpenter have found parasitized nests in San Diego County also.

*Melospiza melodia saltonis* Grinnell. DESERT SONG SPARROW. Three additional records: a nest of the Desert Song Sparrow found at Tucson, Arizona, June 3, 1884, containing four eggs of the sparrow and one of the Dwarf Cowbird; now in the C. E. Doe collection in the Florida State Museum; two nests with cowbirds' eggs found by Mr. Clyde L. Field, one at Tucson, Arizona, and one at Calixico, California. Previously I knew of only Bendire's record.

*Rhynchophanes mccowni* (Lawrence). McCOWN'S LONGSPUR. To the very little hitherto recorded of this bird as a molothrine host may be added the following case: Mr. S. J. Darcus found a nest of this longspur with four eggs of the owner and one of the Nevada Cowbird at Cypress Hills, Saskatchewan, June 7, 1920. Dr. L. B. Bishop writes me that out of three nests found near Cando, North Dakota, two contained eggs of Nevada Cowbird in addition to those of the longspurs.

*Calcarius ornatus* (Townsend). CHESTNUT-COLLARED LONGSPUR. In view of the paucity of records, the following is worth including here: Mr. S. J. Darcus found a nest with four eggs of the longspur and one of the Nevada Cowbird at Cypress Hills, Saskatchewan, June 1, 1920. Three parasitized sets from North Dakota are in the United States National Museum.

UNITED STATES NATIONAL MUSEUM,  
WASHINGTON, D. C.

# 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; L. W. Wing, Ann Arbor, Michigan.

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 \$1.75 a year, and 60 cents a number. Subscriptions and orders for single copies should be addressed to the Secretary, Lawrence E. Hicks, Dept. of Botany, Ohio State University, Columbus, Ohio.

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## EDITORIAL

THERE ARE a few things that might be said concerning our funds which could hardly be made a part of the Treasurer's report. There were originally, so we understand, nineteen banks doing business in the county in which is located the bank in which our funds are now deposited; now there are five. Of these five we are told that the City State Bank, of which our Treasurer is President, is the only one which has come through without liquidating, reorganizing, or selling preferred stock to the Government, or even making an assessment on the stockholders. The W. O. C. funds are now covered by the Federal Deposit Insurance Temporary Fund. Not a cent of W. O. C. funds has been lost, and all bills have been paid as due. We feel as though we should congratulate Mr. Rosene as well as ourselves.

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MR. FRED M. PIERCE has called our attention to an error in the list of officers on page 2 of the March number. It was an error to include Dr. Jesse M. Shaver in the roll of treasurers. He was Secretary from 1929 to 1931, and by typographical error his name was dropped to the list of treasurers, and so appears in the March numbers of 1932, 1933, and 1934.

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CONGRESSMAN CLARENCE MACGREGOR, of Buffalo, N. Y., is quoted as follows in a recent address before the New York Waterways Association:

"Civilization must not be allowed to destroy itself. We must not be blind to the fact that the destruction of natural resources is suicide. Our civilization is too ruthless. We dry up our streams by failing to protect our forests. We kill the bird life by taking away their dwelling-places and leave the fields open for the pests that destroy our agriculture. We kill off our fish by destroying their home. We create cesspools from which to extract our drinking water. We fill our graveyards with the victims of our barbarity. We are more than foolish. We are absolutely stupid."

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ONE of the drudgeries of editorial work is the preparation of an index. It is not uninteresting work, but it comes in a hurry, and must be finished up quickly, often at the inconvenience of the one who does it. The Editor wishes to express his gratitude to Mr. R. D. Hissong for his labor in the preparation of the indexes for the five volumes of the WILSON BULLETIN from 1928 to 1932, inclusive.

## GENERAL NOTES

Conducted by M. H. Swenk

**An Unusual Nest of the House Wren.**—On June 18, 1933, while taking a drive, I stopped at a bridge over a small stream about five miles north of Knox City, Missouri. My attention was attracted to a House Wren (*Troglodytes aëdon parkmani*) carrying food in its beak. It disappeared under the bridge, so I investigated and found an unusual nest for this bird. It had taken possession of a Phoebe's nest and was rearing its five youngsters there without the trouble of building a nest of its own. The wren had not so much as added any material to the nest, which is unusual, as it ordinarily builds a bulky nest. I banded the young, which lacked three or four days of being old enough to fly, and considered myself lucky to have discovered this unusual nest.—H. L. ANGUS, *Quincy, Ill.*

**The Western Solitary Sandpiper in Arkansas.**—An eighteen-year-old record for the Western Solitary Sandpiper (*Tringa solitaria cinnamomea*) from Arkansas, has just been revealed. In a letter written under the date of January 31, 1934, Dr. Louis B. Bishop, of Pasadena, California, informs me that a specimen of solitary sandpiper, purchased with others from my Arkansas collection, collected at Fayetteville, Arkansas, April 3, 1916, by Albert Lano, is typical of that race. The bird is a male, and is number 49452 in Dr. Bishop's collection. It came into my possession with other of Dr. Lano's birds several years ago, after the death of the Fayetteville collector. He had referred the bird to the eastern race, and in the absence of material for comparison his identification had naturally been taken for granted.

As Dr. Bishop suggests, this bird appears to be a record for Arkansas. He has very kindly supplied me with the above information, and the note herewith has been prepared with his consent.—J. D. BLACK, *Museum of Birds and Mammals, University of Kansas, Lawrence, Kan.*

**The Golden Eagle in Northern Louisiana.**—Mr. Ernest G. Holt adds the Golden Eagle (*Aquila chrysaëtos canadensis*) to the Louisiana list (*Auk*, 1933, p. 355), which species was omitted in the "Birds of Louisiana" (Bull. 20, Louisiana Department of Conservation, 1931). But Mr. E. A. McIlhenny is of the opinion (*Auk*, 1933, p. 431) that Mr. Holt has mistaken the immature Bald Eagle for the Golden Eagle.

The two above notes having stimulated my interest, I made an investigation of a report that came out in a local newspaper of a Bald Eagle being caught near Pioneer, Louisiana. Upon making an investigation of this specimen, I found it to have all of the identification marks of an immature Golden Eagle. The most conclusive of these was the base of the tail being white and the tarsus being covered to the toes with ochraceous-buff feathers. The bird was caught January 12, 1934, in a No. 2 Victor steel trap, which was baited with a portion of a six-weeks-old pig that had been caught the day before. This eagle had caught six other pigs from this same brood before it was captured. On February 24, 1934, it broke the cord by which it was tied and attempted to fly away, but was killed. Its skin was preserved for future reference.—JOHN S. CAMPBELL, *Bienville, La.*

**A Red-tailed Hawk Captures a Fox Squirrel.**—I was just emerging from a small piece of woodland, a bit before noon on November 22, 1932, when I saw a Red-tailed Hawk (*Buteo borealis*), with an animal of some species clutched in its talons, dash out of a tree ahead of me and speed for a larger woodland beyond the highway. I wondered if it had torn a mink from one of my traps close by as the animal it clutched appeared no larger than that. I was pleased to see the bird settle in an elm about two hundred yards away, for as I carried a rifle I thought I could slip a bit nearer and shoot close enough to scare it into letting fall whatever it carried. I have never shot these hawks and did not wish to shoot this one, but I did want to know what animal it had taken. I started to carry out my plan, attempting to keep a large beech between us, but before I had gone thirty feet the bird quitted the tree it was in and sailed away. However, fortunately for my purpose, it dropped its burden. I hastened to the spot, but instead of a mink I found a full grown Fox Squirrel (*Sciurus niger rufiventer*). The hawk no doubt had found it a comparatively easy matter to capture the squirrel, for the animal's right fore leg had been torn out at the shoulder, probably by a load of shot some months previously. It was entirely healed over, but the loss of the limb had seriously hampered its agility, else the hawk had found it no little task to have taken it.—GRANT HENDERSON, *Greensburg, Ind.*

**The Pileated Woodpecker in Decatur County, Indiana.**—On the afternoon of July 26, 1933, I set out prepared to band a nest of fledgling Indigo Buntings which I had found a few days previously in the edge of a woods popularly known as the "Paradise Woods", about one mile north of my home. I had forgotten my field glasses, but after banding the buntings I decided, nevertheless, to stroll farther into the woods, hoping to see some unusual bird or perhaps find some young birds that I might band. I had gone less than two hundred yards when I paused beneath a dead-topped beech tree to listen to the unusual amount of noise that a woodpecker, a Northern Flicker I thought, was making among the dead branches above. Showers of bark and chips were raining all about me. "A most unusual Flicker", I thought. "I never knew one to work so industriously nor one that made so much noise." I was preparing to move on, probably had made a step or two, when my attention was arrested by the sudden "swish", "swish" of wings. I got a glimpse of the bird, almost as large as a Crow, I decided, as it left the tree above me and again as it neared another dead-topped beech about fifty yards north. It appeared alarmed, although I had made almost no noise after my first pause. I knew immediately that it was one of the large woodpeckers, though I had never known the Pileated Woodpecker (*Phloeotomus pileatus*) to be seen, in late years, nearer than Brown County, and I had never heard of an Ivory-billed Woodpecker being seen in these parts. The bird alighted on the tip of a dead limb on the next beech and I cautiously made my way towards it. I was fortunate enough to approach very close, an attainment I had feared could not be mine judging from the apparent wariness of the bird. However, I was not more than fifty feet away when I paused to study it. The scarlet crest could plainly be seen, also the long, sharp bill. The bird, I am almost certain, was a male, since I could discern no trace of black in the forehead though, on the other hand, I could not be sure of the scarlet moustache said to be found only in the males. The distance was yet too great to be absolutely certain on these points, but there is no doubt whatever as to the species.—GRANT HENDERSON, *Greensburg, Ind.*

**Michigan Records Questioned.**—The recent paper by Mr. Ralph Beebe on the "Influence of the Great Lakes on the Migration of Birds" (WILSON BULLETIN, XLV, No. 3, September, 1933, pp. 118-121) contains a number of bird records which we feel should not be allowed to pass unquestioned into the literature of the ornithology of Michigan. The following cases require comment:

Swainson's Hawk (*Buteo swainsoni*). Beebe—one seen near Newberry, September 10, 1910. There are but four entirely acceptable records of this hawk in Michigan. In view of its extremely variable plumage and its similarity to other species of *Buteo*, sight records of this species can be accepted only when they are made under very exceptionally favorable circumstances by observers thoroughly familiar with the species in the west.

Purple Sandpiper (*Arquatella maritima*). Beebe—four records at Newberry. In reply to a letter of inquiry, Mr. Beebe has kindly sent us further information on these records. Unfortunately the "specimen" listed by Mr. Beebe proves to be not that at all, but simply a dead bird shown to him by a hunter twenty-three years ago. The bird was not preserved. Since there are no specimens or even other sight records for the Purple Sandpiper in Michigan, and since it is highly improbable that this marine sandpiper would occur several times at a locality such as Newberry so far from even the Great Lakes, we feel that these reports cannot be accepted as establishing the presence of the Purple Sandpiper in the state.

Pomarine Jaeger (*Stercorarius pomarinus*). Beebe—three seen in flight near Newberry. There is but one record of this jaeger in Michigan, a specimen collected in 1879 near Detroit. Sight records of jaegers by observers not thoroughly familiar with the many confusing plumages of all three species are certainly not conclusive and should not be used.

Arctic Tern (*Sterna paradisaea*). Beebe—two records (400 seen at East Tawas, October 6 and 7, 1930, and a smaller flock seen on the Detroit River, December 14, 1920). We have no satisfactory record of this marine species in Michigan (see B. H. Swales, WILSON BULLETIN, XXV, No. 1, March, 1913, pp. 31-32), and its occurrence in the interior of the United States is to be regarded as purely accidental. Mr. Beebe writes that he identified these birds by their "higher pitched notes" and by the fact that they were in a large flock. In the case of a bird that is extremely rare in the interior and that is so difficult to separate in life from the Common Tern, we consider that the record should not be accepted.

Western Yellow-throat (*Geothlypis trichas occidentalis*). Beebe—three seen at Newberry in 1909. These, Mr. Beebe writes, were "distinguished from *brachidactyla* largely on account of larger size". However, Ridgway (*Birds of North and Middle America*, part 2, p. 668) separates these subspecies mainly on color characters, reporting that the longest winged *occidentalis* measures but one millimeter longer than the maximum of *brachidactyla* and the longest tail measures but half a millimeter longer than in the eastern form. The normal range of *occidentalis* extends east only to the western Dakotas.

Chestnut-collared Longspur (*Calcarius ornatus*). Beebe—"Many thousands" seen. Stray individuals of this Great Plains species may be detected in Michigan in the future (there is no state record), but this sight record of thousands points very strongly to a confusion with the rather similar Lapland Longspur.—NORMAN A. WOOD, *Museum of Zoology, Ann Arbor, Mich.*

**The 1933 Fall Migration at Cleveland's Public Square.**—I found fewer birds this season at the Square than the past few years, being successful in identifying only fifteen species, none of them uncommon or unexpected here. In the period from September 1, with the arrival of a Redstart, until December 29, when a flock of Herring Gulls was seen, I made ninety visits and found native, wild birds on all but twenty-four days. The season was somewhat colder than normal, particularly in mid-November, when there was an unusual amount of snow. My records are as follows.

Species	First Record	Last Record	No. of Days Seen	Largest No. in one Day
Herring Gull	Dec. 29	.....	1	50+
Northern Flicker	Oct. 6	.....	1	1
Yellow-bellied Sapsucker	Oct. 6	.....	1	2
Eastern Robin	Oct. 26	.....	1	1
Eastern Hermit Thrush	Sept. 29	.....	1	1
Golden-crowned Kinglet	Oct. 25	.....	1	1
Black-poll Warbler	Sept. 29	.....	1	1
Northern Yellow-throat	Sept. 19	Oct. 7	5	2
Redstart	Sept. 1	.....	1	1
Tree Sparrow	Oct. 21	Oct. 23	2	3
White-crowned Sparrow	Oct. 2	Nov. 7	22	5
White-throated Sparrow	Sept. 11	Dec. 15	56	16
Lincoln's Sparrow	Sept. 26	Dec. 8	29	4
Swamp Sparrow	Sept. 27	Oct. 28	4	2
Song Sparrow	Sept. 25	Dec. 8	28	4

The maze of supports of a large sign-board erected in the Square for the NRA afforded an excellent refuge for several species, and at the same time made observations rather difficult. The Northern Flicker on October 6 flew around the Square two or three times, looking for a friendly haven, and then flew off without alighting. An interesting partial albino White-throated Sparrow stayed several days. The head, nape, throat and upper breast were white except for two short bits of the usual dark stripes appearing on the forehead and the nape. An interesting bit of bird psychology showed one day. I was watching a small group of English Sparrows, when every one of them suddenly cocked an eye upward. There was an Eastern Robin flying over about fifty feet above, and apparently its difference in aspect from the usual pigeons, Starlings, and sparrows brought immediate attention.—WILLIAM H. WATTERSON, *Cleveland, Ohio.*

**Two Unusual Sight Records at Toledo, Ohio.**—On February 25, 1934, a Glaucous Gull (*Larus hyperboreus*) was reported by Mr. and Mrs. Fred Stearns of Toledo, Ohio. The bird was seen in a patch of open water in the Maumee River (otherwise entirely covered with ice at that time) back of the Acme Power House, which stands on the banks of the river within the city limits of Toledo. On February 27, 1934, what was presumably the same bird was seen by Louis W. Campbell. This gull was feeding and resting in the small patch of open water back of the power house along with a large flock of Herring Gulls and several varieties of ducks. Conditions were such that it was possible to approach within 200 feet of the Glaucous Gull. Its size was arrived at by direct comparison with Herring Gulls and American Mergansers. As a further check, the size of the bill was also noted to eliminate both the Iceland Gull and an albino Herring Gull. The bird resembled the second year Glaucous Gull, as depicted on color plate V by Fuertes in the "Birds of New York", especially in the color of the bill.

On February 16, 1934, an adult Great Black-backed Gull (*Larus marinus*) was seen back of the power house mentioned above, by John Stophlet of Toledo, Ohio. On February 18, 1934, an immature Great Black-backed Gull was seen by Louis and Bernard Campbell on the ice at the rapids of the Maumee River, about one mile south of the village of Maumee, Ohio. Identification was made by direct comparison with both adult and immature Herring Gulls. Presence of black primaries eliminated the Glaucous Gull. The bird was pursued about a mile in an unsuccessful attempt to collect it. Throughout the chase, it was at all times possible to separate it from the flock with which it was flying.—LOUIS W. and BERNARD R. CAMPBELL, *Toledo, Ohio*.

**On the Specimens of *Fregata magnificens* in the University of Iowa Museum.**—In a recent article, "Frigate-Birds of the West American Coast" (*Condor*, XXXV, pp. 148-150), H. S. Swarth calls attention to the lack of specimens and measurements of the Frigate-bird in sufficient numbers to demonstrate accurately whether *Fregata magnificens* Mathews might be satisfactorily divided into various geographic races. The following data may prove of interest in furthering such a study.

The University of Iowa Museum contains a series of twenty-one Texas specimens of *Fregata magnificens*, secured by D. H. Talbot and his collectors during 1885 along the southeast Gulf Coast, and six Bahama specimens, which were secured by C. C. Nutting and E. G. Decker, during 1888 and 1893, respectively.

The series of Texas birds consists of four adult males, seven adult females, and ten in immature plumage, nine of which are females. Specimens were secured at various times during the summer of 1885 as follows: Two at Rincon, May 22 and 25; one at "Steam-boat Dug-out", June 6; eight at Matagorda Bay, June 7 and 8; eight at the "Shell Banks", July 4 and 5; and Two at Corpus Pass, August 1.

There is reasonable consistency in the coloration of plumage in the various individuals of the same sex and age. All of the adult males have wing-coverts of a uniform glossy black, there being no indication of a rusty bar on the lesser wing-coverts. There is a predominately purplish sheen to the lanceolate scapulars and interscapulars, but the general effect varies considerably, depending upon the extent of the greenish reflections (which normally occupy the terminal third of the feather in these specimens), and the direction, with regard to the light, in which the specimen is held for examination. The head and throat of the adult female are black; the feathers of the breast are white, as well as those extending on the flanks. In the folded wing of the females the brownish feathers of the lesser wing-coverts form a conspicuous bar. The color of this bar varies somewhat between rusty-brown and gray, depending upon the amount of wear on the lighter margins of each feather. In the white-headed immatures this bar along the wing averages lighter than in the females.

The following Texas specimens of *Fregata magnificens* are now in the University of Iowa Museum. All measurements (in millimeters) were recently taken by the writer. The wing was measured across the chord; the tail from the insertion of the central tail feathers to the tip of the longest rectrix. Besides the measurements of exposed culmen, the distance from the angle of the jaw to the tip of the upper mandible was taken.



## FOUR ADULT MALES

Museum No.	Locality	Date	Wing	Tail	Exposed Culmen	From Angle of Jaw
6282	Matagorda Bay	June 7	632.0	424.0	112.0	129.0
6269	Matagorda Bay	June 7	604.0	366.0 <sup>1</sup>	107.0	123.0
6273	Corpus Pass	August 1	622.0	429.0	110.0	126.0
6267	Corpus Pass	August 1	612.0	403.0	105.0	120.0

## SEVEN ADULT FEMALES

6278	Shell Banks	July 4	606.0	443.0	121.0	137.0
6270	Shell Banks	July 4	635.0	412.0	127.0	139.0
6274	Shell Banks	July ...	647.0	347.0 <sup>2</sup>	124.0	141.0
6284	Matagorda Bay	June 7	646.0	389.0	125.0	136.0
6276	Matagorda Bay	June 8	642.0	418.0	118.9	134.0
6285	Matagorda Bay	June 8	653.0	369.0 <sup>3</sup>	116.0	130.0
6295	Matagorda Bay	June ...	652.0	438.0	126.5	140.0

## TEN IMMATURES (Nine Females)

6288	Rincon	May 22	626.0	381.0	108.0	118.0
6289	Rincon	May 25	636.0	403.0	110.0	116.0
6287	"Steam-boat Dug-out"	June 6	631.0	384.0	110.0	120.0
6280	Shell Banks	July 4	673.0	418.0	123.0	139.0
6272	Shell Banks	July 4	667.0	447.0	121.0	140.0
6266	Shell Banks	July 4	657.0	386.0	127.0	138.0
6265	Shell Banks	July 4	641.0	417.0	110.0	125.0
6275	Shell Banks	July 4	679.0	372.0 <sup>4</sup>	118.0	131.0
6277	Matagorda Bay	June 8	585.0 <sup>5</sup>	422.0	117.0	129.5
6271 <sup>6</sup>	Matagorda Bay	June 8	631.0	383.0 <sup>7</sup>	122.0	135.0

Data on five additional Texas specimens formerly contained in the Talbot collection are recorded in a thesis, "Variation of Birds in the State of Nature", written by Frank Russell at the University of Iowa in 1892. Measurements of wing, tail, and exposed culmen recorded by Russell in inches have here been transposed into millimeters. It is not possible to state whether all specimens were in adult plumage.

## ONE MALE

Museum No.	Locality	Date	Wing	Tail	Exposed Culmen
6268	Corpus Pass	August 2	622.3	457.2	109.2

## FOUR FEMALES

6286	Matagorda Bay	June 8	609.6	482.6	116.8
6282	Matagorda Bay	June 8	622.3	464.8	114.3
6279	Shell Banks	July 4	609.6	363.2	119.4
6281	Shell Banks	July 16	673.1	381.0	106.7

The series of six Bahama specimens consists of four adult males, an adult female, and one immature. The writer could detect no appreciable difference between the Bahama female and immature and the Texas specimens. The lan-

<sup>1</sup>Longest rectrices broken.

<sup>2</sup>Outer rectrices lacking.

<sup>3</sup>One outer rectrix broken; others lacking.

<sup>4</sup>Rectrices not fully grown out.

<sup>5</sup>Primaries badly worn.

<sup>6</sup>Sex not recorded.

<sup>7</sup>Rectrices somewhat worn.

<sup>8</sup>Outer rectrices not grown out.

<sup>9</sup>Outer rectrices lacking.

<sup>10</sup>Outer rectrices not grown out.

ceolate scapulars and interscapulars of the Bahama males lack to a considerable extent the greenish-purple sheen noted in the Texas material. The disposition of what small amount of color remained appeared to differ slightly from the Gulf Coast skins. The inner web of each feather is purplish, while the outer web is somewhat more greenish. The measurements of these specimens are as follows:

## FOUR MALES

Museum No.	Locality	Date	Wing	Tail	Exposed Culmen	From Angle of Jaw
2287	Egg Island	June 8, 1888	648.0	342.0 <sup>8</sup>	114.0	127.5
2302	Spanish Wells	June 25, 1888	628.0	322.0 <sup>9</sup>	110.0	124.0
15814	Bahamas	Summer, 1893	589.0	412.0	109.0	124.0
15816	Bahamas	Summer, 1893	616.0	312.0 <sup>10</sup>	107.0	121.0

## ONE FEMALE

15812	Bahamas	Summer, 1893	634.0	426.0	122.0	128.0
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## ONE IMMATURE

15815	Bahamas	Summer, 1893	611.0	401.0	110.0	125.0
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—PHILIP A. DUMONT, *Des Moines, Iowa.*

**Some Uncommon Birds Taken Near Toledo, Ohio.**—Holboell's Grebe (*Colymbus grisegena holboelli*). Two of these birds were found alive several miles from a lake or stream and turned over to us for preservation. Of these one was a female found February 10, 1934, by Thomas English in Oregon Township, Lucas County, Ohio; the other a male found on February 15, 1934, by Thomas Cook in Swanton Township, Lucas County. The skin of the female found on February 10 will be donated to the Ohio State Museum at Columbus, Ohio.

King Rail (*Rallus elegans elegans*). Two, a male and female, caught on February 8, 1934, in traps set for mink in Erie Marsh, Monroe County, Michigan, were turned over to us. The skins were presented to the University of Michigan, Museum of Zoology, at Ann Arbor. On February 11, 1934, another was collected in a marsh in Jerusalem Township, Lucas County, Ohio. The skin, prepared by Milton B. Trautman, was given to the Ohio State Museum at Columbus.

Parasitic Jaeger (*Stercorarius parasiticus*). On December 3, 1933, a dead immature Parasitic Jaeger was found on Little Cedar Point, Jerusalem Township, Lucas County, Ohio. The bird had been shot some time before and was badly decomposed. The wings, tail, feet, and tarsi, however, were preserved and sent to the Ohio State Museum at Columbus, for confirmation.

Franklin's Gull (*Larus pipixcan*). On December 3, 1933, a female Franklin's Gull, somewhat oil soaked but still able to fly, was collected in Washington Township, Lucas County, Ohio. This skin was presented to the Ohio State Museum at Columbus.

Prairie Marsh Wren (*Telmatodytes palustris dissaëptus*). A male Prairie Marsh Wren was taken on February 4, 1934, in a eat-tail marsh in Jerusalem Township, Lucas County, Ohio. This species was reported as wintering sparingly in this vicinity in the *Auk* XLIX, July, 1932, pp. 352-353), by Louis W. Campbell.

Brewster's Warbler (*Vermivora leucobronchialis*). A male Brewster's Warbler was collected on June 14, 1933, in Spencer Township, Lucas County, Ohio, as a matter of record. This hybrid is found regularly in Lucas County in the Oak Openings. The skin was presented to the Ohio State Museum at Columbus.

Giant Redwing (*Agelaius phoeniceus arctolegus*). On January 21, 1934, a male Giant Redwing was taken in Jerusalem Township, Lucas County, Ohio. The skin was presented to the Ohio State Museum at Columbus. A pair of Giant

Redwings, collected January 27, 1934, in Erie Township, Monroe County, Michigan, was presented to the Museum of Zoology, University of Michigan, at Ann Arbor.

Common Redpoll (*Acanthis linaria linaria*). A flock of about 125 Common Redpolls was discovered on November 19, 1933, in Jerusalem Township, Lucas County, Ohio. The last one was seen on February 25, 1934. Several specimens taken for the Ohio State Museum at Columbus proved to be all the one form. On January 27, 1933, a male Common Redpoll was taken from a flock of fifteen in Erie Township, Monroe County, Michigan, and presented to the University of Michigan, Museum of Zoology, at Ann Arbor.—LOUIS W. and BERNARD R. CAMPBELL, *Toledo, Ohio*.

**Notes on Some Birds Found in Winter Near Wheatland, Wyoming.**—

The records here given were obtained on four trips to the Wheatland vicinity, with a total of seven days' work in the field. My judgment of what was unusual was influenced by a much larger amount of work that had been done in adjacent areas. The first trip was made on December 25, 1927, when twenty-one species of birds were seen, the following being unusual in Wyoming: Marsh Hawk (*Circus hudsonius*), Prairie Falcon (*Falco mexicanus*), Richardson's Pigeon Hawk (*Falco columbarius richardsoni*), Yellow-headed Blackbird (*Xanthocephalus xanthocephalus*), and Rusty Blackbird (*Euphagus carolinus*). The Marsh Hawk, Prairie Falcon, and Yellow-headed Blackbird were seen again on February 26, 1928, and three Brewster's Blackbirds (*Euphagus cyanocephalus*) were also seen the same day. The Yellow-headed Blackbird was seen in the same vicinity both times, and apparently it spent the winter near a farmhouse where chicken feed, an open corn crib, and a family with a love of birds provided it and some red-wings (*Agelaius phoeniceus* subsp.) with food and protection.

In December, 1928, a third visit was made, and on December 24 these unusual birds were seen: Prairie Falcon, Sparrow Hawk (*Falco sparverius* subsp.), and Long-billed Marsh Wren (*Telmatodytes palustris* subsp.). The last trip was made to a reservoir on the Wheatland Flats, on February 4, 1934. At this time the weather was quite mild and no traces of ice or snow were seen. Over 300 ducks were on the reservoir, about fifty being Redheads (*Nyroca americana*), two being Red-breasted Mergansers (*Mergus serrator*) and the rest Common Mallards (*Anas platyrhynchos platyrhynchos*). The first two were unusual winter records.

The records given above are the only mid-winter records for the state for the Yellow-headed Blackbird, Rusty Blackbird, and Redhead. I have only two mid-winter records for the state for the Red-breasted Merganser, Richardson's Pigeon Hawk, and Long-billed Marsh Wren.

There is a second dubious mid-winter record for the Redhead for the state. Knight (*The Birds of Wyoming*, p. 35) makes this statement: "They have been taken at Hutton's Lakes as late as January 10, 1896." This evidently is an error in copying or printing, because Hutton's Lake freezes over even in the mildest winters, and the weather for December, 1895, was very severe. The statement is made in such a way as to indicate a late autumn date was intended, probably November 10, 1896. The record for 1934 was during the mildest winter in the history of this region, at an altitude of about 2500 feet lower than Hutton's Lake.

—OTTO MCCREARY, *Laramie, Wyo.*

**A Double Nest of the Baltimore Oriole.**—At Eureka, Woodford County, Illinois, during the winter of 1911, I found a strange double nest of the Baltimore Oriole (*Icterus galbula*) in a tree in our front yard. At least one of the nests had been occupied by a pair of birds during the preceding summer, but my bird



FIG. 3. Nest of the Baltimore Oriole referred to in Mr. Sutton's note. From a drawing by George Miksch Sutton.

notes were not kept very accurately in those days, and it is barely possible that two pairs of birds were there. During the summer I did not climb to the nests, since I did not know in which tree the birds had built; but in early winter I was attracted by a bulky mass, which at a distance had the appearance of a gray, weatherbeaten piece of cloth.

Both nests were neatly finished: they were inextricably interwoven and swung between two upright branches. I do not know what species of tree it was, though I think it was a boxelder. None of the trees in the yard had drooping branches

like those of the American elm. Much of the nest material was twine. The lining was principally of horsehair. The drawing was made years ago, and while it is crude, it may bear the marks of authenticity more satisfactorily than any impression I might now reconstruct from memory.

I have seen a good many two-storied nests of the Red-eyed Vireo and Yellow Warbler; but I know of no other instance where nests of this sort were joined in this manner.

If by any chance two pairs of birds made the double nest, their sociability may reflect the colonizing habit of some of the tropical Icterids such as *Zarhynchus*. If but one pair built the two nests, is it not possible that the male used one as roosting quarters? In any event the building of these nests between *upright forks*, in the manner of many Orchard Oriole nests which I have seen, is an interesting and unusual deviation from the usual custom of this species of swinging the pouch from a drooping bough.—GEORGE MIKSCHE SUTTON, *Ithaca, N.Y.*

**The Wood Ibis Observed in Southern Indiana.**—Robert Ridgway, in his "Descriptive Catalog of the Birds of Illinois", published in 1913, gives the following range of the Wood Ibis (*Mycteria americana*): "The whole of tropical and most of warm temperate America, north to New York (casual), Ohio, Indiana, Wisconsin, Colorado, Utah, Nevada and California, south to Ecuador and the Argentine Republic." Ridgway also mentions several sight records of the Wood Ibis in the lower Wabash Valley, and adds that the species is an irregular summer visitor to southern Illinois. A. C. Bent, in his "Life Histories of North American Marsh Birds", mentions that the species has been recorded in late summer from near Bicknell and Terre Haute, Indiana.

A partial survey of the literature has failed to disclose any recent Indiana records for the species, so it would seem of value to record the following experience. The writer, in company with Mr. Robert H. McCormick, was engaged in some biological studies in southwestern Indiana during the early part of September, 1930. On September 5 we came to Hovey Lake, situated about twelve miles south of Mt. Vernon, Posey County. Posey is the extreme southwestern Indiana county, being bounded on the west by the Wabash River and on the south and east by the Ohio River. Posey Lake averages about ninety acres in size, is only a short distance from the Ohio River, and during flood time is connected by backwaters with that stream. A border of cypress trees with expanded bases and "knees", surrounds and in many places extends out over the waters of the lake. Numerous pecan trees, a neighboring cane break, and plants of many other species found in the vicinity, create an atmosphere which would lead one to believe himself many miles farther south in the Mississippi Valley.

Due to drouth conditions, the lake was at a very low level at the time, and so shallow that it was difficult to approach the numerous mud bars to identify the occasional flocks of shore birds feeding there. About a dozen Great Blue Herons (*Ardea herodias herodias*), a solitary American Egret (*Casmerodius albus egretta*), and five Little Blue Herons (*Florida caerulea caerulea*) in white plumage, were feeding along the margins.

Twenty-two Double-crested Cormorants (*Phalacrocorax auritus auritus*), a species which is said to sometimes nest in the county, still remained at the lake. Most of them were perched on the dead tops of bald cypress trees growing in the shallower portions of the lake. Many perched awkwardly, drying their outstretched wings in the bright sunshine, as Turkey Vultures frequently do in the

early morning. Others were engaged in fishing activities in different parts of the lake. Seven birds in one tree permitted us to approach with our boat until almost immediately beneath them, giving us the opportunity to take numerous photographs.



FIG. 4. Wood Ibises are perched in tops of the Cypress trees. Photograph by L. E. Hicks.

Our attention, however, was soon attracted to seven large, light-colored birds resting in a tall cypress snag about three hundred yards down the lake. A hasty examination through the binoculars proved them to be the Wood Ibis (*Mycteria americana*). As we watched, eleven more birds appeared on the horizon and approached until nearly overhead, flying at a great height, yet exhibiting plainly

the black of the tail and wing tips. Then, in long swooping curves, the birds began their descent, tacking back and forth in long graceful swoops and curves, spiraling lower and lower with each change of direction, until within a hundred feet of the lake surface. Here the glide was flattened out and these large birds, appearing immense now at close range, flapped to the tops of a half-dozen snags by slow easy beats of their wings, alternating with an occasional short sail.

From the boat we kept the birds under observation through our binoculars for more than an hour. Most of them kept perfectly motionless except for the restless twitching of the necks, giving us an opportunity to observe their ugly unfeathered "flintheads", and the oddly positioned bill. Many sat quietly, balanced upon one leg, in a dejected, hunch-backed position, breasts to the strong sunlight and dozing in the heat of noonday. Observation told us, however, that the ibises were very much aware of our presence and actually alert in spite of their sleepy appearance.

Gradually, we drew nearer, stopping occasionally to take another photograph at the closer range. Several times our boat stranded in the muddy bottom and the activity involved in getting under way again, usually caused one or two birds to take alarm and fly. At last only three birds remained. Already we were closer than 100 yards to our quarry, now only 80, now 60, now 50. Suddenly, when we were scarcely 100 feet distant, the trio rose from their perches with powerful springs which caused the branches of the old cypress tree to vibrate, and with rapid flaps of the wings and legs dangling, rose high above the tree tops, moving in their gyrating flight slowly to the far side of the lake to join the others in the tops of another group of cypress snags.

Later we visited Mr. Robinson, caretaker of the lake, who told us that our birds with the bald heads had been present at the lake for at least two weeks. On September 1, he related, one of the birds with an injured wing was seen to run across the highway and was struck but not further injured by the wheels of the automobile that he was driving. The bird was captured and kept in a garage for three days after which it managed to escape, successfully resisting with vicious thrusts of the long bill all efforts of a dog to grasp it and eventually succeeding in evading its tormentor, wading to safety far out in the deeper waters of the lake.—LAWRENCE E. HICKS, *Ohio Division of Conservation, Columbus, Ohio.*

**An Early Morning Mixed Migration.**—On August 24, 1931, at 6 A. M., I witnessed an interesting morning migration. A large loose flock of common Kingbirds (*Tyrannus tyrannus*) flew over, and smaller flocks of the same species continued to come for nearly an hour. Arkansas Kingbirds (*Tyrannus verticalis*) also came scattering along with the first species. Family parties of Baltimore Orioles (*Icterus galbula*) were also in flight, and were often mixed in with the Kingbirds. The strangest part, however, was the presence of an occasional Red-headed Woodpecker (*Melanerpes erythrocephalus*), following closely along with the other birds and going in the same southeast direction. This mixed company of four species were thus apparently migrating together, and on the best of terms. Estimates were as follows: Kingbirds, 1500; Arkansas Kingbirds, 75; Baltimore Orioles, 400; and about two dozen Red-headed Woodpeckers. By 7 A. M. the flight was over, and the morning migration was ended.—WILLIAM YOUNG WORTH, *Sioux City, Iowa.*

**A Curious Tern Accident.**—On April 22, 1933, at 4:30 P. M., I was coming up the river about five miles below the city, and seeing something white draped across the top of an old piling, crossed to the north side to investigate. It proved to be a Caspian Tern (*Hydroprogne caspia imperator*), with its bill firmly driven into the top of the partially decayed and spongy piling. I had to twist the bird's head considerably before the tapered bill could be withdrawn. One inch from the end of the upper bill the fibers of the horny sheath were broken, as the mandible had bent, and this mark still (March 16, 1934) shows on the prepared skin.

On manipulating the wings before skinning, a gush of water came from the lungs. The plumage was immaculate, except for a slight stain, where the breast had rested against the muddy pile.

The tide at this time was six feet above local low water, and the piling lacked one foot of being covered. I had quite accurate knowledge that the tide had been eight and a half feet above local low water, at about 8:00 A. M., some two miles farther up river. So at no time could the piling have been covered more than one and a half feet.

It seems likely that the tern had seen the dark piling top through the swirling yellow water, or that a fish had actually swam over the top, and the bird in diving had fastened itself and drowned.

Gulls, with their competition of numbers and the diversity of their ways of feeding, are prone to all manner of accidents, such as the Herring Gull (*Larus a. smithsonianus*) which, a year or so ago, picked up a Gillette razor blade as it was thrown into the water alongside of the dredge, and swallowed it, to fly away a little distance, alight on the water and die within a few minutes. But this is the first similar tern accident to come to my notice.—IVAN TOMKINS, *U. S. Dredge Morgan, Savannah, Ga.*

**The Blue-gray Gnatcatcher Moving Its Nest.**—During 1932 and 1933, several notes regarding the Blue-gray Gnatcatcher's habit of moving its nest were published in the WILSON BULLETIN. Still another instance may not be amiss, as it contains one fact that is at least unusual. On April 30, 1934, I found a nest about half finished in an old orchard near Lexington, Virginia. It was saddled on a limb about twelve feet up in a small apple tree. After watching the work of construction, in which both the birds shared, I climbed to the nest. The birds did not seem to be particularly alarmed. On May 5, Rev. John Grey found another nest in an apple tree about fifty yards away. As I had seen only one pair in the orchard, I investigated and found that the first nest had disappeared, only a few scraps of it being left. It seems evident that the first nest had been destroyed and its material utilized in the construction of the second. On May 11, the second nest contained two eggs. The novel point referred to about this second nest is that it was not saddled on a limb, but set between three small forks of an upright crotch, in the manner of the nests of the Yellow Warbler and Redstart. The Blue-gray Gnatcatcher is an uncommon summer resident here.—J. J. MURRAY, *Lexington, Va.*



## ORNITHOLOGICAL LITERATURE

SONGS OF WILD BIRDS. By Albert R. Brand. Published by Thomas Nelson & Sons, New York. 1934. Pp. 1-91. Price, \$2.00.

The book contains one or two chapters on the subject of bird song in general, and about thirty-four pages are devoted to the descriptions of songs of particular birds—all interesting enough. The feature of the book, however, is the accompanying phonograph records of wild birds' songs, which are carried in a pocket on the cover. A year or two ago we learned indirectly that a young man at Cornell University was working on the reproduction of bird songs by modern mechanical methods. In the spring of this year Dr. A. A. Allen made a lecture tour through the middle west exhibiting the results of these efforts. Just a few weeks later Mr. Brand's book with the phonograph records was placed upon the market. The fact of the matter is that men have now recorded mechanically the songs of wild, free birds as they sang in their native haunts. Most of our readers may not care for a detailed explanation of the mechanical devices used in this work, even if we could present it (but we think a little more of a description in the book itself would have been acceptable). However, an enlarged microphone is set up as near as possible to the singing bird. The sound waves which fall upon the microphone are converted into electrical energy. The electrical waves are then amplified and transformed into light waves. These light waves are then photographed on the films. The film is developed and can be reproduced by the movie projector onto the light screen or reconverted into sound. Of course the making of a phonograph record is an additional process. It is to be noted, however, that the phonograph record reproduces the bird's own voice, which has never been accomplished before, we believe. Thirty-five wild bird songs are recorded on the two record disks which accompany this book. A few of the songs are rather weak, perhaps because of the distance of the birds; others are loud and clear. The Bobolink song is one of the best, and lacks none of the vivacity of the living song. The Whip-poor-will's song is reproduced with such fidelity that one might close his eyes and imagine himself in the haunts of the bird. Perhaps we should again assure the reader that the records are reproductions of the bird's voice, not of whistled imitations by some clever human. These records alone are worth the price of the book, and we can cheerfully recommend them.—T. C. S.

THE BIRDS OF DUTCHESS COUNTY, NEW YORK, FROM RECORDS COMPILED BY MAUNSELL S. CROSBY. By Ludlow Griscom. Trans. Linn. Soc., N. Y., III, 1933, pp. 1-184. Price, \$2.00. (Address Sec. Linnaean Society, W. 77th and Central Park, N. Y.).

Mr. Griscom has done another very creditable piece of work in the compilation of this local list. An introduction covering sixty-seven pages, and divided into eight chapters, precedes the systematic list. Species of hypothetical occurrence are not assembled into a separate list, but are enclosed in brackets in the body of the list. Since the note-books of Mr. Maunsell S. Crosby furnished the material for this report it is fitting that a portrait of Mr. Crosby and a picture of his home, which we take to be a country estate, be included. Chapter X is a bibliography of Dutchess County ornithology which is, doubtless, intended to include all of Mr. Crosby's own writings; two titles in the WILSON BULLETIN for 1925 were overlooked.—T. C. S.

1. LEGPERIODEN EIERPRODUCTIE BIJ EENIGE WILDE VOGELSOORTEN, VERGELEKEN MET DIE BIJ HOENDERRASSEN. By D. Tollenaar. Mededeeling 23 van de Landbouw Hoogeschool. Wageningen. 46 pp. 1922.
  2. VERSLAG VAN HET ORNITHOLOGISCH ONDERZOEK 1925. By G. Wolda. 24 pp., 1926.
  3. VERSLAG VAN DE ORNITHOLOGISCHE AFDEELING OVER HET JAAR 1928. By G. Wolda. 27 pp., 1929.
  4. VERSLAG VAN DE ORNITHOLOGISCHE AFDEELING OVER HET JAAR 1929. By G. Wolda. 20 pp., 1930.
  5. VERSLAG VAN DE ORNITHOLOGISCHE AFDEELING OVER HET JAAR 1932. By G. Wolda. 20 pp., 1933.
- Numbers 2-5 published by the Plantenziekenkundige Dienst, Wageningen.
6. BIJDRAGE TOT DE BIOLOGIE EN DE ECOLOGIE VAN DEN SPREEUW (*Sturnus vulgaris* L.) GEDURENDE ZIJN VOORTPLANTINGSTIJD. By H. N. Kluijver. 145 pp., 1933. Veenman & Zonen, Wageningen.
  7. AKKLIMATISIERUNG UND DEKLIMATISIERUNG. RESULTATE ORNITHOLOGISCHE UNTERSUCHUNGEN IN DEN JAHREN 1907-1923. By G. Wolda. *Genetica*, V, pp. 497-526, 1923.
  8. AKKLIMATISIERUNG UND DEKLIMATISIERUNG, II. By G. Wolda. *Genetica*, IX, pp. 157-216, 1927.
  9. INTERPERIODIZITAT. By G. Wolda. *Genetica*, XI, pp. 453-464, 1929.
  10. HET AKKLIMATISEREN VAN VOGELS, MET DE RESULTATEN EENER VERGLELIJKENDE ANTHROPOLOGISCHE STUDIE. By G. Wolda. *Natura*, December, 1932, 19 pp.

For a number of years the Phytopathological Service at Wageningen, Holland, has been carrying on investigations on the nesting of birds, particularly of Titmice, in 1932 having some seventy-five coöperators and records of 3,854 broods for that year alone. Five species of Titmice were responsible for 2,623 of these sets, Starlings for 412, and Redstarts (*Phoenicurus phoenicurus*) for 252. These Titmice lay astonishingly large sets, the Great Tit (*Parus major*) for instance averaging 10-11 eggs in a set, while as high as 18 to 21 living young of the Blue Tit (*Parus coeruleus*) have been recorded (4, p. 5).

Many papers have been published on birds by this Station—twenty-five being listed in the latest report (5); of these seven have been sent to me (Nos. 1-6, 10). Three others of Wolda's papers (7, 8, 9) I have been able to consult in the library of the Ohio State University. Tolenaar's paper (with a three page summary in English) is based on records from 1913 to 1920. Kluijver's admirable study on the biology of the Starling I have reviewed elsewhere (*Bird-Banding*, 1933, pp. 209-210); but several of his findings are of importance in comparison with these other papers. Wolda is the most voluminous writer, bringing out a yearly report on the results of the Station's investigations, besides writing at length of his "acclimatization" theory.\*

*The time of beginning to lay.* Tolenaar, calculating from the temperature of "the decade comprising the commencing-day of the laying-period of the species" decided that there is no direct effect of temperature, but that in early springs "the 'laying-threshold' is sooner crossed owing to the earlier appearance of insects" (1, p. 43). Kluijver (6, pp. 42-46) and Wolda (10, pp. 2-3), taking the

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\*Heer Wolda writes me that "*Akklimatisierung und Deklimatisierung* is now being published in four volumes and is available at my address at the price of fl. 6.50 Dutch currency."

mean temperature of April, decide that the start of laying is definitely related to temperature.

There are a great many interesting data given by the latter in charts (especially in 2, figs. 2 and 4, and 3, pp. 9, 15-17): here we see warm waves bringing many birds into laying five to seven days later, and cold waves causing breaks in activity after approximately the same length of time. In a few cases where the set had been started, severe cold stopped laying for one or more days; in some cases a number of the eggs were infertile, and in still others the birds deserted (2, p. 6).

*Length of the nesting season.* All three authors agree that an early beginning is correlated with a late ending, since many of these titmice raise two broods when the spring is early, but only one when it is late. Starlings ordinarily raise but one brood in Holland, but "an early beginning of the first brood (due to high temperature in April) is followed by a relatively large number of second broods" (6, p. 47).

How general this is among birds I do not know. It certainly has not been true with the Song Sparrow (*Melospiza melodia*)—normally a three-to-four-brooded bird.

*Size of sets.* As a rule the first set is the largest, but with the Coal Titmouse (*Parus ater*) that regularly lays three sets, the middle one is usually the largest (2, p. 11). Wolda states this is a fact for all three-brooded birds (5, p. 17), but this does not agree with my experience. The Blackbird (*Turdus merula*), Song Thrush (*Turdus philomelos*), Mistle Thrush (*Turdus viscivorus*), and Sky Lark (*Alauda arvensis*) reach a maximum in May, the March and April sets being smaller (1, p. 45). Tolenaar considers this a reflection of scarcity and abundance of food.

According to this writer, sets are largest during favorable years (1, p. 23) because of food conditions. Wolda (9, p. 455) says sets are larger in *unfavorable* years, because most of the birds lay but once; however in very unfavorable years the largest sets are absent.

It is evident that this problem is far from settled. Does the size of sets depend on the amount of food available, or on a direct influence of temperature during the laying period, on the age of the birds in the population, or on what? These Dutch experimenters are well situated to undertake a thorough-going study of this matter.

*The effect of environment.* This subject is worked out rather elaborately by Wolda (3, pp. 18-25) with *Parus major* in regions of coniferous and deciduous woods. In the former locality the birds started nesting slightly earlier and ended decidedly later, because more second broods were attempted; the average size of the first set was 10.1 eggs, of the second, 8.7 eggs; 83 per cent of the young that were hatched were raised, i. e., 64 per cent of the eggs laid. In the other district the average size of the first set was 10.6 eggs, of the second, 7.7; 89 per cent of the young that hatched reached maturity—67 per cent of all the eggs laid.

Tolenaar (1, p. 37) gives a chart showing the early start and late ending of the Blue Tit's nesting season in a region where its abundance reflects optimum conditions, and the late start and early ending in another region where it is uncommon. The Great Tit on the other hand is common in both places and started and ended nesting at the same time in the two localities.

*Success of nesting.* A number of other figures are given for the success of nestings, especially in the report for 1928. In Bilderberg in forty nest boxes fifty-one sets of 401 eggs were laid by five different species; of these 288 hatched (71.5 per cent) and 260 were fledged (64.8 per cent). During the previous year, of 351 eggs laid 240 young were raised—67.5 per cent (3, p. 8).

At Driebergen the number of sets laid by twelve species of hole-nesting birds ranged from thirty-nine in 1922 to 162 in 1928. The number of successful broods varied between 61 and 76 per cent (3, p. 9, 10).

At Hooge Veluwe bij Hoenderlo layings of fourteen species rose from 248 in 1921 to 523 in 1928; the lowest number of eggs laid was 850 in 1922 and the highest 2600 in 1925. From 23 to 39 per cent of sets were wholly unsuccessful—the other six years yielding 34 or 35 per cent loss of broods. Many desertions (10-12 per cent) are due to the examination of the boxes.

Frater J. Verschueren at Stein reported 609 young raised from 1103 eggs laid in his boxes in 1929—55.2 per cent of success; considerable trouble was experienced with sparrows, both House and Tree Sparrows, I suppose.

*Acclimatization and declimatization.* This is an elaborate theory which Wolda applies both to birds and man. He believes that a bird with a long breeding season with sets of equal size is becoming acclimatized, while one with a short season laying typically a single clutch of many eggs with occasionally a much smaller second set is becoming "declimatized" and will disappear. The former are usually large birds, strong singers, with marked sexual dimorphism and dark eggs (7, p. 517).

The author makes many categorical statements on subjects that are still far from settled. For instance:

In very favorable years (meteorologically) the number of broods that perish is large, in unfavorable years small, for under the former circumstances eggs are laid that lack the necessary vitality for successful development (9, p. 455). However, in another place he says that in unfavorable years the sets are large and food is scarce, so that a high mortality results (10, p. 7). Earliest and latest layings tend to abnormality and replacement broods are inferior, for these do not correspond with the regular periodicity of the organisms (9, p. 455). Small layings have more chance of success than large ones, hence species that make several small layings are most abundant (10, p. 5).

My own experience does not support any of these assertions; as for the last sentence, how about Starlings and Crows both here and in Europe? I must confess that I have not carefully studied all the tables and graphs of human birth rates and death rates, but to judge from these sample statements on the breeding behavior of birds, the theory does not appear to me a promising path to follow in the solving of biological problems.

These ornithologists have the great advantage of a large population of birds that come readily to nesting boxes, and they are in a position to investigate many vital problems in the breeding biology of birds, especially if banding is generally adopted. They are doing important work, which unfortunately is almost unknown outside of Holland. It would be a splendid thing if a report on the results of the twenty-four years of study should be published in English or German, letting the facts speak for themselves and not trying to fit them into any preconceived theory.—Margaret M. Nicc.

A MALARIA-LIKE DISEASE OF DUCKS CAUSED BY LEUCOCYTOZOOM ANATIS WICKWARE. By Earl C. O'Roke. Bull. No. 4, Univ. Mich. School Forestry and Conservation, Ann Arbor, Mich., 1934. Pp. 1-44, pls. I-V. Price, 25 cents.

Dr. O'Roke investigated a disease among wild and domestic ducks in northern Michigan. He found that a protozoan *Leucocytozoon anatis* Wickware was responsible. He also found that the disease was transmitted by the black fly (*Simulium venustum*). In some areas the ducks were 100 per cent parasitized, in other areas no evidence of the parasites was found. The presence or absence of the black fly determined whether the area was parasitized or not. Young parasitized ducklings found in a marsh where the black fly does not occur would be evidence that the birds had not been bred locally, but were migrants. Young ducks which have been infected, with subsequent recovery, are likely to be stunted and weak. Many recovered ducks act as carriers to infect the black flies in the next season, the latter to spread the infection during the summer season. Dr. O'Roke has made some studies also on the control of this disease. No great success was obtained in the medicinal treatment of the disease. The drugs used were plasmoquin, quinine dihydrochloride, and quinine sulphate. However, control through management was found to be practical in domesticated ducks. No suggestion was made for control in wild ducks.—L. W. Wing.

[EDITOR'S NOTE. With reference to Dr. O'Roke's work we might suggest experimentation with Atabrine (Winthrop) in addition to the other drugs used. Atabrine has been found to have a remarkable effect in destroying the malaria parasite in the human body (see a report by Appelbaum and Gelfand in Amer. Med. Journ., May 19, 1934, p. 1664), and might have a similar effect on other protozoan parasites].

BIRDS OF NUNIVAK ISLAND, ALASKA. By Harry S. Swarth. Pacific Coast Avifauna, No. 22, March, 1934, pp. 1-64, 4 figs. Price, \$2.00 (Address W. Lee Chambers, Bus. Mgr. Cooper Ornith. Club, 2068 Escarpa Drive, Eagle Rock, Los Angeles Co., Calif.).

This report is based chiefly upon material collected in 1927 by the late Cyril Guy Harrold on Nunivak Island, in the Bering Sea. This region is Nearctic, but is so close to the Palaeartic region that species from the latter would be expected, and several were found. The paper is a contribution to distributional ornithology.—T. C. S.

REPORT ON THE FOOD OF FIVE OF OUR MOST IMPORTANT GAME DUCKS. By W. F. Kubichek. Ia. State Coll. Jr. Sci., VIII, No. 1, 1933, pp. 107-126.

The five ducks here reported upon are the Redhead, Canvas-back, Ring-necked Duck, Greater and Lesser Scaup Ducks. The ducks were collected from most parts of their breeding range. The study is based on the stomach contents of 3,127 birds. The animal food consisted of mollusks and insects. The amount of insects taken was quite small, but the season in which the specimens were collected may partially account for this. The two scaup ducks consumed relatively large quantities of mollusks (mostly snails, but some bivalves). The suggestion is made that mollusks may have been taken for grit in lieu of gravel and sand, but the percentages and numbers of shells in some of the cases was quite convincing evidence that they were taken for food.

The most important plant groups found in the stomachs were: wild celery and its allies, pond weeds, grasses, including wild rice, algae, including *Chara*, sedges, arrowhead (Wapato), and water lily. The results of this study indicate

that the wild celery, or eel grass (*Vallisneria*) is not as important a duck food as generally supposed. A useful tabulation of percentage data is given, showing at a glance the relative quantities of various foods in this examination of the five species.—T. C. S.

HISTORY AND LIST OF BIRDS OF MIDDLESEX COUNTY, ONTARIO. By W. E. Saunders and E. M. S. Dale. Trans. Royal Canad. Inst., XIX, Pt. 2, 1933, pp. 161-248+index.

This list includes 267 species with five additional species considered to be of hypothetical occurrence. The species are well annotated, giving one a fairly definite conception of their status in this locality. Plenty of work has been done in this region, but only two or three lists have been heretofore published. Trinomials are freely used and, no doubt, specimens were at hand to substantiate all such enumerations. An index without folio numbers is provided.—T. C. S.

A SYSTEMATIC CLASSIFICATION FOR THE BIRDS OF THE WORLD, REVISED AND AMENDED. By Alexander Wetmore. Smithson. Misc. Coll., Vol. 89, No. 13, 11 pp.

Early in 1930 Dr. Wetmore published a similar classification in the Proceedings of the U. S. National Museum (Vol. 76, Art. 24). This scheme is now superseded by the present one.—T. C. S.

A REVISED LIST OF THE BIRDS OF SOUTHWESTERN CALIFORNIA. By George Willett. Pacific Coast Avifauna, No. 21, 1933, pp. 1-204. Price, \$4.00 (Address W. Lee Chambers, 2068 Escarpa Drive, Eagle Rock, Los Angeles Co., Calif.).

After a period of twenty years the region named in the title is presented with a revised bird list by the author of the earlier one. The revision was needed because of advances in ornithological knowledge, encroachment of civilization, and changes in nomenclature. It is not often that an author is thus permitted to revise his own list after such a length of time. The revised list includes 446 species and subspecies, which are distributed by families and by orders, as shown on page 8. The annotations under each form deal with the status only, with liberal references to the literature. Twenty-nine forms are placed in a separate list.—T. C. S.

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It is announced that the regular edition of Dr. Thos. S. Roberts' two-volume "The Birds of Minnesota" is exhausted (except in the deluxe binding at \$25). But an abridged edition is now offered which contains the ninety-five beautiful colored plates and a brief description of each of the two hundred and ninety-five birds shown on the plates. This book of 206 pages and plates may be obtained for \$2.50; or the plates alone may be had in a portfolio for \$1.50, from the University of Minnesota Press. The plates, it will be remembered, are reproduced from paintings by five of the leading American bird artists; and one plate is by the late L. A. Fuertes.

The *Florida Naturalist* for April contains a list of 140 birds for Merritt's Island in 1932 and 1933. A Magpie is reported for Palm Beach. A full statement of the business of the Florida Audubon Society completes this number. This magazine is edited by R. J. Longstreet, Daytona Beach, Fla.

The *Migrant* for December, 1933, has an article by Mr. B. Coffey on the Painted Bunting, and another on the nesting of the Duck Hawk by F. M. Jones. The volume index shows that four numbers were issued during 1933, aggregating fifty-two pages. The editor is Mr. George B. Woodring, 1414 Stratton Ave., Nashville, Tenn.

The *Chickadee* is published four times a year by the Forbush Bird Club at \$2.00 (address the editor at 12 State St., Worcester, Mass.). The December number gives an interesting report on the destruction of birds by a newly erected beacon light on the summit of Mount Greylock. The beacon was erected as a war memorial, but its utility is not explained. During the last fall migration large numbers of warblers flew against the light and were killed. It is reassuring to find that the same news item was able to report that soon after the destruction was observed the light was shut off during the period of danger to the birds.

The *Raven* seems to arrive more regularly and frequently than any of the other local bird periodicals. It is edited and published by Dr. J. J. Murray, Lynchburg, Va. The March number contains a report of the fourth annual meeting of the Virginia Society of Ornithology, at Alexandria. Several distinguished guests from Washington were on the program. The old officers were re-elected for another year.

A new mimeographed monthly periodical is announced under the title, "The Night Heron", and is edited by John O. Felker, 8 Fair Oaks, St. Louis County, Mo. The subscription rate is 50 cents a year. The first three numbers, which we have seen, contain many interesting local items.

In the "Bulletin to the Schools of the University of the State of New York" for March 15, 1934, Dr. A. A. Allen reports a new bird for North America, the Trinidad Petrel (*Pterodroma arminjoniana*). The specimen was captured alive a few miles from Ithaca, N. Y. When the bird died it was prepared and submitted to Dr. R. C. Murphy, who made the identification. This issue of the magazine was devoted entirely to bird material.

The Yellowstone National Park Nature Notes for November-December, 1933, (Vol. X, Nos. 11-12) is devoted to the wild fowl of the Park. The status in the Park of the swans and ducks during recent winters is presented.

The *Flicker* is a mimeographed quarterly of the Minnesota Bird Club, and published in February, May, October, and December. The annual dues are \$1.00, and may be sent to the Secretary-Treasurer, Mr. Kenneth Carlander, 4227 Harriet Ave., Minneapolis, Minn. The editor is Mr. Ralph Woolsey, 23 South Terrace, Fargo, N. D. The issue for December, 1933, contains a biographical sketch of Donald Fischer with a full page half-tone portrait; and also a paper on the field marks of Minnesota shore birds. The February, 1934, number presents a biographical sketch and half-tone portrait of Stanley Stein. Numerous notes of local interest appear in each issue.

The *St. Louis Bird Club Bulletin* is edited by Mr. N. R. Barger, 801 DeMun Ave., St. Louis. It is issued monthly except in July, August, and September, and is \$1.00 per year. The issue for December, 1933, has a brief discussion of the problems of the relation of muskrats to birds in the sanctuaries controlled by the Audubon Association along the Gulf Coast. The February number includes a list of birds known to have a flight song. Fourteen American species are mentioned, viz., Bobolink, Purple Martin, Lapland Longspur, Sprague's Pipit, Lark Bunting, Vesper Sparrow, Purple Finch, Goldfinch, Ovenbird, Louisiana Water-

Thrush, Maryland Yellow-throat, House Wren, Grey-cheeked Thrush, and Yellow-breasted Chat. Readers are invited to add to the list. In the March number three more were added, viz., Woodcock, Pectoral Sandpiper, and White-throated Sparrow. The Upland Plover and perhaps a number of other shore birds might also be added. This number also has an article on plants that are attractive to birds.

Volume III, Number 1 (which is apparently the April number for 1934, though not dated) is devoted to the memory of Mr. Otto Widmann. This number is printed, and carries a large halftone portrait of Mr. Widmann and two full pages of his remarkable hand-writing, the latter being a letter on the European Tree Sparrow in the vicinity of St. Louis. Many comments have been made about Mr. Widmann's writing. The letter which is reproduced was written when Mr. Widmann was 89 years old, and shows scarcely less precision than his penmanship of earlier years. There are also many appreciations, and some very interesting incidents are related. A page is given to the enumeration of Mr. Widmann's published writings, probably not complete. Copies of this Memorial Number may be had for 25 cents by addressing Miss Elizabeth Golterman, Educational Museum, 3325 Bell Ave., St. Louis. All students of ornithological biography will find it a treasured document. Mr. Widmann was a thorough and appreciative student of our native bird life, but above that he was a warm and sympathetic friend of people.

The *Snowy Egret* is issued occasionally by H. A. and R. E. Olsen, at 172 Manchester St., Battle Creek, Mich. Two numbers were issued in 1932 and apparently the same number in 1933. The winter number for 1933 (Vol. VIII, No. 2, and the last one we have seen) contains the following statement: "In the future it will be the policy of this paper to refer only to species, unless the sub-species has been specifically determined by measurements. That is, instead of printing eastern robin, we will only print robin, unless it has actually been determined that the bird is an eastern robin. We feel that the identification of sub-species by locality alone is inaccurate." This is a courageous and sensible step. Other ornithological magazines will be slow to follow suit because they are more firmly bound up with tradition and authority, from which it is very difficult to break away.

*News from the Bird-Banders* is issued quarterly by the Western Bird-Banding Association, at Berkeley, Calif. This periodical is not only well mimeographed, but usually contains one or more articles of general interest. The volume for 1934 is the ninth, and the January number contains several excellent reviews of recent work. The April number calls attention to the fact that there has arisen in England some criticism of the general inclusiveness of the territory doctrine. There is also a statistical report showing the number of each species banded in each state in 1933 within the area of the W. B. B. A.—a total of 37,174. Prof. O. A. Stevens reports that he has banded a total of 3,015 Harris's Sparrows at Fargo, N. D.

*Inland Bird Banding News* for December, 1933, and March, 1934, have been received. In the December number Mr. M. J. Magee presents some thoughts on the effect of environment on the color intensity in the plumage of the Purple Finch. The March number contains a biographical sketch of Norman Criddle and numerous other brief notes. This mimeographed quarterly is issued by the Inland Bird Banding Association, Edward R. Ford, Secretary, 2013 Greenleaf Ave., Chicago, Ill.



## 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, 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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Repaging—25c per page extra. Title Page—\$1.25.



DEC 26 1934

13,814

Vol. XLVI

SEPTEMBER, 1934

No. 3

Wilson 41

# THE WILSON BULLETIN



A Magazine of Field Ornithology

Published by the  
**WILSON ORNITHOLOGICAL CLUB**  
at  
SIOUX CITY, IOWA

Entered as Second-class Mail Matter, July 13, 1916, at the Postoffice at  
Sioux City, Iowa, under Act of March 3, 1879.

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## THE WILSON BULLETIN

Published quarterly, in March, June, September, and December, as the official organ of the Wilson Ornithological Club, at Sioux City, Iowa.

The current issue of the WILSON BULLETIN is printed by the Verstegen Printing Company, Sioux City, Iowa.

The WILSON BULLETIN is sent to all members not in arrears for dues. The subscription price is \$1.50 a year, invariably in advance, in the United States. Outside of the United States the subscription rate is \$1.75. New subscriptions, change of address, and applications for membership should be addressed to the Secretary.

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The officers for the current year are:

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DEC 26 1934

# THE WILSON BULLETIN

A QUARTERLY MAGAZINE OF ORNITHOLOGY

Published by the Wilson Ornithological Club

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Vol. XLVI

SEPTEMBER, 1934

No. 3

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Vol. XLI (New Series) Whole Number 169

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## OBSERVATIONS ON OWLS IN OHIO

BY THOMAS MASON EARL

Owls are found in every quarter of the globe, braving the terrors of Arctic storm-blasts and enjoying the luxuriance of nature under tropic skies. They are solitary birds, loving not man nor his habitations, and stirring abroad for their food when the animated pulse of nature has settled to repose. By day, should one venture to show himself, he is likely to be harassed by a small array of feathered busybodies who follow in his wake, loudly expressing their wrath in angry threatenings.

The typical owl, however, seldom stirs abroad by day. His eyes are blinded by the full glare of the sunlight and this his feathered enemies know full well. His vision is clearest in the dusk when the great pupils of his eyes are dilated to receive impressions. Moonlight nights are well suited to aid him in his quest for food, otherwise the twilight hours of evening and morning are his favorite hours for hunting.

By the ignorant the owl has always been regarded as a bird of ill-omen. Its nocturnal habits have allied it in the minds of ghost-fearing people with all that is terrible in the night, when graves are supposed to yawn and the uneasy spirits of the dead traverse the earth once more habited in their ghostly eements. Any unusual appearance in the past of one of these night marauders was regarded as a warning of approaching death or of some frightful calamity. Whoever has been startled in the darkness of a wood by the blood-eurdling shrieks and horrid laughter of a pair of owls will not soon forget the experience nor fail to realize how those birds have acquired such an unenviable reputation. The writer has on frequent occasions been so favored with their serenades and cannot recommend the experience to any one with susceptible nerves.

Notwithstanding, however, the odium that has attached to the owl, there is really nothing mysterious or dreadful about him. He is merely a bird of prey that nature has ordained shall seek his food under

cover of the dusk when the pestiferous rodent is the most likely to be engaged in his depredations. Owls for the most part are not hostile to the interests of man. They may be aptly termed the agrarian police—the night watchmen if you please—that relieve the day watchmen, the hawks, in picking up the rodents of the field.

It is not my purpose, however, to dwell upon owl-lore which must be quite well understood by all bird-students, but rather to emphasize some facts concerning native Striges that have come to my notice in my capacity as a taxidermist.

First of all I would mention the Barn Owl (*Tyto alba pratincola*), the only representative of the Family *Tytonidae* in the North American avifauna. This species which has long been locally common in the South and Southwest has in late years extended its range to the remotest parts of Ohio and even beyond into Ontario, notwithstanding a merciless persecution on the part of sportsmen who have often gone out of their way to shoot a “monkey-faced owl”, as they were pleased to term it. It is often called “White Owl” and on one occasion I heard it termed “Stone Owl”.

The writer had his first introduction to the Barn Owl in 1878 and it came about in this way:

My friend, Oliver Davie, then a practicing taxidermist in Columbus, received for mounting a Barn Owl which had been shot by some fowler along the banks of the Scioto River near the Capital City. It was, as I remember it, a fine male, and Mr. Davie, recognizing the rarity of the specimen asked me to accompany him to the office of that distinguished ornithologist, Dr. James M. Wheaton, with the bird. Dr. Wheaton mentions this in his Report on Ohio Birds as among the first six known to have been taken in Ohio and gives the date as November 2, 1878. The ornithologist Kirkpatrick is credited with the first of the birds in Wheaton's Agricultural Report of 1861. Two specimens were later collected by Charles Dury of Cincinnati, but the northern-most record for Ohio of the appearance of this owl was the one then before us. I am almost sure it was the first specimen of its kind ever seen in the flesh by any one of us three. Several years went by before I saw another. Dr. Wheaton gives a subsequent record as May 1, 1881. This too, I believe, came through the hands of Mr. Davie.

It was not until 1890 that I managed to secure a Barn Owl for my own collection. Like the former ones I have mentioned, it was shot from a sycamore tree on the banks of the Scioto River. Year by year the number of these owls gradually increased but it is worthy of

note that they came by way of the Scioto, following that stream northward or diverting by way of some of its tributaries.

A curious flight of Barn Owls was noted in 1917 just previous to the cold winter of 1917-1918. Two or three times a day for several weeks during the November hunting season Barn Owls were brought in for mounting. Other taxidermists had the same experience as I and I believe by a conservative estimate 200 Barn Owls were killed in Central Ohio by hunters who encountered them everywhere. Owl flights, I have found, are not usually confined to one species. During the presence of Barn Owls, Great Horned Owls were very plentiful. This species had almost disappeared from Central Ohio, but at the time Barn Owls were so abundant, hunters brought in for mounting one or two Great Horned Owls daily—all females of an immense size. A stretch of wing of  $57\frac{1}{2}$  inches was noted in one of these owls and 55 inches was not uncommon. Not a male bird was taken, so it appears the flight was confined to females. Since that time Great Horned Owls have been much more common in Central Ohio than for a number of years prior to the flight.

Returning to Barn Owls, I wish to say I have measured dozens before skinning and find that the measurements given in some of the books are not applicable to Ohio owls. The greatest length recorded is  $16\frac{1}{2}$  inches while the average length of ten males and ten females is 15.85 inches. The females are but slightly larger than the males.

The food of the Barn Owl consists of rodents. I have dissected many stomachs and have found mice to be almost the sole food. When this fact is known farmers will not be so hasty to fetch out the old muzzle-loader whenever a Barn Owl alights in a nearby tree and says, "Good morning! I have come to eat up your mice."

In Central Ohio Barn Owls for the most part nest in the hollows of trees. Old towers and abandoned outhouses are oftentimes used for roosts; and pigeons and Barn Owls have been known to occupy a belfry on quite familiar terms. I have known a pair of nesting owls to be pulled by one's bare hand from a hollow in a tree without the least attempt to resent the intrusion. I believe that nesting is either very irregular or prolonged. I have had young owls with down in September and I have one in my collection taken in November with filaments of down adhering to its breast. Taxidermists as a rule do not like to mount these birds, as the long legs and long wings are difficult to adjust so as to give a graceful pose. On one occasion a man brought to me one of these birds carefully wrapped in paper.

"I bet you can't guess what I have got," he said, as he chuckled to think he was going to spring a surprise on me.

At a glance I took in the size of his package, and beheld at the same time a toe protruding from one end.

"You have a "monkey-faced owl," I replied somewhat drearily, as just at that time two or three of these birds a day were coming in for mounting.

"Why, how do you know?" he asked with surprise.

"Oh, I think I am a mind-reader," I said.

Speaking of the feet of Barn Owls, does everyone know that the feathers on the front of the Barn Owl's tarsus run downward but on the rear of the tarsus the feathers run upward?

The largest owl in our Ohio list is the Great Gray Owl. Whatever may have been the past status of this bird, it is quite certain that it never now comes as far south as our state. As far as I know, there have been no records for half a century. I was privileged some years ago to mount a Great Gray Owl for a hunter who shot the bird in Northern Canada. The extreme stretch of wings of this specimen was fifty-eight inches which is but little greater than the extent of the largest Great Horned Owl. Its apparent size is due to the length and fullness of the plumage and not of the body itself which is hardly larger than that of the Barred Owl. An Eastern writer remarks upon the smallness of the egg laid by the Great Gray Owl, but the egg is in proportion to the size of the body itself, not of its feathery covering. It is noteworthy that an examination of the stomach of this bird showed the half-digested remains of six field mice—nothing more.

Very much resembling the Great Gray Owl in appearance is our own Barred Owl which is still found in somewhat depleted numbers throughout Ohio. The eyes of the Great Gray Owl, however, are yellow while those of the Barred Owl are blue-black. In the main the Barred Owl is a useful bird, yet it cannot be denied that game birds and farmers' poultry are sometimes included in his menu.

A few winters ago I kept an uninjured Barred Owl in my basement all winter. The only way I could induce him to swallow bits of meat was by tapping his beak with the meat until he opened his mouth and swallowed it. He never seemed to drink voluntarily but I would hold a pan of water close to his face, then with one hand push his beak into it. He would then take a swallow or two of the water. He was quite docile and I handled him freely without fear of his claws. He was very much afraid of my collie who was just as much afraid of him. When the dog chanced to come too near, the owl would take



wing, glide almost noiselessly across the long basement and alight on my shoulder. When the mild weather of spring came I set him at liberty to care for himself.

The Saw-whet Owl and the Long-eared Owl are the rarest of Ohio *Striges* if we are to judge by the infrequency of their appearance; but being fully nocturnal, it may be that they are less observed than others of their family. In marked contrast to these is the Short-eared Owl which being diurnal in its habits is frequently encountered by sportsmen while they may be beating the fields for rabbits, pheasants, or what not. There was a remarkable abundance of these owls in the fall of 1921. This is true at least of Central Ohio as many observers can testify.

I am convinced there is a peculiar trait among owls of making flights or excursions—be it periodic or spasmodic. I do not know. What caused the remarkable flight of Snowy Owls in 1905? Driven down by stress of weather, do you say? Cold winters are frequent in Canada but the owls do not come down. Yet, if we concede the above reason, what caused the great flight of Barn Owls northward in 1917 in the teeth of the coldest winter we have had for many years? Why the incursions of Great Horned Owls—all females of a remarkable size—at the same period, or why the abundance of Short-eared Owls in 1921? Is it not the age-old habit among living creatures to seek new homes—a new Canaan, perhaps, where milk and honey abound? Squirrels migrate, bees swarm, even man has proved himself fettered by the inexorable laws of migration and change. I suggest these thoughts to learn what others have observed in this line.

I have handled nearly all the owls alive and have found them remarkably docile. They do not take, however, to captivity—refuse to eat or drink and soon die. The one owl that I do not care to handle is the Great Horned Owl, a hardened sinner that has all the recklessness of an outlaw. He is exceedingly tenacious of life, and can be depended upon to put up a lively tussle for existence. On one occasion I found it necessary to chloroform two Horned Owls that had been trapped. After administering a goodly amount of the anæsthetic I left the two birds stretched out for dead. Returning in about an hour, I found the two sitting up and snapping their bills as though they were masters of the situation. I gave these owls enough chloroform to kill three men before they could be pronounced dead. The disfavor of the Great Horned Owl among the denizens of the woods is well known. He is the grizzly among birds, hating and being hated, the wanton thief of the hen houses, the bold marauder that glides with

fiendish intent through the midnight silence. His fierce hoot is now less heard than formerly for his numbers are much depleted. The law offers him no protection and every man's hand is raised against him. More's the pity, for he is a handsome fellow when he stares at you with a look of sapience from his great yellow eyes. His badness is not unmixed with good, and while we may not palliate his faults we should not let them mitigate against others of his kinsfolk that are in every way entitled to protection and esteem.

COLUMBUS, OHIO.

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A CRITICAL STUDY OF THE DISTRIBUTION AND ABUNDANCE  
OF *DENDROICA CASTANEA* AND *DENDROICA STRIATA*  
IN THE SOUTHEASTERN STATES DURING THE  
SPRING AND FALL MIGRATIONS\*

BY THOMAS D. BURLEIGH

It is doubtful whether more confusion exists concerning the actual status of two really common birds in the southeastern United States than in the case of the Bay-breasted Warbler (*Dendroica castanea*) and the Black-poll Warbler (*Dendroica striata*). This is due partly to the fact that, with the exception of Florida, field work in this region has been largely confined to the summer months, and to the unwarranted supposition that the distribution of these two species was well known. Were they subspecies—that bane of all amateur bird students—there might be more excuse for the haphazard manner in which they apparently have been treated. Recent field work in Georgia and North and South Carolina has revealed discrepancies in their range that it is felt advisable to correct at this time, and it is for this purpose that this paper is presented.

Quoting briefly, the following comments summarize the present knowledge, accepted for many years, of these two species in the southeast:

The Fourth Edition of the A. O. U. Check-List states that the Bay-breasted Warbler is "irregular in migration on the Atlantic slope and rare south of Virginia". Concerning the Black-poll Warbler nothing is said relative to the probable migration route. Pearson and Brimleys' "Birds of North Carolina" says of the Bay-breasted Warbler: "Only known as a rare fall transient at Chapel Hill and a rare spring transient in the southern mountains. At Chapel Hill a male was taken

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\*Read at the 51st Stated Meeting of the American Ornithologists' Union, New York City, November 15, 1933.

on October 2 and another on October 8, 1897, by Pearson." And of the Black-poll Warbler: "The whole state during the migrations. In autumn it appears about the last week in September and leaves late in October, a few sometimes lingering on into the first week of November."

In his "Birds of South Carolina", Arthur T. Wayne says of the Bay-breasted Warbler: "The only well authenticated records of the occurrence of this warbler in the State were furnished by Mr. Loomis, who procured a specimen on May 14, 1887, and another on May 5, 1888, at Chester." While concerning the Black-poll Warbler: "It occurs abundantly on the coast during both migrations."

In a bulletin entitled "A Second Supplement to Arthur T. Wayne's Birds of South Carolina", published by the Charleston Museum in 1931, further information relative to the occurrence of the Bay-breasted Warbler in the State is given as follows: "Mr. Wayne on October 18, 1922, took an adult female at Mt. Pleasant, Charleston County, making the first record of occurrence for the coast and the first fall record for the State."

Georgia unfortunately has no State list, and relatively little has ever been published concerning the bird life of that State. The few local lists that are available are obviously inconclusive and add nothing to our knowledge of either the Bay-breasted or the Black-poll Warbler.

So much then for the two Carolinas and Georgia. Omitting for the time being Florida and Alabama, both of which will be considered a little later, let us consider the facts brought out by practically fourteen years of consistent field work in this region.

From the middle of September, 1920, through the first of January, 1930, almost daily records were kept of the bird life at Athens, Georgia. Athens lies in the northeastern corner of the State, near the center of the Piedmont Plateau, which comprises practically half of the State, and is characterized by rolling hills, red clay soil, and scattered stretches of woods in which the shortleaf and loblolly pines predominate. Proximity to the Coastal Plain farther south, and to the foothills of the Southern Appalachians farther north, was found to influence the distribution of bird life during the summer months but in so far as migration is concerned records obtained about Athens are characteristic of this entire Piedmont region.

Here the Black-poll Warbler was found to be an abundant spring migrant, appearing as early as the 19th of April and lingering until the end of May. In the fall, however, its status changed completely,

for it was then exceedingly scarce. Careful observation year after year failed to reveal a single individual of this species, and not until October, 1929, was it definitely recorded for the first time in the fall migration. Two birds collected then, one on the 14th and one on the 15th, are the only records for this species in the fall for this ten-year interval.

The Bay-breasted Warbler, on the other hand, while far less abundant in the spring, was found to be a fairly common fall migrant. During the spring months single birds, rarely two or three together, were observed at irregular intervals from the 29th of April through the 18th of May, the larger number being noted during the first week in May. In the fall, however, small flocks were frequently seen in the scattered stretches of woods, extreme dates for their occurrence then being October 3 and November 5. Their comparative abundance aroused a suspicion as to their identity and individuals were collected from time to time with the thought that they might prove to be Black-polls, but invariably they were found to be immature Bay-breasted Warblers.

Since the first of January, 1930, and up until the present time, careful records have been kept of the bird life about Asheville. Here in the mountains of western North Carolina the occurrence of the Black-poll Warbler and of the Bay-breasted Warbler in the spring and in the fall has been found to be exactly the same as at Athens. Each year the Black-poll Warbler has been an abundant spring migrant, and completely absent in the fall. Because of its extreme scarcity in Georgia it was looked for during the fall months whenever there was the slightest possibility of finding it, but not a single individual was seen. In decided contrast was the relative abundance of the Bay-breasted Warbler. Fairly common during the spring migration, it was actually plentiful each fall, there being days, as on the 5th of October, 1932, when it actually outnumbered all the other warblers seen. That there might be no question as to their identity individuals were again collected at frequent intervals, and in no case did a probable Bay-breasted Warbler turn out to be a Black-poll. In this connection, considering the early date at which the Bay-breasted Warbler appears in the fall farther north, extreme dates of arrival and departure may be of interest. The earliest record is that of a single bird seen September 12, 1930, in the spruce woods at the top of Mt. Mitchell, the average date of arrival for four years being September 19. The latest record is that of three birds seen October 19, 1932, with the average date for departure October 15.

In view of the fact that the Bay-breasted Warbler was a common fall migrant in the northern half of Georgia and in western North Carolina there seemed no reason why, despite the lack of records, it should not be equally common in at least the upper edge of South Carolina. To settle this point a brief field trip was made October 10, 1933, into Greenville County, and within an hour after crossing the South Carolina line an adult male in fall plumage was seen and collected. Although but the second record for the occurrence of this species in the State in the fall, further field work would probably prove it to be not only a regular but a common migrant here during the fall months.

Bearing in mind then the facts brought out by this brief discussion of the actual status of the Black-poll and the Bay-breasted Warbler in the two Carolinas and in Georgia it is obvious that for some time much misinformation has existed concerning these two species. What is actually true concerning their present distribution is as follows:

With the exception of the coast region the Bay-breasted Warbler is a fairly common migrant in the southeastern states, especially during the fall migration when for a month or more small flocks can be observed almost daily. This is further verified by the published records that are available for Alabama and Florida.

Arthur H. Howell has recorded the bird in the fall in Alabama, taking two specimens "in pines on the slopes of Choccolocco Mountain near Piedmont, October 20, 1916"; and in his "Florida Bird Life" he states that it is "a rare spring and fall migrant" in that State. In this connection it is significant that practically all records are from the western part of the State, and that on October 26 and 27, 1925, twenty-nine were reported as killed at a lighthouse near Pensacola.

On the other hand the Black-poll Warbler is abundant in the spring, but common only on the coast in the fall. It apparently, in its west to east migration in the fall from its breeding grounds in the far northwest, is moved by some impulse to reach the coast as soon as possible, and as a result is at best merely a straggler over much of the area it occupies in the spring migration. This is borne out by what is known of its occurrence in Alabama and Florida. Howell, in his "Birds of Alabama" says that "The bird is occasionally seen in spring in the northern half of the State, but there is no record of its occurrence in Autumn". Again, in his "Florida Bird Life", he states that it is "an abundant spring and fall migrant, except in northwestern Florida. Apparently this species avoids or flies over western Florida

in its migrations". It must be admitted that this is a rather unusual migration route, and one that as far as present knowledge goes is not followed by any other species, but there appears no other way in which to interpret the facts that have been brought out.

Further corroboration of this theory is given in a letter from Dr. J. J. Murray of Lexington, Virginia, dated October 24, 1933, in which he says that the Black-poll Warbler is a common migrant at Lexington, but twice as numerous in the spring as in the fall. In northern Virginia, according to Miss May T. Cooke in her "Birds of the Washington, D. C., Region", there is no perceptible difference in numbers in the spring and in the fall, so apparently in the northern half of the State the swing toward the coast is already clearly defined.

The question will possibly arise as to why these two species should for so many years be confused in this manner. Several reasons suggest themselves, and probably all have a direct bearing on this problem. Some years ago the Bay-breasted Warbler was generally considered a rare migrant, and while it has undoubtedly markedly increased in numbers in recent years, the assumption that it is uncommon has persisted in the minds of many bird students. The Black-poll Warbler has always been abundant in migration, and as there has never been any suggestion that the route it followed might vary in the spring and in the fall, it apparently was merely taken for granted that birds observed in the fall in plumage resembling Black-poll Warblers at that season were of that species. This uncovers another fallacy, that these two species are extremely difficult to identify in the fall unless actually collected. It is true that there is a remarkable similarity in the plumage of the two at this time of the year, but with good binoculars they can be readily recognized. The average Bay-breasted Warbler then seen reveals its identity by the trace of chestnut on its flanks, and by its buff rather than yellow underparts. The buff under tail-coverts, in contrast to the white of the Black-poll Warbler, likewise aid in separating these two species, but unfortunately there is more or less variation in this respect. The best field mark to bear in mind, however, is without doubt the color of the legs. In the Bay-breasted Warbler they are dark brown, in some cases almost black, while in the Black-poll they are light colored, almost yellowish. Both species are rather unsuspecting, and for warblers they are deliberate in their movements; therefore little difficulty should ever be experienced in satisfactorily identifying individuals seen in migration.

NOTE: A letter from Mr. Albert F. Ganier of Nashville, Tennessee, dated November 7, 1933, was received too late to be included

in this summary. In his opinion both the Bay-breasted and the Black-poll Warblers are common transients in Tennessee. However, in his collection of skins, the only one in the State, there is but one Black-poll Warbler, a male taken May 15, 1916. He apparently has never taken the bird in the fall, so until definitely proven otherwise this species must be considered a spring migrant only in Tennessee.

U. S. BUREAU OF BIOLOGICAL SURVEY,  
ASHEVILLE, NORTH CAROLINA.

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## RELATIONSHIPS BETWEEN DIET AND EXTENT OF PARASITISM IN BOB-WHITE QUAIL

BY W. O. NAGEL

During the course of a two-year food and parasite survey of Missouri Bob-White Quail (*Colinus virginianus virginianus* Linn.) considerable data was amassed. To a large extent the information secured merely corroborated that obtained previously by other investigators (Errington, '31-'34, Stoddard, '31). In addition, however, the data brought out some new side-lights and interesting implications heretofore untouched, or at least very little emphasized in quail investigations, and indicating a relationship between diet and parasitism in the bob-whites.

The food-list of the bob-white is a very long one; crop analyses (Stoddard, '31) show that practically any accessible seed may be eaten, together with a long list of fruits. Naturally, not all these seeds are eaten by preference nor do they all contain available nourishment. In Missouri (Nagel, '33) the kinds of foods quail eat by preference, and which afford the proper elements of nutrition, are as follows:

Cultivated grains (corn, sorghum cane, millet, Kaffir corn, soy beans).

Ragweed (*Ambrosiaceae*).

Legumes (*Leguminaceae*) (Wild beans, peas, beggarweed).

Buckwheat (*Polygonaceae*) (Smart-weed, Knotgrass).

Senna (*Cassiaceae*) (Partridge-pea).

Grasses (*Graminae*).

This is not, of course, a complete list. It includes the foods most commonly eaten in the order of nutritional value and of preference.<sup>1</sup>

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<sup>1</sup>It is a question whether "preference" might not be due largely to quantity and accessibility.

During the year 1932-1933 when the investigation was begun, large amounts of all the above foods were available in the areas studied. It had been a good year for growth and an open winter obtained. No evidences of food shortage or of starvation were noted during the six months (October, '32-March, '33) survey. The hot, dry summer following, however, severely curtailed the supply of natural foods for the succeeding winter. A similar study (October, '33-March, '34) essentially over the same territory covered in the previous year showed entirely different results with regard to amount and quality of food available, and the extent of parasitism obtaining. Since the data are too cumbersome to present as a whole, the significant and related factors are included in tabular form.

TABLE 1. Comparison of Diet and Parasitism in Bob-White During a Two-Year Survey. Under Different Conditions of Diet.

VARIANT CONDITIONS	1932-33	1933-34
Average amount of food in crop.....	8.4 gm.	5.2 gm.
Percentage of cultivated grains.....	55%	23.7%
Percentage corn in total.....	27%	23.7%
Percentage Sorghum Cane.....	28%	00
Percentage parasitized birds.....	8.7%	61.5%
Corn-eating birds parasitized.....	75%	38%
Cane-eating birds parasitized.....	00	00

The average quail density on the areas studied during the first year was about one bird per four acres. The second year, it had been reduced to about one bird per ten acres. Since forty-two birds were examined the first year, and only twenty-six the second (about the same percentage of population represented by the kill) the increase in parasitism was probably more severe than the data indicate.

INTERPRETING THE DATA: Comparison of the data for two years shows a great increase in parasitism from one season to the next. Correspondingly, there is a decrease in the average crop-content of the specimens. The percentage of cultivated grains eaten has decreased by approximately one-half—a glance at the data shows that the difference is largely due to the absence of cane during the second year. From these comparisons the following points are suggested:

(1) The increase in parasitism noted during the second year may be due to the decrease in *amount* of food.

(2) The increase in parasitism may be due to a change in the *quality* of the food.

The writer has data showing that there is apparently no significant connection between amount of food present in the crop and pres-



ence or absence of parasites in the specimen. That is, a bob-white with a full crop is as likely to show parasitism as one with crop and stomach<sup>2</sup> half empty. Within the limitations of the data, then, the effects of a decrease in food *amount* are not held responsible for the increased percentage of parasitism.

Since all other conditions of environment were held as nearly equal as possible, the only other variants noted are those of (a) decrease in amount of cultivated grains used as food, and (b) a relatively milder, drier winter during 1933-34. It is difficult to see how the latter condition could affect the percentage of parasitism; moreover, there are no data available to prove the case either way. We are left to deal, then, with the variation in amount of cultivated grains in the diet.

Reference to the table will show that these grains consisted during the first year of corn and sorghum cane in almost equal proportions. During the second year, corn alone made up this part of the diet. The percentage of corn eaten was approximately the same during both years, and in each season birds eating this grain included some that were parasitized. Note the difference in the case of cane; during neither year were birds eating sorghum cane parasitized. Further, the cane occurred on one area (Nagel, '33) only during the first year, and on none during the second. Birds taken from this area during 1932-33 were found to contain cane and no parasites; birds taken from this area in 1933-34 were found to contain parasites and no cane. In all other respects, the area remained the same.

CONCLUSIONS: From the data discussed above, and in the absence of information to the contrary, we may tentatively conclude that the presence of sorghum cane in the diet of Bob-White Quail has a restraining effect on parasitism.

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DEPARTMENT OF ZOOLOGY, UNIVERSITY OF MISSOURI,  
COLUMBIA, MO.

<sup>2</sup>"Crop-contents" includes contents of crop and stomach both.

## CYCLES OF MIGRATION\*

BY LEONARD WILLIAM WING

By means of the efforts of bird students, which have been directed towards the accumulation of observational facts of migration, we have built up a vast amount of data of incalculable value. We may be justly proud of the efforts in this direction and hope that they will be continued in the future as in the past. Of perhaps even greater pride is the individual, undirected, and unencouraged nature of the work. In no other branch of natural history has so much data been accumulated on so difficult a problem.

My studies of migration and obvious phenomena of nature such as meteorological conditions proved wholly unsatisfactory and inconclusive. No sooner would a relationship seem established than to be overthrown by additional facts. Some years ago, through the interest of a close friend, I turned to astrophysics as a possible means of finding an ultimate control of migration. It seemed reasonable that migration, which takes place at definite positions of the earth and sun each year would respond to any changes in the sun, the more variable of the two.

In a previous study,<sup>1</sup> I directed attention towards migration responses of birds to two solar cycles, the half and eleven year sun-spot cycles. Presenting the Loon as an example of a bird's response to the half<sup>2</sup> sun-spot cycle and the Sandhill Crane to the eleven year cycle, I attempted to show briefly that birds respond to solar cycles, most water birds to the half sun-spot cycle and most land birds to the eleven year cycle. Although only then surmised, additional periodicities have since been revealed by continued investigation.

In Figure 5, the topmost curve (the same as used in the paper referred to above) shows that the earliest arrivals of the loon at Ann Arbor, Michigan, occur both at sun-spot maximum and minimum. This type of response may be termed *extremal* (after *extremum i. e.* either maximum or minimum).

The middle curve of Figure 5 demonstrates the same migration relationship for a closely related bird, the Pied-billed Grebe. The same five oscillations occur.

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\*Presented at the Fifty-first Stated Meeting of the American Ornithologists' Union, New York, November 21, 1933.

<sup>1</sup>Presented at the Fiftieth Stated Meeting of the A. O. U., Quebec, 1932. Published in the *Auk*, Vol. LIX, July, 1934, pp. 302-305.

<sup>2</sup>The half cycle is half of eleven years.

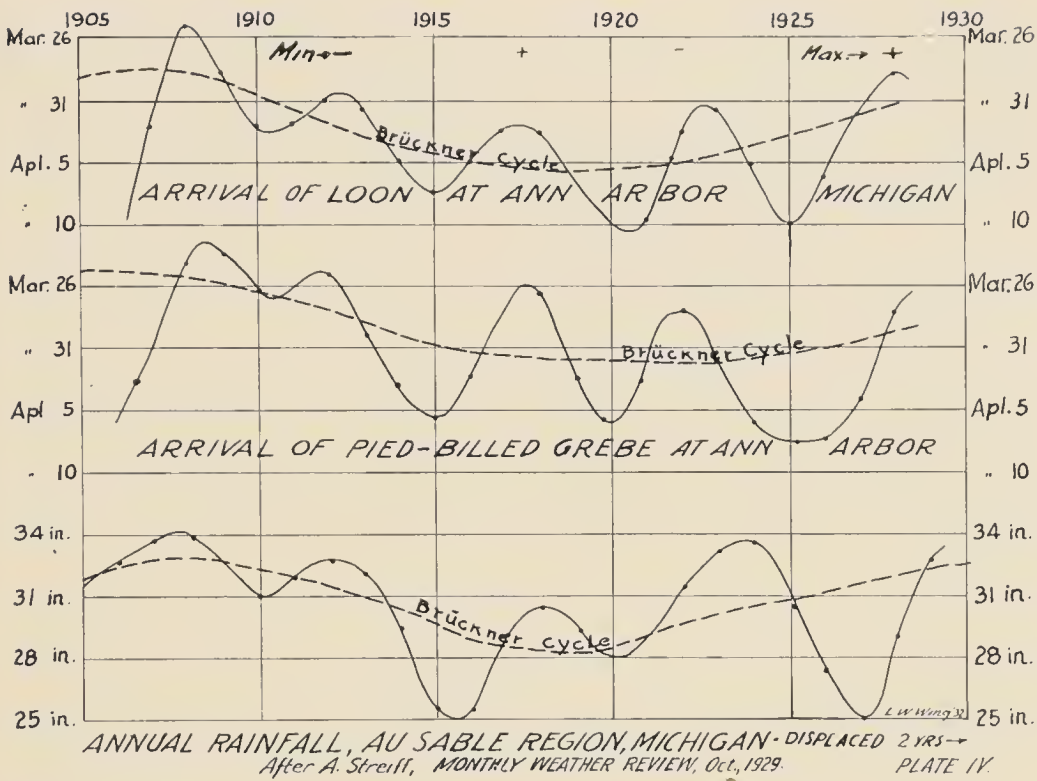


FIG. 5. Curves of earliest arrival of the Loon and Pied-billed Grebe at Ann Arbor, Michigan, and precipitation in the Au Sable River region. The plus and minus signs indicate sun-spot maxima and minima.

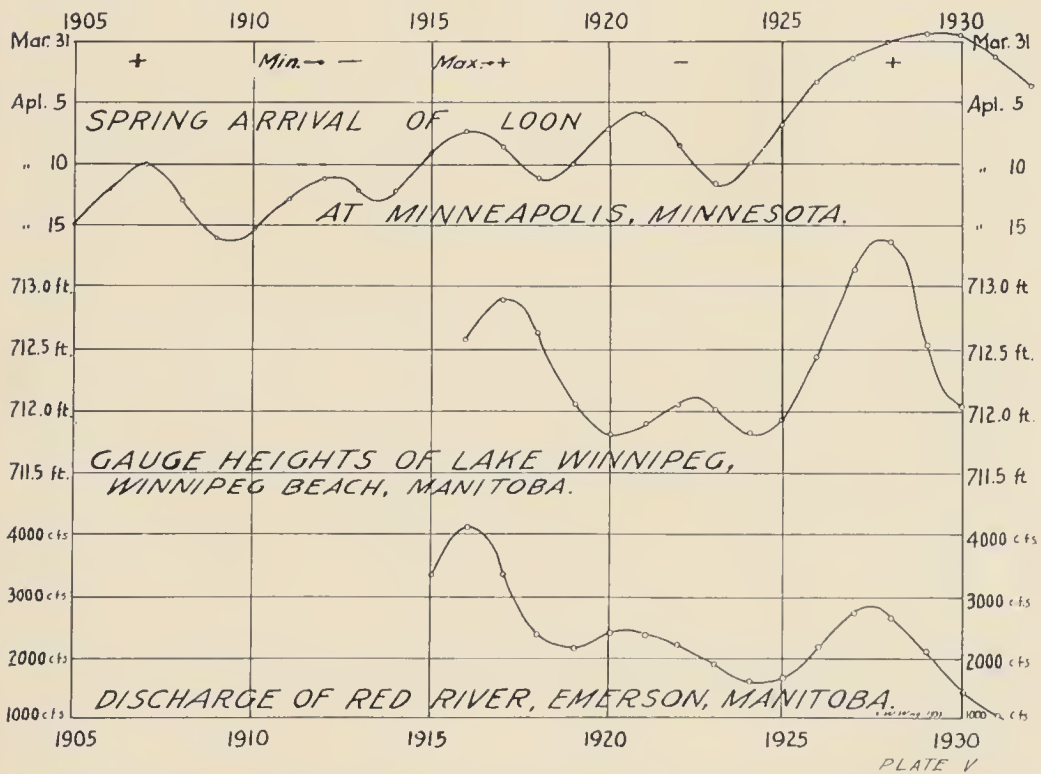


FIG. 6. Migration of the Loon; levels of Lake Winnipeg (above sea level); flow of the Red River, in cubic feet per second.

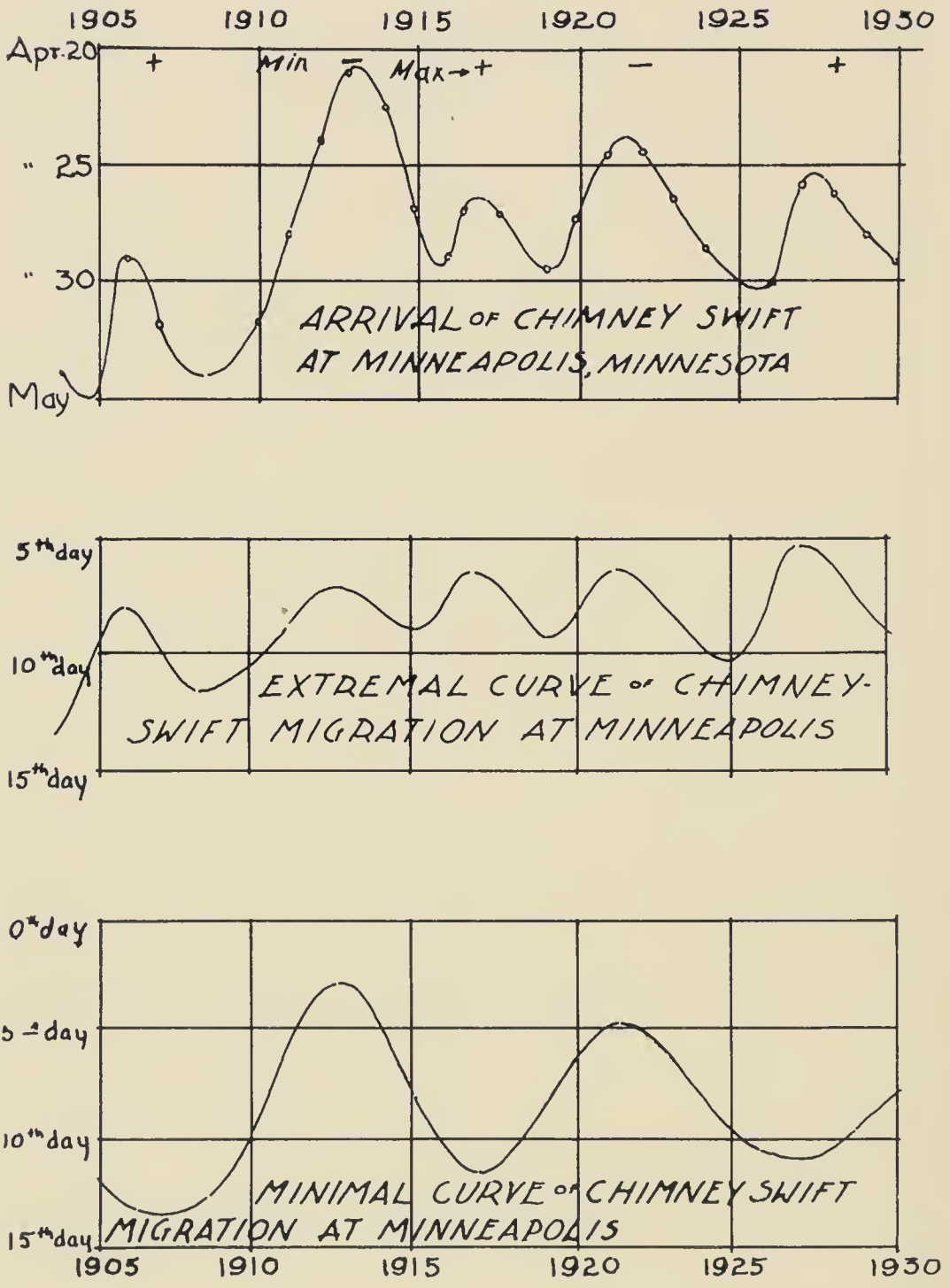


FIG. 7. Analysis of Chimney Swift migration. The ordinates of the two lower curves are based on a "zero" day.

The third curve of Figure 5 shows the rainfall curve for the Au Sable River region 200 miles north of Ann Arbor. I have used this curve (prepared by Mr. Abram Streiff, of Jackson, Michigan) as it represents the only comparable series of integrated precipitation data available. I have displaced this curve to the right two years to assist in comparison with the three curves in the figure. For example, the precipitation for the year 1918 appears under 1920 in the figure, etc. In this displaced position we note a correspondence of all three extrema. According to Mr. Streiff, the cumulative action of ground-water is evidenced in regions of glacial drift by this displacement of the rainfall curve. Stream flow and surface water in turn are reflected in the ground water levels and this displaced curve is indicative of their conditions.

The sun-spot cycle is not one simple cycle but rather a complication of interrelated periodicities. Mr. Strieff<sup>3</sup> has pointed out several long-term cycles. One, with an average length of thirty-three years, has been called the *Brückner Cycle* by him. A change of smoothing averages reveals the Brückner Cycle in the present data of the loon and grebe migrations. It is represented in Figure 5 by the broken-line curves. A feature of significance is the appearance of the Brückner Cycle in phase (*i. e.* the oscillations occurring simultaneously) in the migrations and in the rainfall.

Through the generosity of Dr. Thomas S. Roberts of the University of Minnesota, I obtained arrival data for the loon at Minneapolis. The data have been supplemented, through the courtesy of Dr. Harry C. Oberholser, by records from the files of the Biological Survey, Washington, D. C. The Minneapolis data, Figure 6, bear out the Ann Arbor records. The same five peaks of arrival are present and occur at the sun-spot extrema. The second and third curves of Figure 6 show the levels of Lake Winnipeg and the discharge of the Red River at Emerson, Manitoba. I am indebted to the Dominion Water Power and Hydrometric Bureau for the use of these data. The three sets of curves show a distinct relationship. The lag of the lake levels behind the run-off is clearly apparent.

The arrivals of the Chimney Swift at Minneapolis are shown in Figure 7. These data were also received from Dr. Roberts. The top curve was plotted directly from the smoothed data and shows the extremal migration as in the loon and grebe. The greater amplitudes at sun-spot minima indicate a complex curve and lead one to sus-

<sup>3</sup>1926 Monthly Weather Review, Vol. 54, p. 7.

pect that the Chimney Swift responds both extremally and minimally. This complex curve can be resolved into two curves as shown. It indicates that the Chimney Swift comes the earliest at sun-spot extrema and also possesses a separate set of early arrivals at minima. The combination of the two which occurs at the minima gives earlier early arrivals at minima than the early arrivals of the maxima. From survey of other data, I am inclined to believe that this is a widespread migration phenomenon.

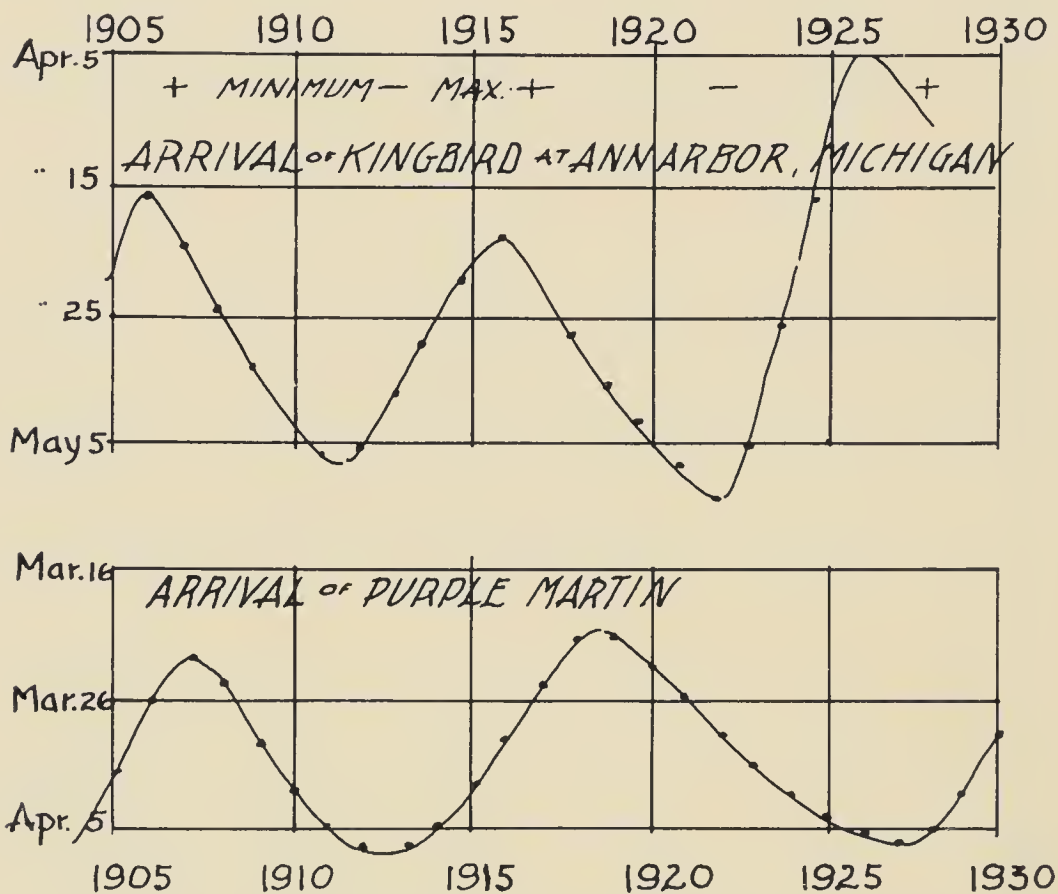


FIG. 8. Migration curves for the Kingbird and Purple Martin.

Figure 8 shows the arrivals of the Kingbird at Ann Arbor and the Purple Martin in southern Michigan. The latter has been compiled from several sources in southern Michigan in order to fill gaps in the Ann Arbor data. These two migration curves are further evidence of the maximal migration as of the Sandhill Crane of my previous paper.

The opening dates for Eastern Brant shooting on Monomoy Island, Massachusetts, as published by Dr. John C. Phillips<sup>4</sup> furnish definite evidence that the start of spring shooting, coincident with the arrival of the Eastern Brant, has followed a definite rhythmic cycle and is not

<sup>4</sup>Auk, Vol. 49, October, 1932, pp. 445-453.

due to fortuities. I have taken the dates from Dr. Phillips' paper, analyzed them and plotted them as shown in the bottom curve of Figure 9. For the convenience of the reader, I have added the curve of the Wolf Numbers (the index of sun-spot conditions) as well as the Brückner Cycle discovered by Mr. Streiff. It will be seen that the early shooting occurred at the sun-spot minima and the later shooting at the maxima. The Brückner Cycle is clearly evident in the brant curve. Its effect is manifest in the earlier shooting at the minima

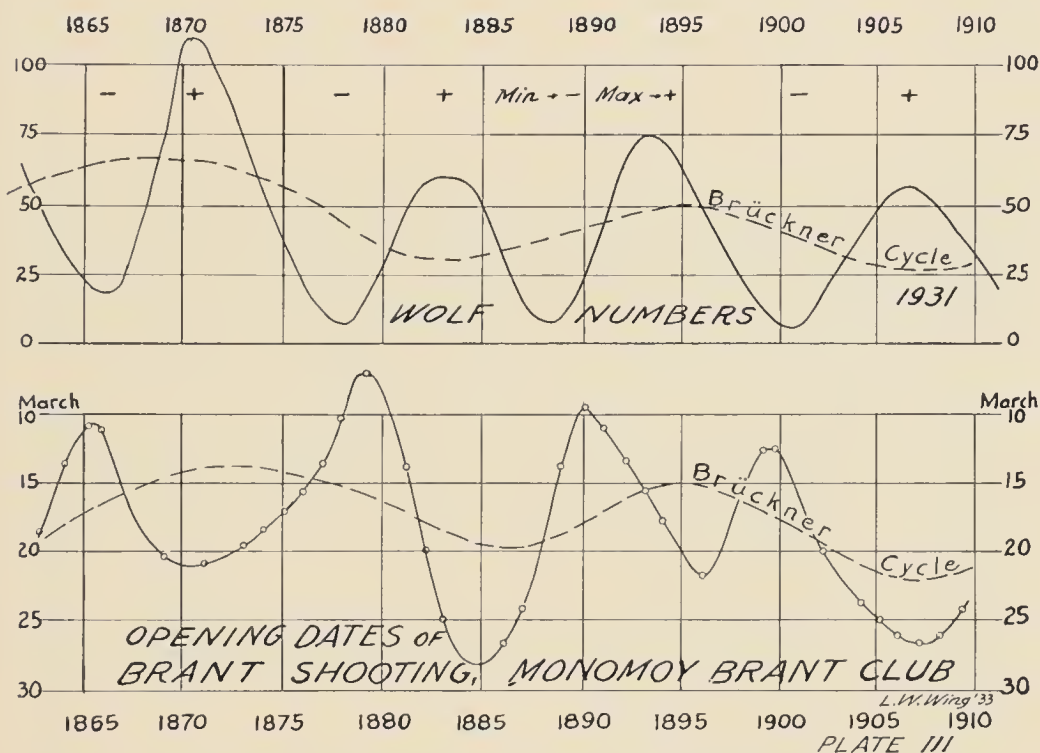


FIG. 9. Analysis of the Wolf sun-spot numbers and of Brant shooting.

of 1871 and 1896 as compared with the minima of 1885 and 1907. The shooting began earlier at the sun-spot minima than at sun-spot maxima and again earlier at the Brückner maxima than at the Brückner minima.

It has been shown that other cycles of longer period than the Brückner may be identified in the Wolf Numbers. There is no reason to disbelieve the presence of the long-time cycles in the migration of birds.

It is not my desire to give the impression that the migration of loons and grebes is controlled by fluctuations in water levels which accompany solar changes. They are introduced here as evidence that the environment has definite rhythms paralleling the migration rhythms. The same cycles found in both migration and the environ-

ment indicate an external control over migration. The accelerations and the retardations of migration with changes in the sun lead to the belief that it is not only the guiding influence in migration movements but is probably the seasonal starter of the movements. The demonstrated limited control by the sun places us a step closer to the causal factors of migration.

From consideration of the cyclic character of migration, it is evident that there is a *continuity* to the yearly migration. We must speak of the *regularity* of migration and look upon the difference in arrival dates from year to year as a manifestation of this regularity. The time when a species is due to arrive at any point of its migration path is not accidental but is dependent upon *real cosmic* factors. This continuity of arrival, as attested by the half century record of the brant and shorter records for others, demonstrates that migration takes its place as another of the inter-related mechanics of nature.

GRASS LAKE, MICH.

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## FIELD EXPERIENCES WITH MOUNTAIN-DWELLING BIRDS OF SOUTHERN UTAH

BY ALDEN H. MILLER

Some of the mountains of southern Utah were visited in the late summer of 1872 by H. W. Henshaw and a considerable amount of information on the birds of this section of the state was set forth by him in the reports resulting from his ornithological explorations and the explorations of his associates (*U. S. Geog. and Geol. Explorations and Surveys*, Vol. V, Chap. III, 1875). Since then little has been added regarding the birds of this region. In 1927 Tanner (*Condor*, XXIX, 1927, pp. 196-200) listed the birds of the lowlands of the Virgin River and mentioned also certain species found in Zion Cañon and in the Pine Valley Mountains. Stanford in a recent article (*Auk*, XLVIII, 1931, pp. 618-621) offers notes on the hawks and owls of Sevier County, including the high mountains of the Fish Lake district. Accompanying the increased accessibility of the mountains of this part of Utah due to the development of national parks and other scenic features, considerable advance in the knowledge of local bird distribution is to be expected. It may appear presumptuous for me to offer comments on the birds of southern Utah on the basis of a short acquaintance with the region. But, my systematic collecting and study during late June and July in Utah in 1931 have disclosed a number of



facts of seeming value. These are offered as a small contribution to a complete report on the birds of the state which, it is anticipated, will be compiled by other persons who have had extended contacts with Utah birds.

Four principal mountain stations were made by Mrs. Miller and myself as follows: June 28 to July 1, Cedar Breaks, elevation 10,000 feet, Parowan Mountains, Iron County; July 2-4, summit of Escalante Mountains, elevation 9,000 feet, seven miles east of Widtsoe, Garfield County; July 5-7, ten miles north of Fish Lake, elevation 10,000 feet, Sevier County; July 8-10, Great Basin Experiment Station, elevation 8,800 feet, Wasatch Mountains east of Ephraim, Sanpete County.



FIG. 10. Left: Meadow, rocks, and Spruce timber at Cedar Breaks, Iron County, Utah. Photograph taken July 1, 1931. Right: Nest and young of Audubon's Hermit Thrush, Great Basin Experiment Station, Wasatch Mountains, Sevier County, Utah. Photograph taken July 8, 1931.

The Cedar Breaks camp was at the edge of a broad, alpine meadow on the top of the mountains surrounded by scattered clumps of conifers, chiefly Engelmann's spruce (*Picea engelmanni*) and Colorado blue spruce (*P. parryana*). (Figs. 10 and 11). Clumps of low alpine willows bordered some of the stream courses running through the meadow while great piles of loose rock adjoined the meadows and provided excellent retreats for marmots and pikas. In places the meadows of the summit gave way to flats covered with artemisia brush. At lower elevations firs and yellow pines (*Pinus ponderosa*) replaced the spruce forest.

The section of the Escalante Mountains visited was lacking in open forests or meadows. The region consisted rather of steep slopes, in places densely forested with spruce, quaking aspens (*Populus tre-*

*muloides*), and firs. Somewhat more open tracts of timber on the south exposures contained a scattering of yellow pines and lodgepole pines (*Pinus murrayana*) with occasional patches of low brush on the forest floor. (Fig. 11).

In Sevier County we drove to the resorts on Fish Lake, thence north through an open valley on an old shepherd's road to a point at the edge of a broad meadow surrounded by tracts of artemisia. To the south an open aspen, spruce, and fir forest covered the sides of a ridge which rose to an elevation of 11,000 feet.

In the vicinity of the forestry experiment station, known as the Great Basin Experiment Station, several zones of floral conditions were encountered. Below the conifers a belt of Gambel oaks (*Quercus gambelii*) formed a low dry forest at an altitude of about 7,000 to 8,000 feet. Such a forest also was present near the base of the Parowan Mountains. The oaks gave way higher up to aspens, firs, and *Pseudotsuga taxifolia*, with an extensive ground cover of bushes two to four feet high. This was the nature of the forest about the station. Here there were a few small stream-side meadows. Still higher, on the open summits of the mountains at 10,000 feet, small clumps of short spruces dotted an open terrane, largely dry at this season, although in places meadow conditions prevailed.

The majority of the birds listed below were seen at one or several of the places just described. A few were noted while we were traveling or at overnight camps between the four principal stations. The list includes all species noted in the mountains and only those occurring at lower elevations that attracted particular attention. Numbers refer to specimens in the Museum of Vertebrate Zoology.

EASTERN GOSHAWK. *Astur atricapillus atricapillus*. One was seen in the aspens on the Escalante Mountains. A female (No. 58090) taken ten miles east of Kamas, Summit County, on July 13 was of the eastern race indicated. The bird had two short-tailed juvenals stationed in the lodgepole pines. At the time of my arrival the young were feeding upon a Dusky Grouse. On the ground beside them was a dead Fremont squirrel. Stanford (*op. cit.*) records both this race and *striatulus* from Sevier County in winter but does not mention details regarding the identification of the two forms. The female which I took near Kamas is a typical light-backed *A. a. atricapillus* with the feathers of the under parts bearing narrower and lighter median streaks than in *striatulus*. I find no difficulty in distinguishing this bird from the much darker breeding *striatulus* of California.

WESTERN RED-TAILED HAWK. *Buteo borealis calurus*. Four were seen about the meadow north of Fish Lake and a single bird was noted flying over similar terrane on the summit east of Ephraim.

OSPREY. *Pandion haliaëtus carolinensis*. One was seen flying over Fish Lake where it also was reported by Stanford. The local ranger, Mr. O. Torgerson, informed me that the Osprey was seen daily and evidently was resident there.

GRAY RUFFED GROUSE. *Bonasa umbellus umbelloides*. Near the Experiment Station on July 8 I encountered a female with a number of chicks the size of small quail. The adult was greatly perturbed



FIG. 11. Left: Small meadow in the spruce timber inhabited by Gray-headed Juncos, Rocky Mountain Pine Grosbeaks, and White-crowned Sparrows, at Cedar Breaks, Iron County, Utah. Photograph taken June 29, 1931. Right: Spruces, aspens, and lodgepole pines on the Escalante Mountains, Garfield County, Utah. Photograph taken July 2, 1931.

and demonstrated her anxiety in the bushes within fifteen feet of me until the chicks stopped peeping and ceased running about. This locality is somewhat south of the range of this species in Utah as hitherto defined. Two days after the above mentioned experience a Ruffed Grouse was nearly run over by my car as I rounded a turn in the road near the Experiment Station and found the bird occupied with a dust bath.

A male (No. 58094) taken July 15 to the north in the Wasatch Mountains near Randolph, Rich County, was molting but possessed many fresh body feathers, the coloration of which agrees with that of specimens of *umbelloides* from British Columbia.

SAGE HEN. *Centrocercus urophasianus*. A hen and at least six half-grown young were flushed from a patch of low artemisia brush between the meadow and the aspen forest north of Fish Lake. This occurrence was on July 5 at an elevation of 10,000 feet.

HORNED OWL. *Bubo virginianus*, ssp.? Several times flushed from spruce thickets at Cedar Breaks and at Fish Lake. At the latter place a group of birds, presumably a family, was heard hooting about our camp on the night of July 5.

NIGHTHAWK. *Chordeiles minor*, ssp.? This species was common on the sage flats ten miles southeast of Sigurd, Sevier County, at an altitude of about 6,500 feet. On July 6 at this place they were booming frequently. None was seen in the mountains in the timbered areas or about the open meadows at 10,000 feet elevation.

BROAD-TAILED HUMMINGBIRD. *Selasphorus platycercus platycercus*. This hummingbird was seen, or its characteristic wing "rattle" heard, daily in a variety of habitats in the mountains, but perhaps most frequently along stream courses and about meadows. They were observed at all four of the principal mountain stations. They also were seen on the floor of Zion Cañon and in dry junipers and artemisia several miles from water ten miles southeast of Sigurd, Sevier County.

CALLIOPE HUMMINGBIRD. *Stellula calliope*. Identified with certainty only on the Escalante Mountains but the species probably was represented on other mountains of the southern part of the state. In the dense spruce timber on the Escalante Mountains we found a female building a nest on July 3. The nest site was six feet above ground on a small limb. As is usual in this species, the nest was sheltered from above by another and larger limb. The bird was almost without fear and permitted me to stand within two feet while she plastered the outside of the nest with cobwebs. In doing this the bill was drawn over the edge of the nest from base to tip, resulting in the head being drawn up and back into various awkward-appearing positions. The nest tree was near a small stream.

RED-SHAFTED FLICKER. *Colaptes cafer collaris*. Common throughout the regions visited, ranging up to timber line in the high mountains.

LEWIS'S WOODPECKER. *Asyndesmus lewis*. Present on June 28 in the open yellow pine timber, elevation 7,500 feet, on the east side of the Parowan Mountains.

RED-NAPED SAPSUCKER. *Sphyrapicus varius nuchalis*. This species was seen north of Fish Lake in aspens and in willows four feet high growing in the meadow. In northern Utah a similar and pronounced habitat preference was noted in agreement with Henshaw's findings (pp. 392, 393) wherein he contrasts this sapsucker with Williamson's Sapsucker which inhabits conifers almost exclusively. Although *nuchalis* clearly favors broad-leaf timber in summer, this is by no means as uniformly the case in the related *Sphyrapicus varius daggetti* (see Grinnell, Dixon, and Linsdale, Univ. Calif. Publ. Zool., Vol. 35, 1930, pp. 254, 255).

NATALIE'S SAPSUCKER. *Sphyrapicus thyroideus nataliae*. Noted only in the Escalante Mountains in the mixed fir and spruce forest.

WHITE-BREASTED WOODPECKER. *Dryobates villosus leucothorectis*. Present at Cedar Breaks, in the Escalante Mountains, and north of Fish Lake. At the Experiment Station a pair had a nest twelve feet up in the solid trunk of a living aspen. It contained large-sized young judging from the sound emanating from the hole.

BATCHELDER'S WOODPECKER. *Dryobates pubescens leucurus*. A pair of these woodpeckers was discovered in an aspen grove near the Experiment Station. The female was collected (No. 58099). No others were seen by us in the southern part of the state.

ALPINE THREE-TOED WOODPECKER. *Picoides tridactylus dorsalis*. This woodpecker was found to be at least as common as the White-breasted Woodpecker in the spruces at Cedar Breaks, in the Escalante Mountains, and north of Fish Lake. A female (No. 58102) was taken June 28 at Cedar Breaks.

WRIGHT'S FLYCATCHER. *Empidonax wrighti*. Several individuals were seen in the spruce and aspen forest north of Fish Lake.

WESTERN FLYCATCHER. *Empidonax difficilis difficilis*. One was noted in the trees along a dry stream course in a cañon in the Escalante Mountains.

WESTERN WOOD PEWEE. *Myiochanes richardsoni richardsoni*. Wood Pewees were scarce at Cedar Breaks and at Fish Lake. They were not observed at our other camps but were present on the floor of Zion Cañon.

OLIVE-SIDED FLYCATCHER. *Nuttallornis mesoleucus*. A single bird of this species was seen at Cedar Breaks on June 30. North of Fish Lake one pair was encountered in short spruce timber at an altitude of 11,000 feet.

DESERT HORNED LARK. *Otocoris alpestris leucolaema*. Besides being abundant at low elevations in the valleys, Horned Larks were

found in open places at an altitude of 10,000 feet. North of Fish Lake a few were seen in the drier portions of the meadow. They were abundant on the divide east of Ephraim on barren ground and also along small streams running from the snow banks. Males were singing occasionally on July 9 and many fully grown juvenals were seen on the same day. A pair (♂ No. 58108. ♀ No. 58109) was taken at this locality.

ROCKY MOUNTAIN JAY. *Perisoreus canadensis capitalis*. Twice these jays were encountered at Cedar Breaks in the larger of the spruce thickets. On June 29 the male of a pair of adults was collected (No. 58111). The condition of the testes (2 mm. in length) indicated that the bird was long past breeding. It also was in the middle of the annual molt. No juvenile or immature birds were accompanying the pair of adults. A single Rocky Mountain Jay was heard in the spruce forest north of Fish Lake.

LONG-CRESTED JAY. *Cyanocitta stelleri diademata*. At Cedar Breaks this species was absent but it was seen in the oak belt on the east flank of the Parowan Mountains. They were fairly common in the Escalante Mountains where I found a juvenal hidden in a spruce clump adjoining a grove of Yellow Pines. Several were seen near the Experiment Station but here, as at Cedar Breaks, they seemed to avoid the pure stands of spruce high on the mountains.

WOODHOUSE'S JAY. *Aphelocoma californica woodhousei*. On June 28 this jay was seen in the piñons along the road between Zion Cañon and Mount Carmel, Kane County. They were again observed ten miles southeast of Sigurd, Sevier County, in a small grove of junipers.

AMERICAN MAGPIE. *Pica pica hudsonia*. Noted along the valley of the Sevier River from the vicinity of Junction, Piute County, north to Ephraim. They were inhabiting the willow clumps beside the river and were foraging in the adjoining farm lands.

PIÑON JAY. *Cyanocephalus cyanocephalus*. A small flock flew through the junipers at our camp ten miles southeast of Sigurd, Sevier County, on July 7.

CLARK'S NUTCRACKER. *Nucifraga columbiana*. Present but scarce at the Experiment Station, Fish Lake, and Cedar Breaks. Five birds flying together, presumably a family group, were seen at the latter place on June 30. The species was somewhat more common on the Escalante Mountains in the mixed pine and spruce forest.

MOUNTAIN CHICKADEE. *Penthestes gambeli gambeli*. Present in small numbers in the coniferous forests at our four principal mountain stations. I noted repeatedly that the songs of this chickadee consist of two groups of notes separated by three or more half tones of pitch. In contrast to this type of song are those of the races *P. g. baileyae* and *abbreviatus* in which the greatest interval of pitch with rare exceptions is no larger than one whole tone.

ROCKY MOUNTAIN NUTHATCH. *Sitta carolinensis nelsoni*. Twice observed in the more open timber of the south-facing slopes of the Escalante Mountains.

RED-BREASTED NUTHATCH. *Sitta canadensis*. Observed in the Escalante Mountains, at Fish Lake, and at the Experiment Station. Only one or two birds were seen at each locality.

ROCKY MOUNTAIN CREEPER. *Certhia familiaris montana*. Only three individuals were seen at Cedar Breaks, but in the Escalante Mountains and north of Fish Lake they were abundant.

WESTERN ROBIN. *Turdus migratorius propinquus*. Fairly common on all the mountains, ranging from 4,000 feet in the valleys to timberline at 11,000 feet altitude as at Fish Lake. A pair were feeding young in a nest at Cedar Breaks on June 30.

AUDUBON'S HERMIT THRUSH. *Hylocichla guttata auduboni*. Many of these thrushes were seen at Cedar Breaks and in the Escalante Mountains in the dense spruce thickets. At the latter place some were seen also in moderately open spruce, pine, and aspen forest where the males were singing at midday in bright sunlight from the tops of fifty-foot spruces. At the Experiment Station they were abundant in the aspens and firs. Here, on July 8, I flushed a bird from a nest two and one-half feet up in a small fir tree at the edge of a stream-side meadow. The nest held three young estimated to be about five days old (Fig. 10). The nest was frail for this species and apparently contained no mud. A male (No. 1071, A. H. Miller) was collected here.

OLIVE-BACKED THRUSH. *Hylocichla ustulata swainsoni*. This species was first noted on July 8 at the Experiment Station in stream-side thickets. It was absent in the mountains to the south, at least in the parts visited by us. A specimen (No. 58127) taken eight miles east of Kamas, Summit County, is comparable to other Rocky Mountain and Great Basin examples of *swainsoni* (*almue* of Oberholser) but is slightly darker and grayer dorsally than available specimens of *swainsoni* from the eastern United States. The eastern specimens, however, are not in strictly comparable plumage, having been taken

in May rather than in June or July as were the available western specimens.

MOUNTAIN BLUEBIRD. *Sialia currucoides*. Present but not common about the meadows at Cedar Breaks, Fish Lake, and the summit east of Ephraim.

TOWNSEND'S SOLITAIRE. *Myadestes townsendi*. One pair was seen at Cedar Breaks in the timber at the edge of a meadow. In the Escalante Mountains there were a number of males singing in the timber near our camp. They sang abundantly in the early morning and late evening and once at midday just before a thunder shower when the sky was heavily clouded. At the Experiment Station a female (No. 58131) was collected.

WESTERN GOLDEN-CROWNED KINGLET. *Regulus satrapa olivaceus*. About five individuals were noted in the dense tall spruces on the Escalante Mountains. No others were encountered except on the summit east of Ephraim at 10,000 feet. Here a single male (No. 58132) was shot from a small clump of spruces.

EASTERN RUBY-CROWNED KINGLET. *Corthylio calendula calendula*. Common in the dense spruce clumps at Cedar Breaks but scarce in the continuous spruce forest on the Escalante Mountains. This species also was noted in the firs at the Experiment Station and on the summit east of the station.

AMERICAN PIPIT. *Anthus spinoletta rubescens*. A solitary pipit was seen on June 30 in the alpine meadow at Cedar Breaks. Although I failed to note other individuals, the presence of this bird on this date seems to indicate summer residence.

PLUMBEOUS VIREO. *Vireo solitarius plumbeus*. Seen in the birches and aspens along a stream course five miles south of Belknap Ranger Station, southern Sevier County, elevation 8,000 feet, on July 4. They were present also at the Experiment Station.

WESTERN WARBLING VIREO. *Vireo gilvus swainsoni*. Seen in the aspens at the Experiment Station.

VIRGINIA'S WARBLER. *Vermivora virginiae*. This warbler was found in the hot dry oak belt five miles south of Belknap Ranger Station, southern Sevier County, on July 4.

ROCKY MOUNTAIN AUDUBON'S WARBLER. *Dendroica auduboni memorabilis*.\* Audubon's Warblers were found on all of the mountains visited. A male (No. 58154) taken at Cedar Breaks is long-winged, measuring 81.2 mm. as is characteristic of *memorabilis*. This

\*Not included in the A. O. U. Check-List.—Ed.



particular specimen does not seem to differ from Pacific Coast examples of *D. a. auduboni* in coloration. The size difference between *D. a. auduboni* and *memorabilis* is pronounced, however.

MACGILLIVRAY'S WARBLER. *Oporornis tolmiei*. A few individuals inhabited the bushes beneath the aspen trees at the Experiment Station.

ROCKY MOUNTAIN BREWER'S BLACKBIRD. *Euphagus cyanocephalus cyanocephalus*. Small flocks of this blackbird were seen about Fish Lake but otherwise the species was encountered only in the valleys at much lower elevations.

WESTERN Tanager. *Piranga ludoviciana*. This species was unaccountably scarce. Two birds only were seen, both in the Escalante Mountains.

WESTERN BLUE GROSBEAK. *Guiraca caerulea interfusa*. Although strictly a lowland species, its occurrence in Zion Cañon makes desirable the recording of this observation. On June 27 a first-year male with partly blue plumage was observed closely as it sang in the willows and tall weeds near the stream. The bird became excited at my approach and gave the characteristic warning note. On the same day another male was heard singing 400 yards down stream from this point.

LAZULI BUNTING. *Passerina amoena*. Several were seen about the bushes in the clearing at the Experiment Station. They also were present in Zion Cañon.

CASSIN'S PURPLE FINCH. *Carpodacus cassinii*. Seen, at least in small numbers, on all of the mountains. At Cedar Breaks in the borders of the timber they were abundant and at similar places on the summit east of Ephraim they were common.

ROCKY MOUNTAIN PINE GROSBEAK. *Pinicola enucleator montana*. Abundant at Cedar Breaks where they were in sight almost continually throughout the day. They usually frequented the low dense spruces near the meadows but also were to be found away from the meadows in the spruce forest. They fed in small groups or in pairs in the meadow at our camp, foraging both on ground and on the low limbs of trees. Although some of the groups of individuals seemed to be families in which the young were independent of the adults, other aggregations of at least twelve individuals were seen on occasions. At times birds were heard singing. Two adult females (Nos. 58166 and 58167) taken here were long past breeding condition. The testes of a male (No. 58165) measured 7 mm.

North of Fish Lake half a dozen birds were seen about small meadows at 10,500 feet altitude. On the summit of the Wasatch

Mountains east of Ephraim a loose band of approximately twenty individuals were feeding about an open meadow at the edge of a small grove of spruces. An orange-headed male (No. 58168) was collected here.

NORTHERN PINE SISKIN. *Spinus pinus pinus*. This species occurred throughout the coniferous forests of the mountains which we visited, but it was especially abundant in the meadows at Cedar Breaks where siskins were feeding on the heads of short composites which were in seed.

BENDIRE'S CROSSBILL. *Loxia curvirostra bendirei*. Small flocks of crossbills were present at Cedar Breaks where a post-breeding female (No. 58338) was collected. At our camp on the Escalante Mountains they were exceedingly abundant, feeding on the spruce cones. A flock of at least fifty birds, probably many more, was flushed from a single tree. Prior to their leaving, a continuous shower of scales and remains of seeds could be seen falling to the ground. The birds were silent while feeding except for the subdued rustle of their feeding activities. Two males were collected here (Nos. 58339 and 58340). A few crossbills were seen north of Fish Lake; a considerable number was present on the summit east of Ephraim.

GREEN-TAILED TOWHEE. *Oberholseria chlorura*. This species was first met in the Escalante Mountains where a few pairs inhabited the patches of ceanothus brush. A nest was found as a bird flushed from it in the characteristic "green-tail" manner, that is, by dropping to the ground and running with tail elevated, thus resembling a chipmunk running through the brush. The nest was situated eighteen inches above ground in an open ceanothus bush on a south-facing slope (Fig. 12). Green-tailed Towhees were seen at Fish Lake in the artemisia and in the bushes about the Experiment Station.

NEVADA SAVANNAH SPARROW. *Passerculus sandwichensis nevadensis*. Savannah Sparrows, presumably of this race, were found in the meadow north of Fish Lake. They still were in song on July 6.

WESTERN VESPER SPARROW. *Pooecetes gramineus confinis*. Noted on June 25 in an artemisia flat at 10,000 feet near Brian Head, Parowan Mountains. They occurred in the same plant association near the town of Widtsoe and again on the mountain tops east of Ephraim. At the latter locality they were found in sparse one-foot bushes on the drier portions of the summit associated with Horned Larks. Five or more pairs were seen here. Two males were collected (Nos. 58345 and 58346). The males sang frequently from the ground but occa-

sionally mounted to the tops of the bushes or even to the tops of twenty-five-foot trees.

GRAY-HEADED JUNCO. *Junco caniceps*. Juncos were the main objective of our expedition and accordingly they were collected in considerable numbers. They were moderately common on all of the mountains visited, ranging from the lower limit of coniferous trees to timber line, with the exception of the summit east of Ephraim. Here they were absent, at least locally. All specimens taken from this section of the state were *J. c. caniceps* (Fig. 12).

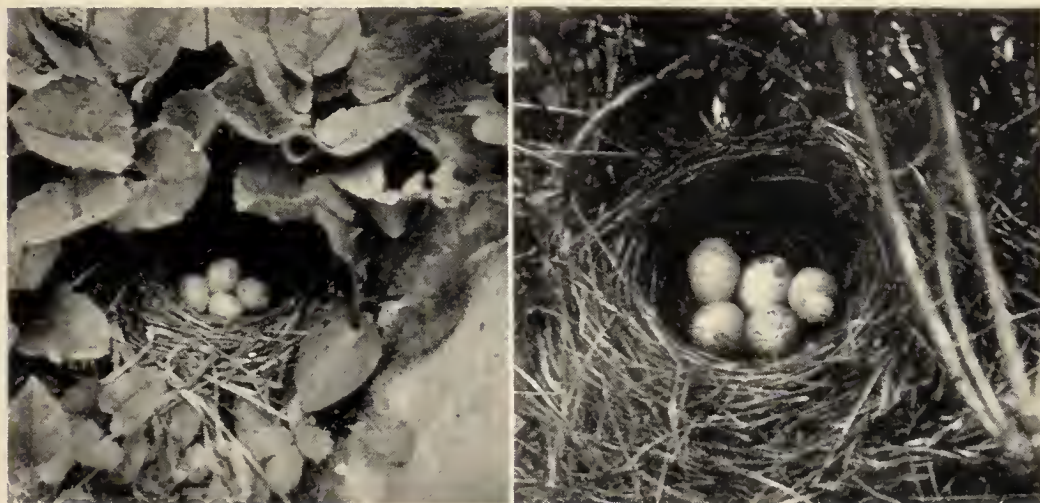


FIG. 12. Left: Nest and eggs of the Gray-headed Junco, *Junco caniceps caniceps*. Photograph taken June 29, 1931. Right: Nest and eggs of the Green-tailed Towhee, Escalante Mountains, Garfield County, Utah. Photograph taken July 2, 1931.

WESTERN CHIPPING SPARROW. *Spizella passerina arizonae*. Abundant about the borders of the meadows at Cedar Breaks where several groups of young were seen. Once a male was heard singing by moonlight. North of Fish Lake, where they also were abundant, a nest was found on July 6 in a five-foot spruce in a meadow. The nest was three feet from the ground against the trunk of the tree and contained four fresh eggs. East of Ephraim the species was present in the open timber of the summit but was absent in the dense timber about the Experiment Station.

BREWER'S SPARROW. *Spizella breweri breweri*. Common in the artemisia brush of the valleys at low elevations but also found on July 9 on the summit east of Ephraim in some low bushes near a snow bank. A male was singing here on this date.

WHITE-CROWNED SPARROW. *Zonotrichia leucophrys leucophrys*. Abundant in the high meadows and artemisia brush at Cedar Breaks,

Fish Lake, and the summit east of Ephraim. In the meadows they inhabited the low clumps of willows and conifers. A pair at Cedar Breaks had a nest located on the ground in a dry clump of grass in the edge of a wet meadow. On June 28 it contained four eggs. The eggs all hatched between daylight and noon of the following day. Other pairs had young either in the nest or just able to run about. A pair of birds (♂ No. 58356 and ♀ No. 58355) was collected at Cedar Breaks; a single male (No. 58357) was taken east of Ephraim.

Males at Cedar Breaks sang regularly by moonlight. Songs of this sparrow in the Rocky Mountain region are different from those of *Z. l. leucophrys* of the Sierra Nevada as far as my observations could determine. Although there was considerable individual variation, the rise to the highest pitched note of the song was by a succession of three to five notes in the Rocky Mountain birds. The birds of the Sierra Nevada in my experience progress directly from the opening note of the song to the highest note. The Utah birds also lacked the low clear concluding note which is almost always given by the Sierra Nevada birds.

SLATE-COLORED FOX SPARROW. *Passerella iliaca schistacea*. One male was located in a small meadow near the Experiment Station. No others were seen in southern Utah. Fox Sparrows were moderately common farther north in the Wasatch Mountains where they frequented the willows of the beaver meadows. A specimen (♀ No. 58347) of this race was secured west of Woodruff, Rich County, July 18.

LINCOLN'S SPARROW. *Melospiza lincolni lincolni*. Three males of this sparrow were stationed along the wettest part of the meadow at our camp at Cedar Breaks. They also were present at Fish Lake and on the summit east of Ephraim, inhabiting scrub willows in the meadows. A male (No. 58358) was collected at Cedar Breaks.

MOUNTAIN SONG SPARROW. *Melospiza melodia fallax*. This species was noted along the shores of Fish Lake at 8,800 feet elevation.

MUSEUM OF VERTEBRATE ZOOLOGY,  
BERKELEY, CALIFORNIA.

## WALTER JOHN HOXIE

BY WILLIAM G. FARGO

FOREWORD. The writer's acquaintance with Mr. Hoxie began shortly after he came to live in St. Petersburg, Florida, which was in 1927. I have spent three or four months each winter since 1923 at Pass-a-Grille, a suburb of St. Petersburg and about six miles from the home of Mr. Hoxie. I have visited him frequently and have become intimately acquainted with him and with his youngest daughter, Mrs. Mary Russell Day, with whom he lives. Both Mr. Hoxie and Mrs. Day have read the following manuscript and have made corrections. I have had the use of Mr. Hoxie's scrapbooks containing a majority of his numerous contributions to the public press and of such of his journals, field notes, and letter files as were not destroyed in a fire at Beaufort, S. C., in 1891.

As time slips by it is well to record some of the salient points in the lives of men who have spent many of their working days in the field collecting zoological material for our museums and the large private collections and to attempt to portray what manner of men they were. It is unfortunate that Mr. Hoxie feels unable to write about himself. Should he do so, the result would be far more interesting reading than the present disconnected record of his ornithological work and similar interests. Incorporated here are some of Mr. Hoxie's hitherto unpublished bird records and manuscripts.

In preparing this biography assistance is gratefully acknowledged from Mrs. V. H. Bassett and Mr. Gilbert R. Rossignol of Savannah, Georgia, long-time acquaintances of Mr. Hoxie; from J. L. Baillie, Jr. and J. H. Fleming of Toronto, Ont.; Dr. Josselyn Van Tyne and Leonard W. Wing of Ann Arbor, Michigan; and Dr. James L. Peters, Cambridge, Mass.; particularly from Arthur H. Howell, of the U. S. Biological Survey who kindly placed at my disposal various of Hoxie's records in his personal possession or that of the Survey.

The portrait of Mr. Hoxie taken when he was about sixty years of age is from the Ruthven Deane Collection of Portraits of Ornithologists, now in the Library of Congress at Washington, to which we are indebted for its use. The other photographs are by the author.

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Prof. Walter John Hoxie, now past eighty-six years of age,\* living in St. Petersburg, Florida, is known to ornithologists chiefly by his

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\*Prof. Hoxie died at his home in St. Petersburg on July 30, 1934, after this biography was in type.

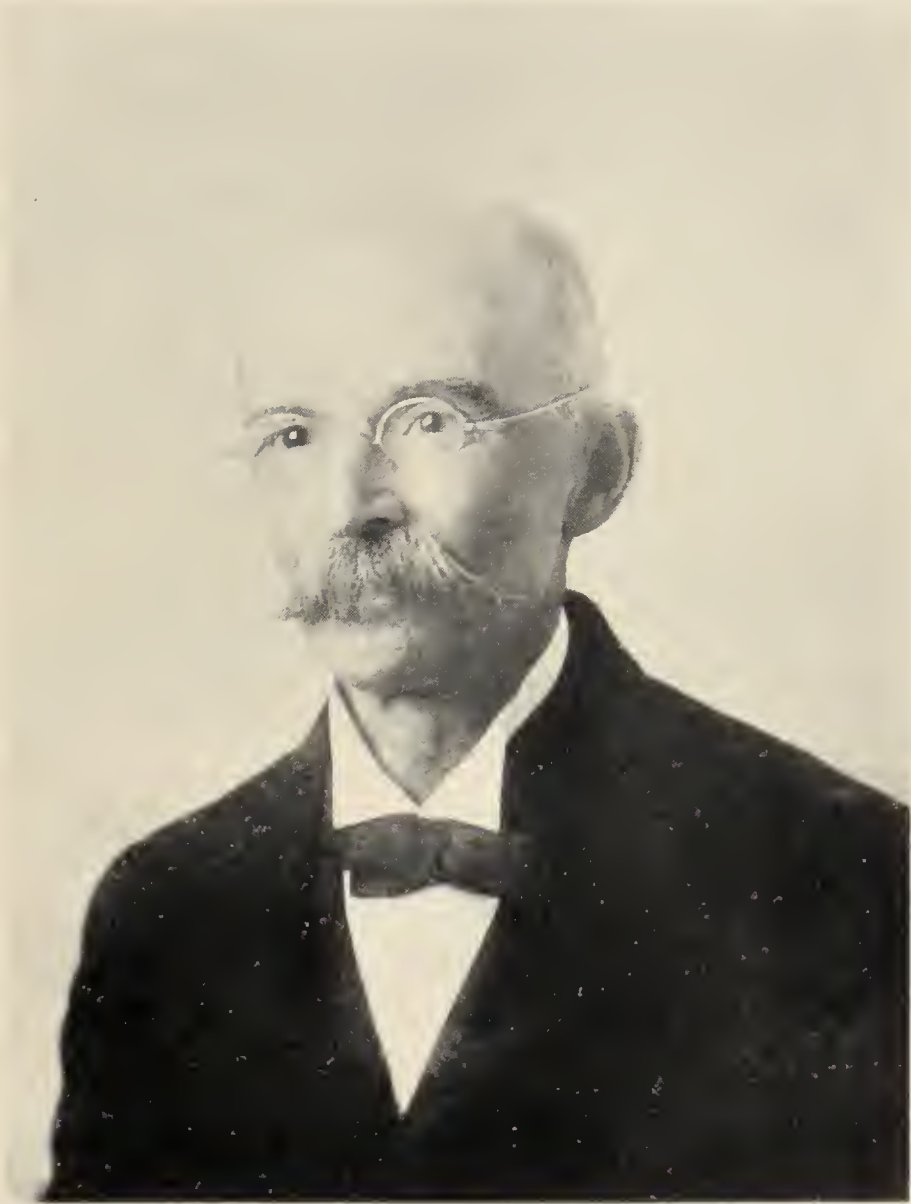
writing on birds in the magazines between 1884 and 1918 and occasionally afterward. There are eight titles by him in the *Auk*, four in the WILSON BULLETIN, and over seventy in the *Ornithologist and Oölogist*. Most of the larger public and private collections of study skins of birds and mammals in the United States contain specimens from the southeastern part of our country collected by Hoxie.

Walter John Hoxie was born at Rochester, New York, February 26, 1848, but since becoming of age has lived mostly in the South and his writings pertain chiefly to the birds of South Carolina, Georgia, and Florida. He acquired, for those days, an education of rather wide scope, had excellent powers of observation, a spirit of research, a keen interest in fauna and flora generally, and in birds particularly, together with a facile pen and a pleasing style of writing, often quite on the order of Thoreau or Burroughs. He wrote easily and rapidly. Beside the above mentioned ornithological papers and notes Hoxie contributed nearly five hundred, more or less, popular articles, of some length, to other magazines and newspapers of which about 450 appeared in the *Savannah Morning News*, Georgia, between 1903 and 1920. Practically all of these newspaper and popular magazine articles were on nature subjects and few of them failed to contain first-hand bird observations, pertaining principally to the coast of Georgia and South Carolina.

Hoxie's father, John Anson Hoxie, of English descent, left Rochester, New York, while Walter was a small child, and located at Newburyport, Massachusetts. From 1853 to 1856 the family lived in Perth Amboy, New Jersey, returning then to Newburyport. Here, Hoxie senior "had a grist mill which was a tide-mill run by damming the Artichoke River at its junction with the Merrimac and the family lived in one end of the mill. It was a quaint old town, busy with ship-yards and having a semi-aquatic population in the lower part called Joppa, where the boys were currently reported to have webbed feet and the girls fins that they kept concealed under their arms. My mother raised me on Nuttall's Ornithology; she also had a botany called 'The Plants of Boston'."

Walter J. Hoxie was graduated in 1865 from the Putnam Free School, later taking a special course including physics and advanced mathematics. The latter fitted him for the surveying positions he held from time to time on southern railroads. After graduation he went into the U. S. Coast Survey as assistant in the astronomical division.

In 1866 he taught in the Tyng Academy at Tyngsboro, Massachusetts; then to the Bridgewater Normal School for about three years.



*W. J. Hoxie*

FIG. 13. Walter John Hoxie, at the age of sixty.

In October, 1868, he went to Beaufort, South Carolina, with a commission from Salmon P. Chase to investigate and report on abandoned lands. He found, however, that a survey and report had been made on such lands in that vicinity and accepted a position as teacher of the Plantation School on Lady's Island, and later taught in the first Normal School for Freedmen. Beaufort and Port Royal are on Port Royal Island. Immediately to the east lies Lady's Island and to the southeast, St. Helena Island, on the southeastern border of the latter lie, in order from west to east: Pritchard's, Fripps', and Hunter's Islands. The larger islands are connected by bridges and there is a bridge from the mainland to Port Royal Island. Frogmore, which later was Hoxie's address, is inland on St. Helena Island. These islands were but partially settled and were the haunt of many interesting species of birds.

Late in 1869 Hoxie returned North and taught in the Boston Farm School on Thompson Island in Boston Harbor; later teaching at various places in Massachusetts. While so engaged at West Newbury in 1871 he was married to Harriet Mosely, now deceased. To them were born three daughters, all living. The youngest, Mary Russell, together with her son John Hoxie Day, are with Mr. Walter J. Hoxie in St. Petersburg, Florida.

In 1879 Walter Hoxie returned to the South permanently and bought a plantation at Lands End on St. Helena Island, where he lived until removing to Savannah, Georgia, in 1901. During all of the years of his residence on the coastal islands and close to tidal waters in the outskirts of Savannah, embracing the period from 1868 to 1927, except when away as mentioned, Hoxie improved the opportunities to study birds found in this maritime paradise of the hunter and naturalist. The material for many of his papers and notes published in the ornithological magazines originated here. Throughout his long life Mr. Hoxie has lived close to the sea, if not actually in sight of it all the time, and is thoroughly at home in various sorts of smaller craft. He has spent the greater part of his life in out of doors pursuits and has been a seasoned camper, an expert woodsman, able and accustomed to live on the country for months at a time in the Florida prairies and swamps, ready for any emergency.

Hoxie was and is a kindly man, modest, self effacing, always a friend to children, birds, dogs, and Indians. One might write many pages about his pets: bald eagles, Audubon caracaras, doves, sandpipers, parakeets, mockingbirds, etc. Mostly his pets were not cap-



tives, but free to come and go while he studied their habits and wrote entertainingly about them.

#### NOTABLE ADDITIONS TO ORNITHOLOGICAL RECORDS

While located on the "Sea Islands" off the coasts of South Carolina and Georgia, Hoxie collected and prepared hundreds of bird specimens for the zoological museums. He made there some important ornithological records which will be referred to in detail below, such as the second and third specimens of the tropical Bridled Tern (*Sterna anaethetus melanoptera*) to be recorded from the United States; the breeding of the Long-billed Curlew and of the Savannah Sparrow on the Sea Islands, the latter two records not being heretofore published so far as we have found.

There are eight records for the Bridled Tern in the United States. The first record is attributed to Audubon. The first of the Hoxie speci-

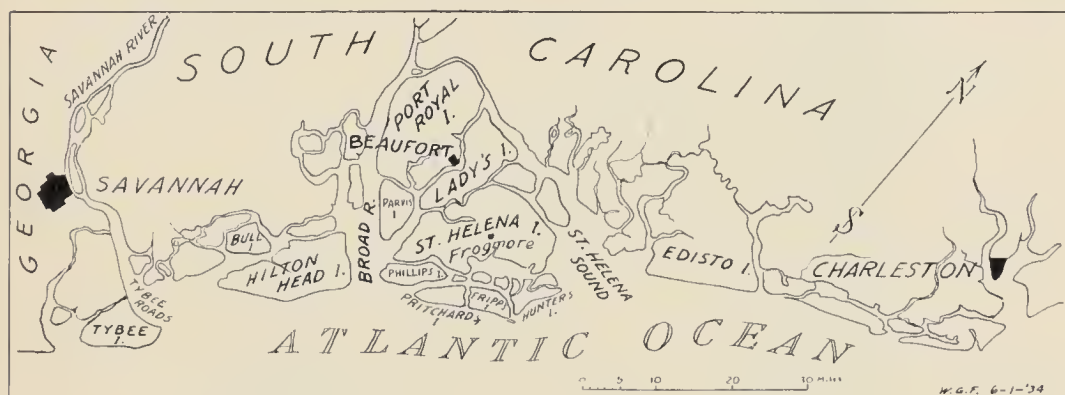


FIG. 14. The "Sea Islands" off the South Carolina coast.

mens was taken on St. Helena Island, S. C., and sent to William Brewster and reported by him in the *Auk* (Vol. III, 1886, p. 131) as follows:

"The Bridled Tern (*Sterna anaethetus*) in South Carolina.—Mr. Walter Hoxie has sent me a specimen of this species shot August 25, 1885 (immediately after a hurricane), at Frogmore, South Carolina. It is a young male in fresh and very perfect autumnal plumage. The occurrence of this species in the United States has been previously open to some doubt, although Mr. George N. Lawrence has a specimen (formerly in the Audubon collection) which is labelled as having been taken in Florida."

About 1919 Mr. Brewster's large collections of birds went to the Museum of Comparative Zoology at Cambridge, Massachusetts, where this specimen still remains. The present label on it gives the sex as a female, according to Dr. James L. Peters, who kindly examined it for the writer.

The third record for the Bridled Tern in the United States was a specimen taken by Hoxie at Cape Canaveral on the east coast of Florida, August 29, 1888. This skin was sent to Dr. C. H. Merriam, Hoxie being then in his personal employ on a three and a half-month collecting trip in Florida. This specimen was sold by Dr. Merriam to Salvin and Godman and now appears to be in the British Museum. (See Howell's "Florida Bird Life", 1932, p. 266).

The fourth record for the Bridled Tern in the United States was a specimen which flew aboard ship off the South Carolina coast in 1912, and was reported by Gilbert R. Rossignol (*Auk*, Vol. XXX, 1913, p. 105; see also for further particulars of this record, the *Auk*, Vol. L, 1933, p. 104). In Bent's "Life Histories of Gulls and Terns" (1921, p. 290) this record is attributed to Georgia, as the steamer with the bird aboard put into Savannah, which is close to the South Carolina line.

Four more records for the Bridled Tern in the United States appear in the *Auk*, three of which are for South Carolina; namely: *Auk*, Vol. XLIV, 1927, p. 93, by E. S. von Dingle; *Auk*, Vol. L, 1933, p. 104, by Mr. E. B. Chamberlain who records two more South Carolina records, one being inland at Orangeburg, seventy-five miles northwest of Charleston, and one from Long Island, S. C. An Alabama record from the Gulf Coast is given by Helen M. Edwards in the *Auk*, Vol. L, 1933, p. 105. All of the eight specimens have been identified by competent ornithologists.

The two Bridled Terns credited to Hoxie were shot by him as they were flying along the coast. He recognized that they were something out of the ordinary and had an "elaborate" flight—a graceful undulatory motion in a vertical plane.

Long-billed Curlew (*Numenius americanus americanus*) nesting in the Sea Islands of South Carolina. "In 1867 Long-billed Curlew, locally known as Spanish Curlew, were plentiful on Lady's Island, S. C. In the spring following my arrival there, that is in the spring of 1869 I saw a pair of these birds walking about on Distant Island sands feeding their young which could not fly. The bills of the young were straight. I watched them several days." (Unpublished Mss. of W. J. Hoxie).

Killdeer (*Oxyechus v. vociferus*). "The Killdeer in the 1870's nested quite abundantly in the cotton fields of southern South Carolina, but disappeared about 1880." (Unpublished Mss. of W. J. Hoxie).

Late Observation of the Passenger Pigeon (*Ectopistes migratorius*) in Georgia, July 2, 1907. "A little way east of Jakin, Georgia,

three doves lit in a tree. The two outer ones were common 'field doves' (i. e. Mourning Doves), but the middle one was a Passenger Pigeon, it sat bolt upright and seemed twice as large as the other two. 'Look at that Wood Dove,' said a voice behind me—'a regular old Wood Dove.' In 1908 one flew over my head near Lanes, S. C., and a day or two later eight were seen near the Santee River by the engineer of the Atlantic Coast Line train. He knew them well, having



FIG. 15. Walter John Hoxie, at his St. Petersburg Cottage, "Hanat Selo", April, 1934.

previously caught them to be sent to trap-shooters in Chicago." (W. J. H.).

Savannah Sparrow (*Passerculus sandwichensis savanna*) nesting (?) near Savannah, Georgia. On May 23, 1907. Hoxie collected a female Savannah Sparrow on Wilmington Island, south of Savannah, which contained two large eggs, one with hard shell about to be laid. This well marked egg, .75x.60 inches in size, had grayish white spots and blotches of brown on a lilac ground. Mr. Hoxie found this species of sparrow in the Sea Islands of South Carolina and Georgia

in May of various years from 1869 on, but did not succeed in locating nests or young birds.

Arthur T. Wayne in his "Birds of South Carolina" (1910) mentions Walter J. Hoxie on pages xvii, xviii, 7, 168, 171, 217, and 220. He discredited several of Hoxie's records which later have been vindicated in the Supplements to the above book. Thus, on page 217 of "Birds of South Carolina", Wayne discredits Hoxie's records of the American Merganser (*Mergus merganser americanus*) for South Carolina. There are records of this species in all the southeastern Atlantic states, including Florida, although the Red-breasted Merganser (*M. serrator*) is doubtless the more abundant winter visitor. In the second Supplement to Wayne's "Birds of South Carolina" the American Merganser is removed from the hypothetical list by Sprunt and Chamberlain, thus corroborating Hoxie.

Mr. Wayne on page 220 of his "Birds of South Carolina" discredits Hoxie's records of Buff-breasted Sandpiper (*Tryngites subruficollis*) in South Carolina. Later observations have confirmed Hoxie's records. Also on page 171, Mr. Wayne discredits Hoxie's winter records of Prairie Warbler (*Dendroica discolor discolor*) at Frogmore, S. C., March 5, 1888, and February 19, 1891, "as this species could not possibly live in South Carolina at such dates". He states in his book that these particular winters were mild and in the *Auk* (Vol. XXXIX, 1922, p. 267) himself records this species in the state on January 9, 1922. In the second Supplement, therefore, Sprunt and Chamberlain vindicate Hoxie.

Having collected together and disposed of these various credits and discredits of Hoxie's new bird records for certain localities, we now resume the rather disconnected narrative of his life from 1888. In late July, 1888, Hoxie arrived at Titusville on the east coast of Florida where he began August first a three and a half-month collecting trip for Dr. C. H. Merriam, returning to South Carolina November 15. He kept a daily journal on this trip which was one of the few of his note books that were saved from a fire in 1891. His route lay across Merritt's Island, to Cape Canaveral, Melbourne, St. Lucie, Fort Pierce, and Fort Drum. In this journal there is a list of seventy-five species of birds observed or collected in the vicinity of Titusville; fifty-five species near Cape Canaveral; eighty-five at St. Lucie and ninety-nine between Ft. Pierce and Ft. Drum.

The journal recites: "Oct. 27, shot nine Parakeets (*Conuropsis c. carolinensis*) west of Bassenger Island. November 6, shot five Para-

keets at Ft. Drum." An Everglade Kite (*Rostrhamus sociabilis plumbeus*) was also collected on the Kissimmee Prairies.

While on this trip alone and afoot Hoxie fell in with several families of Seminole Indians, hunted and camped with them and entered in his journal some 200 Seminole words, mostly nouns, with their English equivalents. The Seminole Indian names for some of the birds of the region were published by Hoxie in the *Ornithologist and Oölogist* (Vol. 14, No. 1, 1889, p. 16 and same Vol. 16, No. 6, 1891, p. 96). While in the Everglades for fourteen months in 1889-1890, Hoxie became better acquainted with the Seminole language and has an exten-

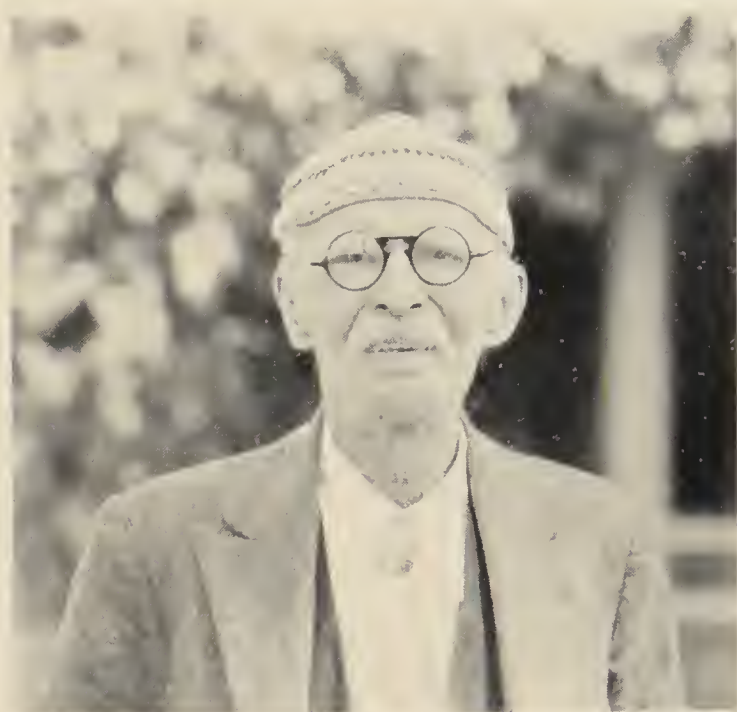


FIG. 16. Walter John Hoxie, at the age of eighty-six.

sive vocabulary. Like other Indian tribes the Seminoles had names for many of the birds and animals of the country. The nom-de-plume of "Huskee Hadki" which Hoxie sometimes used is the name given him by the Seminoles and means "rain-white", i. e., snow, and was the outcome of his having told them about the snows of the North.

Hoxie named his Savannah home in the Bonnabella district, Tashkokah, the Seminole name for the Red-cockaded Woodpecker. A cabin he had in the woods in the outskirts of Savannah he called Os-to-pah' (the Cardinal). His St. Petersburg cottage at 5359 Sixth Avenue, North, has an artistically carved sign over the entrance—Hanat Selo (Meadowlark). This cottage stands among lofty long-leaf pines in the typical "flat-pine woods" of the South, a little oasis in the mid-

outskirts of the city, the ground somewhat moist in the season of rains, with the varied wild flowers of that region in bloom all about, and for most of the year. "Professor" Hoxie as his friends call him, spends much of his time these days of 1934 on the screened front porch of this cottage with his books, his typewriter, and usually a dog. A gun stands in a corner ready to collect the occasional rare bird—perhaps a half dozen in a year. Food and water are out for the mockers, doves, towhees and cardinals. Pine-woods Sparrows in the nesting season sing their sweet little song from nearby.

In 1930 Mr. Hoxie had become almost totally blind from cataracts and in June, 1931, these were removed, since which time his vision with the aid of glasses is excellent.

In the Spanish War period Hoxie was on shipboard in Government employ for about two years off Beaufort, S. C. He was appointed "shipkeeper" on the U. S. S. Wasp, June 27, 1899, serving "two days on and one day off". Here he made many notes of bird life off shore, among them those utilized in writing one of his pleasing bird life descriptions entitled "The Rough-wings of the Hercules" which pertains to the Rough-winged Swallow (*Stelgidopteryx ruficollis serripennis*) and was published in the WILSON BULLETIN (No. 34, pp. 1-2, XIII O. S., 1901). However, as comparatively few of the readers of the present biography have ready access to the original, this interesting example of Prof. Hoxie's style of popular bird-lore is reproduced here.

#### THE ROUGH-WINGS OF THE HERCULES

The Hercules with her guns and war-paint taken off was our station tug at Port Royal. A powerful old sea-going tug thoroughly refitted and just what we needed. I was on the Nantucket then and came astern one morning in the light skiff with the regular report. Forward on the Hercules was old Johnny Greek, who ordered me to moor my boat further aft so as not to disturb his birds. He didn't seem to be as crusty as usual, so I asked to see his birds, supposing he was trying to raise some young Mockingbirds. I was much amused when he pointed out a pair of Rough-winged Swallows that were frolicking around above the dry dock that was just ahead of us. Johnny stoutly asserted his claim to them, and in a minute or two one had procured a straw and with much chatter and congratulation from its mate flew with it right into the port hawse-pipe of the Hercules. This was something new to me. I had always seen the Rough-wings burrow in sand banks, though I had read of their nesting under bridges and in sheltered crannies. The old Greek sailor I found was protecting them well. He had the deck plug of the hawse pipe neatly battened down and would not let any of the crew handle the hose forward when they washed down the decks. He was worried about their feed he told me. Said they wouldn't eat potatoes or eggs, or rice, and he was afraid they

would go somewhere else if he didn't furnish them with the proper dainties. I explained the matter to him as well as I could and every trip after we had little consultations and he gave me all the news about his pets and their smart doings. They seemed to occupy a very big place in his old heart. One day he called me in to back a letter to his mother, which I used to do every pay day because I could write her name in Greek and he confided in me that he had told her about the little "rough-birds".

Three times a week the tug went up to Beaufort for groceries, etc., and the little birds seemed to think it was a pleasure trip for their special enjoyment. In town they tried to make friends with the sparrows about the wharf and came near having a pitched battle over some building material one day, but their watchful guardian scattered the contestants and brought away half a bucketful of rubbish for them to select from in peace.

Then there were eggs at last. When John tried to peep at them the little hen "bit him" and he had the finger to show for it, too. She was "scrabbich too much" he said. Trouble was nearby. A big derelict was drifting around somewhere about Cape Romain and several ships had narrowly missed disaster by it. The Hercules was ordered to put to sea, find it and blow it up. Away she went bright and early one morning and was gone five days. When she came back a very draggled looking swallow was on the truck above the pennant. The other Johnny had tucked away somewhere below. When the first big sea struck her down on the bar, Johnny had pulled out the plug and rescued the little mother but the nest and eggs were past his aid. A day or two they mourned around, but soon set up housekeeping in the same place. All went well and a young brood tried their wings from the rail of the Hercules but never came back.

The same little pair, much more sober and sedate now and with much less chatter than in their younger days, at once began to renovate their old quarters. But the Hercules was ordered to Norfolk with all her crew. When she started off gayly that morning with much saluting of whistles and all her gay bunting flying, do you suppose those wise little birds went with her? I became Johnny Greek's residuary legatee. For they came on board the Nantucket, made a careful survey and then took up their residence in one of the peep holes of the conning tower. When the Nantucket in turn was taken away, they were at some fashionable winter resort in the tropics. I look for them back this spring. The Accomac has just as good hawse-pipes as those they liked so well on the Hercules.

Leaving the vicinity of Beaufort, S. C., in 1901, Mr. Hoxie located in the eastern outskirts of Savannah, Georgia, which city he considered his place of residence until he went to live in St. Petersburg, Florida, in 1927. While located at Savannah he made several collections of mounted birds of the region. One of these was for Mr. W. J. DeRenne, whose son living on the Wormsloe Plantation near Savannah may yet

have it. Another collection was for the Georgia State College at Athens. Mrs. V. H. Bassett writes that one of the Hoxie collections of Chatham County birds is at the home of a Mr. Morgan, in Effingham County.

In 1929 Mr. Hoxie presented a collection of forty-five mounted birds and a few mammals taken near St. Petersburg to Miss Ethel Bachman, principal then of the Lakeview School in that city. Miss Bachman who is a granddaughter of John Bachman, the early American naturalist, is doing a good work interesting her pupils in nature study. She has added much to the collections which are at the Mt. Vernon School in St. Petersburg where she is teaching in 1934

While Mr. Hoxie lived at Savannah he was from time to time engaged in various occupations; as surveyor and inspector on railroad work,\* as a teacher, proprietor of a taxidermy shop, commercial photographer, and as writer for the *Savannah Morning News* and other publications.

Beginning in 1912 he was active in early Girl Scout work, with Mrs. Juliette Low who organized in Savannah in that year the first camp in America of Girl Guides, as the organization was then called in England. He also was connected with the Bethesda Orphan's Home near Savannah, for several years, first as assistant superintendent and later as acting superintendent. He easily made friends with children and secured their confidence, for he never has forgotten how to see the world from their viewpoint.

Mrs. V. H. Bassett, of Savannah, who knew Mr. Hoxie there has kindly furnished some reminiscences of him:

"Mr. Hoxie's home was in the southeastern outskirts of Savannah, in the Bonabella section—the name of a former plantation. His two acres of land was a tangle of native trees, shrubs, vines, and ferns, bordered by a green lane with high walls of shrubbery. Beyond the house was a small cabin about twelve by sixteen feet, containing three rooms, a front room where he did his taxidermy work, a rear room with a fireplace, and a sleeping room just about large enough for a cot. A coral honeysuckle vine shaded the windows.

"As one approached the house from the street-car line he heard Brown-headed Nuthatches, Chickadees, and Tufted Titmice all about. Mockingbirds, Catbirds, Brown Thrashers, Cardinals, Thrushes, and many other birds, varying with the season, effaced themselves in the greenery as he walked along the lane. This lane was a joy to a bird-lover: one could get a very respectable list while walking its length.

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\*Mr Hoxie was on the Florida east coast on such work in 1891 and in 1893 and in 1903 near Fort Myers. He recorded finding the nest and eggs of Bobolink (*Dolichonyx oryzivorus*) May 20, 1903, near the A. C. L. R. R. bridge over Caloosahatchie River, three and one-half miles above Fort Myers.



The Wood Thrush built its nest in his yard, adding its beautiful song to the morning and evening bird-chorus.

"The years that I knew Mr. Hoxie best I am afraid were lean years for him, with work irregular and often lacking, but then as now he was a reserved man concerning his personal affairs. I do know this, however, that if he had little to spend, he spent a little less; if food lacked abundance, yet there was always some to spare for the birds that came expectantly to his window-shelf; and that he always had something to give to others and gave freely. The Scouts and nature lovers in general came to him for information, instruction, and encouragement and were not turned empty away."

Mr. Gilbert R. Rossignol, in a letter to the writer, dated April 8, 1934, says:

"I have known Mr. Hoxie for nearly thirty years and I owe much to him. He taught me to skin birds; gave me my first lessons in critical ornithology and I shall never forget his patience. . . . To know a man is to camp with him, sleep with him, and go hunting together. All three of these I have done. Mr. Hoxie was a master woodsman, lithe as a panther, noiseless as a Screech Owl. He never seemed to tire. Although I was thirty-five years his junior, he often tired me out. I can well imagine that in his youth he must have been truly a marvel."

While living at and near Savannah, Mr. Hoxie wrote over 500 articles for newspapers and magazines, largely on popular nature subjects, few of which failed to contain first-hand observations on the bird life of the region. Over 400 of these appeared in the *Savannah Morning News* between 1909 and 1918. Some 450 such articles by Hoxie examined by the writer average 750 words each, many containing as many as 1,500 words, and some more. In the magazines these articles were illustrated by Mr. Hoxie's own excellent photographs of birds, etc.

The aim of these articles was to create interest in nature, particularly in the fauna and flora of the coastal region contiguous to Savannah, and especially to interest youth in the worth-while things of the out-of-doors. These articles carried, too, a wholesome spirit of conservation, decried unnecessary destruction of trees and shrubs by improperly directed labor forces, as on highway work, and in various ways began a pioneer effort to bring about a right attitude of the public toward the beauties of nature.

Appended to this biographical sketch of the life of Walter J. Hoxie, is a bibliography which is intended to be complete as to the ornithological items published in the *Auk*, in the *WILSON BULLETIN*,

and in the *Ornithologist and Oölogist*, together with titles and abstracts from a few of the articles in the *Savannah Morning News*.

In a report on the work accomplished by the Girl Scouts of Savannah in the first year following the initial organization, Jane Judge says in concluding the report published in the *Savannah Morning News* in 1913:

“The Girl Scouts have no better friend in Savannah than Mr. Hoxie. From the very beginning he has interested himself in their affairs and has become a specially valuable companion on their country walks and camping parties. Through Mr. Hoxie they have learned much about the Nature World. . . . The first Girl Scout Handbook . . . was largely written by Mr. Hoxie, some of it being adapted from the handbook by Miss Baden-Powell and Sir Robert Baden-Powell.”

This handbook was entitled “How Girls Can Help Their Country.”

During his stay in Savannah Mr. Hoxie continued to devote much time to coaching Girl Scouts and others in nature study. His daughter, Mrs. Mary Russell Day carries on the same work in St. Petersburg, Florida, where she is a Girl Scout captain.

Thus it is seen that Mr. Hoxie has made a great contribution to nature study and to the cause of conservation by his educational contacts with boys and girls and by his persistent messages in the public press for a third of a century. In these well written and interesting articles—drawing the attention of both young and old—Mr. Hoxie has told the facts of his own observation about vertebrates and invertebrates; about insects and plants; about tides and winds, and particularly about the seaside, but always his interest in birds predominates. Occasional articles and communications by Mr. Hoxie to the *St. Petersburg Times* still continue the work.

It is worthwhile to reprint some of these articles which have appeared only in a daily newspaper and so have served but a limited section of the country. Here follow four examples of Mr. Hoxie's contributions to the *Savannah Morning News*, entitled: “The Fall Movements of Birds”, “Bachman's Sparrow”, “Fluctuations in Bird Life”, “The Boy that Could Wiggle His Ears”. Also two titles written in 1933 not hitherto published: “Audubon's Caracara”, “The Reaction of Mockingbirds to the ‘Charleston’ Earthquake”. And “Camp-fires on the Beach”, from *Success Magazine*.

THE FALL MOVEMENT OF BIRDS. But presently some warm muggy August night there is a steady tune going on overhead of “*chi-chink, chi-chink*” and straightway joy fills the hearts of the worshippers of the belly-god, for the Rice Birds have come. In their Northern home as the tuneful Bobolink they were the most cherished and admired of

song birds. Here they are a dire and dreaded enemy whose destruction is meritorious and remunerative at the same time. Close in their wake and mixing with the last of their straggling ranks come a veritable mass of many species rushing southward in chirruping throngs every still night.

By day the march is also southward among the swallows, king-birds, and martins who prefer the day light trail, feeding as they travel. Vireos and tanagers seem to travel both by day and night indiscriminately; or perchance do they select only moonlight nights? The overhead calls of these passing swarms seem to have a sleepy tired sound. Even the shore birds, whose calls are plainly distinguishable, have not the vim and ring to them that is so characteristic along the beaches or on the flats. Only the herons that seem to be scattered among the throng give clear and hearty outcries that seem as if they might be commands and directions for the movements of the winged hosts that are sweeping along in the darkness up in the sky and perhaps need the encouragement of these acknowledged night prowlers among their ranks.—W. J. H., in Savannah Morning News, Nov. 2, 1910.

**BACHMAN'S SPARROW.** Bachman's Sparrow has put in appearance this winter in largely increased numbers. He is one of the woodland delights. Though pretty rare in summer he can frequently be detected by his song. It is exactly the opposite of that of his half-cousin the Pine-woods Sparrow. Both are in the same pitch but our Bachman's begins on A with a whole note and drops to E with four quarter notes. Pine-woods' whole note is on E and rises to A for his quarters. To the average man, therefore, it seems as if both were the same bird practicing an up and down rendering of the same tune.

Bachman's may be said to be like the poor, always with us, for we are just barely within his southern nesting range and also cover the northern portion of his winter sojournings. To the student of bird life he is one of the most elusive of all the feathered things. Mousey in his movements at all times, he refuses to take wing unless trodden on. Sometimes it is necessary to make a quick rush toward the spot where he is suspected of lurking. Then ten to one he whisks away behind you, but will almost always perch on some high twig for a moment to see what it is that has frightened him so. In the summer he and the Pine-woods have the same habit of singing to the brooding mate from some elevated perch and looking down at her where she is on the nest. So, to the initiated it is a dead "give away" of the situation of their home on the ground among the dense cover which otherwise it is almost impossible to locate. The Bachman's always arches the nest over somewhat, while the Pine-woods builds a perfectly open nest. The eggs of both are pure white. The songs of both are sweet beyond description.—W. J. H., in Savannah Morning News, 1913 (?).

**FLUCTUATIONS IN BIRD LIFE.** One hundred years ago or more Alexander Wilson, the Father of American Ornithology, was in Savannah. Reading some of the accounts of the birds he found to study

here then, and their comparative scarcity at the present day throws some light on the fluctuation in bird life in this region. Take for instance the Ivory-billed Woodpecker. He relates that on one occasion while riding his horse from Augusta to Savannah those birds flew so close to him and screamed so loudly as to frighten his horse. Now they have disappeared from this region entirely. In South Carolina there was one favored spot where a few pair survived until about 1870. A record of a single individual shot in 1879 and another seen in 1884 seem to complete the history of this remarkable bird for this locality.

Now this is an instance of the total disappearance of a species that was unpersecuted or harmed by man. An explanation must be looked for in some cause other than human agency. Possibly the solution may be in the matter of food supply. The Ivory-bill is a bird of the tall timber. His dependence for an existence seems to be on the dead or decaying trees with their accompanying beetles and larvae. With the deforestation of the land he is literally starved out and is forced to migrate. At his last abiding place in our neighboring state (South Carolina) there were circumstances that for a time favored his remaining for so long in an isolated spot. In 1856 the coast was visited by a tremendous storm. The sea invaded some of the outlying islands and piled the big trees high up on the beaches in long stretches and confused masses. As these slowly rotted away and were filled with destructive insects the birds found an unexpected and large supply of food. So there they lingered for a long time after the rest of their kin had left the neighborhood. But when another storm came and swept all the decaying logs and stumps off into the sea their means of existence was taken away from them and there was nothing left for them to do but decamp.

When I was a boy wild pigeons were plentiful all over the country. They were frequently seen in the markets and at times "pigeon pie" was one of the cheapest dishes in the restaurants. Barrels of them were in Fanueil Hall Market at Boston, Mass., as late as 1869. . . . There seems to have been a fatal habit of these birds to bulk together in some localities. But there were also a few favored spots that were occupied from year to year by much smaller colonies. Such a place was in the northern part of Essex County, Massachusetts, where only four or five pairs were known to nest. Local gunners were responsible for their destruction.

Authors differ as to the number of eggs laid by these birds, most of them adhering to the statement that only one egg was laid to a nest. This seems to be the case in all of the biggest breeding grounds, but where the colony was small two were always deposited. This I can substantiate from my own observation and also from the testimony of an old man who used to trap and keep the wild pigeons to sell to a Chicago gun club for trap-shooting. He states positively that the birds always laid two eggs and when he obtained squabs from nests in northern Illinois there were always two in a nest.

Their mode of flight during the migrations was one of the singular features of their habits. It was a case of strictly following the leaders.

Wilson relates a curious incident in this connection. While a big flight was in progress, the flock was attacked by a hawk. In order to escape, a wide section dropped almost perpendicularly down toward the ground, rising again when the danger was past. Those following however, made the same kind of a dive from aloft when they came to this exact spot in the line of flight and rose again to the higher level in the exact course pursued by their leaders.

The sudden disappearance of such immense numbers of birds is no more wonderful than the fact that such numbers ever did really exist. Pigeons are birds that require an abundant food supply and if an individual had only a daily ration of a gill, what a perfect cargo of grain must it have required to feed the millions in a single flock that have been recorded. . . .

Another of our fast disappearing birds is the Parakeet. Plentiful at one time all over the South and extending its range even to the latitude of New York at favorable times; it is now extinct or if yet in existence, confined to very narrow limits in South Florida and perhaps in the southwest. My own acquaintance with one of these birds was a pleasant incident on my first trip into the Everglades in 1888. He was a very young bird without any yellow about the head but a scarlet mark around the base of the bill. Being only wing-tipped I kept him for a pet and he never offered to escape. Truly I must have presented a wild and weird spectacle tramping day after day clad only in a belted hunting shirt with my little green bird hanging to the back. Though I brought him home with me and he lived some years he never took on the adult phase of plumage.

The flight of the Parakeets closely resembles that of the wild pigeons. Like them too, they like to roost in communities and assemble from great distances in some favorite old hollow tree.—W. J. H., in *Savannah Morning News*, 1918 (?).

Settlers in the vicinity of Old Fort Drum in southern Florida say that the Parakeets came when the cypress balls were ripe. They eat corn and were often found around the plantations.

Prof. Hoxie found no nests of the Parakeet containing eggs and has never seen the eggs. In 1890 Hoxie took eight live Parakeets from southern Florida to Beaufort, S. C., where he soon liberated seven of them near the National Cemetery. All flew up, circled high and took a line due south.

THE BOY THAT COULD WIGGLE HIS EARS. (An Abstract). Why does not a boy like to wash his hands? To tell why that is you must know boys and how few people really do know boys? The real reason is that so few people really try to know them. . . .

This brings us to another point in our look at the character of the real live boy. He is to a certain extent a savage. His code is based on the same inherent principles that governed the cave man. He is not necessarily a liar but he tells the truth only as it seems best

to him. He is not necessarily a thief, but he gets what he can by stealth if he cannot get it in any other way. And he admires the boy that can wiggle his ears just as our cave man admired the man with a ring in his nose or the woman with one in her ear.

When the boy that could wiggle his ears came to our school we were all in a fever of expectation. We felt sure he would exhibit his accomplishment for our admiration and furthermore we had a new teacher. There was a distinct tension in the atmosphere. All went well for an hour or so and then the ears began to wiggle. Our attention was so profoundly attracted to them that for a minute we didn't notice that the new teacher was looking straight at the exhibition. Dire disaster seemed to us to be coming and a hush fell on the room. We hadn't got well acquainted with the new teacher and of course it was impossible to tell how he would take such a strange episode. All he did was to ask the boy if that hurt him any. Because if it did he had better not do it too often unless he got paid for it. That was more of a surprise to us than if the teacher had wiggled his own ears in response and so done a duet for our benefit.

Recess soon came and the new teacher was voted all right. He was one of the few—more's the pity—that have not forgotten that they were once boys. He got us so thoroughly in accord with his views that we hardly had any rules. It was enough for him to express a wish to have things done thus and so, and woe to the boy who failed to comply. We found a way to bring him to book as only boys can.—W. J. H., in Savannah Morning News, 1914 (?).

AUDUBON'S CARACARA. My acquaintance with this species began in 1888 on the Kissimmee prairies that stretch north from Lake Okechobee. We had been alligator hunting and on the way to camp with the hide I heard a strange whistling sound which at first I thought was one of the "dust-devils" which often kick up in the noon-tide on the big prairie. But glancing up there were small specks dropping down out of the sky that quickly materialized as vultures—both Black Vultures and Turkey Vultures. Before we reached camp they were at work on the carcass of our 'gator and must have spread over a half acre of ground. Suddenly there was a commotion and a general scattering, and flying low over the level land came a pair of Caracaras. At a respectful distance stood the entire concourse of vultures while the two visitors made their slow and deliberate meal. Then they wiped their bills deliberately on the grass and departed to a distant tree island for their customary leisurely digestion. Then with a simultaneous rush the waiting swarm of vultures returned to the feast.

Long after, in 1908, one of my friends—Gilbert R. Rossignol—was going to Florida on a hunting trip and asked me what I wanted him to bring me. Somewhat casually I suggested a young Caracara. When I met him on his return he had brought me two. One of them I named Daniel Webster and kept for over twelve years and then sold to a carnival company. For a long time he was at the Isle of Hope, an amusement resort near Savannah. Passing through the names of German Eagle and Mexican Eagle he always responded joyfully to

the name of Daniel. When I visited him on Sundays he would come to the front of the cage to have his head scratched and would posture and croak for my benefit. He would even recognize me when I passed on the open street ears. I was heart-broken when he was sold.—Unpublished Mss., by W. J. H., 1933.

THE REACTION OF MOCKINGBIRDS TO THE "CHARLESTON" EARTHQUAKE. When I lived in South Carolina I was right in the track of the Charleston earthquake. In the night I was suddenly awakened by a most terrible and discordant screech and then the roaring, banging, and twisting. As soon as I was out of bed and settled down to observing, that terrible screeching began again. In the hedge under my window a pair of mockingbirds had a family of four large young. It was their united voices that combined to make that terrible noise that I had never heard before nor since. The bird's senses were sufficiently acute to feel the approach of the tremor before it made any impression on the human anatomy whatsoever. Time after time on that long night's vigil I was awakened by the birds to note the swing of my improvised pendulum and the time by my watch. When my report went in to Washington, I was informed that mine was the most complete report received at the department. It was due to my nest full of mockingbirds supplemented by a course of training on observing in the astronomical department of the U. S. Coast Survey under Dr. B. A. Gould.—Unpublished Mss., by W. J. H., 1933.

CAMP-FIRES ON THE BEACH. A camp without a fire is a hollow mockery. A camp-fire at the beach seems to have a quality all its own. The rush of the waves, the whispering in the grasses, even the sharp tang of the sea air—all are accentuated by the little flicker of light that hangs on the edge of the vast expanse. It's the bead in the cup.

The very materials of which the fire is built lend to it many expressive moods and startling changes never seen away from the ocean's edge. Driftwood that has been buffeted about by the waves and saturated with bitter brine cannot burn in the same calm and sedate fashion as the mere woodland pine knots and pine branches. Driftwood has a voice and gesture all its own and can tell tales and sing songs to the sympathetic listener. Here are no overspreading tree-tops to swallow up the smoke as it rises. Great gray and white masses tower aloft if the air by any chance is still. If not it takes unto itself shapes strange, fantastic, and wild in unison both with its source and its surroundings. A waft of air from landward may sweep it low down in a dull black cloud right out over the leaping crests of the charging billows. It veils their whiteness and lends a dull, slaty tinge to their hollows till it mingles imperceptibly with the offshore mists. If an inshore breeze catches it, away it rolls blue among the tall beach grasses. Once in a while before a storm comes on the smoke will roll reluctantly along the edge between land and water twisting and writhing in fantastic curls seemingly afraid to venture on either element. Whenever this happens look out for squalls. Trust not the deceitful quiet of the sea and the gentle balmy airs that come

now this way and now that. Drive all tent pegs solid and tauten up every guy. For before morning things will be humming.

The flame itself takes part with its surroundings. No upward roaring sheets and leaping tongues. It swirls low and sweeps in flickering twists and turns licking the fuel crookedly and askance. The spirit of the eddies and waves that erstwhile have played with this driftwood seem as if they were in some strange way present and directing its final destruction.

And even as this food for flames has come from distant shores and strange lands, so can a beach fire give out subtle odors and excite strange imaginings in the little brief hour of its play. A little stick of cane that grew on some sun-kissed islet of the "Spanish Main" is long in yielding to the flame. Fierce, red, snaky spirals lick it round and as they eat their way slowly inward, bursts of white steam spout hissing out and sharp rattling explosions follow like pistol shots. Hot sparks seem to chase you and the heart of the cane glows bloody red as it dies. A fierce tropic product this.

From nearer shores came this shapeless, old, whitened snag of cedar. Through all its wanderings it has kept its gentle odor like a good man withstanding the buffets of life. Slowly, smoking white at first it seems to offer a mild resistance to the clinging clasp of the devourer. But when at last it does burst into flame the whole fire glows rosy red. Even the venturesome little waves that come lapping into the circle of light seem to blush at their intrusion. And all about spreads that sweet, intoxicating odor.

A shattered bit of a wreck comes next to feed our fire. Was it hidden rock or hostile cannon that tore such a tough bit of timber so raggedly apart? Did some ocean gray-hound speeding through the fogs of Newfoundland crash to its doom against a floating ice-berg? This is a silent witness. Let the torture of fire examine it. Fierce and black burns the tar from the outside. No ill-smelling refuse from the gashouse this. That pungent shippy fragrance was bred in faroff Norway's forests and long tempered by clinging seaweeds and briny wonders. The witness has begun its reluctant testimony. Farther in as the fire works its way, a little spot flashes green. With a hissing burst it spreads and by the blue and violent changes indicates the presence of copper. This then is a piece of some goodly gallant craft that for years battled with Old Ocean's hostile billows. She was of the old "coppered and copper fastened class" now slowly disappearing before the "iron kettle bottoms"—sparless, smoky, old wallowers. . . .

Slowly has died our beach camp-fire while we sat and drowsed beside it. At last an incoming wave, more venturesome than its fellows laps stealthily up and reaches its quenching edge into the hissing ashes. White steam rises for an instant and then follows darkness—darkness that for the first few minutes can almost be felt. Then appears a tired-looking little old moon ready to begin climbing the sky



for a while till vanquished by her lord, the sun. High overhead swing kindly stars.—W. J. H., in *Success Magazine* (?), about 1911.

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Walter J. Hoxie's Annotated List of the Birds of Chatham County, Georgia, appeared in eight instalments in the *Savannah Morning News*, beginning April 30, 1911, and contained a total of about 12,500 words. It included 314 species of birds of which about twenty species would properly be considered then as hypothetical, because of the identification of some unusual species without the bird in hand or because some sight records were by observers other than Mr. Hoxie whose knowledge of the species recorded by them is uncertain. The following records of ninety-one species are abstracted from this list. The order has been changed to conform to the Fourth Edition of the A. O. U. Check-List.

Stormy Petrel and Wilson's Petrel are found off the coast and in stormy weather come well up into the Savannah River.

American Egret; formerly abundant but now pretty thoroughly plumed out. One or two seen every year.

Red-breasted Merganser is rare. Examined hundreds of American Mergansers in the markets of Savannah between 1907 and 1910 and only found two or three Red-breasted Mergansers among them. The latter species winters farther south.

Swallow-tailed Kite has nested here.

Yellow Rail; two good records in the county.

Purple Gallinule; regular summer visitor.

Florida Gallinule; commoner than the Purple.

Killdeer formerly nested here.

Woodcock; in former years a few pairs succeeded in raising broods in the Cuyler swamp and other suitable places.

Long-billed Curlew; formerly not uncommon and bred near Beaufort in 1868-69. In 1909 saw a small flock, in 1910 only a single bird seen.

Hudsonian Curlew; suddenly becoming plenty in proportion as the Long-bills become scarce. Though still a winter visitor, the numbers become less from year to year. A "bag" can no longer be made for the simple fact that in the past too many "bags" have been made.

Bartramian Sandpiper formerly nested near Savannah.

Great Black-backed Gull; one specimen collected and skin sent to the University of Georgia.

Forster's Tern is the commonest tern about Savannah.

Black Skimmers are very numerous appearing almost like a cloud of smoke off over the outer sand reefs of Tybee.

Ground Dove said to be becoming scarce about Savannah.

Yellow-billed Cuckoo: breeds here. Plunders other birds' nests.

Black-billed Cuckoo; nests a little farther north.

Long-eared Owl; winter visitor.

Saw-whet Owl; a Chatham County record. See *Auk*, Vol. 28, 1911, pp. 265-66.

Whip-poor-will; a very rare winter visitor, seldom utters its cry while here.

Ivory-billed Woodpecker; his exit more recent than that of the Parakeet. The lack of food due to clearing forests is responsible, rather than the fault of the gunner. Yet to be found a few counties away.

Gray Kingbird; rare summer resident.

Scissor-tailed Flycatcher; one seen on Warsaw Island.

Crested Flycatcher; the "shot-dodger" of the boys.

Phoebe; winter visitor only.

Least Flycatcher; rare migrant.

Tree Swallow; common migrant.

Bank Swallow; a single migration record. These birds seldom seen along the coast south of Hatteras.

Rough-winged Swallow; summer resident.

Barn Swallow; common migrant.

Cliff Swallow; now rare.

(Carolina) Chickadee; woodland resident.

Tufted Titmouse; strictly resident. One of the few birds that has been able to hold its own with the English Sparrows.

House Wren; does not seem to nest here.

Mockingbird; some one that feared neither God nor man has been caught shooting them for eating figs. Figs that attract birds ought to be considered very useful figs.

Catbird; a winter visitor. Nests a little farther up the state.

Brown Thrasher; abundant resident.

Wood Thrush; summer resident.

Bluebird; resident.

Pipit; abundant winter visitor.

Cedar Waxwing; winter visitor.

White-eyed Vireo; commonest vireo.

Yellow-throated Vireo; nests occasionally.

Blue-headed Vireo; winter visitor.

Red-eyed Vireo; common summer resident.

Black and White Warbler; one of the first to come in the spring.

Swainson's Warbler; a summer resident in our swamps. There is no sound in the woods so sweet as the song of this shy little bird. He walks about on the ground among the vines and cane in a sober and sedate manner all his own and never ventures out where his talents can be appreciated by the general public.

Blue-winged Warbler; one recent record.

Bachman's Warbler; the rarest of our nesting birds. If there are more than three pairs in Chatham County in any one year no one knows it. They prefer even deeper swamps than the Swainson and but once detected nesting here.

Tennessee Warbler; one record.

Orange-crowned Warbler: in exceptionally mild winters a few linger, feeding on the ground.

Parula Warbler; common summer resident.

Yellow-throated Warbler; common summer resident.

Pine Warbler; our only strictly resident warbler receiving a perfect mob of winter visitors of the northern form of this species.

Kirtland Warbler; one reported recently.

Prairie Warbler; pretty common summer resident.

Palm Warbler; by no means rare in migration.

Yellow Palm Warbler; the western form of the Palm Warbler arrives first in the fall and after passing is followed by the Yellow Palm Warbler. A few occasionally remain in winter. In the spring the Yellow Palms go north first and the western form passes toward the northwest behind them.

Maryland Yellowthroat; common summer resident.

Yellow-breasted Chat; common summer resident.

Hooded Warbler; resident in the swamps in summer, a fine singer.

Yellow-headed Blackbird; for a number of years this western species has appeared all around Chatham County and this year it was observed by Mrs. V. H. Bassett, a very intelligent witness, on Tybee and confirmed by two or three others.

Orchard Oriole; driven away from Savannah by English Sparrows.

Boat-tailed Grackle; common about the "salts".

Cowbird; winter visitor.

Scarlet Tanager; a very rare migrant. For some reason does not pass through here on migration, but occurs only as an accidental straggler. I have never seen a pair together but once. A little farther north they are regular summer residents.

Summer Tanager; summer resident.

Rose-breasted Grosbeak; no records since the days of the tall electric light towers.

Blue Grosbeak; summer resident, not rare, but shy.

Indigo Bunting; the bulk are migrants, but a few breed.

Nonpareil; still quite numerous. Before the English Sparrows came they were all over Savannah.

Purple Finch; a very rare winter visitor.

Pine Siskin; a rare winter visitor.

Towhee, Red-eyed; winter visitor.

Towhee, White-eyed; resident. Locally called Joree.

Savannah Sparrow; found nesting on Tybee Island.

Grasshopper Sparrow; not rare winter visitor.

LeConte's Sparrow; rare winter visitor.

Henslow's Sparrow; rare winter visitor.

Vesper Sparrow; a winter visitor.

Lark Sparrow; recorded in adjoining counties.

Bachman's Sparrow; one or two nesting records.

Chipping Sparrow; seen in the winter in goodly numbers.

Field Sparrow; winters here and there are two or three nesting records.

White-throated Sparrow; commonest upland winter visiting sparrow.

Fox Sparrow; rare winter visitor.

Lincoln's Sparrow; rare winter visitor, one record.

Song Sparrow; winter visitor.

MIGRATION NOTES AND OTHER RECORDS BY WALTER J. HOXIE, Filed with the U. S. Biological Survey. Bird Migration Notes by Hoxie for the following years are on file with the U. S. Biological Survey in Washington: 1904, 1908, 1909, 1910, 1912, 1913, 1914, 1915, 1916, 1918, 1919, 1922, 1923.

These records are all from Savannah, Georgia, except from February 15 to March 5, 1904, the notes were made in Liberty County, Georgia. Hoxie says: "These observations were made while guarding the tracks and laborers on the Atlantic Coast Line R. R. against striking section gangs. . . . The region covered was from the rice country of the Ogeechee River to the swamps of the Altamaha."

In 1922 Hoxie was at Cape Cod, Massachusetts, from July to September. The summer of 1923 he spent at a Girl Scout camp on Look-out Mountain, Georgia, (Pine-tree Camp). Here on July 9, 1923, he found the Carolina Chickadee nesting in crevices in the rock. On the same date he records an American Goldfinch and on July 16, a Spotted Sandpiper.

MAMMAL RECORDS. Along with other material collected, Hoxie sent to the Biological Survey from the Savannah region several mammals not before recorded that far south. Thus in 1910 he collected a Woodchuck (*Marmota monax monax*) quite beyond its recorded habitat. The Biological Survey wrote him it was "probably an escape".

In 1913 a Star-nosed Mole (*Condylura cristata*) was collected near Savannah and sent to the Biological Survey. Various rats, mice, weasels, skunks, and bats were collected by Hoxie near Savannah for the Biological Survey.

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- Notes from Frogmore, S. C., 250 words, O. & O., Vol. 9, No. 11, 1884, p. 138. (Swainson Warbler collected).  
 Notes on the Birds of the Sea Islands, Part I, O. & O., Vol. 10, No. 1, 1885, p. 13, 1,000 words—"These notes are a digest of my notes since 1867."  
 Notes on the Birds of the Sea Islands, Part II, O. & O., Vol. 10, No. 2, 1885, pp. 27-29. 2,500 words.  
 Red-winged Blackbird, var. *gubernator*, in South Carolina, O. & O., Vol. 10, No. 3, 1885, p. 40. 80 words. (See also Vol. 10, No. 5, 1885, p. 72).  
 Notes on the Birds of the Sea Islands, Part III, O. & O., Vol. 10, No. 3, 1885, pp. 44-46. 2,000 words.  
 Do Birds Ever Play 'Possum?, O. & O., Vol. 10, No. 3, 1885, p. 48. 300 words.  
 Editorial Comments on Walter Hoxie's series of articles on Birds of the Sea Islands, O. & O., Vol. 10, No. 4, 1885, p. 56.  
 Notes on Birds of the Sea Islands, Part IV, O. & O., Vol. 10, No. 4, 1885, pp. 62-63. 1,100 words.  
 On Describing the Colors of Birds, O. & O., Vol. 10, No. 7, 1885, p. 111. 100 words.  
 Oological Suggestions—Metriccs, O. & O., Vol. 10, No. 7, 1885, p. 111. 110 words. (Measuring the volume of eggs).  
 Birds of the Sea Islands, Corrections and Additions to My Previous List, O. & O., Vol. 11, No. 3, 1886, pp. 33-34. 800 words.  
 Aptoso-chromatism, O. & O., Vol. 11, No. 4, 1886, pp. 49-50. 800 words. (Refers to Bobolink, Cardinal, etc. "The above name was suggested to me about a year ago by Dr. Cones to denote the moultless color change.")  
 Notes from the Sea Islands, O. & O., Vol. 11, No. 5, 1886, pp. 76-77. 500 words.  
 Notes on Aptoso-chromatism, O. & O., Vol. 11, No. 6, 1886, p. 84. 175 words.  
 Capacity of Eggs, O. & O., Vol. 11, No. 7, 1886, p. 103. 100 words. (Volume of eggs shown by displacement of water in tube.)  
 Chickadees and Oak-borer, O. & O., Vol. 11, No. 8, 1886, p. 122. 325 words. (Carolina Chickadee following moth and eating eggs as fast as laid.)  
 Ratio of Major and Minor Axis of Eggs, O. & O., Vol. 11, No. 8, 1886, p. 122. 180 words. (Intervals between laying affect ratio.)  
 The Florida or White-eyed Towhee, O. & O., Vol. 11, No. 10, 1886, pp. 155-156. 600 words. (Nests found associated with pine trees.)  
 A Day on Edding Island, O. & O., Vol. 11, No. 12, 1886, pp. 180-181. 1,400 words. (Notes on Gannets.)  
 Development of Birds, O. & O., Vol. 12, No. 1, 1887, pp. 8-9. 700 words. (Origin and ancestry of birds.)  
 In the Tupelo Swamp (In the middle of the Island of St. Helena), O. & O., Vol. 12, No. 2, 1887, pp. 26-27. 600 words.  
 Historical Ground, O. & O., Vol. 12, No. 3, 1887, pp. 37-38. (Bull's Pt. and visit of Audubon thereto). 600 words.  
 My Holiday (A Christmas day trip), O. & O., Vol. 12, No. 3, 1887, p. 61. 400 words.  
 The Sense of Smell in the American Vultures, O. & O., Vol. 12, No. 3, 1887, p. 61. 360 words. (No evidence of sense of smell—evidence of keen eyesight.)  
 Breeding Dates of Birds Near Frogmore, S. C., O. & O., Vol. 12, No. 6, 1887, p. 94. (21 species.) 300 words. See also *ibid.*, p. 155. (23 species.)

- Aptoso-chromatism—A Tabulated Field Study, O. & O., Vol. 12, No. 7, 1887, pp. 101-102. 500 words.
- Was It a Sparrow Hawk's Nest?, O. & O., Vol. 12, No. 7, 1887, p. 102. 200 words.
- Probable Occurrence of the Ivory-billed Woodpecker on Pritchard's Island, South Carolina, O. & O., Vol. 12, No. 8, 1887, p. 122. 200 words.
- The Wood Ibis in South Carolina, O. & O., Vol. 12, No. 8, 1887, pp. 128-129. 1,100 words.
- An Egg Lifter, O. & O., Vol. 12, No. 8, 1887, p. 129. 600 words. (Oystercatcher carries eggs to new site.)
- Anent Hawking. (Boyhood Pets). O. & O., Vol. 12, No. 8, 1887, pp. 130-131. 700 words.
- The Sense of Smell in the Black Vulture, O. & O., Vol. 12, No. 8, 1887, p. 132. (Describes experiments; evidence negative.)
- Migratory Movements of Herons, O. & O., Vol. 12, No. 8, 1887, p. 133. 500 words.
- The Number of Eggs in a Set, O. & O., Vol. 12, No. 8, 1887, p. 134. 300 words.
- My Mockingbirds, (Pet birds). O. & O., Vol. 12, No. 9, 1887, pp. 146-147. 700 words.
- Breeding Dates of Birds Near Frogmore, S. C., O. & O., Vol. 12, No. 9, 1887, p. 155. 150 words. (A list of 23 species—12 species additional to previous list, see Vol. 12, No. 6, 1887, p. 94.)
- The Boat-tailed Grackle, O. & O., Vol. 12, No. 10, 1887, pp. 165-166. 1,200 words.
- Observations on Nest-building, O. & O., Vol. 12, No. 11, 1887, pp. 181-182. 1,000 words. (Unusual data re. Osprey, Clapper Rail, Pileated Woodpecker, Long-billed Marsh Wren, and White-eyed Vireo.)
- Up a Stump. (Pileated Woodpecker family). O. & O., Vol. 12, No. 12, 1887, pp. 194-196. 1,500 words.
- The Capacity of Eggs, O. & O., Vol. 12, No. 12, 1887, p. 207. 500 words. (A tabulation of the average capacity of eggs of 19 species of birds reduced to cubic inches and determined by filling, usually, 5 to 10 of the egg shells with dust shot and weighing the shot.)
- Deer Hunter's Assistants. (Finding deer by listening to crows and woodpeckers.) O. & O., Vol. 13, No. 2, 1888, p. 27. 600 words.
- On Making Exchanges, O. & O., Vol. 13, No. 4, 1888, pp. 54-55. 760 words.
- A Bald Eagle's Nest. (Pritchard's Isl. Jan., 1888. Describes process of construction.) O. & O., Vol. 13, No. 4, 1888, pp. 63-64. 400 words.
- Nesting Habits of the Bald Eagle, O. & O., Vol. 13, No. 5, 1888, pp. 77-78. 1,100 words.
- A Delicate Position, O. & O., Vol. 13, No. 6, 1888, pp. 87-88. 650 words. ("In my young and frisky days I was a school teacher in the northeastern corner of Massachusetts." He is scheduled to read an ornithological paper but misses his train to "Peabody": then runs 20 miles in 3½ hours, shoots several birds enroute, reads his "paper" although part is lacking, because used to wad his gun enroute.)
- Retention of Their Eggs by Birds, O. & O., Vol. 13, No. 6, 1888, pp. 89-90. 500 words. (A possibility that a Cowbird egg may cause retention by the host.) See O. & O., Vol. 14, 1889, p. 6 (refutation in part).
- The Rough-winged Swallow, O. & O., Vol. 13, No. 6, 1888, p. 91. 400 words.
- Notes on the Nesting of the Yellow-throated Warbler, O. & O., Vol. 13, No. 7, 1888, pp. 100-101. 300 words.
- Ratio of the Minor to the Major Axis of an "Ideal" Egg, O. & O., Vol. 13, No. 7, 1888, p. 101. 160 words.
- Notes on the Savannah Sparrow. (In the Sea Islands, S. C.). O. & O., Vol. 13, No. 7, 1888, pp. 101-102. 100 words.
- Notes on the Nesting of the Rough-winged Swallow, O. & O., Vol. 13, No. 7, 1888, p. 102. 100 words.

- Changes in the Relative Abundance of Species, *O. & O.*, Vol. 13, No. 8, 1888, p. 116. 500 words.
- The White Ibis in South Carolina, *O. & O.*, Vol. 13, No. 12, 1888, p. 180. 100 words.
- Letter to the Editor of *O. & O.* ("Have just returned from South Florida, . . . in the interior, north of Okeechobee." Gives list of Seminole names of birds), *O. & O.*, Vol. 14, No. 1, 1889, pp. 15-16. 250 words.  
(Hoxie signs this list of Seminole bird names, "Huskee Hadki", which was his Seminole sobriquet and means "rain white", i. e., snow, and was due to his telling the Indians about the white rains of the North. W. G. F.)
- Nesting of the Florida Burrowing Owl, *O. & O.*, Vol. 14, No. 3, 1889, pp. 33-34. 1,200 words.
- Parakeets, *O. & O.*, Vol. 14, No. 4, 1889, pp. 51-52. 1,000 words. (On the Kissimmee Prairies—a collecting trip.)
- More from Frogmore, *O. & O.*, Vol. 14, No. 5, 1889, pp. 71-72. (Notes on: Killdeer, Loggerhead Shrike, and albino Blackbird.)
- A Day in the Alpatoochee, *O. & O.*, Vol. 14, No. 7, 1889, pp. 103-104. 1,400 words. (A three day tramp across the wet swamps of the east coastal plain of Florida.)
- A Trip to Buzzard Island, South Carolina, *O. & O.*, Vol. 14, No. 8, 1889, pp. 121-122. 700 words.
- The Florida Jay, *O. & O.*, Vol. 14, No. 9, 1889. 1,100 words.
- Letter to the Editor of *O. & O.* to refute the criticisms of C. J. Maynard re. Hoxie's Burrowing Owl data. *O. & O.*, Vol. 14, No. 10, 1889, p. 160. 200 words.
- On the Fort Bassenger Trail, *O. & O.*, Vol. 15, No. 7, 1890, p. 107. 650 words. (South Florida—Burrowing Owls, etc.)
- A New Way for Finding the Capacity of Eggs. (Mathematics). *O. & O.*, Vol. 15, No. 10, 1890, pp. 150-151. 500 words.
- The Capacity of Eggs. (Mensuration). *O. & O.*, Vol. 15, No. 11, 1890, pp. 165-166. 600 words.
- A Moonlight Adventure, *O. & O.*, Vol. 16, No. 1, 1891, p. 11. 500 words. (Not much ornithology, but pleasing style.)
- Looking Backward. (Humorous account of first attempt at taxidermy at age of ten.) *O. & O.*, Vol. 16, No. 2, 1891, p. 19. 700 words.
- Warm Weather Collecting. (Care of specimens in the South to avoid ravages of ants, roaches, etc.) *O. & O.*, Vol. 16, No. 3, 1891, p. 45. 300 words.
- A Lazy Day. (Little ornithology). *O. & O.*, Vol. 16, No. 6, 1891, p. 87. 600 words.
- Seminole Nouns, Etc. (Letter to Editor). *O. & O.*, Vol. 16, No. 6, 1891, p. 96. (Nine more names of birds and 39 other equivalents.)
- Caprimulgidae on the Sea Islands [of South Carolina]. *O. & O.*, Vol. 16, No. 8, 1891, p. 126. 300 words.
- Bird Notes at Sea, *O. & O.*, Vol. 17, No. 8, 1892, pp. 113-114. 800 words. ("All summer I have been cruising off shore on a pilot boat . . . a comfortable 40-ton schooner." A few notes of Petrels, Shearwaters, Cormorants, etc.).

The *Ornithologist and Oölogist*, published by Frank Blake Webster of Boston, Massachusetts, suspended publication with the combined issue of August-September and October, 1893.

From about 1903 to 1918 Mr. Hoxie wrote for the Savannah Morning News more than 450 articles on nature topics including various short stories in which natural history was cleverly interlarded.

The scope of the present bibliography will not permit the entry of all of these and similar articles printed in the same period and later in other papers and magazines. Files of the Savannah Morning News are kept in Hodgson Hall, the historical library of Savannah.

Several of the Morning News articles of most ornithological interest are incorporated or abstracted in this biography including also a subject or two from Mr. Hoxie's pen which may be lacking in bird lore but throw a strong side light on his personality. The articles incorporated or abstracted are: The Fall Movements of Birds; Bachman's Sparrow; Fluctuations in Bird Life; Birds of Chatham County (Georgia); The Boy That Could Wiggle His Ears.

The following are a few of the many interesting titles of these Savannah Morning News articles:

Our Georgia Game Birds. (Includes Curlew, White Ibis, Ducks, Quail, Turkey, Woodcock, Snipe, Dove, etc.).

Bismarck. (A tame Bald Eagle, account of its habits, etc.).

Nibsie. (A tame Spotted Sandpiper which was rescued with a broken leg and when healed, albeit crooked, continued to stay near the Hoxie boat landing. After migrating in the fall it returned in the spring and resumed its begging for worms which had been its food supplied by Mr. Hoxie during its "hospitalization".)

Chuck-wills-widow. (Seen removing its egg in its mouth) Savannah Morning News, July 9, 1916. Obituary—James Oriole, Musician. Toads and the Weevil. Cold Weather Birds. Fiddlers and Others, (Fiddler Crabs—*Uca pugnax* and *U. pugilator*). Weed Destroying Birds. Carnivorous Animals in Chatham County. Sand Dollars (and other *Echinodermata*). Jim Crow and the Mink. Going Down the Inlet. Song; Our Georgia.

During the past thirty years Mr. Hoxie wrote articles, similar to the examples given, for several magazines, including: Success Magazine; Sports Afield; Home Progress Magazine (Houghton Mifflin Co.).

In these present years of unemployment many idle people have turned to writing and the magazines are overloaded with copy. Under these conditions and because of his lack of photographic illustrations for some of them, Mr. Hoxie has on hand several unpublished articles and stories that in normal times would have been accepted promptly.

JACKSON, MICH.



# 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; L. W. Wing, Ann Arbor, Michigan.

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 \$1.75 a year, and 60 cents a number. Subscriptions and orders for single copies should be addressed to the Secretary, Lawrence E. Hicks, Dept. of Botany, Ohio State University, Columbus, Ohio.

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## EDITORIAL

THE ANNUAL MEETING of the Wilson Ornithological Club will be held at Pittsburgh, Pa., on December 28 and 29, Friday and Saturday, with the American Association. Plans are now being matured for a good meeting on this occasion. The American Ornithologists' Union will hold its fifty-second Stated Meeting in Chicago beginning October 22d next. This will be the second Chicago meeting.

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RECENT YEARS have marked the appearance of a number of small booklets designed to assist the writer of articles for publication. The technique of writing is being given more and more attention constantly. There is still a good deal of conflict in the rules of editorial style, but less than formerly. Today the larger publishing centers have adopted their own rules leading to uniformity; it is probable that eventually these rules will all be reduced to one code. In the meantime writers and editors will continue to labor with the rules of capitalization, punctuation, quotation, divisions, footnotes, etc.

In the hope of being of service to our contributors we shall offer here a few comments on several of the useful style codes now available. It seems to be generally agreed that the writer needs three tools as special aids in his English technique; these are, a dictionary, a book of synonyms or thesaurus, and a style book. An understanding of the principles of English grammar and composition is presupposed. There are two dictionaries available in this country. We prefer to follow the Standard Dictionary, but Webster's International Dictionary seems to be more generally recommended. Probably the final authority on the English language is the "Oxford" Dictionary. There are several books on synonyms and antonyms. The most recent one we know of is "Allen's Synonyms and Antonyms", 1921 (Harper & Brothers, New York). Similar works by other authors—e. g., March, Fernald, Roget, Crabb, and Fallows—will serve the purpose as well.

Our chief interest centers in a good style code. Most newspapers, magazines, and book publishers have compiled rules of style for their own use. Some of the more complete ones have now been published and made available to the general public. We have adopted for our own guidance the "Manual of Style", issued by the University of Chicago Press. It seems to us to be the most complete and satisfactory. The edition we have is the 7th (1920), but a later one has been issued. This Manual gives authoritative rules for capitalization, punctuation, use of italics, divisions, quotation, footnotes, tabular material, etc. "The Style Manual

of the Government Printing Office", Revised Edition, 1924 (Washington, D. C.), covers somewhat similar ground, yet it is highly specialized and perhaps not so satisfactory for our purposes. Of greater general service is the "Suggestions to Authors of Papers Submitted for Publication by the United States Geological Survey with Directions to Typewriter Operators", 1916 (Dep't of the Interior, Washington, D. C.).

There are now a number of other booklets for writers, several of which are quite recent. These manuals, for the most part, give instructions for assembling the data into a unified whole, and lay less stress on the technique of preparing the manuscript for the printer. In this group we mention first Vizetelly's "The Preparation of Manuscripts for the Printer", Eighth Edition, 1924 (\$1.50, Funk and Wagnalls Co.). This book contains some things not found in the others, but it is too brief on rules of style to serve our purposes. A more recent one is, "Preparation of Scientific and Technical Papers", 1927, by Trelease and Yule (\$1.50, Williams and Wilkins Co., Baltimore, Md.). This booklet contains much more material on the technique of style, and indicates the usage in a large publishing house for scientific material. The latest booklet to reach our attention is "A Manual of Thesis-Writing for Graduates and Undergraduates", First Edition, 1934, by Cole and Bigelow (75 cents, John Wiley and Sons, New York). Emphasis is more on composition, less on rules of form, or technique. It contains a lot of practical help to the beginner in scientific writing. These booklets are all interesting and helpful. Unfortunately, not one of them is complete, and it is impossible to single out one for special recommendation. Composition (expression of ideas) is one thing; reproduction of it on the printed page is another thing. The best usage is being worked out for the latter, just as the rules of grammar have been developed long since. Writers of today should become familiar with the results of efforts to codify the best usage in printed style.

It may not be out of place in this connection to mention another class of books which treat more especially of grammatical construction. There are many school books in this group. Some of them will be found interesting and helpful by the writer who has passed beyond the school age, but who wishes to improve his English form. The ones mentioned have not been selected by a process of elimination, but have simply been found to be helpful. They are all inexpensive. "A Writer's Manual and Workbook", by Kies and others, 1933 (F. S. Croft and Co., New York), is described in the Preface as "a combined review of grammar, concise rhetoric, handbook of revision, and exercise pad. It deals progressively with grammatical background, punctuation, mechanics, and fundamental rhetorical principles . . . ." "English Review Grammar", by W. K. Smart, 1925 (F. S. Croft and Co., New York). "The purpose of this book is primarily to furnish a review of English grammar for mature students who need a more thorough knowledge of the structure of the English language." "College Handbook of Composition", by Wooley and Scott, 1928 (D. C. Heath & Co., New York), is one of the most generally-used guides in English Composition, and may be especially recommended. "Sentences and Thinking. A Handbook of Composition and Revision", by Foerster and Steadman, 1923 (Houghton Mifflin Co., Boston). This book has two objectives, namely, to show how to construct a sentence and how to revise a manuscript. It is a useful book. "Self-Aids in the Essentials of Grammatical Usage", by L. J. O'Rourke, 1927 (Educational and Personnel Pub. Co., Washington, D. C.). This is a somewhat elementary drill book in English

grammar, especially useful to the student who is working alone and has time for practice work.

We offer these suggestions because we are in a position to know that they will be appreciated by a great many of our readers who are also writers—not necessarily the “younger” writers only. We are also confident that the vast majority of scientific writers are not so proficient in the use of the English language but that they can well afford to spend some spare moments on books of this kind.

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THE ARTICLE by Mr. Wing in this number of the BULLETIN shows an unexpected way in which migration data may be used. Detailed migration data carefully prepared and recorded may serve some future research in a manner which the original worker never dreamed.

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MR. FRED J. PIERCE, Winthrop, Iowa, desires to secure Nos. 12, 13, 15 (1897), and 29 (1899) of the WILSON BULLETIN, with which to make his file complete. Incidentally, the Editor would also be glad to secure the following numbers for the same purpose: Ornithologists' and Oologists' Semi-Annual, Vol. I, No. 1, and Vol. II, Nos. 1 and 2.

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OUR CUTS are now costing us about 30 per cent more than previous to the NRA codes. Therefore, we will have to ask our contributors and readers to be patient with fewer illustrations.

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MR. W. H. HOFFSTOT, 14 East 55th Street, Terrace, Kansas City, Mo., has a printed direction sheet for building a serviceable bluebird house which he will gladly send free to anyone who furnishes a self-addressed, stamped envelope.

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IOWA now lists thirty-eight state parks, with a total of 5,987 acres. The number of state parks in New York is sixty; in Michigan is fifty-three; and in Texas is fifty-one. The most important parks, from the scenic point of view, at least, are in mountainous country. In general this is true of the national parks. However, there are various reasons for preserving areas of prairie country also in the natural condition. This is being done chiefly by the establishment of state parks. Preservation of such areas means also the preservation of the flora and fauna.

## GENERAL NOTES

Conducted by M. H. Swenk

**Adaptability in the Feeding Habits of the Woodcock.**—While the Woodcock (*Philohela minor*) is known to eat seeds of various plants, its normal diet consists largely of earthworms and insects. On a recent field trip to New Jersey, State Game Warden Joseph Mathis and others gave incontrovertible evidence that the Woodcock, at least when hard pressed for food, will take grain. During the unusually cold freeze of February and early March, 1934, when snow covered the ground, the warden placed cracked corn on a cleared surface for Bob-whites, three or four times each week. On the second visit to one feed patch near New Gretna, Burlington County, New Jersey, he saw five Woodcocks, along with a covey of Bob-whites, eating the cracked corn. These were observed eating the corn at the feeding station at each subsequent visit for fully a month. Other observers reported the same habit.—CLARENCE COTTAM, *U. S. Biological Survey, Washington, D. C.*

**Unusual Bird Behavior.**—Each new season brings new experiences with birds. This season (1933) I have had a new experience with the Golden-crowned Kinglet (*Regulus satrapa satrapa*). On April 22, 1933, while walking through a small grove in Washington Park, Milwaukee, Wisconsin, I observed a Yellow-bellied Sapsucker (*Sphyrapicus varius varius*) busily engaged in drilling holes in the trunk of a white birch tree. At my approach, it flew to a white pine a short distance away. On the birch just vacated by the sapsucker, I noticed a Golden-crowned Kinglet feeding among the branches. I had barely made sure of its identity, when it did a peculiar thing. Bracing itself on the trunk of the tree in the same manner as the sapsucker, it proceeded to drink the sap that was oozing from the holes drilled in the tree. After drinking three or four times it flew farther into the grove. This being an interesting and unusual incident in my experience with birds, I decided to verify my observation. I had just placed myself in a better position, when another Golden-crowned Kinglet flew into the tree to a series of holes drilled beside a healing branch scar, and proceeded immediately to drink. Near by were two other birches whose trunks and larger branches were full of sapsucker wells. While watching these trees, at least ten other kinglets drank at these artesian wells, and in every instance the birds flew directly to the holes and proceeded to drink. I was then convinced that this unusual incident was not just one particular individual's habit, but apparently was a common practice among this troop of migrating kinglets. Although sap was flowing from all the pines and hemlocks in the vicinity, no kinglets were observed at them. No doubt they prefer the sap of the birches. Ruby-crowned Kinglets were not among this flock, although many species of warblers were present, but none were observed drinking sap.—JOSEPH N. WOPPERT, *Milwaukee, Wis.*

**Shufeldt's Junco Taken in Northwestern Iowa.**—An adult male Shufeldt's Junco (*Junco oreganus shufeldti*) was collected by the writer on April 10, 1934, southwest of Ruthven, in the northwest corner of Section 27 of Freeman Township, Clay County, Iowa. This bird was found among some willows which border the outlet from Rosacker Slough. It was associated with Tree and Song Sparrows, no other juncos being present. It immediately was recognized as one of the "black-headed" juncos.

The specimen was submitted to Prof. Myron H. Swenk of Lincoln, Nebraska, for comparison with specimens in his collection from Lincoln, western Nebraska, and eastern Colorado. His remarks, contained in a letter dated April 20, 1934, regarding the identification of this bird, are as follows: "The specimen is undoubtedly *Junco oreganus*, and probably closest to *shufeldti*, but it has the blackest head with the most contrast between the head and neck and the back, and the brownest back, of any of the specimens before me, in these respects approaching more closely than any of the specimens before me to the typical western form, *Junco oreganus oreganus*, as exemplified in some California specimens in my collection. I would classify it as *shufeldti*, but it is more intermediate between that and the typical subspecies than a typical specimen of *shufeldti* would be. It is interesting to know that this specimen was collected in northwestern Iowa earlier this month. *Junco oreganus shufeldti* is, as I told you previously, a regular migrant at Lincoln."

The color of the soft parts of this bird as noted at the time of collecting were as follows: Bill, pale lavender; iris, deep chocolate; tarsus, buffy gray. The two outer pairs of tail feathers are entirely white, with a clear-cut streak of white along the shaft on the third pair, nearly half the width of the feather. Measurements in millimeters taken of the specimen in the flesh are: Length, 151.0; tail, 68.9; wing (chord of closed wing), 78.5; wing (primaries flattened), 80.2; tarsus, 22.9; exposed culmen, 11.9.

R. M. Anderson, in his treatment of the juncos in the *Birds of Iowa* (1907), listed *Junco hyemalis hyemalis* and *Junco hyemalis montanus*. A specimen of *Junco oreganus shufeldti*, which had been collected by W. E. Praeger across the Mississippi River from Keokuk, in Illinois, on December 16, 1892, was referred to *Junco hyemalis montanus*. There were no specimens of the Montana Junco listed, its inclusion being based upon two sight records.

While examining the various collections of Iowa birds recently, the writer was unable to find any Iowa specimen of junco other than the Slate-colored Junco. Therefore, only *hyemalis* was included in *A Revised List of the Birds of Iowa* (1933, p. 149), Shufeldt's Junco being included in the hypothetical list (p. 158). Therefore, this specimen of *shufeldti* is probably the first taken in Iowa, and so constitutes an addition to the state list.—PHILIP A. DUMONT, *Des Moines, Iowa*.

**Some Additional Ohio Breeding Records.**—The following notes include some of the unusual breeding species for Ohio, and are submitted for record.

Yellow-crowned Night Heron (*Nyctanassa violacea violacea*). Since the first discovery of this bird as a new species and a new breeding species for the state, at the Indian Lake colony of Great Blue and Black-crowned Night Herons (C. F. Walker, *Auk*, XLV, p. 370), from one to three adults have been reported each year, except in 1933. Presumably nesting has occurred each year also, but it is very difficult to locate nests among the numerous nests of the other Night Herons. I have the following records of adults: April 28, 1928 (1); June 1, 1929 (1); June 30, 1930 (1); May 24, 1931 (1); and May 27, 1932 (3).

Long-eared Owl (*Asio wilsonianus*). Several summer records at Cedar Swamp, Champaign County. On May 13, 1933, a nest was found at a height of about twenty-five feet in an arbor-vitae tree. It contained three young about two weeks old and was built on the platform of a nest known to have been used by a Cooper's Hawk the preceding year.

Short-eared Owl (*Asio flammeus flammeus*). Two adults were seen by Mr. Floyd B. Chapman and the writer at the Higby prairie in Ross County on May 21, 1933. Returning on June 5, a nest with two half-grown young was finally located, placed on a raised hummock of sedges and swamp rose.

Saw-whet Owl (*Cryptoglaux acadica acadica*). Single adults were observed at Greenlawn Cemetery in Columbus on May 8, 1927, May 5, 1932, May 3, 1933, and April 19, 1934. Several of these birds were later viewed by fifty or more observers. All were found in evergreen clumps within a radius of 100 yards, and though all tree cavities in the vicinity were examined, no nests were found. On May 24, 1933, another adult was seen, and in an adjacent clump of spruce a young bird in down plumage was observed. It seemed too young to fly well, but succeeded in escaping to one of the larger trees.

Cedar Waxwing (*Bombycilla cedrorum*). Two nests were found in a trembling aspen grove at Cedar Swamp, Champaign County, August 26, 1933. One nest contained three large young, and the other four eggs nearly ready to hatch. Returning on September 3, another nest containing four eggs which had been incubated about six days, was found in an arbor-vitae tree. These dates seem unusually late, and are the only ones that I have for the nesting of this species later than August 15.

Golden-winged Warbler (*Vermivora chrysoptera*). On June 12, 1932, near Steuben, Huron County, an adult male was observed feeding a young bird just out of the nest. The female was not satisfactorily examined, but appeared to be typical *V. chrysoptera*.

Grinnell's Water-Thrush (*Seiurus noveboracensis notabilis*). A singing bird of this species was observed at the same time and place as the above. It was found in a dense thicket of a button-bush, dogwood, poison-sumac and alder swamp, and probably indicates breeding. In addition to this record (twenty-five miles due south of Sandusky), this species has also been found breeding in the northeastern corner of Ohio (Geauga, Trumbull, and Ashtabula Counties).—LAWRENCE E. HICKS, *Ohio State University, Columbus, Ohio*.

**Some Scattering Bird Notes from Indiana.**—I notice in the WILSON BULLETIN that someone found a place where many Green Herons were nesting in the same vicinity. I did not know that these birds did this, although they are not very common in this part of Indiana or where I came from in Ohio. My mother, who lived on a farm in Clark County, Ohio, had a pair of Green Herons nesting in her orchard, on a horizontal branch of an apple tree for several years. A winding creek, the beginning of the Little Miami River I believe, was within a stone's throw of the place, and the parents fed their young from this stream. That was the only chance that I have ever had to study the habits of these birds. I see one occasionally along small streams, hunched up fishing or watching for frogs or minnows, but always they are alone.

Near the county infirmary along the public road about five years ago I found three hole-nesting birds nesting at the same time in a telephone pole. They were the European Starling, the Red-headed Woodpecker, and the Flicker. The two last-named birds were looking out of the door at the same time, one gazing up and the other down, each seeming to be wondering what the other was doing there. Their holes were on the same side of the pole.

A few days ago this spring (1933), I was interested in hearing the voice of a bird that I could not name at once. I listened and it seemed to me that it must have been a small bird. Finally above me, on a horizontal branch of a tree, about twenty feet up, I saw an European Starling doing his best to sing! I had never heard one making such peculiar sounds before. He seemed to say "zee-up, ze-e-up", with variations different from other birds. He seemed to have a high voice and I never would have guessed his identity if I had not seen him at close range. I wonder if that is his love song. He seemed to be calling, but no other bird answered that I heard.—MRS. HORACE P. COOK, *Anderson, Ind.*

**MacGillivray's Warbler in North Dakota.**—On May 29, 1934, the writer saw a pair of MacGillivray's Warblers (*Oporornis tolmiei*), in Bowman County, North Dakota. This county is in the southwestern corner of the state. Buffalo Springs Lake is located near a town of the same name in the eastern part of the above county. The south shore of the lake is heavily fringed with willows and it was here that warblers were found. The birds were quite confiding and allowed approach to within fifteen feet. The white eyelids were plainly seen, and the heavy black wash on the head, neck, and breast precluded the possibility of it being a Connecticut Warbler. Then too, the song was different, and seemed rather thin and wiry compared to the song of either the Mourning or Connecticut Warblers. The birds were followed around for more than an hour, and from their reluctance to leave a certain patch of willows, it was obvious that they probably were settled for the nesting season. The writer has not found any published records of this species in North Dakota and believes that this observation adds a new bird to the state list.—WM. YOUNGWORTH, *Sioux City, Iowa.*

**Iowa Specimen of the "American" Eider" Re-determined as the Pacific Eider.**—Admission is made by the writer that at the time the specimen of eider duck in the Sioux City Academy of Science was examined the thought in mind was positively to distinguish it from *Somateria spectabilis*. A re-examination of this specimen, on May 25, 1934, proved that instead of being *Somateria mollissima dresseri*, as recorded in "A Revised List of the Birds of Iowa" (1933, p. 41), it actually is *Somateria v-nigra*, the Pacific Eider. The posterior horns of the bill processes are narrow, pointed, and but slightly forked, while the anterior point of the feathering on the side of the maxilla is rounded, not pointed as in *S. mollissima*.

Dr. T. C. Stephens has kindly supplied a record of the information for this specimen as taken from the note-book of Dr. Guy C. Rich. This is as follows: "Mounted by W. H. Knight. American Eider. L., 27½; W., 16; Tail, 5⅝; Tarsi, 3 in.; Bill, 2⅓. Found in Market. Bro't in by hunter from Missouri river bottoms below city. Was in flock of other ducks. Shot after a heavy N. E. storm. Sex not marked but probably ♀. My only note."

During a conversation with Dr. Rich, he assured me that November 1, 1901, was the correct date on which the specimen was taken, and that it came from the Missouri River below Sioux City. It would seem, therefore, that this record might be claimed as Nebraskan as well as Iowan.—PHILIP DUMONT, *Des Moines, Iowa.*

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## MEMBERSHIP ROLL OF THE WILSON ORNITHOLOGICAL CLUB\*

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Blincoe, Mrs. Benjamin J., Route 13, Dayton, Ohio.....	1926
Bodine, Mrs. Margaret L., Rittershouse Plaza, 19th and Walnut St., Phila- delphia, Pennsylvania.....	1930
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Book, Dr. R. D., Corning, Ohio.....	1933
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Borror, Donald J., Dept. of Zoology and Entomology, Ohio State University, Columbus, Ohio.....	1927
Boulton, Wolfrid Rudyerd, Field Museum, Chicago, Illinois.....	1922
Brady, Dr. John A., St. Augustine College, Lakewood, Ohio.....	1925
Braly, John C., De Poe Bay, Oregon.....	1927
Brasher, Rex, Chickadee Valley, Kent, Connecticut.....	1926
Brant, Irving W., % St. Louis Star, St. Louis, Missouri.....	1932
Breece, Russel, Delaware, Ohio.....	1933
Breslau, Leo A., % Laurel Printing Co., 480 Canal St., New York City.....	1933
Brockner, Winston W., 175 Dutton Ave., Buffalo, New York.....	1933
Brooks, A. B., Oglebay Park, Wheeling, West Virginia.....	1931
Brooks, Maurice, French Creek, West Virginia.....	1926
Broomhall, W. H., Stockport, Ohio.....	1926
Brosius, Ralph R., Valentine, Nebraska.....	1933
Brown, J. Wilcox, White Oaks, Montchanin, Delaware.....	1932
Bruce, James A., 557 Spring St., Wooster, Ohio.....	1929
Brunn, Charles A., 1510 Central Avenue, Hot Springs, Arkansas.....	1921
Bullock, D. J., Commodore Hotel, Des Moines, Iowa.....	1932
Burnett, Prof. W. L., State Agr. College, Fort Collins, Colorado.....	1926
Burt, W. H., Cal. Inst. of Technology, Pasadena, California.....	1928
Cain, B. C., Box 796, Oakland, California.....	1934
Campbell, Sam H., Oak Grove, Louisiana.....	1934
Campbell, John S., Bienville, Louisiana.....	1932
Campbell, Louis W., 304 Fearing Blvd., Toledo, Ohio.....	1926
Carlson, Carl Olof, Dept. of Biology, Doane College, Crete, Nebraska.....	1923
Carter, John D., Lansdowne, Pennsylvania.....	1930
Cartwright, Bertram W., 238 Guilford St., Deer Lodge, Winnipeg, Canada.....	1930
Chaffee, H. L., Amenia, North Dakota.....	1930
Chamberlain, Glen D., 22 Academy St., Presque Isle, Maine.....	1930
Chambers, W. Lee, 2068 Escarpa Drive, Eagle Rock, Los Angeles, Calif.....	1934
Chapman, Floyd B., 1944 Denune Ave., Columbus, Ohio.....	1932
Chapman, L. B., 67 Chester St., Newton Highlands, Massachusetts.....	1934
Clapp, Alston, Sr., 1115 Cotton Exchange Bldg., Houston, Texas.....	1934
Clark, Mrs. C. C., 922 N. Third St., Burlington, Iowa.....	1925

Clarke, C. H. D., Dept. of Biology, Univ. of Toronto, Toronto, Canada.....	1932
Clayton, Miss Luella B., Feasterville, Pennsylvania.....	1930
Clippinger, Miss Florence, 4300 Midway Ave., Dayton, Ohio.....	1933
Coles, Victor, Hampton Inst., Hampton, Virginia.....	1929
Collins, Henry H., Jr., 1620 P St., N. W., Washington, D. C.....	1931
Compton, Lawrence V., Museum of Vertebrate Zoology, Univ. of California, Berkeley, California.....	1923
Compton, Leila A., 846 E. Bowman St., Wooster, Ohio.....	1930
Conant, Roger, Toledo Zoological Society, Toledo, Ohio.....	1930
Conklin, Charles, Canal Winchester, Ohio.....	1933
Cook, Mrs. Horace P., 412 W. Eleventh St., Anderson, Indiana.....	1931
Cox, Rodman D., 785 South Ave., Rochester, New York.....	1933
Craig, Gerald S., Teacher's College, Columbia Univ., New York City.....	1932
Crandell, Herbert A., % Dept. of Entomology, Ohio State Univ., Columbus, Ohio.....	1934
Crane, Francis V., South St., Needham, Massachusetts.....	1932
Crook, Compton N., Jr., 18 College St., Boone, North Carolina.....	1929
Crouch, James, 409 Eddy St., Ithaca, New York.....	1930
Cummings, William H., Central States Forestry Exp. Sta., Ohio State Univ., Columbus, Ohio.....	1933
Currier, Edmonde S., 8541 N. Chicago Ave., Portland, Oregon.....	1930
Curtis, John T., 325 Grand Ave., Waukesha, Wisconsin.....	1934
Curtler, Martin, R. D. 1, Charlottesville, Virginia.....	1934
Dambach, Charles A., Burton, Ohio.....	1934
Damon, David, 729 Sixth St., Ames, Iowa.....	1933
Danner, Mrs. Mary S., 1646 Cleveland Ave. N. W., Canton, Ohio.....	1921
Davidson, W. M., R. D. 1, Silver Spring, Maryland.....	1933
Davis, Mrs. L. Irby, Box 669, Harlingen, Texas.....	1933
Davis, Russel S., Clayton, Illinois.....	1932
Dawley, Miss Jean W., 13962 Clifton Blvd., Lakewood, Ohio.....	1931
Dawson, Sallie, 807 N. Fourth St., Terre Haute, Indiana.....	1933
Dille, Fred M., Rapid City, South Dakota.....	1912
Dingle, Edward von Seibold, Huger, South Carolina.....	1921
Dole, J. Wilbur, 51 East Stone St., Fairfield, Iowa.....	1930
Dyer, Mrs. Minnie M., Byington, Tennessee.....	1930
Eastman, Mrs. E. P., 719 Columbia St., Burlington, Iowa.....	1926
Eastwood, Sidney K., 301 S. Winebiddle Ave., Pittsburg, Pennsylvania.....	1928
Eaton, Warren F., 128 Wildwood Ave., Upper Montclair, New Jersey.....	1932
Eckler, Harlan E., 1757 Hertel Ave., Buffalo, New York.....	1933
Edson, J. M., 90 Marietta Road, Bellingham, Washington.....	1928
Edwards, Mrs. W. H., Fairhope, Alabama.....	1925
Eheim, J. M., 236 S. Adams St., Hutchinson, Minnesota.....	1926
Eike, James, P. O. Box 4, Woodbridge, Virginia.....	1933
Eliot, S. A. Jr., 32 Paradise Road, Northampton, Massachusetts.....	1932
Ellerman, Alexander H., Sr., 1021 Lincoln St., Piqua, Ohio.....	1933
Elrod, Mrs. Walter D., Box 103, Okmulgee, Oklahoma.....	1923
Emery, F. H., 620 Euclid Ave., Toronto, Ontario, Canada.....	1933
Erickson, Mary M., Museum of Vertebrate Zoology, Univ. of California, Berkeley, California.....	1930
Evans, Dr. Evan M., 550 Park Ave., New York City.....	1929
Everett, Miss Constance, 206 Ninth St., N. E., Waseca, Minnesota.....	1934
Evins, Samuel N., 38 E. 14th St., Atlanta, Georgia.....	1921
Fabert, Harry J., 413 Linwood Ave., Columbus, Ohio.....	1932
Farley, Frank L., Camrose, Alberta, Canada.....	1934
Felker, J. O., 8 Fair Oaks, St. Louis Co., Missouri.....	1934
Felton, W. R., 1709 Summit St., Sioux City, Iowa.....	1934
Fentress, Miss Elizabeth, 1019 Larchmont Crescent, Norfolk, Virginia.....	1933
Fiene, Miss Ada, Lone Rock, Iowa.....	1934
Finister, Ethel B., Ashville Normal School, Ashville, North Carolina.....	1930
Fisher, Dr. G. Clyde, American Museum of Natural History, New York City.....	1925
Fitzpatrick, Prof. F. L., Teacher's College, Columbia Univ., New York City.....	1924

Fleming, Mrs. Allen W., 44 Woodland Ave., Columbus, Ohio.....	1934
Floyd, Charles B., 454 Wolcott St., Auburndale, Massachusetts.....	1924
Foote, M. E., Norwalk, Ohio.....	1932
Forsthoefel, Paul, 303 E. Fulton St., Celina, Ohio.....	1932
Franks, Roscoe W., State Civil Service Commission, Columbus, Ohio.....	1932
Franzen, Albert J., Field Museum, Chicago, Illinois.....	1929
Frazier, John M., Station A, Box 156, Hattiesburg, Mississippi.....	1930
French, Mrs. Mcna, Box 171, Wayland, Massachusetts.....	1928
Frothingham, Mrs. Randolph, 56 Sargent Crossway, Brookline, Massachusetts.....	1932
Frydrych, Paul B., 1508 Valley St., Dayton, Ohio.....	1934
Fryklund, P. O., Roseau, Roseau Co., Minnesota.....	1926
Furniss, Owen C., 2203 First Ave., W., Prince Albert, Sask., Canada.....	1934
Ghigi, Alessandro, R. Universita, Bologna, Italy.....	1931
Gilcrest, O. E., 5831 Waterbury Circle, Des Moines, Iowa.....	1930
Giles, Norman H., Jr., 959 Drewery St., N. E., Atlanta, Georgia.....	1930
Gill, Geoffrey, 24 Overlook Drive, Huntington, Long Island, New York.....	1934
Gillette, Fredericka B., 1319 Forest Ave., Ann Arbor, Michigan.....	1928
Gloyd, Prof. H. K., Dept. of Zoology, Univ. of Michigan, Ann Arbor, Mich.....	1925
Goerlitz, George, 520 E. Main St., Boonville, Indiana.....	1934
Goldsmith, G. W., Box 1611, Univ. Sta., Austin, Texas.....	1931
Goodman, Wilfred A., 2030 Mentor St., Wichita, Kansas.....	1932
Gordon, Dr. Robert B., Dept. of Botany, Ohio State University, Columbus, Ohio.....	1931
Gordon, Seth, American Game Association, Investment Bldg., Washington, D. C.....	1933
Gowen, Carl, 606 S. Illinois Ave., Carbondale, Illinois.....	1932
Grant, C. P., 3744 Glenway Ave., Cincinnati, Ohio.....	1928
Grant, William W., 816 S. Main St., Geneva, New York.....	1933
Gray, Allan L., Orleans, Nebraska.....	1932
Greene, Earle R., 642 Orme Circle, Atlanta, Georgia.....	1930
Gregory, C. E., Box 215, Morgantown, North Carolina.....	1928
Gresham, Burt, Winnipeg Free Press, Winnipeg, Manitoba.....	1934
Grimes, S. A., 2546 Gilmore St., Jacksonville, Florida.....	1924
Gromme, Owen J., Milwaukee Public Museum, Milwaukee, Wisconsin.....	1924
Gross, Dr. Alfred O., Bowdoin College, Brunswick, Maine.....	1927
Guion, George Seth, 1716 American Bank Bldg., New Orleans, Louisiana.....	1931
Habegger, Ruth, 401 W. Main, Marshalltown, Iowa.....	1931
Hagar, Mrs. Jack, Box 294, Corsicana, Texas.....	1930
Hague, Florence, Sweet Briar College, Sweet Briar, Virginia.....	1931
Hainsworth, William P., 214 Railroad Ave., North Andover, Massachusetts.....	1930
Hall, Watson, U. S. Soil Erosion Service, Coon Valley, Wisconsin.....	1934
Haller, Karl W., R. D. 1, Short Creek, West Virginia.....	1934
Hallman, R. C., P. O. Box 847, St. Augustine, Florida.....	1928
Hambleton, Prof. J. C., 380 W. Eighth Ave., Columbus, Ohio.....	1932
Hamilton, Dr. William J., Jr., Dept. of Zoology, Cornell Univ., Ithaca, N. Y.....	1933
Hamerstrom, Frederick N., Jr., Route 3, Ames, Iowa.....	1934
Hanawalt, Prof. Fred A., Zoology Dept., Otterbein College, Westerville, Ohio.....	1932
Handley, Charles O., Ashland, Virginia.....	1925
Hargrave, Lyndon L., Box 203, Flagstaff, Arizona.....	1932
Harkin, J. B., Commissioner, Dept. of Interior, Ottawa, Ontario, Canada.....	1924
Harper, Dr. Francis, 732 Yale Ave., Swarthmore, Pennsylvania.....	1930
Harris, C. L., 921 W. Central, Eldorado, Kansas.....	1928
Harris, Mrs. W. Gray, 37 S. Lenox St., Worcester, Massachusetts.....	1932
Hartsook, Mrs. Fred P., Winterset, Iowa.....	1934
Hayward, C. Lynn, Dept. of Zoology and Entomology, B. Y. Univ., Provo, Utah.....	1933
Hayward, W. J., 2919 Jackson St., Sioux City, Iowa.....	1913
Heising, Clara M., 311 Way Ave., Kirkwood, Missouri.....	1932
Hemphill, Frederick A., 128 Broad St., Elizabeth, New Jersey.....	1928
Henderson, Grant, Route 6, Greensburg, Indiana.....	1930
Henderson, W. C., 8 Magnolia Parkway, Chevy Chase, Maryland.....	1928

Henry, C. J., R. D. 4, Box 632, Battle Creek, Michigan.....	1933
Hicks, Mrs. E. H., Fredericktown, Ohio.....	1932
Hiett, Lawrence D., 3758 Brookside Road, Toledo, Ohio.....	1930
Hill, Howard, Desloge, Missouri.....	1933
Hillmer, Davis B., 454 Colburn Place, Detroit, Michigan.....	1926
Hilton, Dr. David C., 305 Richards Blk., Lincoln, Nebraska.....	1918
Hinchman, Richard May, 501 Randolph Ave., Milton, Massachusetts.....	1931
Hoag, Ena, P. O. Box 407, Pacific Grove, California.....	1934
Holland, Harold May, Box 515, Galesburg, Illinois.....	1915
Holt, Prof. William P., Bowling Green, Ohio.....	1932
Hudson, George E., Dept. of Zoology and Anatomy, Univ. of Nebraska, Lincoln, Nebraska.....	1933
Huey, Lawrence M., Natural History Muscum, Balboa Park, San Diego, California.....	1932
Huff, Prof. N. L., 1219 Seventh St., S. E., Minneapolis, Minnesota.....	1928
Huggitt, Floyd C., Bellevue, Michigan.....	1933
Hughes, George T., Box 153, Plainfield, New Jersey.....	1929
Hunter, Lawrence E., Dallas City, Illinois.....	1934
Hutchins, Harold L., 21 Lake St., Hamden, Connecticut.....	1934
Hyndway, Mrs. Eleanor, R. D. 2, Marcus, Iowa.....	1933
Ijams, H. P., Box 1150, Knoxville, Tennessee.....	1924
Ingersoll, Albert M., 908 F. St., San Diego, California.....	1921
James, Mrs. A. O., 4100 Grove Ave., Richmond, Virginia.....	1931
Jarrard, Miss Berma L., 54 Briarcliff Circle N. E., Atlanta, Georgia.....	1933
Jelier, F. P., Groote Visscherystratt 19a, Rotterdam, Holland.....	1931
Jenks, Randolph, Mount Kemble, Morristown, N. J.....	1934
Jensen, J. P., Box 364, Dassel, Minnesota.....	1926
Johnson, D. E., 2269 Grandview Road, Cleveland Heights, Ohio.....	1934
Johnson, Elmer D., 279 S. 6 West, Provo, Utah.....	1934
Johnson, Mrs. Oscar, 38 Portland Place, St. Louis, Missouri.....	1931
Johnson, Robert A., State Normal School, Oneonta, New York.....	1930
Jones, F. M., Box 652, Harrisonburg, Virginia.....	1933
Jones, Gordon Willis, Elwood Farms, Wildcrness, Virginia.....	1933
Jones, Harold C., 352 W. College St., Oberlin, Ohio.....	1929
Jones, John C., 3224 19th St., N. W., Washington, D. C.....	1931
Jones, M. L., Webster, Iowa.....	1934
Jones, S. Paul, 509 West Ave., N., Waukesha, Wisconsin.....	1921
Kalmbach, E. R., 527 Custom House, Denver, Colorado.....	1926
Kamm, Mrs. Oliver, 365 Lake Shore Drive, Grosse Pointe Farms, Michigan.....	1934
Kellog, Dale C., Box 343, Norwalk, Ohio.....	1932
Kingsbury, Elizabeth W., 72 Barrow St., New York City.....	1933
Klepfer, Ward, Box 1031, Granville, Ohio.....	1934
Knapp, Elmer, R. R. 2, Troy, Pennsylvania.....	1930
Knappen, Phoebe, 2925 Tilden St., N. W., Washington, D. C.....	1926
Knight, Prof. Harry H., Dept. Zoology and Entomology, Iowa State College, Ames, Iowa.....	1926
Koelz, Dr. Walter, University Muscum, Ann Arbor, Michigan.....	1929
Krug, Carl B., % George Krug, Minonk, Illinois.....	1930
Kubichek, W. F., Cedar Rapids, Iowa.....	1926
Kummerlowe, Dr. Hans, Cichorins Strasson 6 III, Lcipzig, Germany.....	1931
Kuser, J. Dryden, Bernardsville, New Jersey.....	1913
Langelier, Gus, R. R. 1, Frubough St. Jean Baptiste, Quebec, Ontario, Can.....	1933
Larrabee, Prof. Austin P., Yankton College, Yankton, South Dakota.....	1921
Lawrence, A. G., City Health Dept., Winnipeg, Manitoba, Canada.....	1928
Lee, Addie, 2111 Dixie Place, Nashville, Tennessee.....	1933
Leedy, Charles A., % The Telegram, Youngstown, Ohio.....	1927
Lewis, Merriam G., Langhorne Place, Salem, Virginia.....	1930
Lincoln, Frederick C., Bur. Biological Survey, Washington, D. C.....	1914
Linsdale, Dr. Jean M., Museum of Vertebrate Zoology, Univ. of California, Berkeley, California.....	1928
Lloyd, C. K., 11 N. Elm St., Oxford, Ohio.....	1925



Lloyd, Hoyes, 582 Mariposa Ave., Rockeliffe Park, Ottawa, Ontario, Canada.....	1922
Lomax, Dr. Claude C., Dale, Indiana.....	1921
Long, Charles F., 203 E. Broad St., Columbus, Ohio.....	1934
Long, Mary A., 526 E. First St., Royal Oak, Michigan.....	1932
Long, William H., Jr., 1612 Morton Ave., Ann Arbor, Michigan.....	1933
Lovell, Mrs. Ray, 101 N. Monroc Ave, Columbus ,Ohio.....	1932
Low, Seth H., 50 Glendale Road, Quincy, Massachusetts.....	1931
Lubin, Seymour I., 106 Chapin St., Binghampton, New York.....	1934
Lundquist, Arthur, Peabody Hospital, Webster, South Dakota.....	1930
MacLoughlin, Mrs. F. E., 43 Inglewood Drive, Hamilton, Ontario, Canada.....	1928
MacLulick, D. A., Biology Dept., Univ. of Toronto, Toronto, Ontario.....	1933
Marburger, Clifford, Denver, Lancaster Co., Pennsylvania.....	1924
Mardon, Aaron, Eagle Island, S. Harpswell, Maine.....	1933
Marsh, V. L., Box 597, Great Falls, Montana.....	1934
Marshall, Raymond O., Box 72, R. D. 1, Leetonia, Ohio.....	1930
Mayr, Dr. Ernst, American Museum of Natural History, New York City.....	1933
McCann, Horace D., Box 175, Paoli, Pennsylvania.....	1928
McCormick, Robert H., 342 King Ave., Columbus, Ohio.....	1932
McGill, Dr. J. T., Vanderbilt Univ., Nashville, Tennessee.....	1930
McIntosh, Duncan, Fairhope, Alabama.....	1931
McNeil, Dr. Charles A., 111 W. Fourth St., Sedalia, Missouri.....	1914
Meadow, Meyer, 2172 Coney Island Ave., Brooklyn, New York.....	1934
Meltreat, Burton W., Paullina, Iowa.....	1930
Melzer, James P., Milford, New Hampshire.....	1931
Mendenhall, Eugene W., 97 Brighton Road, Columbus, Ohio.....	1932
Meyer, Miss Adelpia, Ball Teacher's College, Muncie, Indiana.....	1931
Miehener, Harold, 418 N. Hudson Ave., Pasadena, California.....	1926
Miller, Dr. Alden H., Museum of Vertebrate Zoology, Berkclely, California.....	1930
Miller, Empy, Freeland, Michigan.....	1931
Miller, Henry C., 9 Sheridan Drive, Monroe, Michigan.....	1933
Miller, J. Paul, Box 51, Mill Village, New Hampshire.....	1931
Miller, Miss Louise J., 2708 Elizabeth Ave., Zion, Illinois.....	1929
Million, A., 2060 Rustic Road, Dayton, Ohio.....	1931
Mills, Daisy, Woodside, New Brunswiek, Canada.....	1934
Moffitt, James, 1879 Broadway, San Francisco, California.....	1931
Molloy, Mrs. R. B., 418 W. Third Ave., Corsicana, Texas.....	1930
Monson, Gale, Argusville, North Dakota.....	1933
Moreland, G. E., 219 Eastern Ave., Greenville, Illinois.....	1934
Morse, Frank E., Boston Bird Book Co., 162 Boylston St., Boston, Mass.....	1926
Mouseley, William H., 4073 Tupper St., Westmonnt, Montreal, Quebec, Can.....	1922
Mulaik, Dorthea Upp, Box 155, Edinburg, Texas.....	1933
Munter, Capt. W. H., U. S. Coast Guard, % Postmaster, Jacksonville, Fla.....	1933
Murie, Adolph, Museum of Zoology, Ann Arbor, Michigan.....	1932
Murie, O. J., Jackson, Wyoming.....	1934
Murray, Rev. J. J., Lexington Presbyterian Church, Lexington, Virginia.....	1931
Naeser, Charles R., 515 Bash Court, Champaign, Illinois.....	1932
Nagel, Werner Otto, Butler Apartments, Columbia, Missouri.....	1933
Nauman, E. D., 420 S. Shuffleton St., Sigourney, Iowa.....	1923
Nelson, Arnold L., U. S. Biological Survey, Washington, D. C.....	1932
Newcomb, Cyrenius A., Jr., 1700 Penobscot Bldg., Detroit, Michigan.....	1914
Nieholson, Donald J., 534 S. Eola Drive, Orlando ,Florida.....	1927
Norton, Arthur H., 22 Elm St., Portland, Maine.....	1934
Oakes, Mervin E., State Normal School, Fredonia, New York.....	1933
Odum, Eugene P., Box 792, Chapel Hill, North Carolina.....	1930
O'Keefe, Mrs. Ethel, Glenarm, Illinois.....	1932
Overing, Robert, Landover, Maryland.....	1930
Palmer, Miss Mary C., 760 Midlothian Blvd., R. D. 2, Youngstown, Ohio.....	1927
Palsson, William F., Halldorsstadir, Laxardal, via Husavik, Iceland.....	1931
Patric, Dr. Leon, Smith-Grote Bldg., Orange, California.....	1931
Patterson, J. E., Jaekson Co., Pinehurst, Oregon.....	1930
Peabody, Rev P. B., Box 55A, R. D. 6, Star Prairie, Wisconsin.....	1930

Pellew, Miss Marion, Box 455, Aiken, South Carolina.....	1920
Pennell, Miss Edna, 503 N. Main St., Mt. Vernon, Ohio.....	1931
Pepper, William Jr., 110 Glenview Ave., Wyncote, Pennsylvania.....	1932
Perin, Miss Kate P., Withrow High School, Madison and Erie Ave., Cincinnati, Ohio.....	1931
Perry, Harold E., 1329 Ethel St., Glendale, California.....	1932
Peters, A. S., 529 Hickory St., Mankato, Minnesota.....	1933
Peterson, Alfred, Lock Box 211, Pipestone, Minnesota.....	1931
Peterson, N. Theodore, 80 Oaklawn Ave., Battle Creek, Michigan.....	1931
Pierce, Fred J., Winthrop, Iowa.....	1920
Pierce, Wright M., Box 343, Claremont, California.....	1926
Pearce, John T., Anita, Iowa.....	1930
Pirnie, Dr. Miles D., W. K. Kellogg Bird Sanctuary, Michigan State College, Augusta, Michigan.....	1928
Poenitz, Hans, Frankfurter Strasse 2 III, Leipzig, Germany.....	1930
Potter, Julian K., 437 Park Ave., Collingswood, New Jersey.....	1915
Power, Thomas F., 8 Hillcraft Ave., Worcester, Massachusetts.....	1933
Pratt, D. R., McKinley High School, Canton, Ohio.....	1932
Presnall, Mrs. Clifford C., Springdale, Utah.....	1930
Price, John B., 532 Alvarado, Stanford University, Palo Alto, California.....	1931
Quattlebaum, W. D., 1925 Paloma St., Pasadena, California.....	1930
Rabe, Carl W., 4666 Turney Road, Cleveland, Ohio.....	1931
Ramsden, Charles Theodore, Apartado 146, Guantanamo, Cuba.....	1914
Rapp, F. W., Vicksburg, Michigan.....	1926
Raz, George F., Box 83, Union Pier, Michigan.....	1933
Reeder, J. T., 318 College Ave., Houghton, Michigan.....	1926
Reis, C. O., 646 Jaunita Ave., Los Angeles, California.....	1931
Rich, Dr. Guy C., 1820 El Cerrito Place, Hollywood, California.....	1914
Ricks, Jesse J., 30 E. 42nd St., New York City.....	1931
Ritter, John H., 1015 Old Orchard Ave., Dayton, Ohio.....	1932
Roasch, Gilbert O., Science Hall, Univ. of Wisconsin, Madison, Wisconsin.....	1931
Roberts, Dr. Francis L. R., 419½ S. Governor St., Iowa City, Iowa.....	1924
Rockwood, Mrs. Cristabel S., 40 Monroe St., Northampton, Massachusetts.....	1934
Rogers, Mrs. Walter E., 911 E. North St., Appleton, Wisconsin.....	1931
Rollert, Judson, 1234 Chicago Ave., Evanston, Illinois.....	1933
Rosewall, Prof. O. W., Dept. of Zoology, La. State Univ., Baton Rouge, Louisiana.....	1931
Ross, Hollis T., 32 S. Second St., Lewisburg, Pennsylvania.....	1933
Ross, Julia E., Box 82, Kimball, Minnesota.....	1920
Rottenstein, Vilma, 2907 Scottwood Ave., Toledo, Ohio.....	1931
Russel, Henry N., Jr., 19 Alexander St., Princeton, New Jersey.....	1932
Sargent, William Dunlap, Dept. Entomology, Cornell University, Ithaca, New York.....	1931
Sattire, A. M., Concordia College, Moorhead, Minnesota.....	1934
Saunders, Aretas A., 48 Longview Ave., Fairfield, Connecticut.....	1934
Saunders, George B., Staff Ornithologist, Game Division, Dept. of Conservation, Lansing, Michigan.....	1926
Saur, B. C., Rockwell Nursery, Foster, Ohio.....	1934
Schafer, John J., Route 2, Port Byron, Illinois.....	1926
Schaller, R. A., 124 S. College Drive, Bowling Green, Ohio.....	1930
Schultz, G. J., Sutherland, Iowa.....	1934
Schultz, Miss Helen, Box 105, State Normal College, Fredericksburg, Va.....	1929
Sedgwick, Leibert D., I. S. & S. E. Home, Knightstown, Indiana.....	1933
Shaftesbury, Prof. Archib D., N. C. C. W., Greensboro, North Carolina.....	1930
Shaw, Mrs. Elizabeth M., 2417 Rosewood Ave., Richmond, Virginia.....	1931
Selter, Vivian, P. O. Box 21, St. Petersburg, Florida.....	1934

Sheppard, R. W., 1805 Mouland Ave., Niagara Falls, Ontario, Canada.....	1933
Shields, T. E., 150 18th St., Warwood, Wheeling, West Virginia.....	1934
Shipman, Charles W., 114 Ridge Road, Willoughby, Ohio.....	1930
Shirling, Prof. A. E., 3849 E. 62nd St., Kansas City, Missouri.....	1924
Sibley, John E., R. D. 2, Whittemore, Michigan.....	1933
Sibley, Norman O., R. D. 2, Whittemore, Michigan.....	1933
Smith, Dr. A. F., Manning, Iowa.....	1934
Smith, Herbert Allyn, 3219 Bellefontaine, Kansas City, Missouri.....	1932
Smith, Lewis MacCuen, 8018 Winston Road, Chestnut Hill, Philadelphia, Pennsylvania.....	1931
Smith, Napier, 153 Westminister Ave., N., Montreal West, Quebec, Canada.....	1928
Smith, Wendell Phillips, Wells River, Vermont.....	1921
Smyth, J. Adger, Salem, Virginia.....	1933
Smyth, Dr. L. C. R., 16802 Dartmouth Ave., W. P., Cleveland, Ohio.....	1926
Snow, K. C., Route 1, Dexter, New Mexico.....	1932
Snyder, L. L., Royal Ontario Museum of Zoology, Bloor St. and Avenue Road, Toronto 5, Ontario, Canada.....	1930
Sperry, Charles C., 1455 S. Franklin St., Denver, Colorado.....	1931
Starrett, William C., 303 Maryland Ave., Peoria, Illinois.....	1933
Sterry, Elizabeth, Teacher's College, San Marcos, Texas.....	1930
Stevens, Prof. O. A., State College Station, Fargo, North Dakota.....	1926
Stevens, Ross O., U. S. Soil Erosion Service, Coon Valley, Wisconsin.....	1934
Stein, Hilda A., So. Illinois State Teacher's College, Carbondale, Illinois.....	1933
**Stein, Stanley F., Shakopee, Minnesota.....	1932
Stevenson, James, Museum of Vertebrate Zoology, Berkeley, California.....	1931
Stewart, Paul A., Leetonia, Ohio.....	1925
Stillwell, W. H., Mt. Vernon, Ohio.....	1934
Stine, Perna M., State Teacher's College, Minot, North Dakota.....	1931
Stockbridge, Chas. A., 2323 Webster St., Fort Wayne, Indiana.....	1915
Stoner, Emerson A., Box 144, Benicia, California.....	1934
Stooksberry, C. L.....	1931
Strophlet, John J., 2612 Maplewood Ave., Toledo, Ohio.....	1934
Storer, Dr. Tracy I., Division of Zoology, Univ. Farm, Davis, California.....	1928
Strunk, Prof. W. L., Luther College, Decorah, Iowa.....	1931
Stuart, Mrs. Margaret J., Box 546, Wheaton, Illinois.....	1933
Stump, Jack, Box 403, Price Road, Clayton, Missouri.....	1934
Sullivan, Walter F., 351 Turk St., San Francisco, California.....	1925
Sumner, E. L., 1652 Euclid Ave., Berkeley, California.....	1931
Sumner, E. L., Jr., Museum of Vertebrate Zoology, Berkeley, California.....	1929
Swanson, Gustav, 3305 47th Ave. South, Minneapolis, Minnesota.....	1927
Swedenborg, Ernie D., 4905 Vincent Ave. South, Minneapolis, Minnesota.....	1929
Swenk, Mrs. Myron H., 1410 N. 37th St., Lincoln, Nebraska.....	1925
Tanner, Orey, 5019 Constance St., New Orleans, Louisiana.....	1933
Taverner, P. A., National Museum of Canada, Ottawa, Ontario, Canada.....	1925
Teachenor, Dix, 1020 W. 61st, Kansas City, Missouri.....	1923
Test, Dr. Frederick H., 511 Russell St., West Lafayette, Indiana.....	1931
Thomas, Otho S., 205 S. Green St., Rock Rapids, Iowa.....	1932
Thompson, Paul A., Northville, South Dakota.....	1934
Trautman, Milton B., Museum of Zoology, Ann Arbor, Michigan.....	1932
Trempe, A. D., 612 Kimball St., Sault Ste. Marie, Michigan.....	1932
Turtle, Lancelot Khoock, Belfast, Ireland.....	1930
Tuttle, Henry C., 50 State St., Boston, Massachusetts.....	1930
Tyler, Bruce P., 215 Unaka Ave., Johnson City, Tennessee.....	1934
Uhler, Francis M., U. S. Biological Survey, Washington, D. C.....	1931
Ussher, R. D., Nancy Lake Farm, King, Ontario, Canada.....	1934
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The Wilson Ornithological Research Library at Ann Arbor is now an establishment. This Library now solicits contributions from the members and friends. Publications on ornithology, and the allied subjects of ecology, anatomy, exploration, travel, etc., are desired. And the following types of publications are suggested as especially desirable:

Single volumes, bound or unbound

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Original paintings or drawings of birds

Photographs of birds, nests, eggs, habitats, etc.

Portraits of ornithologists

All portraits and photographs should be accompanied with full identifying data. Authors are requested to deposit a set of reprints of their publications. Members who wish to bequeath their libraries are invited to correspond with the officers of the Club. All gifts should be addressed to

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DEC 26 1934

13,814

Vol. XLVI

DECEMBER, 1934

No. 4

# THE WILSON BULLETIN



A Magazine of Field Ornithology

Published by the

**WILSON ORNITHOLOGICAL CLUB**

at

**SIOUX CITY, IOWA**

Entered as Second-class Mail Matter, July 13, 1916, at the Postoffice at  
Sioux City, Iowa, under Act of March 3, 1879.

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## THE WILSON BULLETIN

Published quarterly, in March, June, September, and December, as the official organ of the Wilson Ornithological Club, at Sioux City, Iowa.

The current issue of the WILSON BULLETIN is printed by the Verstegen Printing Company, Sioux City, Iowa.

The WILSON BULLETIN is sent to all members not in arrears for dues. The subscription price is \$1.50 a year, invariably in advance, in the United States. Outside of the United States the subscription rate is \$1.75. New subscriptions, changes of address, and applications for membership should be addressed to the Secretary.

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## THE WILSON ORNITHOLOGICAL CLUB

Founded December 8, 1888. Named after Alexander Wilson, the first American ornithologist, and called the "Father of American Ornithology".

The officers for the current year are:

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DEC 29 1934

# THE WILSON BULLETIN

A QUARTERLY MAGAZINE OF ORNITHOLOGY

Published by the Wilson Ornithological Club

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Vol. XLVI

DECEMBER, 1934

No. 4

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Vol. XLI (New Series) Whole Number 170

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## REMINISCENCES OF THE IOWA ORNITHOLOGICAL ASSOCIATION\*

BY CARL FRITZ HENNING

With the awakening of spring there comes to us a strange feeling of unrest—it fills our breast with yearnings and delight—it is the hour of dreams and visions.

Already traces of that soft haze which is the glory of the spring sky have appeared, and the sunbeams are falling with a brighter and more invigorating glow—the wind reaches forth with a more delicate touch, and the element of harshness seems to be disappearing from its voice. The Cardinals are calling, and the sweet voices of the returning birds will soon be heard in fields and woods. What a wonderful setting for the coming together of the nature lovers and ornithologists of Iowa.

Pleasant memories awaken in our heart as we stand today on the threshold of Spring—here we have assembled to become better acquainted with one another, to talk about the birds and wild flowers, to plan and lay the foundation for a closer union of the ornithologists of our state, that we may carry on the work of the old Iowa Ornithological Association, whose sun set in glowing splendor a quarter of a century ago.

“A wonderful stream is the River Time

As it blends with the ocean of years.”

Looking back we see a little band of impassioned nature students, men who loved the great out-doors, forming the old association for the purpose of becoming better acquainted with the birds of their own state.

Almost thirty years have come and gone since the first seed was sown by these pioneers—they knew that something must be done to create a sentiment for the protection of our vanishing birds. The Passenger Pigeons had made their last flight; the Wild Turkey was

---

\*This paper was read, in the absence of the author, at the organization meeting of the Iowa Ornithologists' Union, at Ames, Iowa, February 28, 1923.

disappearing from his old haunts; the Ruffed Grouse could still be found in the heavy timber, but in ever lessening numbers; and the weird booming of the Pinnated Grouse was heard on the prairies. The Sandhill Cranes circled over our cities in inspiring flights, but every spring thousands of water-fowl were killed as they passed through Iowa on their way to the breeding grounds in the far north—slaughtered on their wedding day. The Quail, our pretty Bob-white of the fields and woods, was threatened with extinction. It was, therefore, apparent that something must be done to protect the birds of Iowa—the time to act had come.

On the 15th day of June, 1894, the Iowa Ornithological Association was organized. The names of the founders of the Association are endeared to the heart of every nature lover in Iowa. Their names and former addresses are:

Rudolph M. Anderson, Forest City; Carleton R. Ball, Ames; Paul Bartsch, Burlington; Wm. A. Bryan, New Sharon; John V. Crone, Marathon; H. J. Giddings, Sabula; A. P. Godley, LeGrand; Ernest Irons, Council Bluffs; Chas. R. Keyes, Mt. Vernon; J. Eugene Law, Perry; W. W. Loomis, Clermont; Wilmon Newell, Ames; F. G. Richardson, Mason City; Walter G. Savage, Hillsboro; David L. Savage, Salem; W. W. Searles, Lime Springs; Fred R. Stearns, Sac City; Chas. C. Tryon, Avoca; E. B. Webster, Cresco; Paul C. Woods, Fayette.

The *Iowa Ornithologist* was the official organ of the Iowa Ornithological Association—a splendid little quarterly magazine, filled with the song and sunshine of the birds of Iowa, and the only magazine at that time, devoted to ornithology and oölogy, in the Mississippi Valley. Perhaps some of the ornithologists assembled here today remember the “Iowa Ornithologist”; it was not a large magazine—usually about twenty-four pages—but it always found a warm spot in the heart of the Iowa nature lovers.

By request of President Irons, David L. Savage of Salem, Iowa, accepted the Editorship of the *Iowa Ornithologist*. In closing his address of acceptance Mr. Savage said, “It is my desire (and I will do all in my power), that the *Iowa Ornithologist* may be a Magazine that will promote a true knowledge of the Wonders of Nature, and awaken in the hearts and minds of all its readers a truer love and deeper interest in the study of Nature, enabling them to ‘look through Nature up to Nature’s God.’”

The work of the Iowa Ornithological Association was done entirely through correspondence. With the beginning of every quarter, certain work was taken up for special study. For instance during the

first three months of the Association's existence Notes and Observations were taken on the family *Fringillidae* (Finches and Sparrows) and *Mniotiltidae* (Wood Warblers). For the second quarter the families *Icteridae*, *Tyrannidae*, and *Alaudidae* were taken up for special study—and so on throughout the year. The work done in this line was very commendable.

In the year 1895 the Iowa Ornithological Association held its first election of officers. Of the thirty-six members entitled to vote, only sixteen sent in their ballots, with the following results:

Charles R. Keyes, President; Rudolph M. Anderson, Vice-President; J. Eugene Law, Secretary; David L. Savage, Editor-Treasurer.

The First Annual Congress of the Iowa Ornithological Association was held at Iowa City, August 22-23, 1895, in the Zoological Lecture Room of the Science Building. The business meeting was called to order by the President, Charles R. Keyes, of Mt. Vernon. Nine active members were present. After an interesting address by the President, letters from absent members, Paul Bartsch, A. I. Johnson, and Carl Fritz Henning were read, the two former enclosing papers.

The Treasurer's report from organization to August 22, 1895, was read. The Secretary's report having been published in the *Iowa Ornithologist*, was omitted. Discussions followed, and various resolutions were adopted. The yearly dues were raised from fifty cents to one dollar for active members. An invitation was received and accepted from the Curator of the State Historical Society asking the members of the Iowa Ornithological Association to view the collection of that society. At the public session, Prof. Schaeffer, President of the State University, delivered the address of welcome, to which President Charles R. Keyes responded. The following interesting papers were read: "Protection of Our Birds", by W. W. Loomis. "Warblers of Iowa", by Morton E. Peck. Mr. Peck mentioned thirty-six warblers in Iowa. This paper was followed by a discussion of the warblers, which closed the evening program.

At the second session, August 23, a paper on the "American Duck Hawk" was read by Geo. H. Burge. Other interesting papers were read as follows: "Birds Extinct in Iowa", by Paul Bartsch. (In the absence of the author it was read by J. H. Brown). "Relation of the American Crow to Economics", by Hiram Heaton. "Bird Laws of Iowa and Laws that Are Needed", by J. H. Brown. "Prairie Hen", by A. I. Johnson. (In the absence of the author it was read by President Keyes). "Sea Birds that Visit Iowa", by F. H. Shoemaker. "Ruffed

Grouse", by D. L. Savage. Mr. Savage also exhibited a fine life-size and color portrait of his subject. It was drawn by Wm. Savage.

After extending a vote of thanks to the authorities of the State University of Iowa, and particularly to Prof. Schaeffer for the use of their rooms, the meeting adjourned. Thus ended the First Annual Congress of the Iowa Ornithological Association, with the understanding that they would again come together at Mount Vernon in 1896.

The Second Annual Meeting of the Iowa Ornithological Association was held at Mount Vernon, Iowa, July 29-31, 1896. The Secretary's report gave the membership of the Association as 71; constituted as follows: Active, 50; Honorary, 3; Associate, 18. The honorary members of the Association were chosen for their eminence in ornithology. Any person residing outside of the State of Iowa could become an associate member after having been elected.

The Third Annual Congress of the Iowa Ornithological Association was called to convene in the Congregational Church at Manchester, Iowa. The faithful work of the ornithologists of Iowa was beginning to bear fruit. With the beginning of the year 1897 plans were formulated for extending the Association's field of activities.

Paul Bartsch was appointed Chief, Department Seasonal Variations; Carl Fritz Henning, Chief, Department Migration; J. H. Brown, Chief, Department Nidology; Wilmon Newall, Chief, Department Economic Study; and Mrs. M. A. Triem and David L. Savage, Association Lecturers.

Iowa has always been an ideal field for studying the migration of birds. Lying within the embrace of the Mississippi and Missouri Rivers, our state forms a part of the greatest migration pathway in all the world. In the winter of 1881-82 Prof. W. W. Cooke made an attempt to secure the assistance of the ornithologists of Iowa in studying the migration of birds, but a change of residence on the part of Mr. Cooke from Iowa to Minnesota, made it necessary to modify the original scheme, and it was decided to increase the area to be investigated to the whole Mississippi Valley, the admirable report, "Bird Migration in the Mississippi Valley", published by the U. S. Department of Agriculture, being the outcome of this coöperation.

The U. S. Department of Agriculture (Biological Survey), under the kindly influence of Dr. C. Hart Merriam, assisted the Iowa Ornithological Association in the systematic migration work by furnishing several hundred schedules and franked envelopes so that the notes could be made out in duplicate, and a copy forwarded to the Biological Survey free. In the eastern part of the state special attention was

given to the southern species which follow up the river bottoms, for the purpose of ascertaining definitely how far north these birds migrate, and particularly where they breed.

Every member of the Iowa Ornithological Association was putting his shoulder to the wheel, and the aid of every observing ornithologist in the state and adjoining states was solicited. The Association's method of work was the same as Prof. W. W. Cooke used in preparing his work. The work accomplished during 1897 was the most important and interesting in the life of the Association. It included many well written articles on the birds of Iowa, and best of all a real start had been made to solve some of the problems that confronted the student making observations on the movements of birds during those early days.

The Association's work for 1898 was planned along the same lines as the previous year. Arrangements were made for bringing before the people of Iowa, especially the children, the Iowa Ornithological Association Lectures on Ornithology. The plan was to present these lectures to high schools throughout the state, and also before farmers' alliances. The lectures were to be illustrated by a series of magic lantern views showing our native birds and various phases of their life history.

The future of the Iowa Ornithological Association apparently was secure. A few new members were added to the list now and then, and the old wheel-horses were beginning to feel that the Association had weathered the storm that often threatened to cast her upon financial rocks. The prospects were indeed bright for a successful career—but what a change an hour can make! On the 16th of February the U. S. Battleship "Maine" was blown up in Havana Harbor. Rumors of war between the United States and Spain were flashed over the wires—at 4:30 on the afternoon of the same day President McKinley said, "Spain has struck her first blow and war will follow."

Four days later the Twelfth U. S. Infantry, under command of Col. Andrews, passed through my home town, Boone, on their way to the front. The railway station was crowded with excited people, and little boys marched up and down the streets, the soldier boys of the future. As the train pulled out, at the sound of the bugle, the regimental band played the "Star Spangled Banner"—the Stars and Stripes waving proudly in the breeze in union with the Cuban flag.

Naturally through the excitement of war, the systematic work of the Association was neglected. All were thinking of the boys at the front. Some of the members of the Iowa Ornithological Association

were called to the colors, and by the end of the year the Association members were scattered throughout the land. The few remaining members of the Association struggled on to have the *Iowa Ornithologist* published on time. Several issues were published by Hodson Brothers of the Ames Intelligence Office. An effort was made through the influence of Senator C. J. A. Ericson to have the state publish our reports.

In February, 1900, Charles C. Tryon, one of the founders of the Iowa Ornithological Association, published the *Western Ornithologist* as a private enterprise, and the Association's reports on the bird life of Iowa were published therein. The *Western Ornithologist* was a splendid little magazine—a continuation of the *Iowa Ornithologist* in an enlarged and improved form, broadened in scope from the state of Iowa to the entire world. Along in the summer Mr. Tryon accepted a position in the U. S. Army, and was soon thereafter transferred to foreign service, either Cuba or the Philippines.

Finally the members of the Iowa Ornithological Association disbanded, but many of them won renown in various fields of research. We are all familiar with Rudolph M. Anderson's great work in the polar regions, where he in company with Stefansson discovered the "White Eskimo". A true naturalist has the spirit of genius born within him, and no amount of discouragement or misfortune, or of opposition will deter him in the fulfillment of his destiny.

In looking back through the years of time, to the days when the little band of nature lovers worked so faithfully for the welfare of the birds of Iowa, I realize more than ever that after all the *Iowa Ornithologist*, the little quarterly magazine with its pages laden with nature-love and words of cheer, was the tie that bound together the hearts of the ornithologists of Iowa a quarter of a century ago.

BOONE, IOWA.

DISTRIBUTION OF BLACK-THROATED GREEN WARBLERS AND  
WILSON'S WARBLERS WINTERING IN CAMERON COUNTY,  
TEXAS, DURING THE SEASON OF 1933-1934

BY L. IRBY DAVIS

The year 1933 developed the most unusual and interesting biological conditions in the lower Rio Grande Valley of Texas, particularly in Cameron County. The several hurricanes which struck here or near here during the summer and fall were each accompanied by and followed by heavy rains. The rainfall for the months of July, August, and September was so far above normal that entirely different growing conditions obtained. The U. S. Weather Bureau at Brownsville reports the total rainfall during these months as 26.14 inches (nearly three times normal average). Usually this country exhibits all the earmarks of its semi-desert character during the summer and frequently during the month of August even the most resistant weeds are burned black by the sun. This season grass and weeds grew rankly all summer and fall. The trees did not make much showing on account of the storm damage—most of those that escaped more serious damage were completely defoliated by the last hurricane. As would be expected we had an enormous crop of insects. This gave a food supply for insect-eating birds far above the average.

The winter was extremely mild. The mean temperature during December, 1933, was 68.8° F. This was 7.6° above normal and the highest mean temperature since 1839. During January and February, 1934, the mild weather continued. However, our spring was late and cool and the only killing frost of the winter came in the last half of March.

It seems that the mild weather and (or) the plentiful food supply may have caused a northward shift of the winter residence of several species of warblers.<sup>1</sup> Of particular interest was the wintering here of the Black-throated Green Warbler (*Dendroica virens*) and the Wilson's Warbler (*Wilsonia pusilla*). The Black-throated Green Warbler was found to be widely distributed over the lower southwestern portion of the county throughout the winter. Unfortunately, I do not know when these birds arrived as my first trip into this part of the county since early summer was made on December 23. During the last week in December and the first half of January I observed them at many points

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<sup>1</sup>The Black and White Warbler (*Mniotilta varia*), the Nashville Warbler (*Vermivora ruficapilla* Ssp.), and the Pine Warbler (*Dendroica pinus*) were all represented by several times the usual number of winter residents. This was the first season since I came here in 1925 in which I have observed the Pine Warbler.

between the Resaca del Rancho Viejo and the Rio Grande, from Santa Maria at the western boundary of the county across to Olmito and thence southeastward to the southernmost point in Texas some ten or twelve miles southeast of Brownsville.<sup>2</sup> These birds were found only in what may be called the lower resaca association, i. e., the heavy growth of trees, shrubs (chaparral), and vines which extends a short distance on either side of the resacas and ponds and in a few places along the banks of the river. Near the river south of Brownsville this becomes a somewhat different association as the native palm, *Sabal texana*, is encountered in large numbers. Where the palms were thickest this species of warbler became much scarcer apparently and I could find none at all in Rabb's Palm Grove.

About the middle of January I turned my attention to the more northern parts of the county and for the next two months searched diligently every habitat which appeared to be suitable for either of the two species under discussion, but without avail. To two places in particular I returned again and again. One was just east of Combes where a heavy growth of ebony, mesquite, and huisache trees occurred and where there was enough moisture in the soil to permit the growth of elms, a tree very seldom found north of the Arroyo Colorado. The other was near the mouth of a small stream emptying into the Arroyo a short distance southwest of Harlingen where I have always found these warblers in past years during migration. I was very much disappointed with the last mentioned place, especially, because I felt sure that one or the other if not both of the warblers would move into such a favorite haunt before spring.

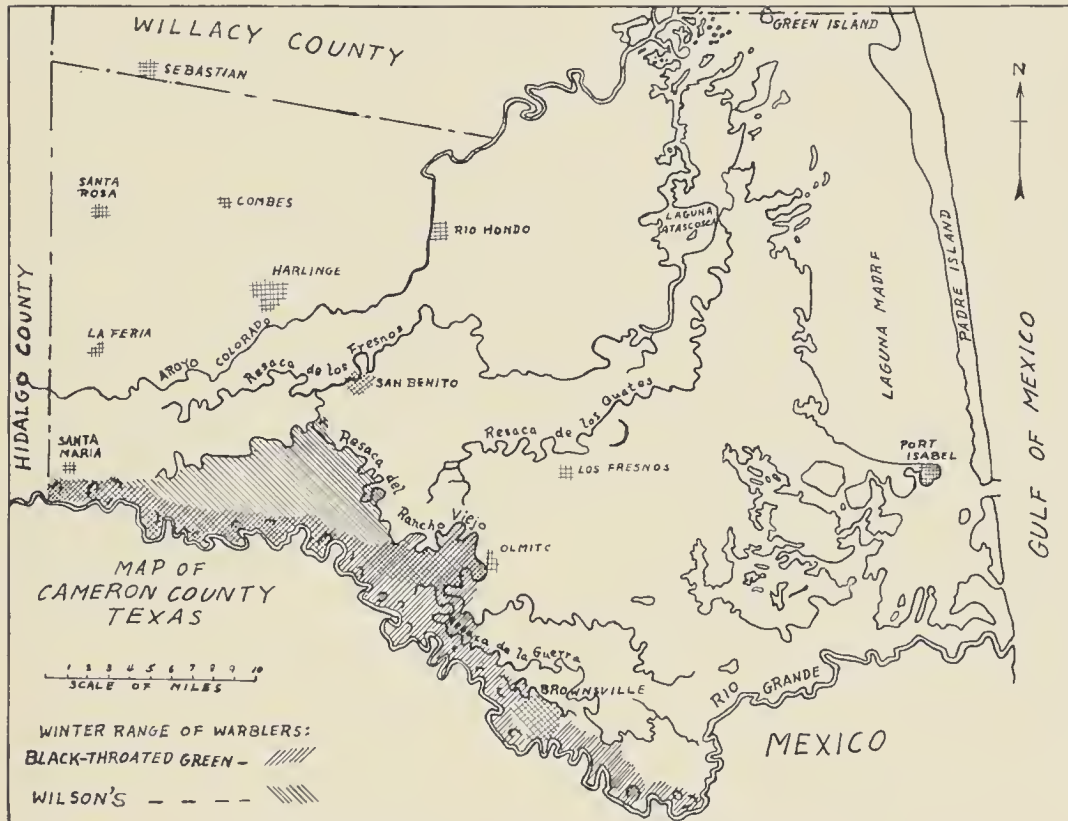
A Wilson's Warbler was observed on January 8 in a resaca-side thicket habitat. Although I saw this bird only a few seconds before it flew into the thickest of the foliage and was lost and although I could scarcely believe that this species was also wintering here, I knew I could not be mistaken for I was at very close quarters and the bird had the distinct cap of the male. Near the same location (southeast of Santa Maria) another or the same bird was observed carefully with 10x32 binoculars on January 14 from a distance of about thirty-five feet. It flitted about busily catching insects on the outer twigs of an ebony tree. I could detect no difference in the coloring or appearance of this bird and the migrating specimen usually seen here about the first of May. Although I returned to the favored association only

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<sup>2</sup>This species no doubt wintered in spots (near the river) across Hidalgo County also as there were two reported in a Christmas census from Mission printed in *Bird-Lore*, January, 1934.



once a week for the next two months, I kept a sharper lookout for Wilson's Warblers from now on and during the next few weeks found them in numerous other, though scattered, locations. By the end of February I had the range of this species mapped out as extending from the southwestern corner of the county across to Olmito and northward to a point about 2.5 miles south of San Benito. I was very much sur-



prised to find this range extending farther north than that of the Black-throated Green Warbler. On February 11 a Wilson's Warbler was found in a mixed flock consisting of one Black and White Warbler, two Ruby-crowned Kinglets (*Corthylio calendula*), three Blue-gray Gnatcatchers (*Poliophtila caerulea*), and nine Orange-crowned Warblers (*Vermivora celata*) in a resaca-side thicket. I was almost certain that there were two Wilson's Warblers in this flock but could never get two in view at the same time; hence, recorded only one. This was the farthest north that any of the hundreds of specimens of the species that wintered in the county were found. As near as I could estimate the exact location of this spot was  $26^{\circ} 6' 12''$  N. and  $97^{\circ} 39' 25''$  W.

I was so busy working the northern part of the county that I made no attempt to determine the concentration of Wilson's Warblers

in their favorite habitat until spring. On March 25 I went to a resaca-like pond about a mile southeast of Santa Maria and forced my way under a thicket to the water's edge. Then I worked my way along near the shore, usually in a stooping position but frequently on hands and knees and sometimes prone wriggling snake fashion, for a total distance of possibly one-quarter mile. Of course my field of view was quite limited under such a low hanging canopy of huisache and hackberry branches matted and weighed down as they were with vines and a great deal of my attention naturally had to be directed toward the business of getting through the brush; nevertheless, I succeeded in listing six Wilson's Warblers, widely separated, and so proved to my satisfaction that these birds were much more plentiful than the scattered individuals I had observed previously had indicated.

In an attempt to determine the relative concentration of different warblers in the favored southwestern corner of the county, I made a census on a small track about eight-tenths of a mile southeast of Santa Maria on January 14, 1934. The time and location were carefully selected. The area was 335 paces long and 75 paces wide and consisted of what appeared to be a dried-up resaca bed. At any rate it was a low flat strip covered with grass and weeds and contained a scattered growth of huisache trees mixed with occasional mesquites and retamas. This narrow strip was bordered on either side by an almost impenetrable growth of trees, shrubs, vines, and cacti growing upon the higher ground. The trees consisted mainly in ebony (*Siderocarpus flexicaulis*), coma (*Bumelia lanuginosa*), hackberry (*Celtis occidentalis*), Mexican persimmon (*Diospyros texana*), brasil (*Condalia obovata*), elm (*Ulmus crassifolia*), anaqua (*Ehretia elliptica*), mesquite (*Prosopis juliflora*), retama (*Parkinsonia aculeata*), huisache (*Acacia farnesiana*), ash (*Fraxinus velutina*), tepeguaje (*Acacia acapulcensis*), and anaquita (*Cordia boissieri*). The frequency of occurrence or relative number of a given species of tree is in general indicated by the place in the above list; however, in one or two spots there was a much heavier growth of elms and in these places the elm and the hackberry replaced the ebony in dominance. At the time of the census the birds were traveling across this relatively open strip (mostly from the south to the north bank of heavy jungle growth) and feeding in the huisache trees. As I very leisurely strolled eastward down the opening, I studied each bird carefully with my glasses and recorded them at once. Proceeding thus for approximately one thousand feet, I then turned and paced off the distance covered and finally totaled up the following results: Myrtle Warbler (*Dendroica coro-*

*nata*), 32; Black-throated Green Warbler, 27 (11 male and 16 female); Orange-crowned Warbler, 11; Black and White Warbler, 8; Nashville Warbler, 3; Western Yellow-throat (*Geothlypis trichas*), 2; Audubon's Warbler<sup>3</sup> (*Dendroica auduboni*), 2; Wilson's Warbler, 1. As a relative gauge some other birds were counted at the same time. The most numerous species aside from kinglets and gnatcatchers were as follows: White-eyed Vireo (*Vireo griseus*), 4; Gray-tailed Cardinal (*Cardinalis cardinalis*), 2; Western Mockingbird (*Mimus polyglottos*), 2. The above ratios, I believe, give an accurate picture of conditions as they existed from Santa Maria to Olmito and no doubt for some distance between Olmito and Brownsville. South of Brownsville, however, they would not hold as the Black-throated Green Warbler was scarcer and as far as I could determine the Wilson's Warbler was entirely absent. Also in the vicinity of palms of the fan-leaf type the ratios would not hold as the Sycamore Warbler (*Dendroica dominica*) would be high up in the list.

The Black-throated Green Warblers were observed singing for the first time on April 7, but from then on they were heard on every side throughout their range. It seems that this singing was their way of letting us know they were about to leave, for by the 15th not a one could be found. Both species left at the same time. There was no gradual movement across the county as far as I could observe. They stayed within the bounds of the winter zone until ready to leave the county entirely.

#### HARLINGEN, TEXAS.

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<sup>3</sup>Only those birds showing definite yellow patches on the throat were counted as Audubon's, doubtfuls being classed as Myrtle.

## SOME OBSERVATIONS ON A PAIR OF RED-TAILED HAWKS

BY PENNOYER F. ENGLISH

The data presented herein were taken by the writer when a graduate student of the University of Michigan working on the Williamston Game Management Project.<sup>1</sup> This coöperative project concerned itself mainly with managing farm lands to increase game species, particularly the pheasant. The writer was assigned the problem of determining "Causes of Pheasant Mortality in Michigan".<sup>2</sup> The Red-tailed Hawk (*Buteo borealis borealis*) was found to be one of these causes at Williamston, Michigan.

Barrows (1912), writing on the Red-tailed Hawks, says, "This hawk is rarely if ever found in Michigan in winter, but arrives from the south very early, usually before the middle of March, and remains until mid-October or later." In the course of this study, however, they have been observed during every month of the year. Therefore it seems probable that they may winter here. The winter records for these hawks in Williamston Township are shown in Table I. These hawks are not numerous in the township, due to the activities of residents directed against them. Many of them are of the opinion that they are detrimental and for that reason they are kept at a minimum.

TABLE I

*A Table Showing the Number of Times that Red-tailed Hawks Have Been Observed at Williamston During the Winters of 1931 and 1932.*

	ACTIVITIES				PERCHING		Total
	Flying	Circling	Hunting	Mating	Tree	Woods	
November .....	1	---	---	---	12	1	14
December .....	2	---	---	---	8	---	10
January .....	2	---	---	---	1	---	3
February .....	2	1	3	---	11	4	21
March .....	2	3	---	2	7	---	14
Total .....	9	4	3	2	39	5	62

BREEDING HABITS AT WILLIAMSTON. A pair of these hawks was observed on February 11, 1932, and frequently thereafter, flying over

<sup>1</sup>Agencies that have coöperated at one time or another are the Izaak Walton League of America, the Michigan Department of Conservation, the Michigan Department of Agriculture, the U. S. Biological Survey, the Sporting Arms and Ammunition Manufacturers Institute, the American Game Association, Michigan State College, the University of Michigan, the Williamston Progressive Hunting Club, and farmers in Williamston Township, Ingham County, Michigan. Particular credit is due Mr. Harry F. Harper, whose enthusiastic moral support and generous financial backing aided in the studies completed. The work was supervised by H. M. Wight of the University of Michigan.

<sup>2</sup>"Causes of Pheasant Mortality in Michigan", unpublished Ph. D. thesis, University of Michigan, 1934, by P. F. English.

a territory which will be described later as their feeding or hunting area. Only this one pair nested successfully in the township in 1932, showing the scarcity of the birds in the area.

On March 21, 1932, while the heaviest snowstorm of the winter (eleven inches) was in progress, a Red-tailed Hawk was observed on a horizontal branch of a basswood tree about fifty feet from the

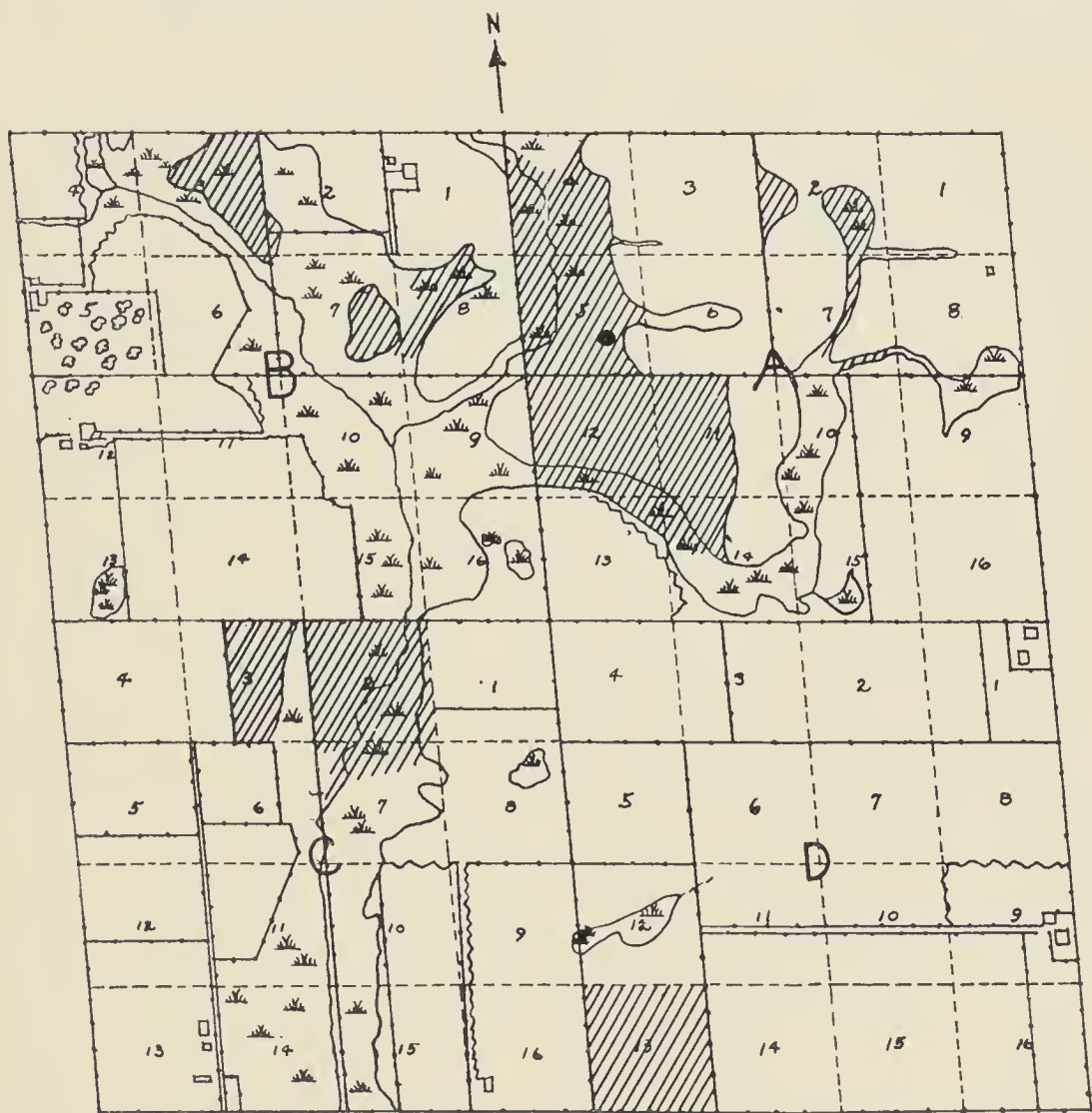


FIG. 18. Williamston Township, Williamston, Mich. The location of the Red-tailed Hawk's nest is shown by the solid black circle.

ground. In a short time a second red-tail alighted on the same branch within a foot of the first one. Subsequent events proved them to be male and female. Ten minutes later at 9:15 A. M., the second hawk copulated with the first, and while the act was in progress the female gave a series of screams characteristic of the species. After mating the male perched on the branch beside the female and both remained quiet for six minutes, when the female flew away, followed a minute later by the male.

From certain peculiarities of markings, these hawks, especially the female, which had one of the primaries of the right wing broken, could be easily identified whenever observed.

**THE NEST.** On April 23 a Red-tailed Hawk nest was discovered in a tree about fifty feet from where the mating had occurred on March 21. The nest was in the uppermost crotch of a basswood tree, sixty-five feet from the ground in an upland, cut-over woods at the point indicated on the accompanying map. The surrounding land had an especially heavy population of game as compared with adjacent areas, which had more of a rodent population. So far as could be determined by field observations, the area hunted by this pair of hawks was about 5,000 acres. Thus their cruising radius was about one and one-half miles. The hunting territory of these hawks overlapped that of a Great Horned Owl and that of two pairs of Marsh Hawks. Two very young hawks in down plumage were first observed in this nest on May 2, one noticeably larger than the other, which is seemingly a characteristic of broods of young hawks and owls. Besides the young hawks, the partial remains of a female Japanese Pheasant, a band No. A-880 from a Hungarian Partridge, and a few twigs of juneberry with leaves and buds were found in the nest.

**FEEDING HABITS.** In order to study better the feeding of these hawks, their nest was removed from the tree and the young were transferred to a false nest constructed from old unpainted lumber, three feet square and two feet deep, with a solid bottom. This nest was placed nine feet from the ground in a small maple tree about ten feet from the original nesting tree (see Figure 19). The actual transfer from one site to the other was made on May 16 during a sudden heavy spring shower. The young at this time were still in their down plumage.

The new nest was visited twice daily to ascertain whether the experiment was going to be successful. It was necessary to hand feed the young with hamburger for the first few days. By May 19, however, the parent hawks discovered the young and fed them a juvenile cottontail. Thereafter food was brought regularly. A possible explanation for the adult hawks' not finding the young promptly might be the windy and rainy weather of this period.

Before going into detail as to the feeding habits of the Williamston red-tails, it might be well to review the feeding habits of the red-tail as reported by other workers. In a sense the findings herein reported are not comparable, since the hawks studied were a single pair and their young, giving a picture of their diet from May 19 to July 15.

Other workers, with the exception of Errington (1930) have based their conclusions on the stomach analyses.

Fisher (1893) examined the stomachs of Red-tailed Hawks from the District of Columbia, twenty-four states, and two Canadian Provinces. He states: "Of 562 stomachs examined, 54 contained poultry



FIG. 19. Improvised nest for the Red-tailed Hawk, at Williamston, Mich., 1932.

or game birds; 51, other birds: 278, mice; 131, other mammals; 37, batrachians or reptiles; 47, insects; 8, crawfish; 1, centipede; 13, offal; and 89 were empty."

Warren (1890) examined the stomachs of 173 and found: 131 contained the remains of mice; 6, rabbits; 3, red squirrels; 2, skunks; 18, small birds; 14, poultry; 3, insects; 3, snakes; and 4, offal or carrion.

Errington (1933), in his study of raptor food habits, compiled from the 165 individuals of prey tabulated as quantitative data, gives the following: "Cottontail (including 8 or more juvenals), 18; arboreal squirrel, 11; Franklin ground squirrel, 3; striped ground squirrel, 49; chipmunk, 3; Norway rat, 1; meadow mouse, 42; deer mouse, 4; house mouse, 1; weasel, 1; shrew (5 *Blarina*, 1 *Sorex*), 6; young horned lark, 1; domestic pigeon (young?), 1; domestic chicken (all young but two), 18; gallinule, 1; snake, 4; frog, 1."

Referring back to the improvised hawk nest under study at Williamston, in order to be sure of what was brought in the nest was covered with a piece of old woven wire so that the parent hawks could drop the prey to the young hawks, but were not able to carry off any of the remains of prey not consumed by the young. In this way, by making frequent visits to the nest, it was possible to obtain a record of what the hawks were taking during the period of time covered by these observations. The smaller of the two young died May 26, ten days after it was placed in the new nest.

The following specimens of vertebrate prey were brought into the nest by the adults during a period of seventy-four days, between May 2 and July 15: Avian prey: Pheasants, 7; Hungarian partridge, 3; quail, 2; flickers, 3; starlings, 2; and sparrows, 2. Mammalian prey: moles, 7; *Microtus*, 7; cottontail (juvenile), 5; weasels, 5; fox squirrel, 5; red squirrel, 1; and spermophile, 1. One milk snake was also brought in. Some of the smaller animals, especially *Microtus*, were eaten immediately and left no trace. For this reason they could not be recorded from remains found in the nest. Pellet analyses disclosed, however, that many animals were eaten which were not observed as fresh prey. On the basis of the ninety-four pellets analyzed, *Microtus* runs up to sixty-two and other small birds to fifteen. A summary of the prey brought to the nest is given in Table II.

Mention should be made of the fact that the young hawk was held in the nest much longer than normal. It was noticed on June 1 that the young raptor was making use of its wings so that on this date a leather anklet was attached to its tarsus, in a manner similar to that used by Errington (1932). To this was fastened a small snap and swivel and two feet of light chain which was secured to the bottom of the nest. In this way the young hawk was held in captivity until released on July 14, some forty-five days later than the hawk would normally have remained on the nest. Table II summarizes our observations together with data on the food taken by the Red-tailed Hawks as compiled from various sources.



TABLE II  
*Food of the Red-tailed Hawk on a Percentage Basis.*

	792 Stomachs		Prey Brought to Young	
	Warren	Fisher	Errington	English
Fowl .....	8.09	7.29	10.99	0.00
Game birds .....	0.00	2.31	0.60	10.52
Other birds .....	10.40	9.07	1.21	13.15
Mice .....	75.72*	39.50*	28.48	54.38
Shrews .....	0.00	6.22	3.63	0.00
Rabbits .....	3.46	4.62	10.99	4.38
Other mammals .....	2.89	10.83	41.21	16.83
Batrachians .....	0.00	2.49	0.60	0.00
Reptiles .....	1.73	3.55	2.42	5.81
Insects .....	1.73*	8.18*	0.00	0.00
Crayfish .....	0.00	1.42	0.00	0.00
Centipedes .....	0.00	0.179	0.00	0.00
Offal .....	2.31*	2.31	0.00	0.00
Empty .....	0.00	15.81	0.00	0.00
Total .....	106.33	113.77	100.00	100.00

\*Some duplication.

The information compiled in the above table was obtained in different ways. The data of Warren (1890) and Fisher (1893) were compiled from stomachs of 792 red-tails, and were based on the stomach analysis method. By this method at most only one meal can be recorded for each hawk taken, and when the stomach was empty no evidence of the bird's food habits was provided. It is not the intention of the writer to underestimate the value of this method. It is felt, however, that the findings based on observations of kills and pellet analyses are more indicative of food habits.

Although the Red-tailed Hawks are commonly called "chicken hawks" or "hen hawks", it will be noted from Table II that not one chicken was brought to the nest under observation during the period of study from May 2 until July 15, even though plenty of poultry was available in their hunting territory. The fact that they took so many game birds deserves comment. On April 9, 1932, at 3:00 P. M., the State Department of Conservation released fifty-six leg-banded Hungarian partridges, all of which were hand reared and semi-tame. Several of these birds had one wing clipped so that it was impossible for them to fly. These birds were released in one of the improved areas at Williamston. This location was also the well-established hunting area of the red-tails, and three of these partridges, identified by the retrieved leg bands, are known to have been taken by this pair of hawks.

The practice of releasing tame birds in strange surroundings, forcing them to fend for themselves, and placing them in places where

they are forced to escape from predators often proves disastrous to the birds. The wing-clipped partridges that were released were certainly handicapped in their chances to escape from predators. Undoubtedly it is unwise to release wing-clipped game birds. It is not known whether the wing-clipped birds were taken as no record was kept at the game farm.

As indicated in Table II, seven pheasants were brought to the nest. In order to obtain the true significance of this number of pheasants in the diet of these hawks over the period of this study, it is necessary to know the approximate number of pheasants inhabiting the feeding area of the hawks. This information is provided by the semi-annual pheasant censuses which have been made in the years 1930-1933. According to the census data, the 1932 winter population of this area (hunted over by the red-tails, about 5,000 acres) was about 440 birds, and the 1932 fall population was approximately 550 pheasants. Since the midsummer population is known to be considerably higher than either of the figures given, it is probable that the seven pheasants which were brought in to the young hawks comprised slightly more than 1.0 per cent of this population. While this study gave no information as to what the pair of adult hawks were eating during this time, it is possible that they were likewise feeding upon pheasants. Assuming that each ate as many as were brought to the young, an improbably high assumption, this one pair of nesting red-tails may have destroyed approximately 3.2 per cent of the summer population of pheasants in the 5,000 acre area.

Stoddard (1931), in his work with the quail, says: "Unless red-tails are unusually numerous they may well be tolerated upon quail preserves because of their usefulness in catching cotton rats and other destructive rodents, and because they eat snakes, which are the most difficult of quail enemies for man to control."

The determination of the economic status of any species must balance the value derived from their presence against the damage they do. It is often difficult to decide whether certain items in any animal's diet should be considered beneficial or harmful from man's viewpoint. This is true in the instance of the weasels taken by the Red-tailed Hawks. Weasels are commonly thought to be harmful by the layman, but Dearborn (1932) showed that 83.34 per cent of the weasel's diet consists of mice, one of man's greatest enemies.

## CONCLUSIONS

1. From the information obtained by this study it has been found that Red-tailed Hawks sometimes winter in southern Michigan.
2. In this study, which took place on an area under intensive game management, it was found that these hawks were taking too many mammal and avian game species.
3. The red-tails involved in this study nested in a territory in which there also nested another harmful predator, the Great Horned Owl, and fed in the territory covered by two pairs of Marsh Hawks.
4. From the evidence there is no way to determine whether the hawks had taken sick or weak birds.
5. It is feared that if these individuals are allowed to continue to breed in the territory just studied, since they have developed a taste for pheasants and partridges, they would be very harmful. A part of a game management program would be to control the hawks. Their nesting period overlaps the nesting season of the pheasant and it is feared that they might develop a marked taste for pheasants.
6. Widespread slaughter of red-tails is not recommended but in areas where game management is being practiced, as it is at Williamston, Michigan, systematic control of the offending individuals is necessary. This no doubt would allow useful species to nest in the territory, as, for example, the Red-shouldered Hawk.
7. Since weasels live principally upon mice, might they not be more useful alive than as food for Red-tailed Hawks?

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DEPARTMENT OF CONSERVATION, GAME DIVISION  
LANSING, MICH.

## FURTHER NOTES ON A VERY OLD CARDINAL

BY ALBERT F. GANIER

In the WILSON BULLETIN for December, 1933 (p. 152) I recorded the fact that a male Cardinal, banded February 12, 1924, was still about my premises and that he was therefore at least ten years old. His constant companion and mate was a female which I had banded in February, 1933. It is with considerable satisfaction that I am able to report that these birds are still mated and about my home. The male is now (October 1) at least eleven years old. At the west end of my home, on a trellis just outside the dining room window, is a feeding shelf on which I place grain and sunflower seed each morning before I sit down to breakfast. There has rarely been a morning since my last account, that these two Cardinals have not come to the repast within a few minutes. In cold weather they are frequently awaiting in the trees about for their breakfast to be spread; if not, a whistling imitation of the male's song would often bring one or both of them from a distance. Only on one or two occasions have other Cardinals been seen on the premises during the present year. During mid-winter the male would fly to the tray closely followed, usually, by the female. She then demurely takes her place to one side until he is through, for if she attempts to join him he rushes her off as he does the English Sparrows. After about five minutes he has satisfied himself and flies away, whereupon she takes his place and likewise rushes the sparrows. On the morning of January 19, the lack of gallantry on the part of the male came to a sudden close. On that morning the thermometer rose from a spell of low temperatures and there was a distinct touch of spring in the air. A Carolina Wren loudly broke a long silence and for the first time the male Cardinal was heard to whistle his spring call. At breakfast time their grain was placed as usual and in a few moments both birds flew to the shelf, the female awaiting "second table" a yard away. He ate leisurely and when he was through, carefully selected a choice kernel, flew to the female and placing it in her beak, flew away. This performance was witnessed nearly every morning from then on until nesting time. As spring advanced his attentiveness became more pronounced and during the period of his breakfast he would feed her sometimes three or four times as she softly chipped to attract his attention. On March 10, she was finally permitted to eat at "first table". The personalities of these two birds are markedly different. The female is notably gentle and quiet of manner. She will alight on the shelf at times while I stand in the open, two yards away. I have never known so gentle a wild

bird. I judge she is relatively young for her plumage is perfect at all seasons. The male is alert and ever watchful—perhaps that is the secret of his long life. He vigorously drives the sparrows away while he eats and during the song period sings as regularly and as well as a young bird. His plumage, however, is poor and his feathers do not lie smoothly upon him. When he lowers his head to eat, a gap appears in the feathers on the back of his neck, giving him the appearance of having a bald neck.

On March 25 both birds inspected the site which they usually choose for their first nest. It is in the top of a privet bush against a south window. Because the new leaves were as yet very small, actual nest building did not begin until April 6. They used the same crotch that has held the male's first nest now for seven years. (I have no proof that the present female has been his mate farther back than 1933 but believe she has). On April 17 the third egg was laid, on the 29th or 30th these hatched and on May 8 the young left the nest. Two of these were noted about the place all through May, being carefully tended by the old birds. The second nest was begun May 21, in the top of a privet hedge, eight feet above the ground, but was deserted upon completion. They then built another, in a similar location and on June 6 began sitting on two eggs. These hatched, the young were banded on June 27, and they left the nest that afternoon. Both adults were singing on the 28th while carrying food to their young. On July 7 they had completed a third nest, nine feet up in a privet against the south wall of the dwelling next door, and later the female was observed sitting on three eggs. These hatched, as did all the others, and this third brood left the nest on July 28. At least two of them have survived and are still about the place as well as one or two young males of an earlier brood. Due to ample rainfall and the green condition of the foliage, I should not have been surprised to have seen them attempt a fourth brood. So far, however, I have been unable to locate another nest. I hope to be able to chronicle another successful season for this pair a year hence.

NASHVILLE, TENN.

## HURRICANES AND SUBSPECIFIC VARIATION

BY IVAN R. TOMKINS

Whether we incline to the systematist who lists all manner of subspecific differences and is willing to go to the effort necessary to distinguish them, and thereby find out some of the multitude of facts to be revealed by this system, or conform to the easier and somewhat less technical school which evades such effort, the fact remains that considerable variation does occur, whether recognized and named or not, and any light on how such variations come about is of value.

Variation has often followed isolation by strictly geographic barriers, as when an island of inhabitable territory is entirely shut off by unusable terrain. These barriers are often such as to affect one species only, and a somewhat similar species, perhaps of the same genus, may thrive over a much wider range. But the geographical factor in variation has been well covered before, and is not within the scope of this paper. It is only mentioned as an additional factor, assisting variants to thrive and become stable.

The coasts of the south Atlantic and Gulf states, have several races of the Seaside Sparrow (*Ammospiza maritima*) breeding within a narrow range of altitude, which may illustrate the theory of the effect of hurricanes as a factor working toward subspecific differentiation. The Seaside Sparrow breeds in the low marshes on the salt water, and is a weak flier. It also appears to return approximately to the same place each year to nest.

It is always hard to get far enough away from evolutionary changes to view them in proper perspective, but if the influence of the tropical storm is as great as it now seems, important changes in a species may occur within the limits of a man's lifetime. The periods of expansion and recession of any species are all a part of such changes, and these periods may present to us at times a fairly constant ebb and flow, but are always subject to being entirely thrown out of balance in either direction (towards scarcity or abundance) by certain violent events. Every serious student knows that no species is ever entirely stable, either as to number and range, or as to physical characteristics.

The occasional great storms that develop in the West Indies, and sweep over the marshes of the south Atlantic and the Gulf coasts, covering the breeding grounds of the Seaside Sparrows many feet deep with water, and with attending gales of often one hundred miles an hour, must wipe out much of the bird life in the marshes, particu-

larly the weak fliers, such as the sparrows, the long-billed marsh wrens, and the clapper rails.

What a part these elements play in the decimation of certain forms, and the consequent evolution of new ones cannot now be properly valued, and in fact only dimly glimpsed. It is obvious that if all but a single family group be destroyed, the new inhabitants will have inherited the characteristics, perhaps heightened by inbreeding, of that group, rather than the more average characters of the original widely spread stock.

Wayne, a few miles north of Charleston, S. C., took a few specimens as dark as the race *A. m. fisheri*, which breeds on the coast of Louisiana, and approaches the very dark Dusky Seaside Sparrow (*Ammodramus nigrescens*) from the east coast of Florida. It is now believed that these birds taken by Wayne were aberrant individuals which bred farther north, perhaps from a small family group of similar color. If members of such a group were the only survivors after a severe storm, a dark colored race might result after sufficient time to allow the natural expansion and stabilization.

Again, it is not entirely necessary that a storm should occur in the nesting season to affect such a change, and the breeding stock might be destroyed in fall or winter, several hundred miles from the breeding territory, provided that the birds from this territory should all winter together in one locality. Certain species do just this, and are as selective of the wintering as of the breeding grounds. In the Wayne collection, now in the Charleston Museum, are twelve skins of the Sharp-tailed Sparrow (*Ammodramus caudacuta caudacuta*), that are albinistic. For twenty-three winters he found birds of this same coloration in this same field. Very likely these partly white birds were from one family group that nested in one fairly exact area, and migrated to this same field each year.

The severity of the tropical hurricane is well known. The great storm of August 27-28, 1893, was credited by Wayne and others with destroying much of the bird life in unprotected places. Near Savannah during this storm, large schooners were left high up on the marsh islands, dredges floated across the Tybee Railroad tracks (which are about fourteen feet above mean low water), and at the Quarantine Station water covered the floors of some of the quarters, which were at least twenty feet above low water. These storms often cut a swath half a state wide across the coastal marshes, commonly in Florida though less often in the more northerly states.

Prior to the 1893 storm, little data was gathered and preserved that would now be of much use in determining just what happened to any one species. About the only usable material would be records of breeding abundance and skins of breeding birds. Such material as can be found in the old publications, as contrasted to present knowledge of the breeding range of the Seaside Sparrows of the Georgia and South Carolina coasts, seems to indicate that most of the breeding birds were destroyed, and are now in a period of much greater expansion than at any time within the memory of living bird students.

It is entirely possible that Macgillivray's Seaside Sparrow (*Ammospiza m. macgillivrayi*), which was not recognized for so many years, has a somewhat different breeding range, than when described by Audubon, in 1834.

U. S. DREDGE MORGAN,  
SAVANNAH, GA.

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### SOME OBSERVATIONS ON BIRDS IN SOUTHEASTERN OKLAHOMA\*

BY ALBERT H. TROWBRIDGE† AND H. L. WHITAKER†

During the greater part of June, July, and August of 1934, the authors were with the University of Oklahoma Biological Survey Field-Party studying the heavily timbered regions of LeFlore and McCurtain Counties in Southeastern Oklahoma. It was during this time that the following observations were made on the Pileated Woodpecker, *Ceophloeus pileatus pileatus*; the Road-Runner, *Geococcyx californicus*; and the Little Blue Heron, *Florida caerula caerula*.

We found the Pileated Woodpecker to be rather rare in the central portion of LeFlore County, although several were seen six miles west of Heavener along the Poteau River and a few others fifteen miles southeast of Heavener along Black Fork Creek in the vicinity of Zoe. Farther south, in the vicinity of Smithville, McCurtain County, they were more numerous and sixty miles south of Smithville on Mountain Fork River they were fairly abundant. None of these birds were seen more than one-half mile from the streams, and the greater number of them were observed along the water-courses.

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\*Contribution from the Zoological Laboratory of the University of Oklahoma. Second Series, No. 132.

†Howard A. Kelly Fellow in Museum Field Work.



Nice (1931) reviews the history and present distribution of *C. p. pileatus* in Oklahoma. Crabb (1930) reported the Pileated Woodpecker to be rare in Oklahoma, except in the sparsely settled, timbered regions of the state. Even here he never observed more than four individuals in a full day in the field. He found this species to be very wary and experienced difficulty in determining the sex of individuals observed in the field. We had no trouble in approaching to within a few feet of these birds on several occasions, and it was not uncommon to see ten or fifteen of them in a half-day in the field. Apparently the Pileated Woodpecker is increasing in numbers in southeastern Oklahoma. Our observations lead us to believe that individuals of this species are most abundant in southeastern McCurtain County and decrease in numbers from south to north along the eastern border of the state.

Only a single Road-Runner, *Geococcyx californicus*, was seen during the entire summer. This individual was observed on the road between Tiner and Whitehall schools, six miles east and two miles south of Broken Bow, McCurtain County, in typical pine-oak forest. It was first seen at two o'clock in the afternoon, August 16, as the authors were going into Broken Bow. The bird ran into the undergrowth beside the road and could not be found. Two hours later we again saw the bird in the road and although it ran into the brush we were able to collect it. Unfortunately the skin was destroyed by an opossum that night.

Nice (1931) gives a complete account of the history and present distribution of *G. californicus* in Oklahoma. She reports this species as having been observed in McCurtain County in 1929, but does not mention the locality. To the best of our knowledge, this is the first published account giving the exact location where this bird has been seen in McCurtain County, and it is the second record of this species from the southeastern part of the state. As Mrs. Nice points out, the Chaparral has been steadily working eastward through Oklahoma during the past thirty years, but it would seem that it is not increasing to any great extent along the eastern border of the state. It is not unlikely that the pine-oak forests of eastern Oklahoma will mark the eastern limits of the range of this species, and that these birds will always be of rare occurrence in the area studied by us.

On the other hand, the Little Blue Heron, *Florida caerula caerula*, particularly the immature, white form, was found to be abundant along the larger streams in both LeFlore and McCurtain Counties. They

were present in such numbers that they formed a serious menace to the smaller fish of the area.

Due to the general dryness of the season, all streams were low and many of the smaller ones almost completely dry. Such water as they contained was in isolated pools seldom more than a foot or two deep. As was to be expected, the fish were heavily concentrated in these pools. Daily observation showed that the herons were taking advantage of this fact for several of them would congregate about the edges of the pool and within a few hours there would not be a single small fish left.

This was equally true of the shallower places of the larger streams, where often flocks of twelve to fifteen of these birds were observed fishing. Mrs. Nice (1931, p. 56) in her list of the food of these birds includes what she terms *worthless fish*. Our observations lead us to take exception to the use of this term. In the first place, it is almost impossible to define the term as she employs it. Probably she means the smaller, non-game fishes, but if so she is gravely in error. Many of the minnows form an important source of food for the game fishes, and in addition, the carnivorous species are an important factor in mosquito control. This particularly applies to the top minnows of the genera *Fundulus* and *Gambusia* which are easy prey for fish-eating birds. In an area such as that studied this summer, where malaria is all too prevalent, the smaller fishes are very important from an economic view-point.

It is also obvious that the fry of game fish, which are generally found in shallow water, are eaten in large numbers by herons and other similar birds. In many of the small pools which we observed there were many small bass and sunfish, but they were eaten along with the rest of the smaller fishes. We are certain that the majority of the fishes eaten by the Little Blue Heron can not be termed *worthless fish*.

In calling attention to these food habits, however, we do not mean to imply that the Little Blue Heron should be wantonly slaughtered, but we merely mean to show that much of its food is composed of a group of animals of general economic importance.

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DEPARTMENT OF ZOOLOGY, UNIVERSITY OF OKLAHOMA,  
NORMAN, OKLAHOMA.

SOME CHANGES IN THE BREEDING BIRDS OF UPSHUR  
COUNTY, WEST VIRGINIA

BY MAURICE BROOKS

Geographically speaking, the State of West Virginia is in an anomalous position. Since it extends farther north than Philadelphia, it should rate as a Northern state, were it not for the fact that it reaches farther south than Richmond, and therefore may be ranked with the South. The Eastern "Panhandle" goes farther east than Buffalo, so it might qualify with the East, did it not extend farther west than Cleveland, and so must be placed with the Middle West. Coupled with this geographical range is a wide elevation range; from 262 feet at Harper's Ferry to 4,860 feet at Spruce Knob. In no way is this confusion more plainly marked than in the field of outdoor life. The State is a meeting place for diverse forms, and it has not yet had a title of the study it deserves.

Upshur County is well located as a field of study, for it lies near the geographical center of the State, may be regarded as typical in soil and forest conditions of a large part of our area, and has no extremes of elevation, since it extends from 1,300 to 2,700 feet above sea level. Furthermore, outdoor life, bird, plant, mammal, and insect, has probably been more thoroughly studied here over a long period of time than in any similar area in West Virginia.

It is the purpose of this paper to record, and comment briefly upon, some of the changes that have taken place in the county's list of breeding birds during the last twenty years. This covers the period of the author's observations, but he has also been assisted by the observations of Earle A. Brooks, A. B. Brooks, F. E. Brooks, and others, some of whose studies extend much farther back. From 1913 to 1933, however, the author has spent a part of every season in the county, and during most years this has been a major portion of the time. Work has been done in every one of the six Magisterial Districts of the county, although the vicinity of the village of French Creek has been headquarters.

At the time this study begins the well-known eastward movement of the Prairie Horned Lark had already reached the county, so it is not covered in this paper. Neither do I include the Starlings which have become established during the period, nor the Ring-necked Pheasants and Hungarian Partridges that have been introduced by the State Game Commission. Only native birds that are believed to have changed their breeding status here materially are included.

Practically all of Upshur County has been ascribed to the Transition Life Zone, such birds as Least Flycatcher and Black-throated Green Warbler being nesting species at the average elevations, and over a wide territory. Were it not for such summer residents as these, some of the following notes might tend to indicate that the county might better be included in the Carolina section of the Upper Austral Life Zone. It is this mingling of forms that makes the bird life here particularly interesting.

The following species have changed their breeding status here sufficiently to be included in these notes:

LEAST FLYCATCHER. *Empidonax minimus*. Twenty years ago Least Flycatchers were regarded as breeding only in the higher Alleghanies of the state. In 1927, however, I first heard it in June along the Buekhannon River, near Sago, Upshur County. In 1928 it appeared at French Creek during the breeding season, and it has been here every year since. I have also noted it during the summer at Tennerton and Rock Cave. In June, 1931, I watched old birds feed young along French Creek. There are no indications that it bred here prior to the time that I first discovered it in 1927.

EASTERN HOUSE WREN. *Troglodytes aedon aedon*. For some reason unknown to the writer House Wrens were exceedingly rare in Upshur County, some years being entirely absent, until the 1920's. They first appeared in numbers about 1925, and have been increasingly abundant since. Three pairs nested near our residence in 1933 (at least there were three nests!) and every building in the neighborhood seemed to have its pair. Our first breeding record was in 1911, and scattered pairs probably nested before that time, but at no period was the bird at all common.

BEWICK'S WREN. *Thryomanes bewicki bewicki*. As the House Wrens waxed in numbers the inevitable happened; the Bewick's have become strikingly less common. At the beginning of the period covered in this paper, Bewick's Wrens were by far the commonest breeding species of the group in the county. Their disappearance has coincided exactly with the increase in the House Wren population. In 1914 there were six pairs on the premises; in 1933 a single pair bred. At Tennerton I recorded three nests in 1927, three in 1928, one in 1929, one in 1930, and not a single one since. In the town of Buekhannon the Bewick's Wrens were common until a few years ago, but, save for a few days during migration, they are not heard now. This is a matter of concern to us, for the Bewick's Wrens are in every way

more desirable. Incidentally, observations in other parts of the state have shown the same thing taking place; the Bewick's not nearly so common as formerly. I have one positive record of force being used by House Wrens to dispossess the Bewick's. In 1931 a pair of Bewick's began a nest in a box on one of our outbuildings. A few days later I found the House Wrens carrying material into the same box, and they subsequently raised a brood there.

EASTERN MOCKINGBIRD. *Mimus polyglottos polyglottos*. Numerous observers have written of the northward spread of the mockingbird, and it has been quite noticeable in Upshur County. A pair were recorded as nesting in Buckhannon as early as 1914, but of recent years the species seems to breed sparingly every season. I have recorded nests at Tennerton, in Buckhannon, and near French Creek. As in other areas, the birds seem more common in winter. I knew of six wintering birds in the county last year, although but a single nest was recorded during the preceding breeding season.

BLACK-THROATED GREEN WARBLER. *Dendroica virens virens*. If Upshur County is really a part of the Transition Life Zone, the presence of this species as a breeding bird should occasion no surprise, but the fact is that it was entirely absent from the greater portion of the county until the last few years. The first definite county breeding record was established by Fred E. Brooks when he found a nest with three eggs near French Creek on May 29, 1922. In 1933 I knew of six singing males in an area of 150 acres. I have heard the song during the nesting season at French Creek, Sago, Tennerton, Selbyville, Rock Cave, and other points in the county. These birds are now widely spread over an area where, until a few years back, they were entirely wanting.

CERULEAN WARBLER. *Dendroica cerulea*. Brewster's classic description of this bird as a breeding species in West Virginia was written of conditions as he found them in Ritchie County, a region very definitely within the Carolina Life Zone. The first summer record for Upshur County was made at French Creek June 21, 1925. A male bird sang in the grove of the Presbyterian Church there throughout the season. There seems to be no reason for doubting that it bred there. In 1932 I saw a female feed young birds at French Creek. These birds sing regularly now along the Buckhannon River near Tennerton and Post's Mills. I have heard them along the Little Kanawha River near Arlington.

NORTHERN PRAIRIE WARBLER. *Dendroica discolor discolor*. This bird is one of the most striking additions to our avifauna. Until recent

years it was not known to breed in this general section of West Virginia, but individuals sang here during the summer of 1927. The first nest was found at French Creek on June 23, 1930. I have recorded in the WILSON BULLETIN that a pair used the identical location again in 1931, the nest having three eggs on July 2. Last year the nest was again close to the original location. Three male birds sang in a twenty-acre brushy region in 1933. These birds are now common in all sections of the county.

AMERICAN REDSTART. *Setophaga ruticilla*. The redstarts overlooked this county as a breeding place for many years, but they are now making up for lost time. I first noticed them at French Creek in the summer of 1929, and they have become more abundant each year. They nest regularly along the Buckhannon and Little Kanawha Rivers. Why they appeared here only recently (no previous records for at least forty years) I do not know.

SUMMER Tanager. *Piranga rubra rubra*. This is another Upper Austral bird to extend its range to our territory during the last few years. In 1933 a male Summer Tanager sang through the season within a hundred feet of a pair of nesting Least Flycatchers. Nearly fifty years of observation in the county failed to yield a single record until 1930, when one was seen in June at French Creek. Since that time they have been present every season, and I have recorded them from Tennerton, Rock Cave, and Kanawha Head. They have been reported from Daysville and Sago. A pair developed quite a fondness for our early cherries in 1933.

EASTERN SAVANNAH SPARROW. *Passerculus sandwichensis savanna*. I have noted elsewhere (*Auk*, October, 1933) the remarkable spread of the Eastern Savannah Sparrow through northern West Virginia and western Maryland. Since that note appeared, I have observed adults with young near Buckhannon. So far as I know, this is the southern breeding record for the species.

EASTERN LARK SPARROW. *Chondestes grammacus grammacus*. One of the noteworthy bird movements that the state has experienced took place about twenty years ago when the Eastern Lark Sparrows appeared in numbers. The first state breeding record was made in Upshur County May 12, 1915. The following year I found four nests within one hundred yards of my home. About 1920 the birds began to be less abundant, and by 1933 it was something of an event to see one, although I have a breeding record for 1932. A few still occur each season in favored places in the state, but the birds are very much on

the decline in this area. In fact, I have not heard of a single record outside this county for the last three years.

BACHMAN'S SPARROW. *Aimophila aestivalis bachmani*. An ornithological surprise of the year 1910 was the appearance in West Virginia of numbers of Bachman's Sparrows. This visitor from the Carolina Life Zones lost little time in making himself at home here with birds of the Transition Zone. The first West Virginia breeding record for this species also was made in Upshur County, July, 1915. In 1925 a pair used our feeding shelf during May, a most unusual experience. By 1928 we were recording them much less frequently. In 1931 I heard a single individual near Rock Cave. Two were seen near Buckhannon during the summer of 1932, and in 1933 I heard a single individual near French Creek. I do not know of other recent records for this species.

This concludes the list of those species whose breeding status has changed enough to make it worth recording. As may be seen, some species spread from the higher elevations down to our area, more came to us from the lower elevations, one species (the Savannah Sparrow) seems to be definitely moving south, while the Lark Sparrow came to us from the West. It is worth mention that until recent years the Prairie Warbler had not been reported from the state except in the eastern portion. Thus, North, East, South, and West have contributed to make bird life richer for a time at least.

Two notable changes in migration might be recorded. Until the last ten years Fox Sparrows were exceedingly common here in migration: now they are regularly very rare. Until 1924 White-crowned Sparrows were definitely regarded as rare migrants. That year they were abundant, and they have been so every season since, both Spring and Fall. It is fascinating to watch these changes in any locality, but I am of the opinion that in the twenty years covered Upshur County has had more than its share.

FRENCH CREEK, W. VA.

## HAWKS AND THEIR NESTS IN MICHIGAN

BY LAWRENCE WARD

To the average person a hawk is a hawk, or if one wishes to be more specific, one says, "All hawks are thieves, and I shall shoot whenever I am near one." This tendency may be partly explained by the fact that some are destructive, and because of the difficulty in learning to distinguish species they are all classed as harmful. The tendency is further explained by the mania of many hunters to shoot any large or shy bird, and to consider a successful kill as an indication of marksmanship. Not long ago I was in a rookery of blue herons. Floating around in the flooded woods were several of those beautiful birds which had been shot down by some ruthless hunter, and left to decay in the water. Climbing to some of the nests, I found young birds in practically every nest.

Not all hawks possess equally destructive habits, in fact a few are of great economic value to the farmer. There are nine species of hawks found in Michigan under the family name of *Buteonidae*. Three of these, Cooper's, Goshawk, and Sharp-shinned, may be classed as very destructive. The Red-tailed Hawk is one which occasionally gets bad habits. The Marsh, Red-shouldered, Swainson's, and Rough-legged Hawks are decidedly beneficial, or at least economically harmless. One of the ways by which one becomes familiar with the species, is to study their nesting habits. To visit an individual in his home, is to become acquainted.

Hawks are early nest builders. The Red-tailed Hawk is probably the earliest, beginning the nest often during the last half of March. The Red-shouldered, Swainson's, and Broad-winged Hawks nest from April 1st to May 10th. Cooper's Hawk nests from late April to mid-June. The Marsh Hawk nests about the middle of May. The Sharp-shinned Hawk and Goshawk are rarely if ever found nesting in Michigan. The Rough-legged Hawk nests in Labrador.

Let us imagine that we are spending a few hours looking for hawks' nests. Of the hawks named above as nesting in Michigan, only the Marsh Hawk nests on the ground: the others nest in trees at heights varying from twenty to a hundred or more feet. The nests are usually placed in trees located in small patches of woods, although the Red-tailed Hawk sometimes builds its nest in trees standing in the open. We may direct our attention then to the farm woodlots comprising from five to twenty acres.

One fact that simplifies the finding of hawks' nests is that most of them are built before the leaves are started on the trees. One soon





FIG. 20. Nest of the Red-tailed Hawk, in Michigan, seventy-five feet from the ground.



FIG. 21. Nest of the Red-shouldered Hawk, in Michigan, thirty-eight feet from the ground.

discovers though that spring trees contain many large nests. Briefly these nests may be described as follows: There are the large round leafy nests which are the nests of squirrels, built during the fall and winter preceding. Then there are the old and new crows' nests. These more closely resemble possible hawks' nests. Usually old crows' nests can be distinguished by the blackened and dilapidated condition apparent even from the ground. New crows' nests usually show an abundance of dried grass used in construction. If the nest is new, the old bird can usually be flushed from the nest by throwing a stick into nearby branches. Then there are the old and new hawks' nests. Old nests may remain in the trees for several seasons, although they are seldom if ever used again.

One soon learns to recognize a hawk's nest almost at a glance, even from quite a distance. On April 18 while driving a car on the highway nearly half a mile from some woods I located a large nest which I later found to be the nest of a Red-tailed Hawk. At another time while driving by a patch of woods bordering the highway I observed a Broad-winged Hawk sitting on the edge of her nest where she had just alighted. When actually in the woods the bird usually flushes from the nest when the observer is about ten or fifteen rods away.

No matter how "good" a nest may look from the ground I have learned from experience not to climb to any nest unless the bird has been flushed. Nothing is much more disappointing and irritating than when after a hard, dangerous climb expecting to find eggs or young to photograph, one finds only an abandoned bunch of twigs. Occasionally one will climb into an uncompleted nest from which the old bird is frightened away and find nothing, but such experience, occasionally, can not be avoided.

Hawks' nests can not be considered common, in fact they may be considered rare. Woodlot after woodlot will contain no nest at all, and I have never found more than a single nest in a woodlot. To locate a nest then brings a real thrill as the old hawk flies rapidly away.

Some identifications can be made as the hawk leaves the nest. A process of elimination can be used. It will not be a Goshawk, Sharp-shinned, or Rough-legged Hawk, as they nest beyond the Northern boundary of Michigan with perhaps a few exceptions. A Marsh Hawk never nests in a tree. Swainson's Hawk is a mere straggler from the West, rarely nesting in Michigan. That leaves identification to four species. Red-tailed, Red-shouldered, Broad-winged, and Cooper's. Ref-



FIG. 22. Nest of the Broad-winged Hawk, in Michigan, fifty feet from the ground.



FIG. 23. The same nest (as above) as seen from above.

erence to dates of nesting will further aid in identification of these four. The Red-tailed Hawk can often be identified as it soars over head. As it turns up with its back to the sun, the upper side of its tail feathers will show up reddish brown, even from quite a distance.

More complete identification can be made by climbing the tree, and examining the nest and eggs, a thing which can be done without disturbing further incubation. Then too there is always the possibility of finding the nest of a species only rarely known to nest in Michigan.

Climbing, however, is dangerous and difficult. Perhaps a few words might be given here in regard to this necessary part of bird study.

Ordinary telephone climbers may be used but the spurs should be long and sharp. Then too there is always the danger that the bark may chip out. A firm hold should be retained by the hands or arms at all times. This warning is probably unnecessary for when one gets up from twenty to one hundred feet, one does hang on.

Three other rules may be given. Never climb a tree unless you see the old bird actually leave the nest. Never climb to show off. Thirdly, in climbing always retain a firm hold with at least one hand at all times. I well remember one occasion when I failed to observe the first two, but followed the third. While resting about forty feet from the ground, standing on an apparently solid limb and holding to a green limb about waist high, the lower limb broke like a flash, but the upper limb held.

Big trees are hard to climb. It is difficult to secure a safe hold on big limbs. It is always well to carry about seventy-five feet of quarter-inch rope. This can be thrown over higher limbs and used to steady and support one in climbing, or else to support part of one's weight in descending. It can be used also to raise or lower the kodak. Extreme caution should be used in climbing wet, slippery trees.

One should climb slowly, accustoming oneself to increasing height. Often when the wind is blowing the tree will sway considerably, especially when one nears the top. Unless one has well developed muscles, and can accustom himself to height and danger, it is best not to attempt to climb. One must take chances in climbing.

Probably the largest of the nests, as well as the most difficult to reach will be that of the Red-tailed Hawk. On April 18th I found a nest of this species in a large red oak. The tree had been struck by lightning leaving a large crease on one side bordered with dead bark. It was about twenty feet to the first limb. The limbs were large and

far apart. The rope had to be used both in ascending and descending. The nest was seventy-five feet from the ground, and out near the end of a limb. It was an enormous bundle of sticks, lined with some leaves and dry strips of bark. There were three eggs in the nest. Identification was made by observing the reddish tail of the bird in flight, and by the size and markings of the eggs. These are the largest of the hawks' eggs and average 2.40x1.82.

The Cooper's Hawk builds somewhat later than the other tree nesting hawks, fresh eggs being found into June. They closely resemble the eggs of the Red-shouldered Hawk except that they are without marks of any kind. This is the true chicken hawk. The eggs average 1.92x1.49.

The nest of the Red-shouldered Hawk is not usually so difficult to reach, usually being built nearer the ground. Often, however, as the picture will show, it is built among large limbs which are difficult to climb around. The eggs are three to four in number, dirty white, and nest-stained, sometimes faintly splashed with brown and lavender. They average 2.13x1.70.

Like the Red-shouldered Hawk, the Broad-winged Hawk is apt to build its nest in more accessible places than the Red-tailed Hawk. On April 10th I found the nest of a Broad-winged containing two eggs; on April 14th, a nest made of leaves and twigs, lined with down from the old bird, dry bark, and cornstalks, containing three eggs; and on May 10th, another with four eggs. The eggs average 1.93x1.57. This is one of our beneficial hawks.

A few words may be said concerning the nest of the Marsh Hawk, the only hawk nesting on the ground. The nest is placed in swales, where water stands in the spring, but which dries up in time for the nest about the middle of May. The eggs are pale blue and unspotted, averaging 1.78x1.41. The hawk is readily recognized as it sails close to the ground over meadows and low-lying ground, by the white upper tail coverts. As it makes such a fine mark for "sportsmen", few can resist the temptation to shoot, although it is one of our most beneficial hawks.

A few days spent in the woods in the early spring and summer ought to enable one to familiarize himself with the different species of hawks. This observational study, supplemented by reference to some good bird book, will add to one's knowledge of hawks, and enhance the enjoyment which the nature lover gets out of field trips, or hikes in the woods.

ST. JOHNS, MICH.

# 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; L. W. Wing, Ann Arbor, Michigan.

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 \$1.75 a year, and 60 cents a number. Subscriptions and orders for single copies should be addressed to the Secretary, Lawrence E. Hicks, Dept. of Botany, Ohio State University, Columbus, Ohio.

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## EDITORIAL

THE TWENTIETH ANNUAL MEETING of the Wilson Ornithological Club will be held at Pittsburg, Pa., on Friday and Saturday, December 28 and 29, 1934, in conjunction with the American Association for the Advancement of Science. Our meetings will be held in the Lecture Hall of the Carnegie Museum. Hotel Headquarters will be at the Fort Pitt Hotel. The Local Committee consists of Messrs. W. E. Clyde Todd, *Chairman*, Bayard H. Christy, Sidney Eastwood, Charles Agostini, J. Warren Jacobs (Waynesburg), and John W. Handlan (Wheeling, W. Va.). Such a splendid committee is an assurance that nothing will be left undone locally to make a successful meeting. We trust that our members will do their part to make a good meeting by attending it. The program will begin on Friday morning. The dinner will be held on Friday evening, in the University Club, in connection with the American Society of Zoologists. W. O. C. members and their friends will be seated together. An informal reception and smoker will be held in the Laboratory of Ornithology of the Museum on Saturday evening, between the hours of 7:00 and 10:00 P. M., when an opportunity will be had to examine the study collection of birds. A Wilsoniana Exhibit will be a feature of this meeting, and is being arranged for by the Local Committee. Contributions to this Exhibit are solicited. Since the first session convenes so short a time before the luncheon and dinner the Local Committee is requesting that attending members send word to the Chairman (Mr. Todd, at the Carnegie Museum) a few days in advance of their arrival; otherwise the Committee will be very seriously handicapped in making arrangements.

Railroad Rates. There will be favorable railroad rates in effect for attendance at this meeting. Practically all railroads have granted a rate of one and a third fare for a round trip ticket from all points to Pittsburgh, on the Certificate Plan. Purchase a first-class *one-way* ticket to Pittsburgh, being sure to get a certificate receipt from the Agent endorsed, "For the American Association for the Advancement of Science and Associated Societies". Upon arrival in Pittsburgh this certificate must be deposited at the Association Headquarters for validation. It must be reclaimed by the owner before purchasing the return ticket, which may then be purchased for one-third of the one-way fare. We understand that there will be reductions also in the Pullman fares. Consult your ticket agent early on all these points in order to give him time to verify any uncertain matters.

Secretary Hicks has been at work on the program for many weeks, and there is assurance of a program to justify your going to inconvenience, if necessary, to

attend. Besides our own meeting the week following will be occupied by the meetings of many other societies in all the sciences—usually from thirty to forty scientific societies have from one to three days of programs of papers showing the advances during the year in all scientific fields. Those who have never visited Pittsburgh should allow some time for visiting a few of the great industrial plants which have made that city famous and rich.

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THE RECENT CHICAGO MEETING of the American Ornithologists' Union seemed to be a marked success in such important matters as attendance and program. The program listed sixty titles, most of which were presented. There were a number of exceptionally interesting and important field studies. We will not attempt to name any of these, for we were unable to hear all, owing to the fact that two sessions were held concurrently on Wednesday.

Not listed on the program at all was an informal talk on Wednesday by Mr. Jay N. Darling, Chief of the U. S. Bureau of Biological Survey. Mr. Darling stated that the two present objectives of the Survey were life history studies and the restoration of environment. He remarked that he left to his staff the job of promoting the life history studies, while he undertook the work of promoting restoration of environment, especially for the purposes of water fowl conservation.

Mr. Darling also referred to the recent reorganization\* of the Survey for the purpose of more effectively carrying on the work. Under the new plan much of the work, especially research, is to be organized on a regional basis. For instance, there will be a regional headquarters in the Rocky Mountain area, another in the Great Plains area, the Great Lakes area, etc. The operation of the Survey under the new plan will be watched with much interest by many. Only a trial can determine success or failure. It is hoped that the Survey will put out a circular showing in detail what the new plan is, and what its objectives are. We do further hope that by the new arrangement more time will be found for investigation—that the resources of the Survey will not be exhausted in law enforcement and administrative effort; and that funds may be available for the publication of the results of the researches.

The fiasco of the 1934 water fowl hunting regulations was explained by Mr. Darling as due to the apathy of the conservationists. He said that when hunting enthusiasts outnumber the conservationists 50 to 1 at the public hearings on the regulations there can be only one outcome. While this is probably true, it excuses neither those who wish to secure excessive killing privileges nor those who are charged with the protection of the game supply. It is a lamentable fact that conservationists are poorly organized. Yet we understand that the one great institution in the country into which conservationists have poured their funds was not represented at the June hearings on the water fowl hunting regulations.

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\**Science* (for Oct. 5, 1934, p. 308) states that the U. S. Biological Survey has now been reorganized into the following six divisions: 1) Division of Administration, 2) Division of Public Relations, 3) Division of Wild Life Research, 4) Division of Game Management, 5) Division of Land Acquisition, and 6) Division of Migratory Water Fowl Program. It is here stated that the work of the former Division of Biological Investigations is to be reorganized on some sort of a regional plan, making contact where possible with universities and similar institutions.

## GENERAL NOTES

Conducted by M. H. Swenk

**Notes from Union County, South Dakota.**—During the spring of 1934, several rather uncommon birds were seen in Union County, South Dakota. The Turkey Vulture was seen on one occasion near the Big Sioux River. The Red-bellied Woodpecker and the Prothonotary Warbler were also found in the same area. The most interesting find, however, was a Northern Parula Warbler. I believe that this is the first record of that species from this corner of South Dakota.—WM. YOUNGWORTH, *Sioux City, Iowa.*

**The First Nesting Record of the Eastern Savannah Sparrow for West Virginia.**—On May 26, 1934, I found the nest of an Eastern Savannah Sparrow (*Passerculus sandwichensis savanna*) at Oglebay Park, which is about five miles from Wheeling, West Virginia. Previous to this time, although this species had been recorded at several places in West Virginia during the spring and summer seasons, there was no nesting record of it for this state. I believe this extends the breeding range of the bird several hundred miles farther southward. The field where I found the nest has an elevation of approximately 1,250 feet above sea level, and is one of the highest points in the immediate vicinity. Parts of the West Virginia Panhandle, which includes the region where the nest was found, are in the Upper Austral zone, while other parts are in the Transition zone. The nest contained five eggs, one of which was more brilliantly colored than the others. Photographs of the nest were made.—THOS. E. SHIELDS, *Wheeling, W. Va.*

**Florida Gallinule in Lewis County, West Virginia.**—In view of the fact that published records for the Florida Gallinule (*Gallinula chloropus cachinnans*) in West Virginia are very scarce, the following observations may be of interest.

On July 24, 1934, while walking with a group of nature students along the West Fork of the Monongahela River, near Jackson's Mill, Lewis County, West Virginia, I noticed an unusual-looking bird entering a small patch of weeds on the bank of the river. We surrounded the patch, and succeeded in driving out an adult Florida Gallinule. The red frontal plate was very noticeable, and the red on the legs showed up plainly. The bird very quickly hid in a larger thicket, and we did not see it again at that time. Near the same place, on July 31, a Florida Gallinule, perhaps the same individual, was seen by another bird group. This time the bird was swimming, the red frontal plate serving to identify it. When we tried to get closer it dived, and we were unable to see it again.—MAURICE BROOKS, *French Creek, W. Va.*

**Ruffed Grouse and Hawk Survival.**—The article "A Cross Country Hawk Census" by Margaret Morse Nice (WILSON BULLETIN, June, 1934) interested me. I spent the winter of 1897-98 in Vancouver, British Columbia, and the people out there were worrying about the extermination of Ruffed Grouse before the birds had even begun to be as wise and wary as they are here. They were so tame that I was told not to shoot until I saw them stretching their necks. This phase had been passed in Massachusetts fifty years ago. A sitting shot was a rarity even then, and now they are so wild and cunning in this district that after a veritable bombardment in October the farmers still complain about them eating the blossom buds on the apple trees.



The Ruffed Grouse is often called "Fool Hen" in the Far West, and obviously there is a question of how near to extermination they came before all the fools were killed off. M. M. Nice says there are more hawks in England than in New England; but of course the English birds will be much wiser, and I think the danger of our hawks being exterminated must be very small. To me, a boy with a gun is at least as much a part of nature as is a hawk. "So careful of the type she seems, so careless of the single life."—WILLIAM P. HAINSWORTH, *North Andover, Mass.*

**Baird's Sparrow at Home.**—Mr. E. T. Judd's south pasture in the Big Coulee near Cando, Towner County, North Dakota, furnished an ideal summer home for the rather poorly known Baird's Sparrow (*Ammodramus bairdi*). It was here in June, 1934, that the writer found a fine colony of these sparrows and decided that there were no less than twenty-five pairs of them living in close harmony with their near neighbors. These neighbors consisted of dozens of pairs of Savannah Sparrows, Clay-colored Sparrows, Western Meadowlarks, Chestnut-collared Longspurs, Greater Prairie Chickens, and several species of ducks. This same pasture is reported to be also the home of that most retiring of prairie birds, the Sprague's Pipit. However, I had come too early to the Cando region and the pipits, if they had arrived, were not heard singing, and thus were not added to the bird list. Baird's Sparrow is an interesting species, because of the long period of time that it remained little known. This was mainly due to its close likeness in flight, appearance, and nesting habits to the Savannah Sparrow. The song is quite distinctive, but out on the prairie there are many birds singing at once and it could easily remain undistinguished. I found one unfinished nest and knew that the birds were actually nesting in this spot. A hurried vacation found me leaving Mr. Judd's kind hospitality and his big south pasture, where one could well spend weeks observing the many species of prairie birds.—WM. YOUNGWORTH, *Sioux City, Iowa.*

**The Western Blue Grosbeak in Iowa.**—During the past two years I have seen the Western Blue Grosbeak (*Guiraca caerulea interfusa*) on three or four occasions near Sioux City, Iowa. However, a specimen record was never made during this time. On June 23, 1934, I found a pair of the grosbeaks two and one-half miles north of Sioux City on the J. W. and J. A. Sturtevant farm, which is located on the Big Sioux River, in Plymouth County, Iowa. The birds were located in a scattered group of bur oak trees, which is their favorite habitat. I disliked to collect the bird so late in the season, and yet I wanted to establish the status of the species in Iowa, and therefore took only the male bird. According to Mr. Philip A. DuMont, no specimens have ever been taken in Iowa. I have made many early morning trips in search of the Blue Grosbeak in Iowa, and feel that such trips will in the future bring to light the summer residence of two other species of western birds. These are the Lazuli Bunting, of which I have one sight record, and the Black-headed Grosbeak. Both of these birds have been found breeding in Yankton County, South Dakota, which is about fifty miles from Sioux City, and since we have the identical type of habitat here at Sioux City, I think the birds eventually will be found breeding in northwestern Iowa.—WM. YOUNGWORTH, *Sioux City, Iowa.*

**Nesting of the Kentucky Warbler in Butler County, Ohio.**—For years I have suspected the Kentucky Warbler (*Oporornis formosus*) as nesting in Butler County, for on different occasions I have seen these birds during the breeding

season. Determined to find a nest of this species, Frank Harbaum and myself started on the morning of May 27, 1934, to a large woods north of Oxford. On entering this locality we observed a pair of Kentucky Warblers, but no nest was found. After about five hours of watching and walking, a female was flushed from its nest on the ground. We observed this female bird for several minutes with our glasses. The male bird was not seen. The nest was placed in a clump of leaves at the base of a small elm sapling. The nest was a bulky affair. The outside was composed of leaves and small weed stems and it was lined with horse hair. It contained two warbler eggs and one egg of the Cowbird. This warbler is a master at concealing its nest, which fact I think accounts for their nests never before having been found in this county.—CLARK K. LLOYD, *Oxford, Ohio*.

**Some Bird Observations in Howard County, Missouri.**—Black Rail (*Creciscus jamaicensis stoddardi*). At about four o'clock on May 1, 1933, a Black Rail was captured alive on the Central College campus, by Miss Seria Rogers. This represents the third record of this species in Missouri, and the only record since 1907. The fact that it was found in such an unusual place as a college campus is partly explained by the fact that on the preceding day there had been a severe wind storm, while at noon on May 1 there was a hard hail storm; however, the bird seemed in perfect condition. I had the pleasure of keeping it over night and during that time it seemed unusually tame. The next day it was sent to the University of Iowa, where it was mounted for the Central College Museum.

Eastern Solitary Sandpiper (*Tringa solitaria solitaria*). On July 8, 1932, while going around a lake about three miles from Fayette, Mr. Tom Baskett and I were surprised to notice a Solitary Sandpiper a few feet in front of us. On July 15, we again returned to observe four Solitary Sandpipers, and on July 16, one male was taken. They were probably exceptionally early migrants.

Blue Grosbeak (*Guiraca caerulea* subsp.). On May 14, 1932, Mr. Baskett and I observed a male Blue Grosbeak. So far as we have been able to determine, this represents the first record for this species in Howard County. On August 8, 1932, Mr. Baskett and I found a nest of this species, containing well advanced young. The nest was located in a sapling elm, about fifteen feet above the ground.

I first observed this species in 1933, on May 7, and on the following July 13 I found two Blue Grosbeak nests. One contained three grosbeak eggs and one egg of the Cowbird, the other four grosbeak eggs. On July 14, I again observed the nests, but their contents remained the same as on the preceding day. On this date, however, I destroyed the Cowbird's egg in order to keep the young Cowbird from crowding the young grosbeaks out of the nest when the eggs hatched. I again returned on July 17 to find that the nest that had contained the Cowbird egg on the 13th then contained two young grosbeaks and an unhatched egg, while the other nest was occupied by only three young grosbeaks, the other young one being found dead on the ground under the nest. I also found another nest on July 17, that contained young almost ready to fly. On July 20 the egg in the first nest was still unhatched, but the other two young were very healthy and the young had left the other two nests. All three nests were within an eighth of a mile of each other, along a roadside. Although all three nests found in 1933 were fairly close together, the number of Blue Grosbeaks is increasing rapidly

throughout this vicinity. If this species keeps increasing at its present rate, it will not be long before it may be considered as a common summer resident here. These data should go far in proving the rapid spread of this species northward.—WILLIAM JENNER, *Fayette, Mo.*

**Eastern Goshawk Flights in West Virginia.**—One of the interesting features of *Bird-Lore's* Christmas Bird Census for 1933 (*Bird-Lore*, Jan.-Feb., 1934) was the scarcity of observations of the Eastern Goshawk (*Astur atricapillus atricapillus*). In view of the fact that the seven-year cycle since the great goshawk flight of 1926-27 was completed during the 1933-34 season, this seemed noteworthy, and it may be of interest to record that West Virginia did have an extended goshawk flight during the latter season.

For purposes of comparison, I quote from my 1926-27 notes on this species:

"First observed on November 2, 1926, when a neighbor woman shot a female goshawk while it was raiding her flock of chickens. During November and December, 1926, seven dead specimens came under my observation, all taken in Upshur County, West Virginia. I observed the species almost every day, specimens being taken in Lewis, Harrison, Barbour, and Monongalia Counties, and seen in a number of others. Three were captured alive by state trappers in pole traps at French Creek. One individual attacked a full-grown Wild Turkey at the State Game Farm at French Creek. The species was common throughout the winter, and was last seen on March 20, 1927."

Notes for 1933-34 summarize as follows:

"First observed near top of Cranberry Mountain, Pocahontas County, October 15, 1933. Two individuals seen that day, one flying over Big Glade (WILSON BULLETIN, March, 1934, page 65). One seen at French Creek, Upshur County, October 17. A dead specimen brought in by one of my students on October 20. Fairly common in Upshur County during November and December. Individuals seen in Barbour and Harrison Counties. Species not seen during January and February, but an individual observed March 7, at French Creek. Seen in Upshur County, March 9, 13, 14, 16, 20, 23, and 29, and April 2; the latter being last one seen."

From these notes it may be seen that during the normal winter of 1926-27 the birds wintered in Central West Virginia, but that during the excessively cold 1933-34 winter they moved out, presumably farther south, since they reappeared in March. Not nearly so many individuals were seen during the latter flight as during the former, nor were so many poultry depredations reported. There was, however, a large 1933-34 flight in Central West Virginia, more individuals being seen than in all the intervening years since 1926-27.—MAURICE BROOKS, *French Creek, W. Va.*

**Winter Birds of the Mississippi Gulf Coast.**—During February of 1934, Mr. Charles F. Walker and the writer spent several days (February 12 to 16) in field work along the Mississippi Gulf Coast. As little has been recorded of the birds of southern Mississippi, a summary is made of the forms observed. The daily lists of species were 50, 58, 61, 66, and 60. The total list of species was 98, and the total number of individuals counted was 10,701.

Because of other field work being done, it seems certain that many species present were missed. However, the numbers listed probably give a fair picture of the relative abundance of most of the species observed. From headquarters at a camp in the long-leaf pine woods, six miles north of Biloxi, trips were made

to inland portions of Harrison and Jackson Counties, to the large Pascagoula River Swamp, and along the gulf shore from Pascagoula to Bay St. Louis.

For the sake of brevity, only the common names are used, following the nomenclature of the 1931 A. O. U. Check-List. No collections were made to determine subspecific forms present, the form listed being the one probable from known distributional data. The list, with the number of individuals checked for each species, is as follows: Horned Grebe, 1; Pied-billed Grebe, 1; Eastern Brown Pelican, 41; Double-crested Cormorant, 6; Great Blue Heron, 3; Louisiana Heron, 1; Black-crowned Night Heron, 1; American Bittern, 1; Common Mallard, 6; Gadwall, 65; American Pintail, 1; Lesser Scaup Duck, 12; Red-breasted Merganser, 22; Turkey Vulture, 32; Black Vulture, 105; Sharp-shinned Hawk, 1; Cooper's Hawk, 3; Eastern Red-tailed Hawk, 1; Florida (and Northern?) Red-shouldered Hawk, 9; Marsh Hawk, 3; Eastern Pigeon Hawk, 6; Eastern (and Little?) Sparrow Hawk, 31; Eastern Turkey, 1; Yellow Rail, 2; Killdeer, 27; Ruddy Turnstone, 6; Sanderling, 312; Herring Gull, 29; Ring-billed Gull, 346; Laughing Gull, 186; Bonaparte's Gull, 2; Forster's Tern, 8; Common Tern, 1; Royal Tern, 127; Caspian Tern, 1; Black Tern, 2; Black Skimmer, 382; Eastern Mourning Dove, 177; Southern Screech Owl, 3; Florida Barred Owl, 3; Eastern Belted Kingfisher, 7; Southern (and Northern?) Flicker, 51; Southern Pileated Woodpecker, 8; Red-bellied Woodpecker, 28; Red-headed Woodpecker, 3; Yellow-bellied Sapsucker, 15; Southern Hairy Woodpecker, 3; Southern Downy Woodpecker, 2; Red-cockaded Woodpecker, 11; Eastern Phoebe, 29; Tree Swallow, 42; Florida Blue Jay, 53; Southern Crow, 56; Fish Crow, 62; Carolina Chickadee, 25; Tufted Titmouse, 34; Florida Nuthatch, 2; Brown-headed Nuthatch, 93; Brown Creeper, 1; Eastern House Wren, 2; Eastern Winter Wren, 2; Carolina Wren, 6; Prairie Marsh Wren, 1; Eastern Mockingbird, 78; Brown Thrasher, 20; Northern (and Southern) Robin, 4,570; Eastern Hermit Thrush, 36; Eastern Bluebird, 389; Blue-grey Gnatcatcher, 2; Eastern Golden-crowned Kinglet, 6; Eastern Ruby-crowned Kinglet, 84; American Pipit, 24; Cedar Waxwing, 127; Loggerhead (and Migrant) Shrike, 66; Blue-headed Vireo, 3; Myrtle Warbler, 96; Northern Pine Warbler, 212; Yellow (?) Palm Warbler, 76; Southern Meadowlark, 224; Eastern (and Gulf Coast) Redwing, 372; Rusty Blackbird, 32; Boat-tailed Grackle, 78; Bronzed and Florida (and Purple?) Grackle, 954; Eastern Cowbird, 184; Louisiana (or Eastern?) Cardinal, 118; Eastern Goldfinch, 236; Red-eyed Towhee, 19; Eastern Savannah Sparrow, 62; Eastern Grasshopper Sparrow, 2; Eastern Vesper Sparrow, 32; Slate-colored Junco, 2; Eastern Chipping Sparrow, 31; Eastern Field Sparrow, 26; White-crowned Sparrow, 3; White-throated Sparrow, 37; Eastern Fox Sparrow, 5; Swamp Sparrow, 6; and Mississippi Song Sparrow, 12.—LAWRENCE E. HICKS, *Columbus, Ohio*.

**A Close Up of the Cardinal.**—Last summer, 1933, we had the same pair of Cardinals that has been with us for several years, winter and summer. They are very tame and come to the feeding station whenever they are hungry and food is scarce elsewhere, but birds generally get their own food when possible. In the summer of 1932 they first nested in the yard of a neighbor to the east of us, in a dense shrub, but cats or Blue Jays destroyed the nest and the eggs were thrown out on the ground. They then built in the yard west of ours, about eight feet up in a mulberry tree, where sprouts grew upright, making a perfect nesting site. But when the young birds were beginning to feather, a pair of Blue Jays tried to do away with them. The brave parents fought them off in a terrific

battle, to come out the victors, although the birds were barely saved. The nest was upset and the young clung to it for dear life, but I climbed on top of the step ladder and righted the nest and birds, while the parents sat in the tree nearby. So they lived and left the nest in due time. The parents stayed as usual through the winter.

Last spring (1933) they first nested in a Colorado Spruce, about three feet from the ground. When the mother was nesting a violent storm came one night and all but wrecked the nest, but the brave mother held fast through it all, although trees were bent almost to the ground and havoc wrought every place. I was sure that they could not survive, but at dawn I went out to see and they were safe and sound. But a cat was under the tree, ready to spring upon the mother which had fought through. That cat mysteriously disappeared for some reason, forthwith!

The next nest I thought was in the neighboring yard, but when cleaning the yard this spring I found it here in another thick spruce about four feet up. After the second brood was out of the nest they were all over the yard, begging for food, and the father was still feeding them while the mother was brooding for the third time in a clump of *Aralia spinosa* just outside the dining room window, about eight feet up—one of the best nesting sites one could imagine, as cats and squirrels cannot get through the thorny plants and leaves. We watched this nest of birds from the inside of the room through the window. Since Cardinals are largely seed eaters, I wondered what they would feed the young. Have others seen them feed the young at close range? They evidently fed them many soft-bodied insects of various kinds. I noticed them standing on the edge of the nest time and again, apparently with nothing in their bills, but all at once food appeared in the bill and the young were fed. It seemed to me to come from regurgitation, for they would produce this food for each of the three birds before they left the nest. The mother sat on the nest most of the time, as the father was busy with the other insistently hungry brood of three, and followed them about to keep them from danger. He tried to "fill the bill" as best he could, while his wife was attending to home duties. She can sing as well as the male, but not in the same way nor so often. She often sang when brooding on the nest. She generally sang when excited and often just before she left the nest. I have noticed other birds doing the same thing, that is singing when excited. The Carolina Wren does this, and a different song. He sings two, three, or four notes, according to conditions about him. He says "*whittle-y, whittle-y, whittle-y*", or, as we Quakers like to say, "*Whittier, Whittier, Whittier*", but sometimes he says "*Whittle, whittle, whittle*", and I have heard him say not "*teakettle*" as some say, but with another syllable in the word, as "*Te-a-kettle, te-a-kettle, te-a-kettle*", repeated three or four times, loud and bold as if he were as big as a jay.

I did not know the Cardinal nested three times in a season until these birds thus nested thrice in our yard. I banded the third brood of young and am hoping to see some of them this summer, although I have not seen any of the second and third broods since fall. But the parents come often to feed and get water. They awaken me each morning with their song. They sing twice as much if I answer them each time they whistle. When other birds, as English Sparrows and Starlings, bother them while eating, I can scare them away without disturbing the Cardinals. They seem to know.—MRS. HORACE P. COOK, *Anderson, Ind.*

**Observations of the Ferruginous Rough-leg in Iowa.**—The recorded occurrences of the Ferruginous Rough-leg (*Buteo regalis*) in Iowa seem to be sufficiently scarce to warrant publication of these observations made by the writer during the spring of 1934.

On March 29, two birds were seen two miles southwest of Perry, Dallas County. One was noticeably larger than the other, apparently indicating a mated pair. Both had light gray tails, which were dark terminally. The backs were rusty, and the underparts were light. The rusty tarsal feathering was noted on one of the birds as it perched near by. The black spot on the under side of the wing, diagnostic of a Rough-leg, was evident in both individuals. Another pair was seen at Long Pond, Dallas County, a few minutes later. This is five or six miles west of where the first pair was noted, and certainly was a different pair. On April 9, a single bird was seen two miles northeast of Milford, Dickinson County. The spot on the under-surface of the wing, the rusty back, gray tail with dark terminal band, all were noted. A single bird was seen on April 11, two miles southwest of Round Lake, Clay County. This bird was seen to advantage as it perched on a telephone post near by. It probably was a male. On April 17, another, probably a female, was observed at Four Mile Lake, Emmet County. The underparts of this bird were darker, except on the throat, and the other field characters were indicative of this species.—PHILIP A. DUMONT, *Des Moines, Iowa*.

**Observations on the Chimney Swift.**—For several seasons I have been especially interested in the nesting of the Chimney Swift (*Chaetura pelagica*). On two occasions I have lowered myself down a chimney in order to obtain closer observation of the nest and young birds. On the first occasion I found the nest about twenty feet below the top of the chimney. The nest was composed of small, dry twigs, a seven-inch length of string, a piece of straw, and three inches of bee wire. At the beginning of the nesting season I had placed three dry twigs on the top of a ledge in the chimney, allowing them to protrude about an inch beyond the edge. To one of the twigs I attached the three-inch bit of wire, and I painted the ends of the two remaining twigs black. I was somewhat surprised, however, to find later that the birds had used the wire and one of the twigs in the construction of the nest. The string used in nest building had also been placed by me in the chimney well. The straw is not accounted for. All the pieces in the nest were glued together with a substance secreted by the builders. Three nestlings occupied the nest this season, and all were successfully reared. Later in the season the broken nest was found at the bottom of the chimney well.

In July, 1934, I located another nest thirty-five feet below the top of the chimney. This family consisted of six birds, all of which were captured; four were banded and released. Two of the older nestlings died upon being taken to the top of the chimney. I believe this was caused by the heat. At the top of the chimney the air was excessively warm. The air at the level of the nest was cool. I expect to continue my observations of the Chimney Swift next season, and would be glad to correspond with others who are interested in this species.—LAWRENCE E. HUNTER, *Dallas City, Ill.*

**Changes in the Habits of the Prairie Chicken.**—In a former note the writer mentioned the habit of prairie-nesting birds of resting in the shade of fence posts during extremely hot weather. This last June (1934), while in western North Dakota, Prairie Chickens and Sharp-tailed Grouse were found on numerous

occasions resting behind telephone poles along the country roads. The average pole casts a shadow just about as wide as the width of the sitting bird and here they were found during the worst heat of the day. Several times as many as eight and ten birds would be found in the shade of consecutive poles, and although they were located only a short distance from a slowly moving ear, they would not budge from their places.

Below Sioux City, Iowa, is a flat area known as the "Hornick Bottoms", and here great quantities of winter wheat is planted. This region is the favorite feeding ground of migrating Golden Plover, and it was while observing these birds on several occasions, that another interesting habit of the Prairie Chicken was discovered. The wheat fields are usually of several hundreds of acres in extent, and in plowing the farmers will often miss a stretch of weed grown stubble a foot or two wide and several rods long. It is here that the wary Prairie Chicken will rest during the day, in almost assured safety, as hunters and dogs do not get out on the low green growth of new wheat in their search for game. I have flushed out birds from these narrow bands of stubble, and from the amount of droppings knew that the birds had been coming back day after day. Cottontail rabbits also use this same site for day-time resting places, showing that both birds and animals take advantage of this man-made haven.—W. M. YOUNG WORTH, *Sioux City, Iowa*.

**A Snowy Heron Record for Franklin County, Indiana.**—The smaller of two brothers, hoeing corn in front of my home, came rushing in as I sat writing at my desk on the morning of July 28, 1933, and told me that there was a great flock of strange, white birds approaching from the west. However, they had reached the cornfield almost by the time the boy got to me, and by the time I had snatched a pair of field glasses and got outside they had disappeared beyond the woods that skirted the eastern edge of the field. The older brother informed me that he judged that there were between fifty and seventy-five of them. They were not pigeons, they were sure, nor ducks, nor geese. The smaller brother said that they were some kind of really strange birds. "What did they most resemble?" I asked. "Looked like a flock of 'White Shite Pokes'", the younger brother said. "White Shite Pokes"! Could it be, I wondered, that the boys had seen a flock of Snowy Herons? I had never seen any, nor had I ever heard of any being seen in my immediate neighborhood.

Along towards evening on August 1, 1933, I went up on Right Hand Fork, a meandering, rocky stream that lies northeast of my home, to observe some Spotted Sandpipers (*Actitis macularia*) that I had seen there while on a hurried trip some days before. I reached the stream some distance above where I had seen the sandpipers, and not yet having encountered them, I was watching for a moment through my field glasses two adult Little Blue Herons (*Florida caerulea*). Both took wing at once, and as I lowered my glasses I chanced to glimpse a white object near the top of a small, black hickory that stood on the right bank of the stream. My first thought, unusual as it may seem, was that the object was an old white turkey belonging to a farmstead a short way behind. I saw my mistake at once. I trained the glasses on the bird and noted immediately the yellow feet, black legs, and dark bill, also the plumes on the back of the head. It was a Snowy Heron (*Egretta thula thula*). It was not shy, for to begin with I was not more than forty feet away, and it allowed me another ten-foot approach before it flew, circled not higher than thirty feet over my head a half dozen times, flew across the creek and alighted in the top of a taller hickory situated on a bluff.

I studied it some more on its new perch and then, wishing to see it in flight again, I tossed several stones into the shrubbery at the base of the tree. A number of times I threw before it flew, and then it circled four times above me, straightened out and disappeared upstream, back towards the woods. I wondered after seeing this Snowy Heron if it was not one of the flock that the boys had seen on July 28. I made several inquiries afterward, and found one boy who had seen a single Snowy Heron near where I had seen mine. It was probably the same one, as he had seen it two days later.—GRANT HENDERSON, *Route 6, Greensburg, Ind.*

**The Turkey Vulture in Southern Arizona.**—A recent article (WILSON BULLETIN, XLVI, pp. 93-95, 1934) by Margaret Morse Nee, stating that only three Turkey Vultures (*Cathartes aura septentrionalis*) were seen on a motor trip of 678 miles in Arizona proved a distinct surprise to me. She does not give the route travelled, but judging from the time of year she started I would guess that she covered the cooler, northern part of the state. Apparently here the Turkey Vulture is not common. I feel that she would have encountered many more had she traversed the hot, southern portion of Arizona.

My observations, confined to the Tucson area, are as follows: During the summer of 1932 I made thirteen weekly trips from Tucson to Oracle, a distance of thirty-five miles. The highway leads through practically nothing but Lower Sonoran desert, the elevation being about 2,400 feet at Tucson and reaching 4,500 feet at Oracle, where the Upper Sonoran oak belt begins.

Turkey Vultures were counted only on the morning, out-going trips, a total of ninety-three birds being recorded. The average was about seven birds per trip, making one bird to each five miles. The largest number seen was eighteen birds on August 28, the smallest one bird on August 21 and September 4. It is very evident that the variation was extreme. A person who drove by on August 21 would have reached a very erroneous conclusion in regard to the actual distribution of these birds.

The food available along the highway consisted chiefly of jack rabbits, round-tailed ground squirrels, Texas Nighthawks, and a few small birds, all of which had probably been killed by passing automobiles.

Observations for 1933 and 1934 were not so extensive. However, from my home in the Rillito Valley, I could look out almost any time of the day during the summer months and count four or five Turkey Vultures circling about. Binoculars would often reveal several more in the distance. A few times I have noted as many as twenty birds over one spot. On May 30, 1933, ten Turkey Vultures were seen on a trip to Madera Canyon, Santa Rita Mountains, about thirty-five miles south of Tucson.

So far as I can see, in the Tucson area, there has been no change in the status of the Turkey Vulture since 1931.—ANDERS H. ANDERSON, *Route 2, Box 105-C, Tucson, Ariz.*



## ORNITHOLOGICAL LITERATURE

CHECK-LIST OF BIRDS OF THE WORLD. VOLUME II. By James Lee Peters. Harvard University Press, Cambridge, Mass., 1934. Pp. i-xvii+1-401. Price, \$4.00.

The second volume of this notable work appeared in the middle of June, there being an interval of about two and a half years between the first and second volumes. The author reports that his work on the second volume was completed early in 1933. The plan of this work follows that of Volume I (which was announced in the *WILSON BULLETIN* for December, 1931, XLIII, p. 320). Volume II treats of the Galliformes, Gruiformes, Diatrymiformes, and Charadriiformes (grouse, quail, cranes, rails, sandpipers, plovers, gulls, terns, and auks), thus including a considerable number of the "game birds". In the list is given the scientific name, source of original description, and world distribution. Vernacular specific names are omitted, for the reason that they have only national use. Vernacular family names are added in the Table of Contents, but the author remarks in the Preface that, "inventing English names for birds that do not have them is a waste of time." As this series of volumes nears completion the magnitude of it will become more apparent, and it is to be hoped that early volumes are being issued in sufficient numbers to accommodate late buyers.—T. C. S.

LES OIEAUX DE FRANCE. VOLUME II. By A. Menegaux. Published by Paul Lechevalier & Sons, 12 Rue de Tournon, Paris, VI. Pp. 450. Figs. 148. Pls. 80 (64 in color). 1934.

"The Birds of France" here appears in the second volume. This volume treats of the grebes, auks, petrels, terns, gulls, plovers, sandpipers, ducks, geese, cormorants, pelicans, storks, herons, cranes, and rails—the water birds. The volume is arranged in two parts. Part I is the systematic text, and covers about 300 pages. It includes 130 line drawings to illustrate various morphological features, e. g., head, tail, wing, foot, bill, etc. Besides this systematic treatment of the water birds of France, there is a very full treatment of the parasites found on the birds of the list. Eighteen genera, including 194 species, of parasites are described, all but three of the species belonging to the Mallophaga. A list showing the distribution of the parasites on the bird species is also given. There are line drawings (eighteen in number) to illustrate practically all of the genera of parasites.

Part II is called the Atlas, which contains the pictures. There are eighty full page plates, sixty-four of which are in color. Each plate is accompanied with a page of descriptive text matter, including plumage, measurements, food habits, and distribution. Each plate illustrates one species, but both sexes are shown in cases where they differ. A useful paragraph in the text for each species gives the vernacular names in the French, German, English, Spanish, Italian, and Portuguese languages.

This volume on the water birds of France follows the same general plan as in the earlier volume on the hawks, grouse, pigeons, woodpeckers, etc. (reviewed in the *WILSON BULLETIN*, June, 1933, XLV, p. 91). In many respects the second volume impresses us as being an improvement on the first volume of the series. We do not find a statement as to the price of Volume II, but Volume I was priced at 50 francs. Volume III is projected to treat the song birds of France. These volumes are of uniform pocket size ( $4\frac{1}{2} \times 6\frac{1}{4}$  inches), and should be most helpful to bird students travelling in Europe.—T. C. S.

A FIELD GUIDE TO THE BIRDS, GIVING FIELD MARKS OF ALL SPECIES FOUND IN EASTERN NORTH AMERICA. By Roger Tory Peterson. Pp. i-xxiv+1-167. 1934. Houghton, Mifflin Co., New York. Price, \$2.75.

This handbook is intended as a popular manual for "birding", rather than as a reference book in ornithology: and as such it admirably fulfills its purpose, and will be found helpful by all amateurs who do field work. However, the author's failure to fully treat the birds of the Middle West is noticeable, and must be taken into account in this region. As examples of subspecies which are found in the Middle West, not included by the author, may be mentioned, the Lesser Loon (*G. i. elasson*), the Northern Bald Eagle (*H. l. alascanus*), the Western House Wren (*T. a. parkmani*), the Bendire's Crossbill (*L. c. bendirei*), and the Dakota Song Sparrow (*M. m. juddi*). In some of these cases only the species are treated, doubtless on the assumption that the subspecies are not distinguishable in the field. However, the author claims ability to distinguish in the field "typical individuals" of the Newfoundland Crossbill from the Red Crossbill. These omissions would not be worth mentioning were it not for the fact that subspecies along the Atlantic coast seem to be pretty well covered. The utility of the book as a field guide is not much impaired by such omissions because the student in the field is not much concerned with subspecies; if he is, he collects.

The author attempts to describe the bird as it may be recognized in the field. Descriptive facts not useful in field identification are omitted. However, a brief statement of the range of each form listed would have added much to the book's value for field purposes, without unduly adding to its bulk. Too little attention is given to the matter of range by many writers. Students might often be saved from error had they better knowledge of the usual distribution of a species or subspecies in question.

The illustrations form an important feature of the book. There are four color plates and thirty-two plates in black and white, each showing the portraits of numerous species. Most of the portraits are in the form of diagrams emphasizing the field marks.—L. W. W.

BIRD CITY. By E. A. McIlhenny. Pp. 1-203. Many photographs. 1934. Price, \$3.00 (E. A. McIlhenny, Avery Island, La.).

The story of the wonderful man-made "Bird City" is presented in the form of a conversation between the author and his two grandsons during a day spent together in the blinds. It tells of the routine of tragedy in the daily existence of the wild things of the swamps—with many examples of the intricate mechanism in the balance of nature. One striking fact recorded is the case of a brood of five half-grown Florida Gallinules caring for and feeding a second brood of seven brother-sister young, just hatched, while the parents of both were in the nearby rushes preparing a nest for a third brood! Eventually both older broods will help care for the youngest ones. The account of how the young herons are taught to fly is an interesting one. The author treats the habits of flying as wholly acquired by a learning process.

Not by any means the least interesting feature of this book is the story of how "Bird City" came to be. At the time of Mr. McIlhenny's boyhood practically all of the herons and egrets had been driven from Avery Island by the plume hunters. About the year 1893 he located two nests of the Snowy Heron, each with four young. These he took home and reared in large cages. They became so tame that they followed him about and ate from his hand. But that

fall, at migration time, the eight birds left. Next year six of the eight returned, though one later deserted. Four of the remaining five mated and nested on his premises. From the two nests eight young were hatched and raised. The young and old were tamed as in the preceding year. On November 17 all of the thirteen healthy birds migrated. In the succeeding spring all of the thirteen birds returned—in two different groups. In this third season five nests were built and twenty young ones were raised. By 1908 the colony had grown to 10,000 birds, including various other species of the heron kind. By 1912 there were 120,000. Since that year the population of the "City" has remained at about 100,000, and a good deal of labor is required in providing for the needs of so many.

Early in the history of the colony the Little Blue Herons and the Louisiana Herons voluntarily joined it. When any of these birds built a nest and laid a full clutch of eggs Mr. McIlhenny removed the eggs and substituted a clutch of Snowy Heron eggs. The foster parents reared a brood of Snowy Herons, while the Snowy Herons, which were robbed, at once laid another set of eggs. Thus the rarer Snowy Herons increased more rapidly than if left to their own devices. It has been necessary for Mr. McIlhenny to furnish not only a great deal of food for his birds (especially for his winter visitors), but he has found it necessary also to furnish nest material. Thus, each year he hauls from twenty-five to thirty-five truck loads of twigs (size of a lead pencil, or a little larger) to be dumped in piles near the rookery. These sticks are all used up by the birds in the construction of their nests. It is an interesting story, and well told.

And, as Mr. McIlhenny told the story of "Bird City" to his grandchildren, so we think that many other children would be fascinated by having the same story read to them from this book.—T. C. S.

THE BIRD FAUNA OF THE GALAPAGOS ISLANDS IN RELATION TO SPECIES FORMATION.

By Harry S. Swarth. *Biol. Reviews*, IX, No. 2, April, 1934, pp. 213-234.

The author visited the Galapagos Islands in 1932, after several years of close study of the world's collections of birds from that region. Explanation of the avifauna of this region hinges chiefly upon the history of the islands themselves. Darwin, Salvin, and Ridgway regarded the islands as of oceanic origin, through the agency of volcanic activities. Baur, Van Denburgh, and others considered that the Galapagos Islands arose by the severance of a former land connection with the American continent. Careful study of the bird life affords some evidence on this question. Mr. Swarth's studies lead him to the conclusion that the birds of the Galapagos Islands are of diverse origin—that they are "clearly not derived from the South American mainland directly to the eastward". At least one bird, the Galapagos Penguin, is an immigrant from the south, carried northward, perhaps, by the Humboldt Current. Other birds seem to be definitely related to West Indian forms. Still others have a world wide distribution. Altogether Swarth's analysis of the Galapagan avifauna leads him to the conclusion that the islands were first populated by "chance-controlled wanderers" from various directions. And, of course, this conclusion supports the theory of oceanic origin of the islands.—T. C. S.

FIGHTING THE INSECTS. *The Story of an Entomologist*. By L. O. Howard. 1933. Pp. i-xvii+1-333. The Macmillan Co., New York. Price, \$2.50.

Some justification is likely to be expected for presenting this review of a title by an entomologist, even though it may be autobiographical. It is thought to be an opportune occasion to make reference to Dr. Howard's brief contact

with the Wilson Ornithological Club, and his unfailing courtesy and magnificent simplicity. Sometime during 1915 the writer, as President of the W. O. C., wrote to Dr. Howard, then the Permanent Secretary of the American Association for the Advancement of Science, relative to the possibility of affiliation of the smaller society with the American Association. Dr. Howard was very cordial, and after some inquiry and doubtless some investigation, the matter was placed before the A. A. A. S. Council and acted upon favorably. And from 1916 to the close of Dr. Howard's Secretaryship this relation remained. When Dr. Howard retired as Secretary to become the President, influences were successful in securing a change in classification. This, however, is incidental, and another story.

The writer has a very vivid mental picture of Dr. Howard at the Columbus meeting of the American Association in 1915, so soon after the correspondence. Though we had no personal acquaintance with Dr. Howard, he was immediately recognized as he came down the hallway in short, shuffling steps, and with a cigar stub, apparently out, hanging downward between his lips. The book under discussion, which is largely biographical, fully corroborates our impressions of the man. His simplicity is shown by the pleasure with which he enjoyed various honors bestowed upon him and the frankness with which he tells about it.

In reading the book we discovered only one reference to birds. Dr. Howard was attending an Agricultural Congress in Vienna in 1907. The protection of birds was being discussed, and Dr. Howard was invited to speak. He took the ground that "by far the most important enemies of injurious insects are other insects" (p. 191), rather than birds. And he suggests that birds should be protected for sentimental reasons, rather than because of their value as insect destroyers—a view which is coming to be more and more recognized. The book is full of anecdotes, and is enjoyable reading.—T. C. S.

A REVISION OF NORTH AMERICAN HOUSE WRENS. By Harry C. Oberholser. Reprinted from Ohio Journ. Sci., XXXIV, No. 2, March, 1934. Pp. 86-96.

There are two features in this paper. First, Dr. Oberholser uses the specific name *domesticus* in place of *aedon*, on the supposition that Vieillot's work designating the type of the eastern race as *aedon* was not published until 1809, a year after Wilson proposed the name *domestica*. And thus by priority, if the supposition is correct, the House Wren should be known as *Troglodytes domesticus* (= *Troglodytes aedon*). The second point in the paper is the proposal of a new subspecies of House Wren for Ohio, to be known as the Ohio House Wren (*T. d. baldwini*). Specimens of both *domesticus* and *baldwini* are reported in this paper from Connecticut, Florida, Georgia, Indiana, Louisiana, Michigan, New York, Pennsylvania, Texas, Virginia, and West Virginia. The Western House Wren (*T. d. parkmani*) is still recognized and specimens are reported from the following states, among others: Indiana, Florida, Texas, Louisiana, and Michigan. That is, these states have yielded three of the three subspecies of the House Wren (at least during the non-breeding season)—from Florida to Michigan and on to Texas. It would evidently be hazardous to name the subspecies of any House Wren seen in the field within this wide range. *T. d. baldwini* and *T. d. parkmani* are also both recorded from Michigan during the breeding season; while *T. d. domesticus* is recorded from there on May 27, which very nearly falls within the breeding season. If this latter bird was migrating through Michigan and headed eastward, how may we account for this peculiar route? If it was not a migrant then Michigan may boast of three breeding subspecies of the House Wren—three

“geographical races”. We can understand the desire to do justice to the efforts of early workers, even at the inconvenience of living ornithologists; but we confess to an inability to understand the occurrence of three breeding geographical races within so limited an area, even after granting the somewhat more northerly occurrence of *T. d. parkmani*, as shown by the data in this paper.—T. C. S.

THE BIRDS OF CHURCHILL, MANITOBA. By Percy A. Taverner and George Miksch Sutton. *Annals Carnegie Museum*, XXIII, May, 1934. Pp. 1-83. Pls. I-XIV.

One hundred and forty-two species of birds are reported, not including ten which are regarded as hypothetical. All species are well annotated, the annotations in some cases being important systematic discussions. The sequence is that of the A. O. U. Check-List, and the authors have tried to follow the nomenclature of that authority as far as possible. All birds are listed in binomial terms. In some cases the subspecies are named in the annotations, or the probabilities are discussed. In this respect we believe that this report may well be taken as a model. Mr. Taverner is “convinced that Kumlien’s Gull is a distinct species and not a hybrid as is represented in the last A. O. U. ‘Check-List’”. Two forms of the Horned Lark were found, *O. a. alpestris* and *O. a. hoyti*. *Hoyti* was found to be the breeding form, but individuals recognizable as *alpestris* (the latter having a more easterly range) remained to interbreed with *hoyti*. A somewhat similar condition was found to prevail with the Water-Thrushes (*Seiurus noveboracensis noveboracensis* and *S. n. notabilis*). The specimens taken at Churchill were all intermediate between these two. The senior author refers to ninety-eight specimens of these Water-Thrushes in the National Museum of Canada, which were collected throughout Canada. “White *noveboracensis* and yellow *notabilis* with their accompanying characters are scattered indiscriminately throughout the series”. While some of these specimens were migrants, yet in the forty which could be regarded as breeders “practically the same confusion persists”. These unprejudiced observations are made by one who is not opposed in principle to the subspecies concept, but by one who is not carried away, apparently, by a scientific fetish. The plates are reproductions of some excellent photographs both of birds and habitats. The colored frontispiece by Major Brooks shows a Hudsonian Curlew and downy young.—T. C. S.

ANNUAL REPORT OF THE HAWK AND OWL SOCIETY. *Bulletin No. 4*. June, 1934.

Besides the reports of officers we find on these pages reports on the present status of the hawks and owls in two states, viz., Vermont and Arizona. Printed correspondence shows a pitiful ignorance of hawks and their habits by occasional state officials. For instance, an official in the Department of Conservation of the state of Illinois is quoted as follows: “As to the killing of hawks, owls, eagles, etc., I beg to advise that all species of hawks and owls are considered predatory birds, and are not protected by the game laws.” They were all alike to him. But an editorial comment shows that only six species of raptors are unprotected by the game laws of Illinois. With men of this calibre in official positions the laws are practically nullified. However, there are indications that a new day in conservation is close at hand. And as soon as a supply of trained men is available, they will be gradually placed in the state positions to administer the wild life of the country. Let us then encourage young men to take training for this work, as it is offered at Wisconsin under Leopold, at Iowa State under Errington, and at Cornell under Allen, and at other similar places when established. Other recent papers on the protection of hawks and owls are as follows: “Birds of Prey”,

by Warren F. Eaton, in the Transactions of the 20th American Game Conference, 1934; "The War on Winged Predators", by William Vogt, in the American Forests, June, 1934.—T. C. S.

IN DEFENSE OF PELICANS. By Ben H. Thompson. Calif. Fish and Game, Vol. 19, No. 3, July, 1933, pp. 188-192.

Again Mr. Thompson comes to the defense of the White Pelican, but this time it is in specific reply to a writer who denounced this bird as a nuisance. It is an interesting paper, and closes with the suggestion that instead of being the "worst of all" predators upon fish, it may be the "best of all", because a large part of the pelican's diet may consist of non-game fish which prey upon game fish.—T. C. S.

BULLETIN OF THE ESSEX COUNTY ORNITHOLOGICAL CLUB OF MASSACHUSETTS. Salem, 1933. Pp. 1-56. Price, 75 cents (S. G. Emilio, 7 Winter St., Salem, Mass.).

Mr. Griscom reports on the exceptional abundance of warblers in the spring migration of 1933, comparing it with the year 1917. Those students of migration who are interested in the phenomenon of bird waves will find this paper interesting. The late Dr. C. W. Townsend discusses the predatory habits of the Northern Shrike and some winter feeding habits of the Yellow-bellied Sapsucker. The annual composite bird list is given.—T. C. S.

THE AUDUBON YEARBOOK [INDIANA] 1934. Published by the Indiana Audubon Society. Pp. 1-84. Numerous illustrations. Price, \$1.00 (Miss Margaret R. Knox, 4030 Park Ave., Indianapolis).

Dr. Blatchley offers a plea for the preservation of the Sand Dunes of Indiana. There is also a report that 50,000 Crows were killed in the state of Indiana during the first six months of 1934. A vivid account of netting Passenger Pigeons is given by one of Indiana's pioneers. There is also a paper by Mr. McAtee on "The Mutual Relations of Farms and Birds", which gives a good review of economic ornithology as exhibited on the farm. A paper by Mr. M. L. Fisher presents a digest of many questionnaires on the habits of the Starling in Indiana. Many other short papers are included in this issue of the Yearbook.—T. C. S.

BIRDS OF THE CHICAGO REGION. By Edward R. Ford, Colin C. Sanborn, and G. Blair Coursen. Pub. jointly by the Ill. Aud. Soc. and the Chicago Acad. Sci. (Order from the latter at 2001 N. Clark St., Chicago). May, 1934. Pp. 1-63. Price, 50 cents.

This new list for the Chicago region includes 371 species and subspecies, as contrasted with 317 species listed by Woodruff in 1907. The old list was practically limited to Cook and Dupage Counties, with the northern portion of Will County (Ill.) and Lake County, Indiana. The new list covers a much wider area, including five counties in Wisconsin, seven counties in Illinois, and seven in Indiana. The annotations include a statement as to status and the migration dates.—T. C. S.

FIFTY YEARS OF BIRD MIGRATION IN THE ANN ARBOR REGION OF MICHIGAN. By Norman A. Wood and A. D. Tinker. Occasional Papers Mus. Zool., Univ. Mich., No. 280, May 21, 1934, pp. 1-56.

The authors present under this title fifty-three pages of tables showing the migration dates for 212 species and subspecies. An early and late date is given

for each year from 1906 to 1930, inclusive; an average date for these twenty-five years is also given. And with the latter there is also given an average date for the preceding twenty-five-year period, based on data published by Mr. Wood in 1906. The paper is a valuable contribution to migration data.—T. C. S.

EFFECT OF THE INTRODUCTION OF EXOTIC ANIMAL FORMS. By Rudolph Martin Anderson. Proc. Fifth Pacific Sci. Congress, 1933, pp. 769-728. Printed by the University of Toronto Press, 1934.

Dr. Anderson herein gives a splendid brief history of the known natural and artificial introductions of exotics of all kinds. Details of various introductions throughout the world are given, and local effects are discussed. A summary of generalizations on the good and bad effects of such introductions is finally presented.—T. C. S.

WILD LIFE AS A PROFESSION. By Paul L. Errington, Sci. Month., XXXVIII, June, 1934, pp. 554-560.

A paper of interest to all who may be contemplating a career in the field of game management or similar work. The young man who is fond of outdoor life and the study of nature, but who sees no opportunity of going into it professionally, will find this discussion of much help. Now is the time to prepare for this new profession.—T. C. S.

MANAGEMENT POSSIBILITIES FOR RING-NECKED PHEASANTS AND HUNGARIAN PARTRIDGES. By Lawrence E. Hicks. Proc. 27th Convention Internat. Assoc. Game, Fish, and Conserv. Commissioners. 1933.

Dr. Hicks' paper on this subject will be of interest to those who are concerned with game management.—T. C. S.

A FLUSHING APPARATUS DEvised TO SAVE GROUND NESTING BIRDS AND MAMMALS DURING MOWING OPERATIONS. By P. F. English. Game Div. Bull. No. 2. Mich. Dept. Conservation. 1934.

In recent years much consideration has been given to the problem of the destruction of adult birds and nests by mowing machines. Several types of "flushing rods" have been designed to attach to the tongue of the machine and project laterally in front of the cutting knife. The first one became known as the Wisconsin bar. Later ones were known as the Iowa bar and the Minnesota bar. The modification here described by Dr. English may become known as the Michigan bar. In one case where 280 acres of hayfields were mowed without any kind of a flushing device, 64 per cent of the hens were killed; on another parcel of 258 acres only 33 $\frac{1}{3}$  per cent of the birds were killed where a flushing device was used.—T. C. S.

THE GROWTH OF SOME YOUNG RAPTorial BIRDS. By E. Lowell Sumner, Jr. Univ. Calif. Publ. Zool., XL, pp. 277-308, 1933. Price, 50 cents.

This statistical study is based upon three species, viz., the Pacific Horned Owl, the Barn Owl, and the Golden Eagle. Observations were made on the temperature changes, weight increase, food consumption, bone growth, and feather development.—T. C. S.

GEOGRAPHICAL VARIATION IN *BELONOPTERUS CHILIENSIS* (MOLINA). By Pierce Brodtkorb. Occasional Papers Mus. Zool., Univ. Mich., No. 293, June, 1934.

*Belonopterus chiliensis* is a South American species which now embraces four subspecies, including one newly described by the author in this paper.—T. C. S.

For some years, beginning in 1923, Prof. O. A. Stevens, of North Dakota State College, at Fargo, has been issuing a mimeographed bulletin under the title, "North Dakota Bird Notes". It appears weekly from March to June, covering the migration season. It gathers up information from many parts of the State, and is distributed to the newspapers of the State. Prof. Stevens tells us that about seventy-five copies were distributed this year, chiefly to the newspapers. This ought to be a practical means of developing public interest in birds.

The *St. Louis Bird Club Bulletin* for May and June are at hand. The St. Louis Bird Club made an interesting experiment in placing ad cards in street cars, the cards reading, "Protect the birds. They will reward you with beauty and song." Notes on extinct birds in Missouri, migration lists, with numerous short items, fill the Bulletin.

The *Redstart* is the youngest of the local bird periodicals. It is published monthly by the Brooks Bird Club, of Wheeling, W. Va. The Editor is Mr. Thos. E. Shields. This Club has conducted an essay contest, prizes being given to the authors of ornithological essays which are judged to have the greatest merit. The *Redstart* is mimeographed and is similar in its aims and methods to other local publications which are now being issued.

"Conservation Economics" is the title of a paper by Professor Aldo Leopold in the *Journal of Forestry* (XXXII, May, 1934) in which he points out some of the disharmonies in the adjustments of the numerous conservation and relief enterprises put into operation under the "New Deal". For illustration, we quote: "There was, for example, the road crew cutting a grade along a clay bank so as to permanently roil the troutstream which another crew was improving with dams and shelters; the silvicultural crew felling the 'wolf trees' and border shrubbery needed for game food; the roadside-cleanup crew burning all the down oak fuel wood available to the fire-places being built by the recreation-ground crew; the planting crew setting pines all over the only open clover-patch available to the deer and partridges; the fire-line crew burning up all the hollow snags on a wild-life refuge, or worse yet, felling the gnarled veterans which were about the only scenic thing along a 'scenic road'. In short, the ecological and esthetic limitations of 'scientific' technology were revealed in all their nakedness." The entire paper is an instructive discussion in a very new field. Perhaps the lesson to be drawn is that the business of conservation in practice calls for a new type of trained man, and the breadth and directions of necessary training is the surprising thing. It probably means the setting up new departments in the universities for the proper training of this new profession.

The *American Midland Naturalist* for May, 1934, contains two papers each dealing exhaustively with a genus of sedges in Indiana, viz., the genera of *Cyperus* and *Scirpus*. Not only is the distribution in Indiana fully treated, but the species are illustrated with full page drawings, making identification easy in any locality. The entire July number is occupied by a scholarly report on the Amphibia of Kansas, covering 250 pages. In addition to the usual catalogue account of each species, keys are presented for adults, for tadpoles, and for eggs of the species found in that state. All of these papers are exceptionally useful.

The August number of *News from the Bird-Banders* (IX, No. 3, Museum of Vert. Zool., Berkeley, Calif.) contains a general plea for coöperation in banding work, and makes specific mention of many projects now under way in which



assistance is wanted. Mr. E. L. Sumner is reported to have evidence that a Wren-tit lived to be ten years old, at least, and belief is expressed that this is a unique record. We may call attention to a record of a ten-year-old Cardinal published by Mr. Ganier in the *WILSON BULLETIN* (for December, 1933). This bird has now passed its eleventh season, as later reported by Mr. Ganier.

In the *Florida Naturalist* for July R. J. Longstreet writes on Wilson's Plover in Florida—its various habits and the marks which distinguish it in the field from the Semipalmated and Piping Plovers. The October number presents a report by Dr. H. R. Mills on some rookeries in the Tampa Bay region which have recently been given warden protection. This protection has already resulted in a marked increase in the bird population. In a paper on bird banding E. W. Davis reports on the cannibalistic habits of immature Brown Pelicans.

The *Migrant* for March, 1934, contains an account of the night events in a roost consisting mainly of Starlings. The nesting of Swainson's Warbler in Tennessee is reported. In the June number we find an article by Professor Mayfield on the song of the Mockingbird. He places the Carolina Wren, Blue Jay, and Cardinal first of birds mimicked by the Mockingbird. Dr. Mayfield also announces that he is continuing his study of this problem, and would be glad to hear from others on the same subject. Benj. R. Warriner tells of a pair of Prothonotary Warblers nesting in a hornet's nest for two successive years. The number for September has an article by Harry C. Monk on the habits of the Warbling Vireo. Mr. Ganier presents a list of public and private libraries in Tennessee which contain the works of Wilson and Audubon. The *Migrant* is edited by Mr. Geo. B. Woodring, 1414 Stratton Ave., Nashville, Tenn.

The second volume of the *Nebraska Bird Review* has appeared regularly during the present year. Each issue contains one or more leading articles and many short "General Notes"; migration reports and proceedings appear occasionally. One of the most important articles is a paper by Prof. Swenk on "The Present Status of the Whooping Crane" (October, 1933). The paper gives a history of the species with particular reference to Nebraska, over the last twenty-year period. A list of specimens and sight records and maps of distribution, with bibliography, make the paper a very complete one. The important conclusion seems to be that this species is not as near extinction as many previous writers have assumed. Prof. Swenk also has another article (July, 1934) on the Carolina Paroquet as a Nebraska bird, collecting the known records of this bird through the Missouri Valley. The October number (1934) contains an important article by Messrs. DuMont and Swenk on the Canada Goose and its varieties. It is a detailed report on 404 specimens of the various forms of the Canada Goose collected in Nebraska about fifty years ago by D. H. Talbot, of Sioux City, or by his collectors, and later deposited in the Museum of the State University of Iowa. The paper is especially interesting in showing the intergradation in dimensions of the three subspecies of the Canada Goose which are involved in this study. The *Review* is published by the Nebraska Ornithologists' Union and edited by Prof. Myron H. Swenk, 1410 N. 37th St., Lincoln. The subscription rate is \$1 per year.

The *Iowa Bird Life*, now completing its fourth volume, is published quarterly by the Iowa Ornithologists' Union, and edited by Mr. Fred Pierce, Winthrop, Iowa (50 cents per year outside of Iowa). It contains much local material in the form of long and short articles. About a year ago (December, 1933) it pre-

sented a useful history of extinct amateur ornithological serials published in whole or in part in Iowa—thirteen of them. The number for March, 1934, gives a list of all known published items on Iowa ornithology during the preceding year. This is a most useful service, and a very proper function for a state publication.

The *Flicker* was issued in February and May, 1934. It is the publication of the Minnesota Bird Club. Dr. Gustav Swanson is President, 3305 47th Ave., Minneapolis, Minn.

The *Snowy Egret* (Volume IX, No. 1) appeared during the summer of 1934. This number gives a history of the publication, which will be of interest to bibliographers. It contains also a list of birds seen in southern Michigan during recent years by Dr. Harry W. Hann. Two papers by Oscar McKinley Bryens and an autobiography by R. E. Olsen make up the forty-six pages of mimeographed material.

The *Inland Bird Banding News* for June, 1934 (Vol. VI, No. 2) contains a letter from Mr. Berner, at Jamestown, N. D., which is interesting for the statements concerning drouth conditions and their effect on wild life. Prof. O. A. Stevens gives a summary on the banding work in North Dakota, showing that a total of 8,749 birds were banded during the first five months of 1934, by ten banders. Mr. T. E. Musselman gives a report of activities, especially along educational lines.

The *Chickadee* for June, 1934, contains as its chief article a list of birds seen during the spring migration at Worcester. Reports of daily field trips and proceedings complete the number of sixteen mimeographed pages.

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