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The PASSENGER PIGEON

VOLUME VII

October, 1945

NUMBER 4



UPLAND PLOVER AT NEST

GORDON ORIAN

A MAGAZINE OF WISCONSIN BIRD STUDY

Published Quarterly By

THE WISCONSIN SOCIETY FOR ORNITHOLOGY, Inc.

NEWS...

The next annual convention will be held in Appleton, April 27-28. Sessions will begin on Saturday afternoon and continue through Sunday afternoon.

All members wishing to present papers or movies should contact Mrs. W. E. Rogers of Appleton, at once.

The Wisconsin Christmas bird count will be printed in *THE PASSENGER PIGEON* again this year as usual, all members being invited to participate. "A Record New England List" by Ludlow Griscom, nationally known ornithologist and author, appearing in this issue, describes admirably a method of taking a bird count. Although this article deals with the "May Day," the same application may be made to the Christmas bird count.

Many reports of snowy owls are coming in again this year. It may be another "invasion." All observers are requested to be on the look-out for them and to send in any records obtainable.

Irven O. Buss, biologist and active observer for the society, has returned to Wisconsin. He entered the armed forces among the first.

The society is indebted to Miss Ellen Hoffman, Librarian of the U. S. Forest Products Laboratory, Madison, for capably preparing the three-year index included in this issue.

"Hawks and Owls—Friends or Foes?" was the title of a radio broadcast heard on the WHA Farm Program, December 26, by Earl L. Loyster, member of our society.

F. Holman King, Manitowoc, active bird observer who was long a prisoner in Germany, has returned and is about to resume his former role in our society.

Two wildlife programs, presented in Milwaukee by the National Audubon Society, remain to be seen: Feb. 11, "Happy Valley," by Tom and Arlene Hadley; and "Growing Feathers," by Olin Sewall Pettingill, Jr. All programs are at 7:45 p. m. in the Shorewood Auditorium.

A Check-List of the Birds of Nebraska, by Haecker, Moser and Swenk, 40 pages,

appeared in *The Nebraska Bird Review*, magazine of the Nebraska Ornithologists' Union. It lists 473 species and subspecies.

Walter E. Scott, first editor of *THE PASSENGER PIGEON* is now in Japan. A more detailed news item of his bird activities will be found in this issue.

Mrs. R. P. Husson presented a paper, "Nesting Studies of the Clay-colored Sparrow in the Green Bay Area" to the Green Bay Bird Club in November. This paper, illustrated with photographs by Earl G. Wright, will appear in *THE PASSENGER PIGEON*.

Dr. T. Emlen, of Johns Hopkins University, presented a lecture, "Home Range Bonds in Valley Quail and Other Birds," recently in the Biology Building of the University of Wisconsin. Briefly, the lecture was concerned with discussing the influences which regulate the known ranges of birds.

Dr. Eugene P. Odum, president of the Georgia Ornithological Society and associate professor of zoology at the University of Georgia, recently gave an illustrated lecture at the University of Wisconsin on "The Physiological Ecology of Birds and Mammals." "Several years ago Dr. Odum devised a delicate recording instrument, the cardiograph, that registers heart beats and breathing movements of birds—even the fine muscle tremors of shivering. With this instrument he studied the effects of temperature on cardiac and respiratory rates of wrens and chickadees of various ages, and of other birds. He found that a temperature rising from cold to optimum produced very different effects on young nestlings, which are not warm-blooded as yet, from its effects on adult birds that have attained effective temperature regulation. He discovered that coordinated muscle tremors (shivering) appeared concurrently with the attainment of the warm-blooded condition. The heart rates of his wrens varied from 150 to as high as 750 beats per minute." (Quotation taken from announcement distributed by Dr. Lowell E. Noland.)

Harold Kruse, of Loganville, counted 134 going nests representing 44 species of birds on his 200 acre farm this year. This is exclusive of nests by such birds as English sparrows and starlings. Nests of the
(Continued on page 127)

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A NESTING STUDY OF THE EASTERN SONG SPARROW

By ALVIN L. THRONE

This study of the Eastern song sparrow (*Melospiza melodia melodia*, Gmel.) was made at the Eagle River Conservation Camp, Vilas County, Wisconsin, from June 26 to July 20, 1941. Numerous other workers, notably Margaret M. Nice, have already made extensive studies of the song sparrow. The writer is of the opinion that birds are so individually different as to warrant numerous reports of the same species. In the present study two nests were observed, which I shall designate hereafter as Nest I and Nest II. Although the nests were barely 300 feet apart, the physical environment and the consequent behavior of the adults were very different.

Location of Nests and Nesting Data

The Eagle River Conservation Camp is a college summer camp located within ten minutes walking distance to the northeast of the village of Eagle River. Throughout the nesting period numerous students and other people were within sight and sound of the nests. Both nests were built on the ground and composed mainly of dried grasses. Nest I was found June 26th located in rather tall grass, approximately fifty feet south of the girls' dormitory and at the very edge of a dense hardwood stand. It received direct sunlight for only about one hour a day between 12:40 and 1:40 P. M.

Nest II was found July 3rd and was built about 100 feet to the east of the dining hall in a hay field that had recently been cut. It received absolutely no protection from the sun at any time during the day and this lack of protection greatly influenced the behavior of the adults.

The length of the incubation period was not determined for in both cases incubation had started before the nests were found. All of the eggs of Nest I hatched during the early morning hours, but, as Table I shows, three eggs hatched July 2nd and the fourth egg a day later. This late arrival was handicapped throughout the nestling period by being smaller, less aggressive, and thus receiving less food than the other three. Although they all left the nest July 11th within forty minutes time, the "runt" was the last to go. The first one left the nest at 5:20 a. m. and the last at 6:00 a. m. The grass was wet when the young left the nest, for rain had fallen all during the night of July 10-11 and the morning of July 11th.

In contrast, the young of Nest II hatched late in the afternoon, the first at 4:55 and the second at 5:35 p. m. Both of these young left the nest nine days later at 1:00 p. m. They were returned to the nest but would not stay. They were then placed in an open-topped wire cage with sides one foot high, for further study. They remained in the cage, being fed by the adults, for two more days and then were able to get out. Nice in her studies found that the young usually stayed in the nest ten days.

TABLE I

	Nest I	Nest II
Number of eggs laid	4	4
Number of eggs hatched	4	2
Number of young leaving nest	4	2
Date of hatching	(3) July 2 (1) July 3	(2) July 9
Date of leaving nest	July 11	July 18

Method and Time of Observations

A burlap blind was set up fifteen feet from each nest during the incubation period. It was gradually moved closer to the nest until it was but forty inches from the nest the day after the eggs hatched. From the blind, observations and kodachrome pictures were taken on six days during the time the young were in the nest. A total of fifteen hours, twenty-seven minutes was spent in the blind observing Nest I, and ten hours observing Nest II. At several other times during each day of the incubation and nestling periods short observations were made at each nest without entering the blind. Detailed notes were taken of all observations.

During the entire period of study at Nest I it was impossible to be sure of the identity of male and female. At Nest II it was at once obvious that there was a recognizable difference between the adults. The light band on the side of the head just above and running back of the eye was white on one bird and gray on the other. Although they were different, it was not so easy to say which was male and which female. However, after a most careful study of my observations, I have concluded that the bird with the white band was the female and the one with the gray band the male. My conclusions were based on the following facts: Nice in her studies, reports that the female does all of the brooding. At this nest both birds brooded, but "White" brooded 10% more of the time than "Gray." White was much more aggressive about the nest than Gray. Finally, the best proof of all is this observation: On July 12th at 12:07 p. m. while Gray was brooding, a song sparrow about thirty feet away, was singing loudly. All at once I was almost startled in the blind to hear and see Gray sing a typical song while brooding on the nest only forty inches from me.

Brooding

In this discussion I am accepting the definition of brooding as being the protection of the young from any weather condition by the adults sitting on or over the young. This would include cold, rain, and sun.

Nice concluded from her studies that the female does all of the brooding. As before mentioned, with Nest I, I could not definitely distinguish the male from the female so I do not know which adult did the brooding or whether they shared the task. With Nest II, I found that both adults brooded the young.

TABLE II

Percentage of Observation Time Spent in Brooding						
Age of Young Days	Nice Average of 3 broods	Nest I	Nest II			Total
			Female	Male	Both	
1—	64	60	----	----	----	----
2—	54	54	----	----	----	----

3—	49	----	21	15	55	91
4—	50	41	19	17	60	96
5—	42	29	17	17	65	99
6—	32	16	33	0	0	33
7—	23	----	14	19	62	95
8—	7.5	0	0	24	0	24
9—	4.7	0	0	0	0	0

Table II shows that with Nest I the percentage of brooding time corresponds rather closely to that found by Nice. Practically all of the brooding at this nest was to protect the young against cold and rain. The less time spent in brooding these young than that at the nests observed by Nice was probably due to the fact that Nest I was being brooded later in the season when the weather was warmer. The young of both Eagle River broods left the nest when they averaged nine days of age, while those studied by Nice left at ten days of age. Brooding at Nest I followed the usual pattern of tapering off rapidly as the young grew older.



FROM A KODACHROME BY THE AUTHOR
ON SUNNY DAYS ONE ADULT WOULD SHADE ITS MATE FROM THE DIRECT RAYS

The Table shows that the brooding at Nest II followed an entirely different pattern, being governed not so much by age of young as by the intensity of the sun. When the young were 3, 4, 5, and 7 days of age the sun was shining brightly and the brooding was almost continuous. When the young were 6 and 8 days of age the sky was overcast and a light rain

was falling. On these two days the brooding time dropped to almost one-fourth of that on sunny days.

The Table also shows that over half of the time, on sunny days, both adults were brooding at the same time. One adult would be brooding the young, and it in turn would be shaded by the other adult. The least desirable position was that on top, and many tussles took place between the male and the female to determine which one should be below. The upper bird after receiving the intense sun for several minutes would try to slip below the other one. Sometimes it would succeed and sometimes there would be a fight in which the female usually won out. When one would leave to bring in food the other remained to shade the young. The adult returning to the nest with food would slip under the shading parent, feed the young, and remain there. In practically every case it was the bird returning to the nest which seemed to have the privilege of remaining below the other.

The female seemed to be the more intelligent of the two, or at least the more crafty. After shading the male for a time she would try to slip underneath him. If he prevented her from doing so, she would walk off several feet from the nest, stand for a moment, and come running back to the nest and slip under the male, who would then raise no protest. I never saw the male resort to this stratagem to get under the female. Table III shows the number of times, the minutes, and the percentage of time each adult spent below the other during double brooding.

TABLE III
Double Brooding Data

Date	Weather Condition	No. of times each adult was below		Minutes each adult was below		% of time each adult was below	
		Female	Male	Female	Male	Female	Male
July 12	Bright sun	14	6	84	14.5	85	15
13	Bright sun	8	6	42	36.5	54	46
14	Bright sun	7	1	85.5	0.5	99	1
15	Sky overcast	0	0	0	0	0	0
16	Bright sun	4	2	31	14	69	31
17	Sky overcast	0	0	0	0	0	0
Totals		33	15	242.5	65.5	79	21

Another effect of the sun is shown in comparing the minutes of time elapsing from the time I entered the blind until the first adult came to the nest. For the nine times I entered the blind in studying Nest I, the shortest time elapsing before an adult appeared was one minute, the longest time fifteen minutes, and the average nine minutes. This nest was in the shade almost all day.

For the seven times I entered the blind in studying Nest II, twice the male was on the nest and remained on while I got in the blind about four feet away from him. The longest time elapsing before an adult came was ten minutes, and the average was two and six-sevenths minutes. In comparing cloudy with sunny days, we find the time intervals were six and one-half minutes contrasted to one and two-fifths minutes respectively.

Food and Feeding

At the two nests both adults helped in feeding the young. For Nest I, because of the difficulty in determining male and female, separate records were not kept for the two parents. However this record was kept for Nest II. This nest contained but two young. The male brought food more often than the female, but the latter brought larger loads of food. The food brought by the male was rarely sufficient to feed more than one young, whereas that brought by the female was often sufficient for both, so that the total numbers of individual feedings by the female and the male were approximately the same. Accurate records could not be kept of this because of the habit of one adult feeding the young while the other was shading them, thus cutting off my view. The adults brought food to the nest on the average of once every fourteen minutes, and, as accurately as I could determine, each young was fed once every nine minutes.

Nest I contained four young, and the adults brought food to them on the average of once every eight minutes, with each individual bird being fed once every six minutes. In 60% of the times an adult came to the nest with food but one young was fed; in 33% two young were fed; in 5% three were fed; in 1% all four were fed; and for 1% of the feedings I could not determine how many young were fed.

It was not always possible to tell what kind of food was being fed to the nestlings. Of the food identified, green lepidopterous larvae, about an inch long, were fed 59% of the time; grasshoppers including wings and legs 13%; small angle worms 6%; and the other 22% included larger macerated angle worms, macerated spiders and white grubs, small moths, flies, and sawfly larvae.

Nest Sanitation

Both nests were kept scrupulously clean at all times. Egg shells were removed almost immediately upon hatching of the eggs. In Nest II, two eggs did not hatch and were removed the day after the other young hatched. How the adults removed the eggs I do not know, for I was not in the blind when they disappeared.

Excrement capsules practically never touched the nest, being picked up by the adults as they were being voided. Each young of both broods voided a capsule on the average of once for every four feedings. At Nest I all of the capsules were eaten by the parents until the young were four days old. On that day the adults started carrying them away and continued to do so until the young left the nest.

At Nest II the adults started carrying the capsules away when the young were four days old as with Nest I. However on two succeeding days when the young were five and seven days old, the adults swallowed most of the capsules. The sun was shining on both of these days, and perhaps the adults did not want to expose the young to the sun during the time it would have taken to carry the capsules away. This statement may sound as though I am attributing reasoning power to the birds. After watching this pair in their many unusual responses, brought about by the intensity of the sun, one is almost inclined to believe that they did possess some reasoning power or at any rate a highly developed instinctive reaction, rarely exhibited under more normal conditions.

Development of the Young

The young were naked when hatched, with only a small amount of grayish black down. They opened their bills for food a few hours after hatching. By the fourth day their eyes were open wide, they were several times their original size, and the wing and tail feathers were elongating but still within the sheaths. The young slept practically all the time they were not feeding, but occasionally lifted up their heads and yawned.

One young of Nest I crawled about a foot out of the nest when it was six days old, to get into the shade of the grass to escape the hot sun. While in the grass it was fed several times by the parents and after one hour and seven minutes it crawled back into the nest. Their bodies were covered with feathers by the eighth day. When nine days old the young from both broods left the nest.

As previously stated, the young of Nest II left the nest at 1:00 p. m. There was a north wind blowing, temperature 60° F., sky overcast and misting. The young were caught as they were sneaking through the grass and returned to the nest. They would not stay in but left immediately. As soon as possible I brought an open-topped wire cage two feet long, one foot wide, and one foot high. In the fifteen minutes that I was gone the young had so effectively hidden themselves in the short grass that it took me half an hour to find them. They were then banded and placed in the cage. I then carefully took the nest from the ground and put it in the cage.

I had to leave and did not return till 6:23 p. m. Both young were still in the cage, one sleeping in the nest. I observed from the blind until nearly dark and for most of the next day. There was no hesitancy on the part of the male in flying down into the cage and feeding the young and carrying away excrement. The female was more wary at first and would not go into the cage. She would light on the ground at the side of the cage and try to feed the young through the half inch mesh. On the second day, the female as well as the male flew into the cage to feed the young.

At one time while I was watching from the blind, the male fed the young, then dove with his head into the nest and started to fly away dragging one of the young completely out of the nest. He had mistaken the band on the young one's leg for a capsule in the nest. One other time later in the day he did the same thing. Two days after the young were placed in the cage they got out, one about 9:40 a. m. and the other at 12:15 p. m.

Adult Behavior

In addition to what has already been noted concerning the adults, there were other observations of interest. Often while an adult was incubating or brooding it would rise up on the nest, lower its bill below the eggs or young and rather vigorously loosen up the nesting material, perhaps for better aeration.

The vegetation grew so close around Nest I that the adult when coming to the nest to incubate, would invariably circle around while settling on the eggs so that the tail feathers would not be ruffled up and misplaced. She (?) would always circle in the same way with the tail feathers bent to the same side, so that by the end of the incubation period

the tail feathers were awry and did not straighten out again for several days after the hatching of the eggs.

For the first few days after the eggs hatched, the adults always approached the nest from the same direction and in the same manner. They would fly to the ground, two to eight feet from the nest, and walk to the nest. After the first few days, they would usually fly directly to the nest. In leaving they would always fly directly from the nest. I observed just one exception to this. At Nest I on the day of hatching, when a person was walking in the direction of the nest and still about fifteen feet away, the adult left the nest rapidly walking and hopping through the grass about twenty feet from the nest before it flew.

While incubating and brooding, the adult spent most of the time in just sitting, often with eyes closed, apparently sleeping, and in preening the feathers. There were numerous small insects in the grass near the nests and often the adults would reach out and catch and eat them. Sometimes while brooding the adult would rise up, touch its bill to the bills of the young, and if there was no response settle down again. If the young opened their mouths, the adult would fly off for food. When an adult came with food and a young voided a capsule before feeding, the adult would hastily swallow the food and immediately pick up the capsule.

On one occasion after an adult had been brooding for some time, it suddenly made a complete circle in the nest with such rapidity I was afraid the young would be injured. Then after settling again for a few seconds it flew away.

In the afternoon when the young of Nest I were four days old, I was in the blind observing one of the adults brooding. I heard a bird fly close to the blind and light on the ground about four feet from the nest but out of my sight. Immediately the brooding adult stood up high on the nest with wings outspread, head thrust forward, and mouth open. This unusual performance surprised me, and getting my eye closer to the opening in the blind, I could see that the visitor was a female cowbird. It remained on the ground only a few seconds and then flew to a bush about ten feet away. It stayed there fully a minute before flying. All this time the song sparrow rigidly retained its defiant attitude and did not relax and settle on the nest until the cowbird had flown away from the bush.

On the day the young of Nest I were eight days old, one of the adults came to the nest at 2:22 p. m. with a green lepidopterous larvae and a good sized grasshopper in its bill. After staying at the nest for a moment without feeding the young, it flew to a branch of a small tree about ten feet from the nest and started to cheep with the larvae and grasshopper still in its bill. The other adult came regularly and fed the young, but for one hour and forty-two minutes, until I had to leave the blind, the one with the food in its bill remained on the branch cheeping almost continuously. I have no explanation for this act unless it be that the adult was trying to get the young to leave the nest. The next day all of the young left the nest late in the afternoon.

Literature Cited

Nice, Margaret M.—Studies in the Life History of the Song Sparrow, Transactions of the Linnaean Society of New York, 1937.
Milwaukee, Wisconsin, October, 1945.

Sac Prairie Autumn

By AUGUST DERLETH

24 September 1944: A great many small flocks of robins were at devouring hackberries today, gorging on the brown, thin-skinned berries, and disgorging seeds with almost the rapidity with which they ate, so that it was a continuing process. The robins clung to the twigs and bent far over to get at the brown fruit, which hung heavily and thickly clustered this year. The birds made a great deal of todo—chirpings, half-hearted and broken carols, and calls. I observed them in different parts of the village; it was almost as if their invasion of the hackberry trees was a calculated thing, but far more probably it was simply that a large flock of robins, probably already migrating, scattered through the village to feed.

3 October 1944: Warblers passed through the village all morning, southward bound. From time to time I paused in my work and looked over my shoulder into the apple tree just beside my studio; there I saw in the course of the morning, myrtle warblers, redstarts, and Blackburnians, but of these the majority appeared to be either females in autumn plumage or immature birds. They occupied the apple tree, the lilacs, and the cedars all morning and into the afternoon, not leaving until late afternoon.

7 October 1944: In the marshes tonight there was almost as much red-wing song as in April; the air rang with the familiar *conqueree* or *okalee*, and the red-wing chorus was supported by the occasional melodies of a few song sparrows, the rattling of a kingfisher, and the nostalgic cries of killdeers over the meadows.

10 October 1944: I stood for some time in the twilight marshes tonight listening, after the plaints of cardinals, the songs of red-wings and white-throated sparrows had diminished, to the singing and/or calling of the long-eared swamp owl. I observed a fairly consistent variation. The most common song, the familiar *Coo, coo-coo-coo, coo* was varied from time to time into a very rapid, almost hoot-like cooing, as if it were *Kuk-kuk-kuk-kuk* (a break) *kuk-kukkukcoo*. This variant call occurred every little while, but apparently without any set pattern.

13 October 1944: Speaking of the low-voiced calls of woodducks, so often heard in the early night hours of autumn, Pete Blankenheim explained today, "That's a habit of theirs; when they're disturbed, they scatter, and then they kind of talk it over before getting together again."

14 October 1944: Bay-breasted and masked (Northern yellow-throat) warblers appeared in the apple tree this morning, but were not long there—a little over an hour, and then gone again.

16 October 1944: I took the keenest delight this pleasant afternoon in lying on the hill above the wing dam watching the magnificent, proud wheeling and soaring of a red-tailed hawk, whose tail-feathers flashed sullen fire each time the bird turned from the sun—a kind of red-gold flashing in heaven's cloudless blue. The bird appeared at first just north of the wing dam, over the Wisconsin, and then at tree height; but it climbed rapidly and effortlessly, wheeling and turning with little wing motion, banking, slipping, riding the air currents, leaning westward over Sac Prairie, and bearing south, very high at last, scarcely visible, so that

I estimated the bird must be half a mile above the river's surface. At last it turned southeastward, far below the bridge, and vanished over the marshes, whickering and screaming from time to time, in sheer exuberance.

24 October 1944: On the way home this late afternoon, with Hugh, I heard robins caroling in that little area immediately west of the harness shop; whereat Hugh pointed out that it was in this same little region that he customarily heard the first robins carol each spring, just as in every autumn he heard them last at this place. The carol was full-throated, varying in no particular from the spring song.

29 October 1944: I timed the red-wings' *conqueree* in the marshes this evening, where they sang in the Upper Meadow. The familiar song sounded at the rate of twenty-four times a minute for a period of fifteen minutes. The number of birds present, therefore, would seem to be considerable.

15 December 1944: After having had Froly distribute some bread crumbs, broken crusts, etc., over the paths in front and in back of the house, I was interested to observe a nuthatch flying up from the path to conceal a little square of crust, tucking it away on the edge of the roof, and then flying to one of the limbs of the linden nearest the house, where he took from beneath the limb—where snow would not be likely to cover it—another such square of crust, which the bird had evidently tucked away a day or two ago. Of this he ate a little, and then replaced it. This adroit storage of crusts against days of wind and weather explained the rapid disappearance of the larger pieces of crusts and bread, which I had seldom heretofore seen any of the birds feeding here—cardinals, sparrows, jays, a mourning dove, quail—eat.

20 December 1944: Walking into the village by way of the river road this morning at dawn (a cold day with a southwest wind blowing and giving some promise of rising temperature), I saw a thin file of geese flying south, very high, so high that the sunlight shone on their undersides, brightly, giving them the appearance of a long wavering line of silver against the intense almost cobalt blue of heaven. Somewhat lower, closer to the river, five mergansers were flying, also southward bound, making a most effective picture, dark against the dawn-lit sky; and a slower-flying lake gull came leisurely winging its way from bank to bank along the river, going north in manifest search for food. The day held little of autumn in it, as did most of November, and apart from these birds, there were no sounds along the way at this hour.
Sauk City, Wisconsin.

CHICKADEE



PHOTO BY
MARY STAEGE

A RECORD NEW ENGLAND LIST*

By LUDLOW GRISCOM

On May 20, 1945, a single party of fourteen individuals found 160 species of birds in Essex County, Massachusetts. Ten were together over twenty-two hours. Efforts to secure large lists in Essex County have been made since 1928. As the best previous list was 142, made on May 19, 1939, there is a story in how it was done and the numerous factors in favorable combination required.

In the first place, the route selected is of vital importance. Needless to say it must include localities good for both land-bird migrants and the more local summer residents; it must also include localities good for sea and shore birds. Equally important, these localities must be visited in an absolutely **correct order**, as various types of birds must be sought at the proper time of day. Actually, the Essex County route has been stabilized for years. We begin at dawn at Lynnfield marsh, this being the time and place to hear rare marsh birds calling. The first hours after sunrise are devoted to a tour of varied country in Lynnfield and West Peabody. Land-bird migrants and some sea and water birds are next picked up at Nahant. The afternoon is spent at Newburyport Harbor, Plum Island, and various near-by localities for special summer residents. As soon after dark as possible the wilder areas of the County (points along the Ipswich River and Boxford) are visited for owls and night birds.

A record list can only result when the following ideal combination of factors occurs.

1. There must be a great wave of land-bird migrants from the south. This wave **must include** three groups of transients (a) a delayed early one; (b) the one normally due; (c) an advance guard of the late one. Consequently, it requires a most abnormal set of weather conditions over the whole month preceding. It can only take place in the middle of May. At the same time (d) the shore birds must be early, to secure an adequate variety of species. No other May day in Essex County ever provided more than two of these factors in combination.

The normal course of events is as follows. There is often a great wave May 12 or 13, another May 17-20, a third May 23-24. Roughly speaking, the lists are **approximately equal**. At each period the arrival of further species from the south is balanced by the disappearance of earlier groups of migrants or winter residents. This may be proved in tabular form as follows, using previous big lists.

May 12, 1944 — 129

May 19, 1939 — 142

May 13, 1945 — 132

May 24, 1933 — 133

May 12, 1942 — 138

May 24, 1942 — 140

May 17, 1942 — 132

On May 20, 1945, we found some individuals at least of all the late May group, except the Alder Flycatcher, Indigo Bunting, and Sharp-tailed Sparrow. On the other hand, we found the last stragglers of the Horned Grebe, Canada Goose, Red-breasted Merganser, Hermit Thrush,

*Reprinted from The Bulletin of The Massachusetts Audubon Society by special permission of the editor.

Ruby-crowned Kinglet, Blueheaded Vireo, Myrtle Warbler, and White-throated Sparrow. Seventeen species of shore birds were also obtained.

2. Ideal weather conditions must prevail **all twenty-four hours**. There must be no rainstorms, no fog, no wind, and no intense heat in the middle of the day. The night must be clear, still, with a full moon. Under no other conditions can eight species of birds be added after dark, including five kind of owls. Only twice previously have these ideal conditions prevailed.

3. The tide schedule must be dead right. It requires low tide at Newburyport Harbor to get the shore birds, gulls, etc. Low tide **must**, consequently, be in the **afternoon**. There is no use trying to get a large land-bird list except in the first hours of the morning, and if low tide is in the morning a large list is impossible. If there is a really great wave of land birds, one cannot start north from Nahant much before noon. Actually, low tide should be in the **early afternoon**, as that makes it possible to go down Plum Island and beat the thickets in the late afternoon for additional land-bird migrants. On May 20, 1945, we added eight species by being able to do this; ordinarily it is quite impossible to work it in.

4. Good "breaks" of luck are required to save precious time. In mid-May many species are transients as well as local summer residents. If they can be found as transients in the early morning, time is saved in visiting special breeding localities. On May 20, 1945, the Cliff, Bank, and Rough-winged Swallows, Hermit Thrush, Blue-headed Vireo and Prairie Warbler were all found in the early morning as transients. This made a saving of **at least two hours** in visiting five different breeding localities and alone made it possible to spend two profitable hours on Plum Island.

5. Needless to state, constant field work all spring, including considerable night work, is essential to locate owls and all rare and local summer residents. I have yet to hear of anyone lucky enough to get five species of owls in three hours as a result of one lucky stab in the dark! On May 20, 1945, the Grouse, one possible pair of White-breasted Nuthatches and a pair of Blue-winged Teal were the only summer residents missed positively known at the time to be present. Actually the Teal would have required a detour of two hours which were much more profitably expended elsewhere.

6. The element of "luck" in securing certain transients is incontestable, but experience and knowledge naturally tend to reduce it. By predicting a "wave" and knowing enough to visit a natural trap like Nahant for migrants at the proper time of day, many reputedly "rare" migrants become practical certainties on a big day list. But the occurrence of these birds in numbers most decidedly gives no guarantee whatever that you will find a Great Blue Heron, one of several hawks, or a Purple Martin.

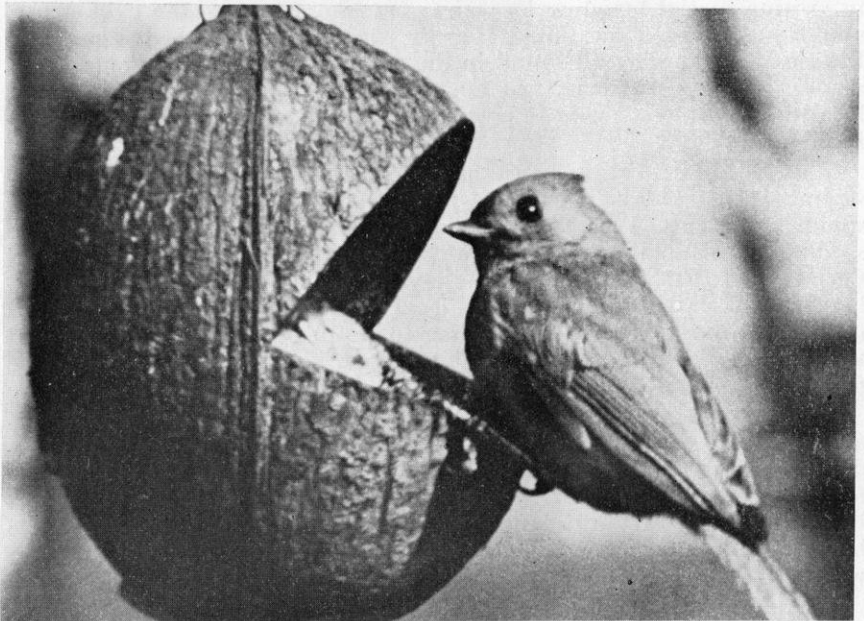
On May 20, 1945, luck entirely produced Bob-white and Grasshopper and Henslow's Sparrows, all utterly unexpected species where found. Every great wave produces an exceptional list of warblers, usually twenty-one to twenty-three species. But on May 20 we had twenty-eight, which was certainly luck as well as good management. One simply is not entitled to so many in eastern Massachusetts! Every great wave produces one or more great rarities, but it is luck indeed to get the White-eyed

Vireo, Gnatcatcher and Cerulean Warbler the same day. An Eastern Willet and a flock of Pectoral Sandpipers were "lucky" finds in another group of birds.

7. Finally, the unselfish cooperation of the party is a vital necessity. The leader has to run the schedule with watch in hand, and the whole party must eat when convenient, leave a given locality upon order, and there is no time to allow every one of fourteen people to see all the interesting rarities. Nobody gets all the species on the party list; I was "down" fourteen myself.

The party originally grew around the visit from New York of Guy Emerson, who some years ago had the largest year's list of birds in the United States. The members were G. W. Cottrell, Jr., Norman Hill, Warren Flock, Martin Karplus, Mr. and Mrs. Arthur W. Argue, Mr. and Mrs. Maurice C. Emery, and Mrs. Haven Parker. Mrs. Hervey B. Elkins and Kimball C. Elkins arrived half an hour late and had to leave early (10 p. m.) Rosario Mazzeo was heartbroken at having to leave at 4:30 p. m. Mr. Emerson seemed to have a very good time, but I fear he may have an exaggerated idea of the bird-life of Essex County, Massachusetts.

TUFTED TITMOUSE AT FEEDER



H. L. ORIAN

THE TUFTED TITMOUSE IS RARE ENOUGH IN WISCONSIN TO CAUSE COMMENT, BUT IT IS NOW THOUGHT TO BE GAINING IN NUMBERS WITHIN OUR BOUNDARIES. IF THIS BE TRUE WE MAY EXPECT TO FIND IT MOVING NORTHWARD SLOWLY. MOST RECORDS NOW ARE MADE IN THE SOUTHERN THIRD OF THE STATE AND ALONG THE RIVERS. THE ABOVE PHOTO WAS TAKEN IN MILWAUKEE.

The Ubiquitous Starling, Migratory to a Certain Extent,
is Regarded with Mixed Emotions by Man

A HISTORY OF THE STARLING IN THE U. S.

By CLARENCE S. JUNG

In the last half of the 19th century, the United States was the world's promised land. Immigrants from the over-populated places of the globe were tempted to settle the great spaces of our country.

These newcomers brought with them memories of life in their old home which persisted in spite of all the new wonders that came into their experience. Among others were the recollection of flowers and birds as well as the food and clothing of the life they lived. As a result, there were imported many plants and animals from foreign lands.

And so, many ornithological novelties, nightingales, goldfinches, house sparrows, larks, bullfinches and many other species were brought to this country from time to time for some reason or other, but the basic psychology for the importation was some real or fancied recollection from a past life.

Only a few of these avian importations are important. Game birds such as pheasant, chuckar and Hungarian partridge have been rather satisfactory; the English sparrow a nuisance in that he preempted the place formerly occupied by native birds. And now we have the starling invading and usurping the domain belonging to our own native species and taking advantage of our changing ecology with which other birds find it difficult to cope. We know him as the hole nesting black devil who lays a clutch of 5 to 7 eggs; prolific, imitative and noisy.

In Europe the starling was regarded with mixed emotions much as the robin and red-winged blackbirds are in this country. In that part of the country where our native birds do good by controlling insect life, their song and form bring cheer. In a cherry orchard or rice field, it is another story, and nothing less than total extirpation will satisfy.

As to the starling in his native land, we find reports of the birds that are very favorable at times. A good fellow, intelligent enough to be taught to talk, his prodigious insect appetite, his spectacular flight alone and in flocks, and an interesting report on erratic migrations in great flocks that might remind one of the habit of Bohemian waxwings, evening grossbeaks, or even the lamented passenger pigeon.

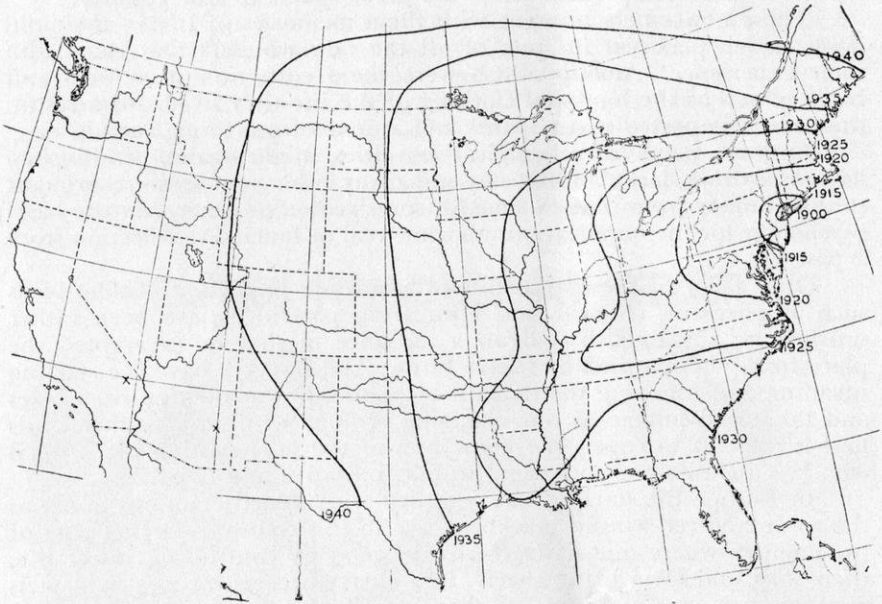
You find, however, debit items in the starling ledger in Europe. It is admitted that he eats ripe fruit in quantity. A most interesting complaint is that when gathering in great flocks in the fall on the moors they break the moor grass by the weight of numbers and thus render it useless for roof thatching. And so he is a curse and a blackguard.

The starling was introduced into this country in 1890 not very successfully, but some unknown souls were persistent in sponsoring their pet ideas, and it seems that bird released on Long Island in 1895 first succeeded in surviving a winter, and by 1900 it was apparent that the stock was able to breed and live. I remember vacationing on Long Island in 1917 and seeing a few flocks of the birds, but these were certainly no intimation of the myriads that would populate the continent 25 to 30 years later. They were unheard of in most of New Jersey, and

my impression was, at that time, that the bird was about as abundant as the European goldfinch, another introduced bird, of which I saw several flocks in the country around Far Rockaway, L. I.

The spread of the starling across the length and breadth of the continent has been a fascinating picture of conquest, and several scientific watchers have graphed observations regarding this great invasion.

Leonard Wing compiled and published in the *Auk*, Vol. 60, No. 1, January, 1943, a map showing starling limits as indicated by Christmas bird censuses published in *Bird Lore*.

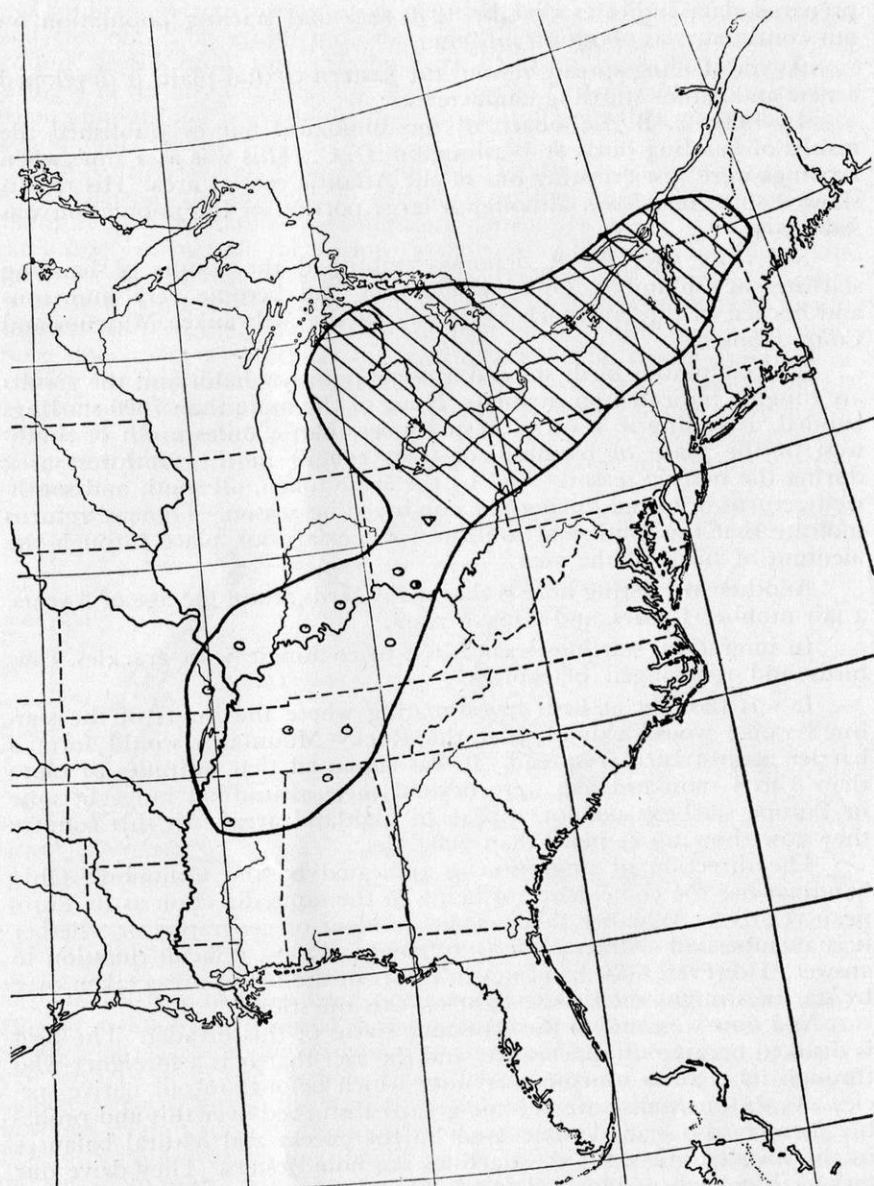


SPREAD OF STARLING IN UNITED STATES
ADAPTED FROM LEONARD WING'S ARTICLE IN THE *AUK*, JANUARY, 1943

Pioneers, of course, always showed up ahead of the isopleths indicated on this map—thus while the 1925 limit indicates the east shore of Lake Michigan, we in Milwaukee knew of birds nesting in Downer College woods in 1923, and the Milwaukee Public Museum's first record is one from about February 1922, at which time Ohio was the western limit of the bird's range.

The pattern indicates a more rapid southern expansion and also a more rapid expansion in recent years through the prairie regions of the continent. In explanation of this phenomenon it is surmised that the more forested regions of the east were able to contain the starling population until it was saturated.

Then as surplus birds erupted out of the area, they flew farther and spread more in searching for appropriate territory in what to them was more marginal land. The enormous jump between 1935 and 1940 would indicate this to be true. It is interesting to note that census reports indicate the starling did not increase in population as rapidly as in territorial expansion. Mr. Wing's rather complicated but carefully



WINTER AND SUMMER RETURN AREAS FOR STARLINGS FROM COLUMBUS, OHIO.

SHADED AREA INDICATES SUMMER RETURNS; CIRCLES INDICATE WINTER RETURNS.

ADAPTED FROM E. R. THOMAS' ARTICLE IN BIRD BANDING.

prepared data indicates that by 1940 the total starling population on our continent was about 50 million.

As the starling spread beyond the eastern coastal plain it developed a new and rather startling characteristic.

In 1928, E. R. Kalmbach of the Biological Survey published the results of banding birds at Washington, D. C. This was at a time when starlings were just erupting out of the Atlantic coastal area. His results showed some migration although a large portion of the population was sedentary.

Six years later, E. R. Thomas published the results of banding starlings at Columbus, Ohio, where they had become very numerous and flocked in the fall much as they do at the Milwaukee Museum and Court House.

The Columbus birds showed a very migratory habit and the results are roughly indicated on the map. None of the more than 7000 starlings banded, according to returns, nested more than 8 miles south or southwest of the place of banding, or were caught in the southwest area during the nesting season. And by the same token, all south and southwest returns occurred during the non-breeding season. Thomas' returns indicate that the south and southwest dispersal took place through the medium of birds of the year.

Another interesting note is that many birds attain the age of 3 years, a fair number 4 years, and a few 5 years.

In migration, starlings seem often to co-mingle with grackles, cowbirds and red-winged blackbirds.

It was thought at first, in estimating where the limits of the starling's range would extend, that the Rocky Mountains would form a barrier against further spread. It was supposed that altitudes of more than 3 to 4 thousand feet were beyond their altitudinal range because in Europe starlings do not appear in highland areas. In this country they now show up at more than 7000 feet.

The direction of migration as indicated by the Columbus, Ohio bandings has the coincidence of being in the same direction as its European relatives. Whether this is some accident of geography or whether it is an inherited characteristic is, of course, a most difficult question to answer. However, mass bandings in roosts in the newer areas taken over by starlings might shed some light on this question.

And now we come to the economic status of this invader. The bird is disliked because of appearance, and the fact that it is a foreigner who through its vigor is usurping territory which belongs to our native species. As sentimentalists we become greatly disturbed over this and probably there is also fear of some upset in the checks and natural balances in the invaded areas, for the starlings are hole nesters. They drive our flickers, bluebirds, red-headed woodpeckers and compete with the crested flycatcher for nesting sites. Some of these native birds feed on flying and wood boring insects, which are not part of the starling's diet.

The starling is, however, a highly insectivorous bird. A great part of its diet consists of larvae and beetles. The report of E. R. Kalmbach of the Biological Survey on the starling indicates that 2626 stomachs were examined for food in 1916 from birds collected in its range from Massachusetts to Pennsylvania and Delaware. 57% of the entire diet

was animal matter—insects, spiders, millepedes, and a few crustaceans and carrion. The graph indicates that they feed on weevils the year 'round, beetles of all sort, grasshoppers in season, caterpillars, but interestingly never any butterflies or flying insects.* And you will note that when animal food is available, their desire for vegetable matter becomes almost non-existent.

In April, May and June, 90% of their food is insectivorous, and even in February at the low ebb of the insect season, animal matter still remains 28% of their total consumption. In the list of the type of insects eaten one can include the various weevils, May beetles, June bugs, Japanese beetles, potato bugs, grasshoppers, crickets and locusts. Another interesting point is that the beneficial insects such as bees form an almost negligible part of their diet. The robins feed on cultivated berry fruit more than twice as much as the starlings do. The starling method of feeding on fruit differs in that a flock will leave a tree denuded of all its fruit and then be gone, not to return. Robins, on the other hand, will slowly clean the cherries off of a tree and even when chased away will persist in returning until they have taken a large toll from an entire orchard.

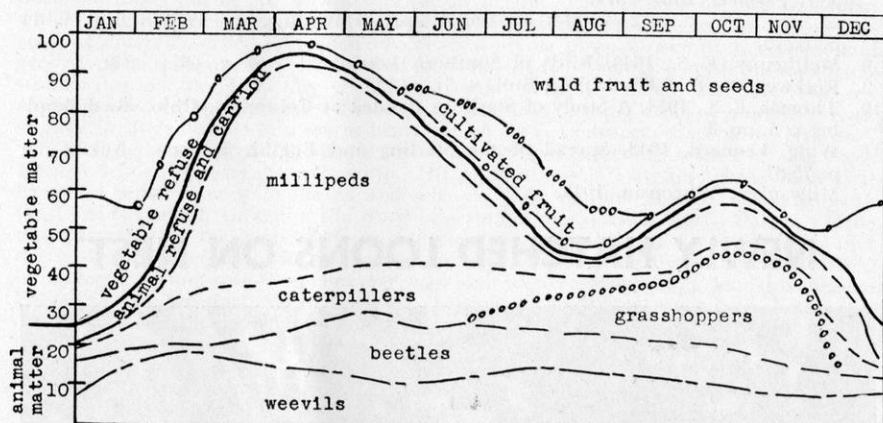


CHART OF STARLING'S DIET. ADAPTED FROM KALMBACH'S REPORT PUBLISHED BY THE "BIOLOGICAL SURVEY," 1928. (NOW U. S. FISH AND WILDLIFE SERVICE)

The starling has also been given the blackball because of the company he is known to keep at certain seasons of the year. He flocks together with grackles, cowbirds and red-winged blackbirds and is often seen with them in corn fields. These fellows are known to do serious damage to corn, and so the starling is judged by its company. However, thorough examination of birds collected in corn fields in company with these other miscreants show that less than .8% of his diet is the young and succulent grain. He is found going after the corn borer and weevils that infest the growing crop.

Wild fruit is important in the starling diet. About 22% of his annual food consists of elderberries, wild cherries, sumac, bayberry and the fruit of poison ivy. In my own experience I have seen them

*Starlings are frequently observed especially in late summer flying out for aerial visits in the manner of the red-headed woodpecker.

dig out many grubs from my lawn and garden, and have never found them injurious to fruit or vegetables, while the robins and thrushes do noticeable damage to my apples and tomatoes. The reports of the U. S. Fish and Wildlife Service stress the fact that the bird is a good citizen so far as its food habits are concerned. It is by choice insectivorous although it does at times eat seeds and a small quantity of fruit.

The greatest objection to the starling is its habit of gathering in large flocks. The filth these large gatherings produce is, of course, a potential danger. Also as the numbers increase other bad habits may develop which have not appeared to date. At present, however, the bird is an economic asset.

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- Milwaukee, Wisconsin, 1945.

NEWLY HATCHED LOONS ON NEST



YOUNG LOONS REMAIN BUT A SHORT TIME ON THE NEST

ROLAND DEDE

Pioneer in the Study of Bird Food Habits
by Making Analyses of Stomach Contents

Franklin Hiram King

By A. W. SCHORGER

Franklin Hiram King was born on a farm near Whitewater, Walworth County, Wisconsin, on June 8, 1848. Most of his life was spent in his native state, and he died at Madison on August 4, 1911. Here he was buried in the Forest Hill Cemetery.

King's early education was received from the district school and from the State Normal School (now State Teachers College) at Whitewater where he graduated in 1872. Prof. T. C. Chamberlin, who was to become a distinguished geologist, filled the chair of Natural Sciences at the Normal School at that time. He gave instruction in zoology, botany, chemistry, physics, astronomy and geology. King was profoundly influenced by his teaching and he specialized in the natural sciences. After graduation he spent a year working and studying with Professor Chamberlin.

King taught science in the Berlin High School for three years, 1873-76. The details of his connection with the State Geological Survey during this period are not known. Through some agreement with Chamberlin, who became Assistant State Geologist in 1873, he began his economic studies of birds in July of that year. These were continued during his vacations while at Berlin. The summer of 1876 was spent with a party making a geological survey of the Flambeau River. In the fall of that year, he entered Cornell and spent two years studying physics, chemistry, biology, and geology. The assistance that he received from Prof. J. H. Comstock in his entomological studies inspired the following charming tribute: "I desire to express here, too, my appreciation of the personal assistance, besides that coming from a sojourn of six months in the sunshine of a warm heart, which Prof. Comstock was able to give me."

After leaving Cornell, he spent ten years, 1878-88, teaching science at the State Normal School, River Falls, Wisconsin. His publications ^{19 21} at this period show that he had a broad interest in the natural sciences. The summer of 1884 was spent with the U. S. Geological Survey in the study of terminal moraines in North Dakota. Made uncomfortable by the seeds of the porcupine grass, he published a note showing that the seeds bury themselves in the ground through alternate expansion and contraction by changes in moisture.²⁰ A summer was also spent at the Johns Hopkins Seaside Laboratory, at Beaufort, North Carolina. During the period at River Falls, he devised a mechanical method of producing rapidly and exactly relief models and maps for the teaching of meteorology and physiography. Many of these models, with the assistance of his wife, were prepared for various educational institutions.

In 1880 King married Carrie H. Baker, of Whitewater, who has continued her residence in Madison. Five of their six children, Anna, Max, Clarence, Hugh, Ralph, and Howard, are still living. Hugh died in infancy.

King came to the University of Wisconsin in 1888 to fill the chair of Agricultural Physics. Dean Harry L. Russell, who knew King intimately, has written of this event as follows: "Chamberlin and Henry, realizing that future advance in agriculture would doubtless be contingent upon a more fundamental approach, took a novel step when Prof. F. H. King . . . was brought to the Agricultural College as Professor of Agricultural Physics. This was the first chair in this field to be established in any educational institution. King had been associated with Chamberlin on the Wisconsin Geological Survey. The painstaking quality of the researches that he had here undertaken convinced Chamberlin of the unusual scientific ability of this teacher, and it was upon the President's initiative that this new chair was founded in 1888. It was recognized that the physical problems of agriculture were fully as important as the chemistry of this same subject. King attacked in a fundamental and constructive manner the role of water in the soil, the physical properties of soils and the mechanics of farm machinery. From this generalized approach there later grew the basic soils department with the State Soils Survey, drainage and irrigation work, and a separate farm engineering department."²⁷

King's arrival in Madison marks a long career in the study of the physics and fertility of the soil.^{22 25} From 1901-04, he was Chief of the Division of Soil Management, Bureau of Soils, U. S. Department of Agriculture. He retired from this position in 1904, returned to Madison and spent his remaining years in writing, lecturing, and travelling. A trip to the Orient in 1909 resulted in the **Farmers of Forty Centuries**.

This extremely interesting book describes how the Chinese have maintained the fertility of their soil for more than 4,000 years. He did not live to complete the final chapter of the book.

King's first ornithological contribution arose from the discovery of the breeding of the winter wren at Ithaca, N. Y., in June, 1878.¹ The latter part of May, 1882, there was a cold wave in Wisconsin. King,² then at River Falls, picked up specimens of the Tennessee, chestnut-sided, magnolia, and Wilson's warblers, and least flycatcher that had apparently succumbed to the cold.

In one phase of ornithology, determining the abundance of birds by actual count, King was a pioneer. He wrote: "It is deeply to be regretted, it seems to me, that we have so little specific information in regard to the abundance of birds in various portions of the United States from which lists of species have been published."³ He covered four routes at Whitewater in 1877 and four at Ithaca in 1878. They were described in sufficient detail that it would be possible to repeat the counts at the present time. His census gives the number of individuals per species seen per mile and is not based on the number in a given area. The average number of birds to the mile was nearly the same for each route in a given locality. The average number at Whitewater was 33 and at Ithaca 58. The counts at Whitewater were made the end of July and early in August, and at Ithaca in June. In July, after the young birds were on the wing, he repeated the counts on two routes at Ithaca and obtained a little more than double the previous figures. This indicates that the population at Ithaca was three and one-half times that at Whitewater. No unusual species is contained in the Whitewater list. It is worthy of mention that the yellow-bellied sapsucker was found on three of the routes, an indication that it was once a regular breeding bird in southern Wisconsin. The upland plover was not common even at that date for he records but two birds, both on the same route.

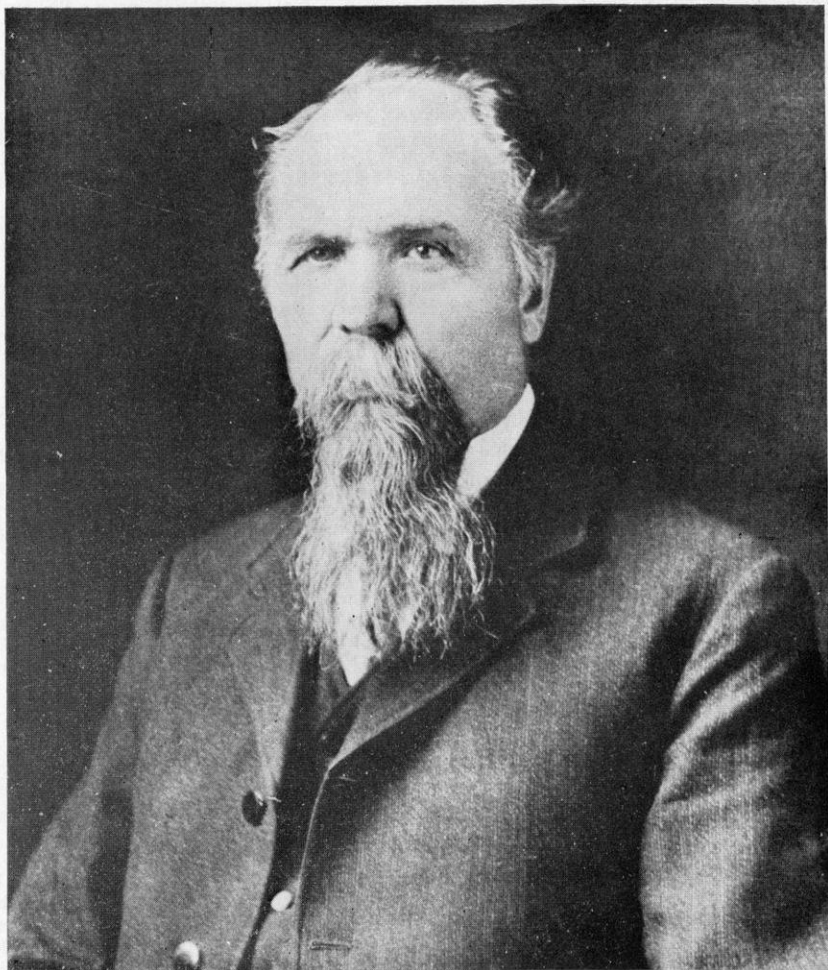
The most important of King's papers was on the food of Wisconsin birds.⁴ There has been a difference of opinion as to whether King or S. A. Forbes³⁶ should be considered the pioneer in the introduction of the methods used in modern food studies. McAtee states that Stephan A. Forbes of Illinois "set the pattern for most of the work that has been done since. Forbes improved the technique of analysis of the stomach contents of birds, especially in systematically carrying identifications of all food items as far as possible, and in consistently using the percentage of bulk method of estimating the ratios of the dietary elements. He also calculated averages of the food items for months and seasons, and brought to bear carefully planned combinations of field and laboratory work on the solution of economic problems."³⁸ The first of Forbes' papers was published in 1877, apparently.

The right of King to priority was championed by Burrill as follows: "Dr. Forbes' studies of birds' stomachs was first published in 1876, according to a letter from him, dated October 15, 1912."

"In an interview at the Cleveland meeting of the American Association for the advancement of Science, December 31, 1912, Professor Forbes admitted that the work for this paper was all done in that or the preceding year, while Professor King began his paper in July, 1873, and continued it until October, 1877, the field work being done mostly in 1873-4. In 1876-8, according to a letter from Prof. J. H. Comstock, 1912, Professor King worked in the Cornell laboratory, analyzing the contents of the birds' stomachs previously collected, but did not publish, due to delays in the Geological Survey, until 1883 . . ."

"It thus appears that King's work began before that of Dr. Forbes, but was delayed in publication until some years after Dr. Forbes published his first and second researches. While Prof. Aughey had studied ninety different bird species representing 630 stomachs and Dr. Forbes some 40 species representing 460 stomachs (combining figures of all three papers of 1876, 1880 and 1883), Professor King studied 83 species representing over 1800 stomachs, 1600 of these being reported."¹⁵

The facts do not justify so sweeping a conclusion. King's initial efforts, begun in 1873, consisted largely in the collection of stomachs. He was insufficiently trained in entomology to identify all of the insect remains in the stomachs. In the fall of 1876 he went to Cornell to receive special training under Prof. Comstock and to complete the analyses. This work at best was coeval with that of Forbes and publication was several years later. His procedure was to list the number of insects and vegetable remains found in the stomachs. The ratio of the two kinds of food was represented by lines. The bulk method of analysis, he thought, could lead to erroneous impressions for a fragment of an insect is "positive proof of the destruction of a whole insect of some kind." His conclusion was: ". . . I believe, all things considered, the most relia-



FRANKLIN HIRAM KING

ble method of exhibiting the results of observations on the food of birds, as well as one which will leave the materials accumulated in the most available form for subsequent more critical examination, is to exhibit the number of forms of life which a bird can be proved to have eaten in as systematic a form and as specifically as possible."

Priority, in many instances, is at best a fleeting honor. As science advances new pioneers are produced and the old are half-forgotten. It is sufficient to state that King's was one of the fundamental papers in economic ornithology. Coues,¹⁶ in a lengthy review, gave it warm praise, while Merriam¹⁷ called it "admirable and comprehensive."

King's ornithological activities continued throughout his stay at River Falls. He found that a young flying squirrel, held in captivity, would eat birds' eggs with avidity. A young chipping sparrow placed in the cage was killed but no part was eaten.¹⁰ During a residence of eight years at the above place, he found but one pair of western meadowlarks on the Wisconsin side of the St. Croix River, while it bred year after year on the western bank of Lake St. Croix, in Minnesota, only six miles distant.¹³ Kessenger,⁸ in his **History of Buffalo County**, published a list of birds

consisting of 86 summer and 25 winter residents considered by King as "likely to occur" in the county.

Following his arrival in Madison, he published several popular articles on birds, showing his sustained interest. While at Hongkong, the migration of the birds motivated this final, simple statement: "It was the beginning of the migratory season for birds, and trees and shrubbery thronged with many species."³⁵

He was a member of the Society for the Promotion of Agricultural Science, the Wisconsin Academy of Sciences, Arts, and Letters, the Washington Philosophical Society, and a fellow of the American Association for the Advancement of Science. He received from the University of Wisconsin the honorary degree of Doctor of Science in 1910. The National Geographic Society made to him the Society's first award from the Grant Squires fund, relating to commerce and industries of the Orient, as author of **Farmers of Forty Centuries**.

King had a keen, scientific mind and was an indefatigable worker. It is to be regretted that he abandoned the field of economic ornithology in which he showed so much promise, but he passed to one fundamental to human existence.

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SCOTT IN JAPAN

Walter Scott reports from Japan that the rice birds are an ever-present menace to the staple crops of the islands. He declares that the scarecrows, sometimes two or three for one small plot, rival Ringling Brothers circus. He saw a man-in-the-moon hung to swing between two bamboo poles and another which resembled a wind directional sleeve at an airport, hung on a long string, so that it dove six to ten feet in the wind. For good measure, they had added a paper hawk. The common bird around the towns, a tree sparrow, is similar to the English sparrow, but their "song" is higher pitched.

At the place he is now stationed near the sea, the beautifully landscaped grounds do not have the large bird population he had hoped to find. One of the birds he likes best is a wagtail, which he describes as follows: "They really do wag. Almost all the time, continually, the bird's rear boby bobs like a sandpiper's head. And when the bird flies and lands somewhere, then it really wags, with its tail spread out beautifully."

So far, his closest contacts were with a bird which joined the ship 200 miles from land (Iwo Jima) and 700 miles from Japan, where it probably lived—at any rate, he has also seen one there in the gardens. The one aboard ship stayed until it became weak and was captured and caged. Scott force-fed it a day or so, but it died before they reached land where it could be released. So, with the medic's assistance, it was skinned before an audience of interested GI's, and sooner or later the skin will be on display—but he wants to identify it first.

At the airport near Osaka buzzard hawks were numerous and one got in the way of their jeep, however, the skin was too badly torn to salvage.—Mrs. W. E. Scott.

SUMMER BANDING NOTES, 1945

By ALVIN L. THRONE

I do very little banding during the summer months but have two notes that may be of interest.

During the last week of June, a blue jay was about my back yard a great deal. I set out a funnel trap baited with several live cecropia and polyphemus moths. At 4:30 p. m. June 28th, the day I put out the trap, I caught the blue jay.

It was not until I had it in my hand that I noticed its right leg had been broken. The tibiotarsus was broken just above the joint with the tarsometatarsus. This break had occurred some time previous to catching the bird, for the break had completely healed over but in such a way that the lower part of the leg was turned around in a half circle, the three forward toes pointing back and the hind toe pointing forward. The foot was now permanently in that position and useless. The leg muscles were completely atrophied.

When released, it flew to a tree half a block away and had no difficulty in sitting on the branch.

Not many Nighthawks are banded each year and this is particularly true of the adult birds. This summer while making a detailed study of a nesting pair, I banded the young and also both of the adults. The two young were banded July 22nd when they were 18 and 19 days old respectively, shortly before they started to fly.

The adults were banded July 8th when the young were four and five days old respectively. In order to trap the adults, I placed both young in a small wire cage and placed this cage under a large wire drop trap which was to be released with a pull cord. In a little less than half an hour the female came to the young in the cage. I pulled the cord and caught her under the large trap. She was banded and freed at 7:40 p. m. and the trap was again set for the male. At 8:23 p. m. the male came to feed the young and was immediately caught, banded, and released.

This method of trapping the adults of nestlings has been used successfully by me in banding song sparrows, kingbirds, American redstarts, and other birds.

Milwaukee, Wisconsin, September, 1945.

BY THE WAYSIDE . . .

A Mockingbird in Green Bay. On April 21, a mockingbird was seen hunting insects in the vacant lot next door. It would prowl through the grass, opening and closing wings in a fanning motion, a habit it has, Wright says, to scare up insects. It stayed around for about an hour and then flew away. Two friends, who live about a mile from here on the Fox River have reported a mockingbird in their neighborhood for the past two years, seeing it both in winter and summer. While at our place the bird came within a few feet of the banding trap on the lawn, but the trap was closed, which fact I bemoaned and daughter Marjie came out with: "That'll teach you to keep your 'trap' open."

In the new pale green grass the mockingbird appeared to be unusually slaty blue—underwings especially blue, but I've often noticed how

much bluer grackles, woodpeckers, nuthatches look against a pale green background. This effect of background coloring on plumage no doubt explains many of the difficulties amateur bird students have in getting exact color.—Mrs. R. P. Hussong, Green Bay.

A Robin Hangs Itself. "I spy a dead robin in the tree over there," cried a six-year-old boy of my Nature Study Group, one day while playing the game of "I Spy." I thought he was joking, but no! When we reached the buckeye tree a robin was hanging from a limb. A girl secured a pole and we soon had the bird down, string had rotted, the body decomposed—only feathers and bones. The string had wound many times around the neck and twig from which the bird hung.—Mrs. W. E. Rogers, Appleton.

Some Observations On The Phoebe. While in the process of installing screens on the porch of our cottage this year we were forced to move a nest of the phoebe about sixteen inches from its original location to a ledge provided by us. The phoebe did not find it in its new location for twenty-four hours, however, the five eggs hatched in spite of cold and rainy weather which prevailed at the time. During one hour on June 30, when the nestlings were eight days old, I counted 69 trips to the nest on which food was brought. If this average were kept up for fifteen hours per day it would mean over one thousand meals per day. The latest feeding in the evening was done at 8:20.—Mrs. Arthur Koehler, Madison.

THE SUMMER SEASON . . .

(Field notes should be sent to the editor at the end of the four seasons. They should be turned in promptly and the A. O. U. order may be followed. All members are invited to participate.)

Great Blue Heron: Young in nest, Kenosha County, May 22 (Mrs. Higgins).

American Egret: At least one nest on Horicon Marsh. Two young were seen in this nest July 22; nearly full grown Aug. 12 (Mathiak). Six on Lake Koshkonong, Sept. 16 (Miss Haas). One at Westport, Aug. 8 (Robbins). Four in Pepin County, Aug. 16 (Kaspar). A large flock was in the vicinity of Prairie du Chien in late summer causing the daily newspapers to take notice of them. The Koehlers found a few additional scattered along the Mississippi north of this flock. By far the largest concentration reported in the state was a flock of about 250 in Genoa, Sept. 5 (Miss Morse). A few strays were sighted around Madison in late summer (Schorger).

Canada Goose: Flock of 14 flying over Oshkosh, Aug. 9 (Kaspar).

Wood Duck: Female lit in a willow about ten feet from porch of cottage on Lake Mendota, June 17 (Mrs. Koehler).

Redhead: Male remained on Lake Mendota at least until June 10 (Mrs. Koehler).

Lesser Scaup: Two females and one male on Lake Mendota, June 10 (Mrs. Koehler).

Red-breasted Merganser: Two summering at Racine (Dr. von Jarchow). Three on Lake Mendota, June 12 (Mrs. Koehler).

Turkey Vulture: One in Sawyer County, July 17 (Hartmeister). On Aug. 27, 14 were counted between Maiden Rock and Lake Pepin (Mrs. Koehler).

Goshawk: One chasing a raven over cedar swamp, Florence County, Sept. 13 (Feeney). One in Rusk County, July 2 and one in Oneida County, Aug. 21 (Hartmeister).

Rough-legged Hawk: Horicon Marsh, Sept. 22 (Mathiak).

Osprey: Madison, July 26 (Robbins).

Pigeon Hawk: Sauk County, Sept. 16 (Kruse).

Ruffed Grouse: Four nearly grown young were flushed in Sauk County, Sept. 6 (Kruse). Hen and seven large chicks, Forest County, Aug. 6 (Bradle). Hen and eight chicks about half grown, Oneida County, Aug. 9 (Hartmeister). Grouse drumming, Forest County, Sept. 20 (Bradle).

Virginia Rail: Florence County, Sept. 13 (Feeney).

Common Tern: Two on Lake Mendota, June 16 (Mrs. Koehler).

Nighthawk: Reached its peak in migration during the last three days of August in Sauk County (Kruse) and in Dane County (Mrs. Koehler).

Ruby-throated Hummingbird: Female gathering fuzz from willow seeds, Vernon County, July 29 (Miss Morse).

Pileated Woodpecker: Albino observed by Mrs. Glen Locking and reported by Mrs. R. B. Freed.

Red-headed Woodpecker: Many young out of the nest July 22-28, Appleton (Mrs. Rogers).

Phoebe: Nest with three young ready to leave nest, Forest County, Aug. 3 (Bradle).

Acadian Flycatcher: Observed Aug. 12 in same spot where found singing June 10, Madison (Robbins).

Wood Pewee: Nest with one young, Vernon County, July 16 (Miss Morse). Adult feeding two young just out of the nest, Aug. 26 (Miss Morse).

Barn Swallow: Young left nest, Sauk County, Aug. 26. This was the last hatch (Kruse).

Canada Jay: Sawyer County, Sept. 14 (Feeney).

Raven: Three in Clark County, July 12 (Hartmeister). Quite far south for breeding season.

Red-breasted Nuthatch: Three in Winnebago County, Sept. 3 (Kaspar). One in Sauk County, Sept. 9 (Leopold). One in Milwaukee, July 16 (Mrs. Schwendener).

House Wren: Last hatch left nest, Aug. 27, Sauk County (Kruse).

Bewick's Wren: Group of eight in woodlot where one was singing on May 13. The young were nearly full grown. Sauk County, July 18 (Kruse).

Mockingbird: Green Bay, Apr. 21 (Mrs. Hussong). Described elsewhere in this issue.

Pipit: Small group, Green Bay, May 7 and 8 (Mrs. Hussong).

Cedar Waxwing: Three young being fed in willow tree, Vernon County, July 22 (Miss Morse). With two young, Appleton, Aug. 7 (Mrs. Rogers). Very abundant around Oshkosh in June (Evans).

Golden-winged Warbler: Adults and five young on the wing, Rusk County, July 5 (Hartmeister).

Blue-winged Warbler: Pepin County, Aug. 16 (Kaspar).

Magnolia Warbler: Adults and at least two young, Waupaca County, July 12 (Kaspar).

Connecticut Warbler: Sauk County, Sept. 13 (Kruse).

Orchard Oriole: Young male in song, Viroqua, June 22 (Miss Morse).
On June 26 also a young male was in song in Sauk County (Kruse).

Rose-breasted Grosbeak: Young out of nest but not able to fly, Milwaukee, Aug. 10 (Mrs. Schwendener).

Indigo Bunting: Last hatch left the nest, Sept. 10, Sauk County (Kruse).

Purple Finch: Three, Sept. 10, Sauk County (Kruse).

Grasshopper Sparrow: Nest with five eggs, Vernon County, July 8 (Miss Morse). Three hatched by July 14, but on July 18 one egg remained and it proved to be infertile. On July 22 two nestlings were found in a depression about six inches away from the real nest also of two. The parent stood by with a green caterpillar. On July 25 the hay had been cut, and the birds were gone although the nest was still intact.

Lark Sparrow: Feeding young (also cowbird) in the vicinity of Lone Rock, June 22 (Miss Morse).

Chipping Sparrow: Feeding young, Vernon County, July 28 (Miss Morse).

Clay-colored Sparrow: Third nesting found of the same pair, however the bottom of the nest had fallen out; two young were dead and one was able to fly. Green Bay, late in July (Eric Richter).

Harris' Sparrow: Noteworthy numbers in autumn migration at Racine (Dr. von Jarchow).

Song Sparrow: One banded May 8, 1943 returned Apr. 30, 1944 and again Apr. 21, 1945. Green Bay (Mrs. Hussong).

BIRDS ABOUT OUR COTTAGE

By MRS. ANNA HALL

Our cottage is surrounded by white pine, hemlock, maple, birch and oak trees. It is very attractive to birds; ruffed grouse, goldfinches, fox sparrows and juncos abound, but the most interesting and enjoyable is the chickadee. Every winter I have some which will alight on my hand and eat pumpkin or sunflower seed and shelled peanuts. As soon as their appetite is satisfied they store the surplus. One day I saw a chickadee stuff a seed under the bark of a piece of firewood, but as soon as he had gone, a nuthatch came and took it.

But I have the most pleasure from our bird bath. One summer day I watched at length and noted the following: Beginning at 6:50 a. m. a robin bathed; song sparrow bathed; another song sparrow drank; another robin bathed. At 9:30 a. m. a chipmunk drank; next a robin, a goldfinch and two other birds drank; a downy woodpecker drank; two robins just made a call; a goldfinch took a drink; another goldfinch took a drink; then two more goldfinches came and drank at once. At 11:15 a. m. a chipping sparrow bathed; another chipping sparrow bathed; goldfinch bathed; robin bathed; two chickadees bathed at once; another chickadee bathed; a wren bathed; two wrens bathed; a purple finch bathed; and a song sparrow drank.

Even in the winter when the bath was filled with loose snow I counted eleven English sparrows bathing at one time in it.

Oconto Falls, Wisconsin, November 6, 1945.

TICHORA NOTES

By GEORGE KOEHLER

I was at Camp Tichora from June 17 to July 15, where I took a great number of notes on the habits of birds, especially with reference to their nesting. This scout camp is at Green Lake, about 65 miles north of Madison. Its 44 acres contain marsh, oak woods, fields, conifers and a steep rocky shoreline, producing an exceptionally large bird population as one can see from the following list of nesting species:

Least bittern 2P*, pheasant 1P, mourning dove 1P, yellow-billed cuckoo 1P, flicker 2P, downy woodpecker 1P, crested flycatcher 1P, phoebe 1P, least flycatcher 1M, wood pewee 1P, 3M, rough-winged swallow 2P, purple martin 8P, blue jay 2P, chickadee 1P, white-breasted nuthatch 1P, house wren 2P, prairie marsh wren 2P, 2M, catbird 4P, robin 3P, bluebird 1M, cedar waxwing 2P, red-eyed vireo 1M, warbling vireo 1M, oven-bird 1M, yellow-throat 1P, red-wing 28P, Baltimore oriole 3P, scarlet tanager 1M, cardinal 1M, indigo bunting 1P, 1M, towhee 1M, chipping sparrow 1P, swamp sparrow 1P. Total, 33 species and 87 pairs. This makes the extraordinary density of 200 pairs per 100 acres.

Also there were many visitors from just outside of the camp boundaries. These raised the total species observed to 54. Some of them were: Crow, goldfinch, field sparrow, song sparrow, vesper sparrow, black tern, common tern, herring gull, great blue heron, cowbird, kingbird, loon, hairy woodpecker, red-headed woodpecker, English sparrow, wood thrush, chimney swift, kingfisher, bank swallow, barn swallow and brown thrasher.

No doubt I missed some of the early nesters of the area by arriving so late in the season, but this brief visit gives an idea of its great bird population.

Madison, Wisconsin, 1945.

*P indicates a pair; M, a male at least.

SEMIPALMATED
PLOVER



PHOTO BY
HANS ZELL

ALTHOUGH OUT TO PHOTOGRAPH A PIPING PLOVER OBSERVED ON THE BEACH, ONLY THIS SEMIPALMATED PLOVER PHOTO WAS SECURED.

MISTAKING THE HAWK

By EARL G. WRIGHT

A lady living in De Pere, Wisconsin, called the Neville Public Museum, Green Bay, and complained that hawks were catching her chickens and that she had shot one and wanted to know what species it was. From her description, I guessed it to be a red-tailed hawk and asked her if we might have it for the Museum collection.

The next day she brought it in and it proved to be a large, female rough-legged hawk. Of course, I told her that this species was not the real offender and that it was often shot as an innocent bystander. The lady then told me the hawk was eating a mouse when she shot it, then went on to state that a weasel had killed twenty-two of her chickens earlier in the season and wanted to know how to set traps for the weasel. I gave her all the advice I could on weasel trapping and she left the hawk and went on her way. After preparing the hawk for mounting, I examined the stomach and craw and found the craw to contain two mice (*Microtus p. pennsylvanicus*). In the stomach I found three more (*Microtus p. pennsylvanicus*) and the remains and perfect skull of a weasel. Just another case of killing the goose that laid the golden egg.

Green Bay, Wisconsin.

NEWS

(Continued from page 98)

pileated woodpecker, Cooper's hawk, red-bellied woodpecker, oven-birds and grasshopper sparrow are among the most interesting.

Harry Anderson, long time bird observer about Madison, has returned from submarine duty in the Atlantic. Anderson served in the armed forces from the beginning.

Notices of change of address should be sent to the treasurer of the society.

"1946 will bring the Fiftieth Anniversary of the founding of the Massachusetts Audubon Society, the oldest society in America for the study and protection of birds and mammals."

Please check your name in the membership list to see that it is correctly written, including the year of joining the society and the class of membership held. Unfortunately we could not include any member's name not currently paid up, but, since renewals and new members will be listed quarterly, all such delinquents will be provided for.

Lt. F. R. Zimmerman is now communications officer stationed in the Philippines.

Mr. R. E. Meany, writing in *The Audubon Bulletin* of Illinois, states that a friend and he had success attracting martins to a bird house distant from water by attaching small mirrors alongside some of the holes. This was after several unsuccessful years without them.

T. E. Musselman, Sc. D., writing in the same magazine, points out "that the bands of Tanglefoot placed about our elm trees to protect them from canker moth caterpillars are destructive to brown creepers. The birds work slowly up the trees and often, instead of flying over the obstruction, try to hop through, thus being hopelessly besmeared with the sticky adhesive."

The Brewster Medal was awarded H. A. Hochbaum for the best ornithological publication during 1944. This award was made by the American Ornithologist's Union in recognition of Hochbaum's book, "The Canvasback on a Prairie Marsh." Hochbaum completed his master's degree in the Department of Wildlife Management under Prof. Leopold.

Two adult female house wrens and one adult wren banded in 1944 returned as breeders to the University Arboretum. A juvenile banded in 1943 also returned.

Of 18 adult catbirds banded last year in one area of the Arboretum, 13 returned. One bird was caught in the same bush in 1944 and in 1945.

A female cardinal banded in this study area April 27, 1937 repeated periodically in winter and spring and was last caught on June 19, 1945. It was not caught between June and December during these eight years.

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*Compiled as of November 10, 1945.

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— Dettmann, Warren, 3404 North 39th Street, Milwaukee.....	1941
— Deusing, Murl, Milwaukee Public Museum, Milwaukee.....	1939
— Doll, Mark H., 1243 South 76th Street, West Allis.....	1940
— Dollar, Miss Ferne, 417 Jackson Drive, Oshkosh.....	1940
— Donald, Miss Mary, 6918 Belmont Lane, Milwaukee 11.....	1944
— Drake, Miss Susan M., 2125 East Kenwood Boulevard, Milwaukee 11.....	1941
— Duckart, H. F., 240 Eighth Street, North, Wisconsin Rapids.....	1945
— Du Four, Miss Laura E., 1524 Boyd Avenue, Racine.....	1941
— Du Mez, William I., Hiawatha Heights, Menomonee Falls.....	1940
— Dunham, Mrs. Lloyd, 3209 West Wisconsin Avenue, Milwaukee 8.....	1945
— Dunlop, Mrs. J. W., 3332 North 14th Street, Milwaukee 6.....	1945
— Dunn, Mrs. Dorothy, 2879 North 8th Street, Milwaukee 6.....	1945
— Dunning, Miss Matilda, 319 Church Street, Neenah.....	1942

— Du Quaine, Mrs. M. J., 1301 Stuart Street, Green Bay.....	1944
Eales, Mrs. Irving, 414 Madison Avenue, Fort Atkinson.....	1945
Eastman, Whitney H., 2240 West Lake Isles of Minneapolis, Minnesota.....	1945
— Eckstein, W. L., Box 102, Benton.....	1944
— Edwards, Floyd W., Union Grove.....	1945
— Egeland, Mrs. Olaf, Rt. 1, Sturgeon Bay.....	1945
— Ehrhardt, Miss Olive, 1332 Rutledge Street, Madison 4.....	1945
— Elkert, Mrs. Henry, 2545 North 41st Street, Milwaukee 10.....	1945
— Ellis, Paul, Rockton, Ill.....	1945
— Ellis, Ralph, 12 Administration Bldg., University of Kansas, Lawrence, Kansas.....	1944
— Elton, Dir. Charles, Bureau of Animal Population, University Museum, Oxford, England.....	1944
— Engler, Mrs. John L., 210 South Greenfield, Waukesha.....	1945
— Erffmeyer, Jackson K., 6 South Loomis Street, Naperville, Illinois.....	1945
Erickson, Homer, Rt. 2, Pulaski.....	1940
Erickson, Mrs. R. O., Hartland.....	1945
— Essing, Miss Rose Marie, 1830 North First Street, Milwaukee 12.....	1945
Esten, Sidney R., 4340 North Illinois Street, Indianapolis, Indiana.....	1941
Evans, J. Harwood, 517 Jackson Drive, Oshkosh.....	1939
Evans, Miss Lucille, 2129 East Kenwood Boulevard, Milwaukee.....	1940
— Farner, Mrs. John, Colfax.....	1945
— Farrar, Mrs. R. R., 366 North Main, Mayville.....	1945
— Fell, Miss Florence E., 1005 East Walnut, Green Bay.....	1945
Fell, S. D., 1626 Ninth Street, Oshkosh.....	1940
— Feller, Robert M., F. 1/c, U. S. S. Kenton A. P. O. 122 E. Div. F. P. O. San Francisco, California.....	1945
— Felser, Mrs. Lina, 2370 North 59th Street, Milwaukee 10.....	1944
— Ferge, Richard, 8036 Milwaukee Avenue, Wauwatosa 13.....	1945
— Fessenden, Mrs. Louis, 1522 North Sixth Street, Sheboygan.....	1945
— Fey, Mrs. Frank R., 910 Elm Street, Wisconsin Rapids.....	1945
Firth, Mrs. Walter H., 2210 East Newton Avenue, Milwaukee 11.....	1945
— Fischer, Harvey, 3608 North 12th Street, Milwaukee 6.....	1944
Fischthal, Jacob H., 714 Benjamin Avenue, Spooner.....	1944
Fisher, Mrs. Glen, Rt. 3, Box 168, Oshkosh.....	1944
— Fletcher, Mrs. T. L., Rt. 2, Highlands, Madison 5.....	1945
Fletcher, Walter H., Box 54, Groton, Vermont.....	1942
— Fleugal, James B., 2405 South Park Street, Kalamazoo 35, Michigan.....	1945
Fonder, Winfred, 514 Melrose Avenue, Green Bay.....	1940
Fox, C. P., Rt. 4, Oconomowoc.....	1940
Franzel, R. J., 3700 North 22nd Street, Milwaukee 6.....	1944
— Freed, Mrs. R. Byron, Rt. 2, Box 187, Stevens Point.....	1944
— Freudenberg, Arthur D., 205 Jackman Building, Janesville.....	1945
Gailey, Franklin B., 731 State Street, Madison 5.....	1943
— Gardner, Sheldon T., 7625 North Greenview, Chicago 26, Illinois.....	1942
Gates, Mrs. Mabelle F., 714 Sixth Avenue East, Superior.....	1942
— Gatterdam, Dr. Paul C., 1836 South Avenue, La Crosse.....	1940
— Gatterdam, Paul E., 2539 Edgewood Place, La Crosse.....	1945
— Geise, Mrs. S. A., 2004 North 53rd Street, Milwaukee 8.....	1945
Gensch, Mrs. R. H., 5039 North 19th Street, Milwaukee.....	1945
Gephart, Mrs. C. H., 7100 Third Avenue, Kenosha.....	1941
— Gerlach, Mrs. H., North East Avenue, Menomonee Falls.....	1945
Gerry, Dr. Eloise, U. S. Forest Products Laboratory, Madison 5.....	1940
— Gibson, Mrs. Leslie B., Box 4, Taycheedah.....	1945
— Gillett, Mrs. J. E., Hayward.....	1944
Godfrey, Edwin S., 1103 East North Street, Appleton.....	1945
— Goffin, Herman, 107 Mayer Street, Neenah.....	1945
Goldsmit, Mrs. Edna J., Wood County Normal, Wisconsin Rapids.....	1945
— Graass, Henry, 320 East Walnut Street, Green Bay.....	1941
— Grant, Miss Margaret, Almond.....	1945
— Graves, Mrs. L. F., 2107 Slawson Avenue, Racine.....	1945
— Greenwood, Donald, 2859 North Fifth Street, Milwaukee 12.....	1945
— Gregg, Dir. Clifford C., Chicago Museum of Natural History, Chicago, Illinois.....	1941
— Greve, Mrs. H. C., Hayward.....	1944
— Griewisch, Louis, 114 Gray Street, Green Bay.....	1944

⁴ Gromme, Owen, Milwaukee Public Museum, Milwaukee.....	1939
Gross, Dr. Alfred O., 11 Boody Street, Bunswick, Maine.....	1941
⁵ Grosskrueger, Gerald, 314 Oakton Avenue, Pewaukee.....	1944
Guion, George Seth, 1701 American Bank Building, New Orleans, Louisiana.....	1939
Haas, Miss Marilyn, Johnson Creek.....	1945
Hachmeister, Mrs. Herman, Ephraim.....	1945
Haessler, Dr. F. H., 324 East Wisconsin Avenue, Milwaukee 2.....	1944
⁵ Halvorsen, E. J., 901 North 14th Street, Manitowoc.....	1944
Haman, Miss Theodora L., 1512 Nineteenth Street, Two Rivers.....	1942
⁵ Hammerquist, Mrs. Arcie, Rt. 1, Fort Atkinson.....	1945
⁵ Haney, J. G., Rt. 2, Amery.....	1944
Hanson, E. C., Jr., III, 1305 Wisconsin Avenue, Racine.....	1940
⁵ Harman, Peter, 2604 Hackberry Lane, La Crosse.....	1945
⁵ Harmon, Miss Ruth R., 119 East Washington Avenue, Madison 3.....	1945
⁵ Harms, Forrest, Rt. 2, Loganville.....	1945
Hartmeister, Felix A., Box 262, Ladysmith.....	1944
Hartquist, Miss Doris Polley, 812 Wyman Street, New London.....	1943
⁵ Hase, Paul W., 4336 North 14th Street, Milwaukee.....	1945
⁵ Hassler, Mrs. C. M., 446 Congress Street, Oconto.....	1945
⁵ Hawkins, Kenneth, 1018 Eighth Street, Watertown.....	1942
⁵ Hayward, Mrs. N. S., 1250 Fairview Avenue, South Milwaukee.....	1945
⁵ Hefti, J. N., 1102 East Forest Avenue, Neenah.....	1945
Heise, Mrs. L. W., 2631 North 96th Street, Wauwatosa 13.....	1944
Helble, Mrs. H. H., 838 East North Street, Appleton.....	1941
Hemp, Richard A., Mosinee.....	1945
⁵ Henkel, Miss Mathilda, 610 Blaine, Detroit 2, Michigan.....	1945
Heppler, E. A., 1516 Sixth Street, Beloit.....	1944
⁵ Hering, Miss Carol, Rt. 3, Box 51, Racine.....	1945
⁵ Hering, Mrs. Robert, Rt. 3, Box 51, Racine.....	1945
⁵ Herzog, Ray W., 305 Shenley Drive, Erie, Pennsylvania.....	1945
Hess, Mrs. L. F., 1624 Franklin Street, Racine.....	1944
Hicks, Lawrence E., Wildlife Research Sta., Ohio State University, Columbus.....	1944
Higgins, Mrs. Howard, 6302 Eighth Avenue, Kenosha.....	1944
⁵ Hilty, Palmer A., 433 State Street, Madison 3.....	1945
Hoffman, Miss Ellen, 1319 West Dayton Street, Madison 5.....	1939
Hoffman, Paul William, 8415 Kenyon Avenue, Wauwatosa.....	1939
⁵ Hogue, Mrs. Walter M., Box 293, Onalaska.....	1945
Hollister, Hal H., 11 East 75th Street, New York 21, New York.....	1944
Holly, Mrs. Robert S., 902 South Main Street, Waupaca.....	1945
⁵ Holmes, Mrs. Charles, 227 East South River Street, Appleton.....	1945
Holterman, John, 1229 Grignon Street, Green Bay.....	1940
Hook, Mrs. Fred L., 418 Hawthorne Avenue, South Milwaukee.....	1939
Horton, Miss Ethel Sue, St. Olaf College, Northfield, Minnesota.....	1943
⁵ Host, Mrs. E. P., 2546 Edgewood Place, La Crosse.....	1945
⁵ Huffer, Mrs. C. M., 2119 Regent Street, Madison 5.....	1945
⁵ Hughes, H. L., 1104 West Stoughton Street, Urbana, Illinois.....	1945
⁵ Hulick, P. V., 216 North 8th Street, La Crosse.....	1945
Hunter, Elden, 2507 North 24th Street, Milwaukee 6.....	1945
⁵ Hussong, R. P., 332 East Beaupre Street, Green Bay.....	1944
⁵ Hussong, Mrs. R. P., 332 East Beaupre Street, Rt. 3, Green Bay.....	1940
⁵ Hutto, Pfc. Jerome A., 36238471, A. G. Sec. Hq. 3rd U. S. Army, A. P. O. 403 c/o P. M., New York, New York.....	1945
⁵ Irish, Miss Fanny D., Muskego Shores, Waukesha.....	1945
Ivey, Zida C., 400 Madison Avenue, Fort Atkinson.....	1941
⁵ Izral, John Jr., Catawba.....	1943
Jackson, Arnold S. Jr., 1901 Adams Street, Madison 5.....	1939
¹ Jackson, Dr. H. H. T., Fish & Wildlife Service, Washington, D. C.....	1939
Jackson, William, 2473 North 46th Street, Milwaukee 10.....	1942
Jahn, August, 1247 Lawe Street, Green Bay.....	1939
⁵ Jensen, Ralph, 7627 28th Avenue, Kenosha.....	1942
⁵ Johns, Mrs. S. W., 25 Greenacre Avenue, Longmeadow 6, Massachusetts.....	1942
⁴ Johnson, Miss Frances, M. D., 2604 E. Hartford Avenue, Milwaukee 11.....	1944
⁵ Johnson, Mrs. I. W., Rt. 3, Box 231, Oshkosh.....	1945
Johnson, Mrs. Ralph, Little Suamico.....	1940

— Jones, Miss Elizabeth, Science Bldg., East Campus, Duke University, Durham, N. C.	1944
— Jones, Mrs. John D. Jr., Rt. 2, Box 481, Racine	1945
— Jones, S. Paul, Box D, Horicon	1939
— Joys, John E., 813 East Beaumont Avenue, Milwaukee 11	1944
⁴ Jung, Clarence S., 6383 North Port Washington Road, Milwaukee	1939
— Kahmann, Karl W., Rt. 2, Hayward	1939
— Kanitz, Ray William, 2629 North 62nd Street, Milwaukee 13	1944
— Karvell, Mrs. A. J., 417 Sixty-fifth Street, Kenosha	1942
— Kasper, John L., 392 Twenty-third Street, Oshkosh	1945
— Kelley, Mrs. T. L., 5011 West Wells Street, Milwaukee 13	1942
— Kelsey, Rachel M., 221 Clifford Court, Madison 5	1944
— Kennedy, Mrs. James M., 306 East 5th Street, Superior	1945
— King, F. Holman, 913 Huron Street, Manitowoc	1940
— Kinsey, Dr. Jack, 3414 West Wisconsin Avenue, Milwaukee	1940
— Kinzel, Carl, 4149 North 52nd Street, Milwaukee 9	1940
— Kissinger, Mrs. C. A., 3074 North Gordon Place Circle, Milwaukee 12	1945
— Kjolseth, Miss Karine, High School, Oshkosh	1939
— Klaus, Mrs. Robert, Rt. 4, Oconomowoc	1945
— Klein, Jacob, Shawano	1940
³ Klieforth, Ralph, 493 Algoma Boulevard, Oshkosh	1940
— Kloppenburg, Jack, 708 East Green Tree Road, Milwaukee 11	1945
— Knaab, Mrs. Lawrence, Rt. 2, Thiensville	1945
— Koch, Herman F., 1729 North 74th Street, Wauwatosa 13	1945
— Koehler, Mrs. Arthur, 109 Chestnut Street, Madison 5	1939
— Kolb, J. H., 3644 Lake Mendota Drive, Madison 5	1945
— Konrad, Henry, 7917 Stickney Avenue, Wauwatosa 13	1945
— Kraus, G. V., 906 West 5th Street, Marshfield	1944
— Krawczyk, Chester, 1494 Main Street, Green Bay	1941
— Kreznar, F. L., 6451 North 52nd Street, Milwaukee 9	1944
— Krueger, Alfred A., 5122 Tremont Street, Dallas 14, Texas	1943
— Krueger, Mrs. Henry, 100 Turner, Oconto	1945
— Krueger, Mrs. Nellie K., 3513C West Lisbon Avenue, Milwaukee 8	1943
— Krueger, Mrs. Rexford, 935 South 32nd Street, Milwaukee	1940
— Kurse, Harold, Logansville	1944
— Kugel, Miss Agnes R., 330 North Carroll Street, Madison 3	1941
— Kuhn, Kenneth, 1920 West Vienna Avenue, Milwaukee 6	1945
— Kuclaus, Mrs. Arthur, 1320 North 3rd Street, Sheboygan	1945
— Kummer, T. H., 4244 North Teutonia Avenue, Milwaukee 9	1945
— Kunath, Miss Arona C., 1441 North 28th Street, Milwaukee	1940
— Kust, Pvt. Bernard V., 36826488, Co. A—49th Bu. I. A. R. & C., 13th Reg. Bks. 1, Camp Howze, Texas	1945
— Laing, Charles, 762 North Van Buren Street, Milwaukee 2	1944
— Lampert, Mrs. Philip C., 410 East Lincoln Avenue, Belvidere, Illinois	1945
— Landis, Dr. Ralph V., Lt. Col. Med. Corps, Sta. Hosp., Chanute Field, Rantoul, Ill.	1942
— Larkin, Mrs. F. L., 5333 North Idlewild Avenue, Milwaukee 11	1944
— Larkin, Irving, P. O. Box 221, Appleton	1943
— Larson, Mrs. G. B., 2519 North 44th Street, Milwaukee	1941
— Lee, Mrs. T. J., 2917 South Logan Avenue, Milwaukee	1943
— Leighton, Mrs. L. S., 105 Park Avenue, Neenah	1943
¹ Leopold, Prof. Aldo, 424 University Farm Place, Madison 5	1939
— LeRoy, Miss Myrtle G., 1206 South Jackson Street, Green Bay	1944
— Lewis, Mrs. C. M., 1412 Lake Drive, South Milwaukee	1945
— Library, American Museum of Natural History, Central Park West at 79th Street, New York, New York	1941
— Library, Carroll College, Waukesha	1945
— Library, Columbus High School, Columbus	1944
— Library, Menomonee Falls Public, Menomonee Falls	1945
— Library, Milwaukee Public, 814 West Wisconsin Avenue, Milwaukee	1941
— Library, Milwaukee State Teachers College, Milwaukee	1941
— Library, Oconomowoc Public, Oconomowoc	1943
— Library, Racine Public, Racine	1941
— Library, Senior High School, Oshkosh	1942
— Library, Superior State Teachers College, Superior	1941

Library, University Farms, St. Paul, Minnesota.....	1941
Library, West High School, Mrs. G. Viola McCombs, Green Bay.....	1944
Liebman, Donald F., Ens. 358191, U. S. S.—L. S. M.—129, c/o F. P. O., San Francisco, California.....	1945
Lilly, John H., P. O. Box 200, Oregon.....	1944
Lloyd, Mrs. M. J., 2321 Carmel Avenue, Racine.....	1945
Loboda, Louis A., Box 135, New Lisbon.....	1939
Lopour, Mrs. Olga E., 2622 Mason Street, Madison 5.....	1945
Lorentz, Mrs. Irving P., 1006 East Manitoba Street, Milwaukee 7.....	1943
Machey, Miss Theresa L., 909 South 7th Street, Manitowoc.....	1945
Main, Mrs. H. A., Rt. 1, Fort Atkinson.....	1939
Malisch, Mrs. R. H., P. O. Box 13, Hales Corners.....	1944
Manske, Hadrian, Park Ridge, Stevens Point.....	1945
Marks, W. A., 807 First Street, Wausau.....	1941
Marsh, Mrs. Frank, Rt. 3, Madison.....	1945
Marsh, Miss Lillian, 909A South 7th Street, Manitowoc.....	1944
Mason, C. N., 6432 Thirty-first Street N. W., Washington 15, D. C.....	1939
Mason, Miss Mary Maude, 1845 North Oakland Avenue, Milwaukee 2.....	1944
Mathiak, Harold A., Box D, Horicon.....	1939
Maxson, Mrs. Melva, 437 Rogers Street, Milton.....	1942
McAlpin, Mrs. H. D., 114 First Street, Belvidere, Illinois.....	1945
McEachron, Miss Edith, Rt. 1, Sturtevant.....	1944
McGeen, Dan, 2930 Harrison, Detroit 16, Michigan.....	1941
McMaster, Mrs. Leta D., 1030 South State Street, Belvidere, Illinois.....	1945
McMillan, Miss Jean, 2702 North Stowell Avenue, Milwaukee 11.....	1940
McNeel, W., College of Agriculture, Madison 6.....	1944
Meinke, Miss Luella L., Rt. 3, Westfield.....	1945
Meissner, Miss Charlotte, 1534 North 2nd Street, Sheboygan.....	1944
Meyer, Miss Margaret, 839 North 67th Street, Wauwatosa 13.....	1944
Meyrose, F. H., R. F. D. 1, Box 350, Waterford.....	1939
Miles, Mrs. Philip E., 1900 Arlington Place, Madison 5.....	1941
Miller, Mrs. Helen B., 33 Franklin Avenue, Oshkosh.....	1942
Milward, Daisy, 724 Conklin Place, Madison.....	1939
Mitchell, Mrs. Earl, c/o Glenn Lipscond, 300 Idlereen, Springfield, Missouri.....	1939
Mitchell, Mrs. Robert S., 119 North Rankin Street, Appleton.....	1943
Moeller, Mrs. Harriet, 649 West Acacia Road, Milwaukee 9.....	1944
Moeran, Edward H., 541 Bronx River Road, Yonkers, New York.....	1941
Moerer, Mrs. Marshall, 215 South Eva Street, Port Washington.....	1944
Morgan, Dr. Banner Bill, Dept. Veterinary Science, Madison.....	1942
Morse, Miss Margarette E., 122 West South Street, Viroqua.....	1939
Moseng, Lloyd R., 736 South Main Street, Racine.....	1944
Moser, Dr. R. A., 1407 Medical Arts Bldg., Omaha, Nebraska.....	1940
Mosiman, Miss Nancy, 2571 North 28th Street, Milwaukee 10.....	1945
Mossman, Dr. H. W., 2902 Columbia Road, Madison 5.....	1944
Muckenhirn, Robert J., 2326 Rugby Row, Madison 5.....	1939
Mueller, Helmuth, 2756 North Palmer Street, Milwaukee 12.....	1944
Mueller, Walter J., 3043 North Prospect Avenue, Milwaukee.....	1939
Murray, Joe, 122 West James Street, Columbus.....	1945
Murray, Robert A., Rt. 4, Oshkosh.....	1940
Museum, Kenosha of History and Art, Civic Center, Kenosha.....	1941
Museum, Neville Public, Green Bay.....	1942
Muth, Miss Anna, Woodrow Wilson Junior High School, Rt. 2, Manitowoc.....	1944
Naber, C. D., 430 South Sawyer Street, Shawano.....	1945
Neenah High School Conservation Club, Neenah.....	1944
Neess, John C., 2116 East Estes Street, Milwaukee 7.....	1941
Nelson, Charles E. Jr., 124 Oxford Road, Waukesha.....	1944
Nelson, Mrs. C. E. Jr., 124 Oxford Road, Waukesha.....	1945
Nelson, Harry P., 835 North Cass Street, Milwaukee 2.....	1944
Nelson, Mrs. Nels, Rt. 1, Hayward.....	1944
Nelson, Dr. Theodora, 315 East 68th Street, New York 21, New York.....	1941
Nelton, E., Balsom Lake.....	1945
Nevitt, Chares Jr., 250 Lake Drive, Oshkosh.....	1940
Northup, Miss Helen, 134 East Gorham Street, Madison 3.....	1945
Nunnemacher, Mrs. H. J., 2815 East Newberry Boulevard, Milwaukee 11.....	1941

Nutt, Mrs. C. R., 521 Western Avenue, Plymouth.....	1945
Oberholser, Dr. Harry C., Cleveland Museum of Natural History, 2717 Euclid Avenue, Cleveland, Ohio.....	1940
Oehlenschlager, Miss Elizabeth A., "The Hummocks," Sta. C., Rt. 6, Milwaukee.....	1940
Oesau, Miss Joan, Rt. 1, New Holstein.....	1945
Oldenburg, William, 3284 North 15th Street, Milwaukee.....	1941
Olsen, Mrs. Ethel, South Wayne.....	1939
Orbison, Mrs. T. E., 214 South Rankin Street, Appleton.....	1942
³ Orians, Gordon, 2401 South Williams Street, Milwaukee 7.....	1945
Orians, Dr. G. H., University of Toledo, Toledo, Ohio.....	1944
Orians, Rev. Howard L., 2401 South Williams Street, Milwaukee 7.....	1942
Ott, Frederick, 2527 North Wahl Avenue, Milwaukee 11.....	1940
Otto, Charles A., 18 Pleasant Street, Oshkosh.....	1945
Otto, Mrs. William F., 1522 Ohio Street, Oshkosh.....	1945
Pabst, Harold, Oconomowoc.....	1944
Paeske, Gordon L., 522 Twelfth Street, Watertown.....	1944
Palmer, Richard J., 909 Memory Lane, De Pere.....	1945
Pankowski, Arthur, 1726 South 8th Street, Milwaukee 7.....	1945
Parker, Mrs. Harry F., Rt. 4, Box 298, Lake Shore Drive, Kenosha.....	1945
³ Parker, Mrs. Kenneth, 1000 Milwaukee Road, Janesville.....	1939
Parker, Mrs. William W., 512 East Capitol Drive, Hartland.....	1944
Parrott, Mrs. Nellie, Endeavor.....	1945
Pascoe, Mrs. Truman A., Port Edwards.....	1945
⁴ Paulson, E. O., 430 Fairview Court, Green Bay.....	1939
Peartree, Edward W., 425 South State Street, Oconomowoc.....	1940
Peirce, Mrs. Walter A., 2335 Carmel Avenue, Racine.....	1939
Pennington, Mrs. Golda, Birnamwood.....	1942
Perry, Miss Mildred R., 531 Main Street, Reedsburg.....	1945
Petersen, Dr. R. E., 1611 Torrison Drive, Manitowoc.....	1944
Peterson, A. J., 1504 Deane Boulevard, Racine.....	1945
Peterson, Alvin M., Onalaska.....	1941
Peterson, Miss Eleanor, 916 Conklin Place, Madison 3.....	1939
Peterson, Mrs. Theo. J., 319 Harrison Street, Waupaca.....	1943
Peterson, W. H., 304 Princeton Avenue, Madison 5.....	1945
Pettingill, Dr. O. S. Jr., Carleton College, Northfield, Minnesota.....	1941
Phillips, Mrs. A. D., Shorewood Hills, Madison 5.....	1939
Pickett, Miss Merle N., 909A 7th Street, Manitowoc.....	1945
Pinkley, Mrs. R. H., 2502 East Newberry Boulevard, Milwaukee 11.....	1945
Pirnie, Dr. Miles D., Rt. 1, Augusta, Michigan.....	1941
Pischke, Mrs. Frank, Rt. 3, Oshkosh.....	1945
Platten, Ambrose, 723 Bond, Green Bay.....	1944
Platts, Mrs. Leona D., 335 High Street, Milton.....	1945
Playman, Mrs. H. L., 217 North Union Street, Appleton.....	1940
Poe, Forest R., 2139 North 48th Street, Milwaukee 8.....	1941
Pohn, Wilmer, Belgium.....	1944
Poppe, Mrs. Fred, 711 East South River Street, Appleton.....	1945
Porter, Miss Helen, 1440 South 80th Street, West Allis 14.....	1939
Potter, Miss Nettie, 1211 South High Avenue, Freeport, Illinois.....	1944
Powers, Miss Myrtle, Scotts, Michigan.....	1945
Prins, George, 403 Park View, Racine.....	1944
Protsman, Miss Naomi, c/o Rev. A. J. Protsman, Green Lake.....	1943
Prucha, Miss Alma H., 3052 North Maryland Avenue, Milwaukee.....	1943
Pusch, Roy J., 714 South Summit Street, Appleton.....	1943
⁴ Radsch, R. M., 28 Bellaire Court, Appleton.....	1945
Ramsay, Mrs. R. E., 302 North Lawe Street, Appleton.....	1945
Ramsey, Mrs. D. J., 1626 Quincy Street, Racine.....	1945
Redmond, Kenneth, Mosinee.....	1943
⁴ Reese, Mrs. H. H., Shorewood Hills, Madison 5.....	1939
Reiss, Mrs. Peter, 1225 North 7th Street, Sheboygan.....	1945
Reitmann, Miss Olive, 1504 North Prospect Avenue, Milwaukee 2.....	1945
Reynolds, Theodore, 718 Tenth Street, Beloit.....	1945
Richardson, Rev. F. C., 1130 Wisconsin Avenue, Beloit.....	1945
* Richter, Carl H., 703 Main Street, Oconto.....	1939
⁵ Richter, Eric, Rt. 6, Green Bay.....	1945

- Richter, Dr. M. R., Chaseburg.....	1945
Ringland, William L., 2134 South 80th Street, West Allis 14.....	1943
- Ritchie, Miss E. Margaret, 845 East College Avenue, Appleton.....	1945
Robbins, Chandler, Patuxent Research Refuge, Bowie, Maryland.....	1940
Robbins, Samuel D., 5757 University Avenue, Chicago 37, Illinois.....	1940
Roberts, Dr. Thomas S., University of Minnesota, Minneapolis, Minnesota.....	1939
- Rock, Harold W., 2631 South 30th Street, Milwaukee.....	1945
Rogers, Kay Trowbridge, 911 East North Street, Appleton.....	1939
Rogers, Dr. Walter E., Box 135, Appleton.....	1939
Rogers, Mrs. Walter E., 911 East North Street, Appleton.....	1939
Rohlfing, Mrs. Anthony, 1502 East Hartford Avenue, Milwaukee 11.....	1941
Rollis, E. J., 200 South Monroe Street, Stoughton.....	1945
Roloff, Mrs. Emilie L., Rt. 2, Madison.....	1941
- Rom, Miss Betty B., Pewaukee.....	1945
- Romig, Bill, 201 Whitney Road, Green Bay.....	1945
Romig, Paul W., R. F. D. 6, Green Bay.....	1944
Rood, A. E., 652 Amanda Street, Burlington.....	1941
Rood, Mrs. A. M., 1440 Main Street, Racine.....	1939
Ross, Laird, 332 Harrison Avenue, Waukesha.....	1945
Rueppel, Miss Eunice, 331 North Ashland Avenue, Green Bay.....	1940
- Rule, Mrs. William D., 4316 South Howell Avenue, Milwaukee 7.....	1945
- Russell, Mrs. Alfred C., Endeavor.....	1945
Russell, Donald M., P. O. Box 202, Clintonville.....	1944
Ryder, A. W., 344 Washington Boulevard, Oshkosh.....	1944
Sage, Charles H., c/o Kimberly-Clark Corp., Neenah.....	1945
Sander, Phil, 6203 Twenty-second Avenue, Kenosha.....	1941
Schaal, J. Wesley, Rt. 2, Gillette.....	1945
Schaars, H. W., 2356 North 19th Street, Milwaukee.....	1940
Schacht, Mrs. Arthur L., Rt. 2, Box 185, Racine.....	1940
Schacht, Miss Laura Mae, Rt. 2, Box 180, Racine.....	1941
Schaller, Miss Ruth, 2579 North 14th Street, Milwaukee 6.....	1945
Schmidt, Mrs. A. R., Box 167, Hayward.....	1945
Schmidt, E. S., Bellin Building, Green Bay.....	1942
Schmidt, Lt. John R., O-680949, Br. 3—H. A. A. F., Honda, Texas.....	1941
Schneiders, Dr. Hugo O., 410 Mayer-Lotz Building, Wausau.....	1942
- Schoenebeck, Owen, Suring.....	1945
- Scholler, Miss Mary K., 17 South Wisconsin Street, Janesville.....	1945
¹ Schorger, Dr. A. W., 168 North Prospect Avenue, Madison 5.....	1939
Schriever, Fred, Boys' Technical High School, Milwaukee 4.....	1939
Schroeder, Helen, 916 Conklin Place, Madison 3.....	1939
- Schroeder, Miss Jennette, 1413 College Avenue, Racine.....	1945
Schweitzer, Mrs. G. H., 614 South Washington Street, Waupaca.....	1945
Schwendener, Mrs. Carl W., 1722 North 48th Street, Milwaukee.....	1940
Schwengel, Armin O., 457 West Oakland Street, Port Washington.....	1945
- Scott, Mrs. Eileen, Rt. 1, Sta. F., Milwaukee 9.....	1945
Scott, Walter E., Hickory Drive, Mendota Beach Heights, Madison 5.....	1939
Scott, Mrs. Walter E., Hickory Drive, Mendota Beach Heights, Madison 5.....	1939
Seabourne, Ben, 815 East Alton Place, Appleton.....	1940
⁴ Seables, Clarence A., R. R. 3, Box 305, Wisconsin Rapids.....	1940
- Seguin, Miss Hazel, 1205 Sixteenth Street, Superior.....	1945
- Sharp, Richard, 2623 North Buffum Street, Milwaukee 12.....	1944
- Shoemaker, Mrs. Milton J., 3433 Sunset Drive, Madison 5.....	1944
Shuman, Miss Bertha, 136 South 19th Street, La Crosse.....	1944
Sieker, Miss Josephine, 1220 South 11th Street, Manitowoc.....	1939
Simmons, Mrs. W., 2007 North Holton Avenue, Milwaukee.....	1940
- Skemp, Mike, 26th and Cass Streets, La Crosse.....	1945
Skuldt, Mrs. Dorothy R., 28 East Gilmon Street, Madison 3.....	1941
- Smith, Miss Katherine, 1400 Nineteenth Street, Two Rivers.....	1945
- Snapp, Mrs. L. J., 2317 Midway Boulevard, Wausau.....	1945
Snell, Mrs. G. E., 414 Erie Avenue, Sheboygan.....	1942
- Solberg, Nelson, Rt. 3, Hayward.....	1945
- Somerville, G. D., 948 Bond Street, Green Bay.....	1945
Speirs, Mrs. Doris H., 92 McFittire Street, W., North Bay, Ontario, Canada.....	1941
³ Spoo, Mrs. Erwin, 324 Lake Drive, Oshkosh.....	1940

St. Clair, Mrs. E. A., 2418 North 65th Street, Milwaukee 13	1944
Stage, Miss Mary H., Rt. 1, Birnamwood	1943
Staley, Miss D., 4117 Iroquois Drive, Madison 5	1945
Stehlik, Joseph, 1526 Carlisle Avenue, Racine	1943
Stephenson, Harold, 30 Hadley Street, Dayton 9, Ohio	1939
Steven, Lee P., 3910 West Walnut Street, Milwaukee 8	1941
Stillman, Miss Ruth, 885 Terry Place, Madison	1939
Stoddard, Herbert L., Sherwood Plantation, Thomasville, Georgia	1940
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Stolzmann, Miss E. M., Tucson Public Schools, Tucson, Arizona	1943
Storck, Oscar, 3400 West Willard Avenue, Milwaukee 9	1945
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Sturgeon, Dr. Myron T., Michigan State Normal College, Ypsilanti, Michigan	1945
Suehring, Mrs. Geo. F., 2169 South 84th Street, West Allis 14	1945
Terrell, Clyde, Terrell's Aquatic Nurseries, Oshkosh	1939
Tharinger, Miss Annette, 6300 West Wisconsin Avenue, Wauwatosa	1945
Thiede, Mrs. W. O., 532 North Ida Street, Appleton	1940
Thomas, Mrs. F. L., 115 East Prospect Avenue, Stoughton	1945
Thomas, Gerald S., 817 Arcadian Avenue, Waukesha	1945
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Thomas, Mrs. R. F., 4626 North Barlett, Milwaukee	1944
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Thorne, Samuel A., 2963 Farwell Avenue, Milwaukee 11	1940
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Urban, William, Schofield	1939
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Voelzke, William, 818 English Street, Racine	1940
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Volk, Miss Emily, Public Schools, Two Rivers	1945
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Warner, Dwight M., Rt. 1, Box 15, Whitewater	1940
Warner, Richard L., 512 West Boulevard, Racine	1945
Wassow, Mrs. Loerwood C., 7009 West Chestnut, Wauwatosa 13	1945
Watertown Chapter, Isaac Walton League, W. A. Otto, Sec'y., 512 North Water Street, Watertown	1945
Watson, Miss Mary Catherine, 3501 Blackbird Drive, Shorewood Hills, Madison 5	1945
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White, Jules Arden, Rt. 1, Roscoe, Illinois	1945
Whitmus, Mrs. W. J., 2352 North 66th Street, Wauwatosa 13	1944
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Williams, Richard A., 516 College Avenue, Beloit	1945
Wilson, Harold C., Ephraim	1939

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Wolfe, Dexter, T/3, 36821637, P. O. Box 1663, Sante Fe, New Mexico.....	1940
Wolfe, Dr. Harold R., Biology Building, Madison 6.....	1939
⁴ Wood, Edgar, 404 Security Boulevard, Milwaukee 3.....	1945
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