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SANDHILL CRANE

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IN THIS ISSUE

COVER PHOTO: There is a good possibility that members will be able to observe this stately bird during the 1965 convention. A field trip is planned to the Sandhill Wildlife Demonstration Area near Babcock on Sunday, May 16, 1965. On page 172 you will find details about the convention and field trips.

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The Ornithological Flood of September 18-20, 1963

By Charles A. Kemper
Samuel D. Robbins
Arol C. Epple

PART 1—INTRODUCTION

By Charles A. Kemper

Members and guests of WSO, may I say at the beginning of this paper, what a great pleasure it is for me to be here on the 25th anniversary of this wonderful organization. To be on the same podium with Professor Arol Epple and Reverend Sam Robbins is an association I find most flattering and this study is a cooperative venture that I have most enjoyed.

One of the most observable and remarkable migration phenomena ever recorded in Wisconsin occurred in the fall of 1963. It may be that the great massive flight that took place in late September was simply closer to the observer than usual. It may be that circumstances magnified the image so that it appeared more phenomenal than it really was. We cannot dispute the likelihood that much migration goes on at great heights on clear nights without significant detection. So without losing perspective of this, we will attempt to describe a veritable flood of migrants through Wisconsin (and Minnesota) that almost defies imagination.

Someone has said that opportunity is a combination of luck and preparation.

The Opportunity

On the night of September 18, 1963, WSO made good on a great opportunity. We performed an experiment of real significance that shed some real light on the mysterious, majectic phenomena of bird migration.

To explain this I must go back further in time.

The opportunity from my personal point of view began about 13 years ago, when I made a house call on an invalid patient. I have long forgotten the nature of the patient's illness. But I won't forget seeing for the first time on the bedside table a copy of **The Passenger Pigeon.** My patient was happy to lend me his copy. This was my introduction to WSO. The progression of events since then has been most fruitful to me. The many happy, stimulating hours, new friends, new places seen, all these things that resulted from this lucky event have been a most wonderful serendipitous part of my life.

While this was a stroke of luck, I must pay tribute to the vitality, energy and vision of the original charter members who made WSO a reality. We all owe them a great deal.

The second phase of the opportunity for the experiment began at Milwaukee at the WSO convention 6 or 7 years ago. We were discuss-

This paper was presented at the Society's 25th annual convention at Madison on May 23, 1964.

ing the mortality of birds at TV towers. Then, as now, we pondered whether the large bird kill really reduced bird numbers, or were these casualties just a tiny sample of a great migratory flight on a given night. To begin answering this question, research has to be done on the breadth or extent of the flight. Sam Robbins described his experience of hearing thousands of chips going over his house on one night. If only we knew if they were going over the rest of the state at the same time. I then made the suggestion that we set up an audio chain of volunteer listeners throughout the state. One person could call another and he would call another and another all across the state. But practical reflection suggested this might be too ambitions. Some one might not be home and the whole chain would be broken.

At first, we tried to have volunteers listen every night for a limited time—says 5 minutes every hour, for several hours each night. This was tried and some results were published, I believe, in **The Passenger Pigeon.** Even though some volunteers did yeoman service—I think of Harold Bauers in Milwaukee listening from his attic window to escape the city background noises—our reported data was too scanty to be significant. But at least we had broken the ice and prepared for future work.

The Plan is Activated

The seed of the idea didn't really germinate until September 18, 1963. When Sam Robbins called me long distance that night, I knew before he finished saying, "Hello, Charles," what he had in mind. I said to him, "I know what you want to tell me." He was taken aback, but I was right. He told me of the tremendous number of chips heard overhead. At that point we decided to put our original idea into action.

I made a five-minute count, called Arol Epple at Stevens Point, and he in turn called Al Holz at Green Bay. This was tremendously interesting, but I felt a little hesitant to wake up Arol. But I needn't have been. He was most enthusiastic.

Thus, we had a chain of four simultaneous listeners about equidistant apart at about the same latitude across the state. For the first time we had real evidence of a widespread movement of what must have been millions of birds across the entire state. This was a real fulfillment of an opportunity and a real accomplishment.

But it is only the beginning. Before this meeting is over, I hope to have a group of volunteer telephone communicants all over Wisconsin. These people will be willing to answer the challenge of listening to the skies on a night of mass migration and expand our experience. Eventually I hope we can stretch this all over the country, and even into Canada. This will be a great research project—a real pioneering ornithological opportunity for the WSO.

PART 2—OBSERVATIONS

By Samuel D. Robbins

My first inkling that a substantial flight was under way on the evening of September 18 came at about 10:00 p. m. I had been at a church

gathering at Hammond, and when I stepped outside at the end of the meeting, my attention was immediately drawn to a barrage of call notes from low-flying night migrants. For a few minutes several of us stood outside listening, and then I left for home. The distance between Hammond and Roberts is six miles, and it occurred to me that here was a chance to determine whether the low-flying migrants were spread out over a front several miles wide, or were channeled into one tiny little funnel that happened to center over Hammond at that time. I made four stops between Hammond and Roberts, and found that the flood of migrants was heavy at every stop. The telephone chain that ensued offers evidence that the flight that night was so broad that it blanketed the width of the entire state.

To make some sort of guess of the magnitude of the flight, we made some five-minute counts of the chips we heard (Table 1). My personal figures showed considerable variation—well over one chip per second

TABLE 1.

"CHIP" COUNTS OF NIGHT MIGRANTS
SEPTEMBER 18-19, 1963

At Duluth

"Between 9:30 and 11:30 p. m. constant chipping was heard from the stream of migrants overhead, but no chip counts were made."

At Roberts

10:55-11:00 p. m.: 360 chips
11:30-11:35 p. m.: 278 chips
12:20-12:25 a. m.: 44 chips
12:25-12:30 a. m.: 135 chips
5:55- 6:00 a. m.: 43 chips

At Stevens Point

12:06-12:11 a. m.: 26 chips
12:26-12:31 a. m.: 41 chips
12:39-12:44 a. m.: 49 chips

At Cedar Grove

5:50 a. m.: Estimated average of 50 thrush calls per minute.

At Chippewa Falls

11:15-11:20 p. m.: 75 chips

At Green Bay

12:00-12:30 a. m.: 105 chips (17 per 5 minutes)
12:30-12:45 a. m.: 200 chips (67 per 5 minutes)
12:45- 1:00 a. m.: 104 chips (35 per 5 minutes)

At Madison

Nothing reported.

at the heaviest times, less than one chip per ten seconds at the lightest times. For the sake of conjecture, let us made several assumptions:

(1) The flight probably was under way by at least 9:00 p. m., and was in full swing by 9:30 p. m . Evidence for this comes from Duluth, where Janet Green reported that the flight was under way by 8:30 p. m. with nearly 100 birds killed at a ceilometer by 9:00 p. m.

(2) The flight probably continued until 8:00 a. m., and was probably heaviest at least until 7:30 a. m. Evidence for this comes from Eau Claire, where birds were reported still hitting the tower until 8:00 a. m. I kept hearing night migrants until 6:50 that morning, and by that time there was so much sound from daytime resident birds that it was quite impossible to measure night migrants.

(3) In all probability the number of birds passing over a given point is greater—rather than less—than the number of chips heard. At times

when I have heard isolated night migrants, they have sometimes shown a wavering flight in which the same bird could be heard six to eight times; but at times when birds are moving in numbers, their flight is direct, and rarely is the same bird heard more than once. It seems reasonable to suppose that the birds that may have been within hearing range for more than one call note would be more than outnumbered by birds that passed over without emitting any call.

(4) Night migrants apparently go over in waves—heavy at times, light at other times—and one should average out heavy and light periods to arrive at anything like a reasonable estimate.

If these assumptions are used, there is every reason to believe that the number of birds that passed within hearing distance of my home in Roberts that night was in excess of 20,000.

The number of birds detected by other members of the telephone chain was much less. But this does not necessarily mean that the flight was signicantly stronger in the western edge of the state. If the other listeners had to compete with more passing cars and trucks and other noises, the figures would show wide differences. The keenness of an individual's hearing is also a strong factor; I happen to have been blessed with an unusually sensitive pair of ears, and I would estimate that fully half the sounds I counted were so faint that they would have gone undetected by somewhat less sensitive ears.

Daytime Bird Observations

After listening to this tremendous migration at night, I wished very much that I could have spent several hours afield the next morning to witness with my eyes something of what I had been hearing with my ears. Unfortunately, my schedule for the 19th was so pressing that I was able to be in the field only briefly from 9:00 to 10:00 a. m. Yet, on the basis of that brief glimpse, I would call that morning one of the most exciting days for small passerines in fall migration that I have ever experienced. In this short time I was able to identify some 30 vireos of four species, and 90 warblers of 16 species. I also wrote in my notes: "Tremendous wave; unable to identify more than one of every 15-20 warblers seen." This inability to identify more birds was due at least in part to the behavior of the birds. My previous experience with fall warblers has been that the first hour or so of daylight is a poor time to see warblers, for during that time they are still very restless and fly around too much to permit close observation. Later on they settle down to feed, and are more easily seen. On the morning of the 19th, even though I did not get into the field until 9:00, the birds were still showing their restless movements that I usually associate with the first hour of daylight. It was not until 9:30 a. m. or so that the birds appeared to settle down for their morning feeding. The logical assumption is that this nocturnal flight did not stop at daybreak but extended somewhat into the daylight hours. This is corroborated by Janet Green's observations at Duluth on the morning of the 19th, in which she mentions hearing and seeing birds pass overhead along a ridge between 7:00 and 7:30 a. m. A somewhat different pattern was observed by Helmut Mueller at Cedar Grove. He detected the passage of a front at 6:08 that morning

and a shift to a northeast wind. With the passage of the front, the thrush calls of the previous 15-minute interval suddenly ceased, and no birds were seen or heard in the sky for the rest of the morning.

I must confess to having been caught off guard on the night of September 19-20. My previous experience had led me to believe that one would almost never expect a heavy flight of low-flying night migrants on two consecutive nights. So, although I listened briefly late that evening, and heard what I thought was a surprising number of calls (73 chips between 11:15 and 11:20 p. m., and another 90 chips between 11:20 and 11:25 p. m.), I did not stay with it and do any extensive listening or counting.

Nor did most of the other observers, apparently, for only at Madison do we have a report of substantial numbers of night migrtnts, that coming from Tom Soulen between 10:00 and 11:00 p. m.

On the morning of the 20th, I again spent 1½ hours afield. Passerines were present in fair numbers, but not at all comparable to what they had been the previous morning. The most interesting thing this day was a hawk flight. Between 11:00 and 12:00 a. m., and again for a five-minute period near 2:00 p. m., I observed a total of 217 hawks of six species—mostly Broad-wings. Undoubtedly, the total count could have gone much higher for the weather conditions were excellent. At times the birds were so high that even with binoculars they could be made out only when soaring against the background of a white cloud. No outstanding hawk flight was observed either at Duluth or at Cedar Grove that day, but Mrs. Russell Rill noted at Clintonville at least seven flocks of hawks that must have had a combined total of close to 500 birds. Tom Nicholls in Madison reported a very heavy flight of passerines there on the morning of the 20th.

PART 3—BANDING RESULTS

By Arol C. Epple

It is amazing how much data has been collected on this one event. Only four people were jointly involved in making observations, but through the channels of WSO's bird reporting system so ably directed by Samuel Robbins we have been able to amass a considerable amount of additional information. I, for one, certainly hope that the plans for a statewide system for the observation of birds as suggested by Dr. Kemper and Rev. Robbins will materialize.

Banding data from Kemper in Chippewa Falls and Mueller in Cedar Grove reveals interesting information. Kemper reported one of his best banding days on September 19 and again on the 20th. During these two days he banded 31 species for a total of 309 individual birds. It is interesting to note the results of a comparison between tower kills at Eau Claire and banding data accumulated by Dr. Kemper during the same period. Although Dr. Kemper has a complete record of the birds banded and has compared this information with individual species of birds that were killed at the tower, I will present only a partial listing. The following data has been selected:

Species	Banded	Killed at Tower	Ratio
Swainson's Thrush	39	226	1:6
Red-eyed Vireo	43	1181	1:27
Philadelphia Vireo	25	696	1:28
Tennessee Warbler	37	959	1:26
Blackpoll Warbler	11	446	1:44
Redstart	9	546	1:61
Black-and-white Warbler	2	259	1:125
Magnolia Warbler	15	1346	1:90
Cape May Warbler	1	241	1:241
Chestnut-sided Warbler	7	858	1:123
Ovenbird	14	966	1:69

If it is assumed that tower kills were somewhat proportionate to the number of each species in migration, then it becomes apparent, when the two groupings of birds in the above chart are compared, that the number of birds trapped or netted is not necessarily an indication of the relative abundance of each species in migration.

Other investigators using radar have come to the same conclusion, but as far as I have been able to determine, Dr. Kemper is the only one who has compared the number of birds killed at a TV tower with the number of birds banded, and has been able to make comparisons between individual species.

On the morning of the 19th, Dr. Mueller at Cedar Grove netted 305 birds. In a letter to Reverend Robbins concerning his experiences on this morning, he writes, "Our mist net catch on the 19th of September was 305 birds. In any other year this might have been our best day, but this year it comes in fifth. We have had five 300 plus days this year, one of which (September 7) had a catch of 416 birds."

Mr. Edward Peartree of Oconomowoc reports that his best banding day of the fall was on the morning of the 20th. Eighty-eight birds were handled and among them were "many Magnolias."

In field reports to Rev. Robbins, Tom Soulen and Tom Nicholls of Madison commented on the number of birds in the area on the 19th and 20th of September. Mr. Soulen related that migrants were numerous between 10 p. m. and 11 p. m. on the 19th and that most of the birds were Swainson's Thrushes. Mr. Nicholls wrote that on the 20th "trees and bushes were literally full of birds" and that many species of warblers and numerous Gray-cheeked Thrushes were seen.

Banding records and field observations alone do not indicate that a tremendous number of birds were in Wisconsin during this migratory wave, but when added to the other information presented in this article the evidence becomes overwhelming.

PART 4—TV TOWER MORTALITIES

By Charles A. Kemper

On the night of September 18-19, Janet Green in Duluth, Minnesota, reported a tremendous migration of birds all night and extending until after dawn. Eighty-two birds were killed between 8:30 and 9:00

p. m. at the airport. At this time the lights were turned off, preventing a greater kill. I quote from her notes: "According to Weather Bureau personnel at the Duluth airport, the birds were killed only about 10-20 minutes before the ceilometer was turned off at 9:00 p. m. During this time the air was thick with birds and when it became apparent that they were falling to the ground the light was turned off. If it had been kept on the kill certainly would have been tremendous.

"My husband and I arrived at the airport at 9:30 p. m. and during the next two hours collected and identified the birds that had been killed. During this time constant chipping was heard from the stream of migrants overhead, but unfortunately no chip counts were made. Two of the birds picked up at the airport provided good evidence to support our theory of how the birds are killed. We think that most deaths were due to mid-air collisions of the birds which then fell stunned to the concrete runways and were killed. Two birds that I picked up had feathers, obviously not their own, adhering to their bills, as if they had rammed into another bird head first. During the time of the kill the wind was NNW at 8-9 mph. At 8:00 p.m. the ceiling was 7500 feet and completely overcast. At 8:50 the ceiling was the same with a broken cloud level at 1300 feet. At 9:00 the whole ceiling had dropped to 1300 feet. Stunned and crippled birds were quite in evidence around the airport from about 9:00 to 9:30 but after that became less numerous.

"The birds at the TV tower, which is about 450 feet high, were collected from 7:00-8:00 a. m . The area around the TV tower is covered with tall weeds, bushes and high grass so probably many were missed. From 7:00 to 7:30 small birds could be heard and seen passing overhead along the ridge line to the southwest, but after 7:30 their numbers fell off."

Swarming Like Hornets

On the night of September 21, the number of chips heard overhead at the site of the Eau Claire TV tower, were absolutely too numerous to count. It was a fantastic continuous chipping. I'll never forget it. The sky was overcast, the ceiling about 1500 feet. When a TV studio lamp was shone upward on the tower, it looked like a swarm of hornets around a nest. Birds were flying crazily and confusedly about the tower. Every now and then, about four a minute would fall to the ground. Believe me, I had several near misses that were startling!

A group of graduate students from the University of Minnesota were able to catch falling birds before they hit the ground by walking along with a net stretched between them. They used these birds for investigating the presence of plant spores and molds. They commented that on crossing the St. Croix River at Hudson a ceilometer beam was catching many migrants in the light. So this gives some idea of the density of bird migration on just this one night.

It is not my purpose here to discuss TV tower bird mortalities. This will be done elsewhere. But a table of migrants found dead at the tower has been compiled (Table 2). It is interesting that at Lewisville, Minnesota, 90 miles southwest of Minneapolis, on the night of September 20-21, there were TV tower mortalities. I have complied data from these 3 nights to give some idea of the quantity and quality

TABLE 2.

WISCONSIN AND MINNESOTA TV TOWER MORTALITIES

SEPTEMBER 18-21, 1963

	Mortalities at Eau Claire, Wis.				Mortalities at Lewisville, Minn.		Birds Banded at Chippewa Falls, Wis.	
	Sept. 18-19		Sept. 19-20		Sept. 20-21		Sept. 18-21	
	No.	%	No.	%	No.	%	No.	%
Sora	2	.04	....	....	3	.33	....	....
Yellow Rail	....	....	....	....	2	.22	....	....
Mourning Dove	....	....	1	.02	1	.11	....	....
Black-billed Cuckoo	1	.02	3	.07	....	....	....	....
Unidentified flycatchers	6	.11	2	.04	....	....	....	....
Yellow-bell Flycatcher	1	.02	....	....	....	....	1	.32
Traill's Flycatcher	1	.02	1	.02	5	.54	6	1.94
Least Flycatcher	1	.02	1	.02	6	.65	7	2.26
Red-breasted Nuthatch	4	.07	....	....	1	.11	....	....
House Wren	....	....	....	....	7	.76	....	....
Long-billed Marsh Wren	....	....	....	....	3	.33	....	....
Short-billed Marsh Wren	....	....	3	.07	5	.54	....	....
Catbird	6	.11	17	.37	94	10.17	2	.65
Black-capped Chickadee	....	....	....	....	....	....	1	.32
Wood Thrush	....	....	1	.02	2	.22	....	....
Swainson's Thrush	145	2.59	81	1.76	51	5.52	39	12.61
Gray-cheeked Thrush	37	.66	34	.74	2	.22	6	1.94
Veery	7	.13	4	.09	3	.33	....	....
Ruby-crowned Kinglet	....	....	....	....	1	.11	....	....
Cedar Waxwing	4	.07	1	.02	....	....	8	2.59
Yellow-throated Vireo	10	.18	43	.94	3	.33	....	....
Solitary Vireo	96	1.71	35	.76	45	4.88	5	1.62
Red-eyed Vireo	384	6.86	797	17.30	305	33.00	43	13.93
Philadelphia Vireo	402	7.19	294	6.40	18	1.95	25	8.10
Warbling Vireo	....	....	....	....	11	1.19	....	....
Black-and-white Warbler	135	2.42	124	2.70	30	3.25	2	.65
Golden-winged Warbler	12	.21	11	.24	....	....	....	....
Tennessee Warbler	594	10.61	365	7.94	12	1.30	37	11.97
Orange-crowned Warbler	....	....	1	.02	....	....	....	....
Nashville Warbler	67	1.20	40	.87	72	7.80	8	2.59
Parula Warbler	2	.04	6	.13	1	.11	....	....
Yellow Warbler	1	.02	4	.09	7	.76	....	....
Magnolia Warbler	846	15.09	500	10.86	2	.22	15	4.86
Myrtle Warbler	5	.09	4	.09	1	.11	3	.97
Cape May Warbler	192	3.43	49	1.08	....	....	1	.32

TABLE 2. (Continued)

	Mortalities at Eau Claire, Wis.				Mortalities at Lewisville, Minn.		Birds Banded at Chippewa Falls, Wis.	
	Sept. 18-19		Sept. 19-20		Sept. 20-21		Sept. 18-21	
	No.	%	No.	%	No.	%	No.	%
Black-thr. Blue Warbler	1	.02	1	.02	....	....	....	....
Black-thr. Green Warbler	31	.55	14	.34	....	....	2	.65
Blackburnian Warbler	8	.14	23	.50	1	.11	....	....
Chestnut-sided Warbler	385	6.88	473	10.28	17	1.84	7	2.26
Bay-breasted Warbler	425	7.59	540	11.71	11	1.19	11	3.56
Blackpoll Warbler	384	6.86	62	1.35	....	....	11	3.56
Pine Warbler	....	....	....	....	3	.33	....	....
Palm Warbler	288	5.15	41	.89	1	.11	....	....
Ovenbird	512	9.14	454	9.88	90	9.75	14	4.54
Northern Waterthrush	61	1.09	38	.83	4	.43	2	.65
Connecticut Warbler	1	.02	75	1.63	3	.33	1	.32
Mourning Warbler	....	....	4	.09	6	.65	....	....
Unidentified Oporornis	95	1.69	131	2.84	....	....	....	....
Yellowthroat	39	.70	19	.41	65	7.04	3	.97
Wilson's Warbler	2	.04	2	.04	6	.65	....	....
Canada Warbler	....	....	2	.04	2	.22	....	....
Redstart	345	6.17	201	4.37	3	.33	9	2.91
Bobolink	....	....	....	....	1	.11	....	....
Baltimore Oriole	....	....	1	.02	1	.11	....	....
Scarlet Tanager	23	.41	34	.74	5	.54	1	.32
Rose-breasted Grosbeak	26	.46	58	1.26	1	.11	9	2.91
Indigo Bunting	....	....	1	.02	1	.11	....	....
Purple Finch	2	.04	1	.02	....	....	4	1.29
Savannah Sparrow	2	.04	....	....	....	....	....	....
Vesper Sparrow	....	....	1	.02	....	....	....	....
White-crowned Sparrow	....	....	1	.02	....	....	....	....
White-throated Sparrow	2	.04	1	.02	1	.11	13	4.21
Lincoln's Sparrow	2	.04	....	....	9	.97	13	4.21
Swamp Sparrow	1	.02	....	....	....	....	....	....
Total birds	5596		4600		924		309	
Total Species	46		50		47		31	

of the flight. You will note that certain species are tremendously affected in the Wisconsin area, the Red-eyed Vireo, Philadelphia Vireo, Tennessee Warbler, Magnolia Warbler, Chestnut-sided and Bay-breasted and Ovenbird were hardest hit. In Minnesota, in a prairie region, there is a different make-up. Note that here the Red-eyed Vireo and Ovenbird are likewise hard hit, but the number of Rails, Catbirds, Nashville Warblers, Marsh Wrens and Yellow-throats make up a much higher percentage

of casualties than at the Eau Claire tower. The report of "Warbling Vireos" killed in Minnesota is most surprising to me. I would like to question the accuracy of identification here. Our Warbling Vireos have long since departed by this date. Perhaps in the west they stay longer.

PART 5—MEASURING MIGRATORY FLIGHTS

By Samuel D. Robbins

Four standards have been used to gauge something of the unusual size of the September 18-20 flight. Two of these measure birds that attempted to pass overhead without stopping: 1) counts of nocturnal chips, and 2) television tower casualties. Two measure birds that put down to rest on their migratory journeys: 1) banding and 2) diurnal observations.

By every one of these standards, the flight stands out as a most exceptional one. The measurement of television tower casualties makes it sound like a record-breaker.

Yet it does not necessarily follow that this flight was actually bigger than some that might occur nearly every year. It is reasonable to assume that 1) roughly the same number of passerines are likely to migrate over a given region in the course of a season, 2) the passage of the bulk of these birds may be presumed to be associated with the various frontal systems that pass through the region in the course of the season, and 3) the number of frontal systems is not likely to vary widely from one year to another.

What can be said with certainty is that weather conditions were such that the flight of September 18-20 occurred at an unusually low altitude.

More Observations Needed

Attempts to measure the size of migratory flights—be they spring or fall—are of ever increasing importance. Much more effort needs to be made to understand them. For instance, how disturbed should we be over the loss of 30,000 birds at one television tower in two nights? Of course, no bird lover is going to feel happy over such loss of life. But does this pose a threat to the survival of some species, as more and more towers reach up higher and higher? Or are migratory flights so huge that the loss at Eau Claire last fall can be written off as a negligible drop in the bucket? Before this and other related questions can be answered, a great deal of information needs to be assembled from a great many people. We still do not know if last fall's flight tended to concentrate along the major water arteries of the state—the St. Croix, the Mississippi, the Chippewa, the Wisconsin, the Fox, Lake Michigan—or if it was equally widespread throughout.

We would encourage all of you to help gather this data. One way in which you can do this is by spending a few moments outside on some of the more promising evenings when migrations may be taking place. Listen for call notes. If you hear any substantial number, take some sample five-minute counts, and record your data. What the collaborators in this paper heard on the night of September 18 last fall, each of you might have heard, either that evening or the following night.

We would urge each of you, too, to pay closer attention to those days when bird migration is most noticeable. If you possibly can, get out into the field for at least a little while on the day after you may have heard a heavy night migration. Or if you can't get into the field, notice whether there are an unusual number of birds present in your yard. Keep records. And when the time for submitting quarterly reports comes, make some mention of the times of heaviest migration. We are anxious that the WSO field note program be much more than a listing of species and the dates of their first arrival.

PART 6—WEATHER AND MIGRATION

By Arol C. Epple

Most of the species of birds involved in the migratory flood being reported in this paper build their nests and raise broods within an area extending from the northern-most tier of states to the timber line and tundra regions of northern Alberta, Saskatchewan, Manitoba and Ontario. As fall approaches and parental responsibilities come to an end, a migratory state develops that readies them for their flight to winter quarters in Central and South America.

The majority of migratory passerine birds that winter in Central and South America leave their nesting grounds for a more favorable winter climate during the period from August 15 to October 15. The peak flow of this migration occurs in September when more species are winging their way south in greater numbers than at any other time.

Ornithologists are convinced that an internal mechanism under hormonal control, and an external condition involving weather, are the major factors stimulating birds to migrate. The intrinsic factor which is developed by changes in the total amount of light, establishes a period of readiness and the extrinsic stimulus triggers the date of departure.

Fat Accumulation and Migration

Within recent years a large amount of information concerning fat deposition on the bodies of birds before, during, and after migration has been accumulated. Those species that fly great distances make large increases in the amount of fat on their body before beginning their journey. A number of experiments have determined that the distance a bird is able to fly is dependent upon the amount of energy stored as fat in its body. As energy demands during migration deplete the fat accumulations, birds stop enroute for varying periods of time to build up their food reserves. The fact that birds are able to rapidly deposit large amounts of fat on their bodies prior to and during migration apparently involves a metabolic change that is probably influenced by a shift in the hormonal balance. This ability of birds to modify their fat accumulations might be a fruitful area of investigation for those nutritionists who are studying the relationship of food intake to fat deposition in humans.

More is known about the effect of the intrinsic factors upon the development of migratory readiness than is known about the triggering effect of weather. This is possible because captive birds can be subjected

to controlled conditions in a laboratory, and their behavior in relation to changes in daily amounts and duration of light studied. In contrast, weather must be taken as it occurs, and the ability to isolate a specific factor involved in the total weather pattern and relate it to bird movements is extremely difficult, if not impossible.

Within recent years radar has been used to supplement visual and audio observations of nighttime migrations. Whereas visual observations and "chip" counting gives the best results for birds flying at low altitudes, radar is better at noting flights at higher levels. Radar can do little to determine the species of birds involved in a flight but is an excellent means for providing information on the numbers in migration. This instrument has provided much more information relating to weather and migration than could have been learned without it.

Despite advances in weather analysis and techniques for studying bird migrations there is no clear cut understanding of how weather influences this movement. It is generally agreed that changes in barometric pressure have no effect and that birds seldom migrate when the sky is overcast, or when it is raining, or when the wind velocity is greater than a moderate speed.

Migratory passerines have been observed during their southern flight to be taking advantage of a tail wind to help speed their journey, and there is evidence to indicate birds await such a condition before setting forth. It has also been noted that during late summer and early fall birds will frequently begin their southward flight when a sudden drop in temperature occurs. Some observers consider this factor to be the stimulus that initiates flight. Despite the lack of agreement on the specific factor or factors involved, most all agree that mass migrations of passerines occurring during the fall often follow a slow moving cold front.

Review of the Weather Pattern

The weather pattern that passed over Wisconsin from the 18th to the 20th of September originated with two fronts that developed on the 14th. One front extended across northern Canada and the other reached from central Alberta to the southern border of New Mexico. By the 16th these two fronts had joined to form a single trough that extended from western Nebraska northeast to a region around Great Whale, Quebec.

During the period from September 14th through the 20th the weather in the northcentral states, Saskachewan, Manitoba and western Ontario was characterized by moderate temperatures, gentle to moderate winds, overcast skies, light rains and a slow moving cold front. Temperatures were normal for this time of the year and ranged from approximately 35 to 50 degrees during the night and between 60 and 75 degrees during the day. The temperatures ahead of the front were only slightly warmer (5-8 degrees) than those to the rear. Wind speeds varied from 15 to 20 miles per hour during the 14th, 15th and 16th and diminished somewhat between the 18th and 20th. The overcast sky and the fact that some birds were flying into a gentle breeze ahead of the front are noteworthy. The overcast sky, of course, was responsible for the birds flying at low altitudes. It may be that the flight speed of the birds,

being more rapid than the advancement of the front, caused a number of them to overfly the front and move into the gentle and somewhat southerly (variable SE to SW) winds that occurred ahead of the front. There is the possibility that lacking the opportunity for celestial navigation the birds were using wind direction to orient their flight. That birds were flying ahead of the front as well as behind it is indicated by the observations of Robbins who noted "chips" at 10:00 p. m. on the 18th when the front was still north of this point. It is quite possible that when Holz and myself were making "chip" counts at midnight that the front was passing at that time. During my observations at 12:35 a. m. I noted clearing skies and a west wind. Dr. Mueller at Cedar Grove reported numerous "chip" counts until 6:08 a. m. (September 19) at which time the front passed and the "chips" suddenly stopped. Kemper in Chippewa Falls heard birds calling at 11:00 p. m. and estimated that tower kills at Eau Claire started as early as 8:00 p. m. That birds were noted in migration during the nights of the 19th and 20th and the 20th and 21st, which, of course, would be following the front, is not unusual. Migration of birds behind a front characteristically continue for two and occasionally three days. Flights of birds in waves of a few days and then an apparent drop in numbers to almost none is a common observation.

Overcast conditions prevailed to a large extent from September 14th through the 19th. Except for a clearing condition in northwest Minnesota, in North Dakota, and southern Manitoba on the 16th when the front was forming, overcast conditions existed for distances approximating 200 to 300 miles behind and 100 to 200 miles in advance of the front. The ceiling for the cloud cover varied at times from 300 feet in some places to 8,000 feet, with the usual height being under 4,000 feet. That these conditions existed indicates the birds were taking off in an overcast with little chance for celestial navigation. Inasmuch as a major migration occurred under these seemingly adverse conditions it would appear that some factor, not always associated with migratory movements, may have been involved. Significant changes in temperature and barometric pressures were not present and could hardly be the stimulus that set the birds in motion. The only remaining features that could be involved are wind velocity and direction. Wind speeds are only significant to the extent that they aid or deter flight, and in this instance the velocities behind the front were of sufficient force to be of some value in assisting the birds in their forward flight. The winds ahead of the front were also moderate and not of sufficient force to produce an avoidance reaction. Wind speed, however, would not provide a means of orientation for their flight, whereas the direction of both the head and tail winds would. By keeping in the mainstream of the air currents whether it be the southerly breeze (SE to SW) ahead of them or the northerly wind (NE to NW) behind them they would be able to continue in the correct direction.

Birding is fun and to many the greatest enjoyment comes while observing birds in the field. Further adventures await those who will take to the out-of-doors on overcast nights during the periods of migration and count the "chips" overhead. Not only will they have added a new dimension of pleasure to their birding activities, but by reporting their

observations to Reverend Samuel Robbins, the associate editor of **The Passenger Pigeon,** they will have made available their findings to all who read the Society's official publication.

SELECTED LITERATURE ON WEATHER AND MIGRATION

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1955 Direct studies in noctural bird migration. **In** Recent Studies in Avian Biology, 238-262.

Odum, E. P., C. E. Connell and H. L. Stoddard
1961 Flight energy and estimated flight ranges of some migratory birds. The Auk, 78:515-527.

733 Maple Street
Chippewa Falls, Wisconsin 54729
and
Roberts, Wisconsin 54023
and
Wisconsin State University
Stevens Point, Wisconsin 54481

ANNOUNCING THE 1965 CONVENTION

In 1965, WSO members and friends will trek to Stevens Point for the Society's 26th convention. The date for this always interesting, annual event is the weekend of May 14-16.

The word from Arol Epple, WSO vice president and convention arranger, is that his committee has concocted the convention ingredients that you will relish.

Here is some of the advance information:

Item 1. Convention headquarters will be in the Science Building, Wisconsin State University-Stevens Point.

Item 2. Dr. Walter J. Breckenridge of the Minnesota Museum of Natural History will be the main banquet speaker. Dr. Breckenridge is well-known throughout the nation as an ornithologist as well as an Audubon Screen Tour lecturer.

Item 3. Field trips are planned to the heron and cormorant rookery on the Wisconsin River near Stevens Point on Saturday morning and to the Sandhill Wildlife Demonstration Area near Babcock on Sunday

HEADQUARTERS FOR THE 1965 CONVENTION WILL BE IN THE SCIENCE BUILDING, WISCONSIN STATE UNIVERSITY, STEVENS POINT.

EL-RAY ASSOCIATES PHOTO

morning. Now, mind you, Arol didn't come right out and say it, but there was an implied guarantee that we will see Sandhill Cranes on Sunday morning.

Item 4. An art and photography contest will be held once again. This event has always been of interest, and we hope we will have more entries this year than ever before. So, you artists and photographers—don't hide your light under a bushel basket—write to Mrs. Merwood Chipman, Route 2, Wautoma for details of the contests. And then send in your entry.

Item 5. The convention committee has arranged for an exhibit of famous bird prints.

Item 6. The Book Store will again be operating during the entire convention to satisfy your ornithological needs.

Item 7. You will have an opportunity to "visit under the stars" at the University's new planetarium. Tours will be conducted in this theater of the stars that features the solar system, planets and constellations.

Advance information about the convention will be sent to all members in the near future. This will include more details on convention arrangements, hotel and motel accommodations, and the excellent camping facilities at Bukolt Park at Stevens Point.

It's a little early to pack your suitcase and binoculars right now, but you can reserve the dates of May 14-16, 1965 for WSO's 26th annual convention at Stevens Point.—Nils P. Dahlstrand.

By the Wayside . . .

Goshawk Stalks Pheasant. On February 9, 1964, as I was coming out of a private drive, I saw a Goshawk flying through the trees on the far side of the road ahead. When I reached the exit, I stopped my car. Directly across the highway in some low growing evergreens and tall grass, a cock pheasant was standing, neck stretched, fully alert. I was about to drive on when a movement behind him caught my eye. A Goshawk appeared, stalking the pheasant on the ground. He would move forward a few feet and then pause to look and listen. The pheasant remained motionless. When the hawk reached a position only a yard or two from him but still concealed by the grass, he either heard or saw it, and started to run. At this moment a car went by and startled the hawk, who flew off. In a matter of seconds he was back and, perching on a poplar tree some fifteen feet above the ground, scanned the surrounding undergrowth for sight of the pheasant. The latter had disappeared. I believe he had not stopped running once he started. Three or four minutes later another car startled the hawk into flight and this time he did not return.

The hawk could not have caught the pheasant in a race on the ground but he was eventually going to drive his intended prey away from the cover of low pines and grass to the adjacent more open undergrowth, where he could strike from the air. A fight between the two would have been worth seeing, for a powerful cock pheasant is no pantywaist. In the Dakotas I have seen them beat off hawks of the Buteo type successfully. A Goshawk would, I believe, be a different matter.—Alfred S. Bradford, Appleton.

NO FIELD NOTES IN THIS ISSUE

For years and years, editors of **The Passenger Pigeon** have been struggling to maintain an up-to-date publication schedule. It appears now that we will reach this goal within the next few months.

To provide the associate and seasonal editors with enough time to compile and write the regular "Field Notes" feature, a change is being made with this issue. Normally, the spring, 1964, "Field Notes" would be published in this issue. Instead. they will appear in the Spring, 1965, issue. Thereafter, the summer. autumn, winter, etc. "Field Notes" will appear in the corresponding issues of **The Passenger Pigeon.**

From Douglas County

Vireo and Woodpecker Nests Observed

By RICHARD F. BERNARD

I. YELLOW-THROATED VIREO

Information concerning the status of the Yellow-throated Vireo (**Vireo flavifrons**) in northern Wisconsin has heretofore been incomplete (**The Birds of Wisconsin,** 1951:95). The finding of two nests along the Brule River near the Brule Ranger Station on May 17, 1964, establishes this vireo as a breeding species in Douglas county. This represents the northernmost nesting record for the species in Wisconsin (**AOU Checklist,** 1957:471).

Previous sight records of adult Yellow-throated Vireos were obtained on at least two other occasions in Douglas county. One bird was observed by Rev. Samuel D. Robbins on July 2, 1963, (Robbins, personal comunication) and another was seen by the author at the St. Croix Flowage on May 10, 1964.

The environment along the Brule River consists of mixed coniferous and deciduous forest.

From May 17 to June 12 the adult vireos were observed at the nests on frequent visits. On May 31 as well as on June 2 the birds appeared to be incubating. By June 20 both nests were deserted and the nests were then collected. One nest is now in the ornithology collection at Wisconsin State University-Superior, while the other was donated to the Audubon Field Camp at Sarona, Washburn county, Wisconsin.

The first nest was about 20 feet from the ground in a red pine situated some 15 feet west of the Brule Ranger Station. The pensile nest was suspended from the terminal fork of a branch in characteristic vireo fashion. The nest was constructed mainly of bark and plant fibers and lined with pine needles.

During our observations at the nest, the incubating vireo seemed undisturbed, but the other adult near the nest often seemed agitated. In fact, the incubating bird rarely moved while on the nest and seldom left the nest while we were present.

On June 12, Bernard Klugow managed to climb the nest tree and observed four young in the nest.

The second nest was located in a quaking aspen some 25 feet from the ground. The nest tree was near the center of the picnic area adjacent to campground #2 in the Brule River State Forest. Nest 2 was similar in construction to nest 1 with the modification that birch bark made up the bulk of the nest cup exterior.

Although both adults were repeatedly observed at or near the nest, the actual nest contents were never determined.

These appear to be the only breeding records of this species in Douglas county.

II. BLACK-BACKED WOODPECKER

Although the Black-backed Woodpecker (**Picoides arcticus**) has long been known to occur and breed in northern Wisconsin (**The Birds of Wisconsin,** 1951:63) there are actually few reported nesting records for this species in the northern part of the state. Specifically, I can find no breeding record for this woodpecker in Douglas county.

The Black-backed Woodpecker has been observed in late June and early July along the Brule River in Douglas county for the past two years, but previous attempts to locate its nest were unsuccessful.

However, on June 25, 1964, George LaBar, Paul Gregory and I found a nest of the Black-backed Woodpecker while canoeing on the Brule River. The nest was located in a white cedar some 1.5 miles east of the Stone Bridge landing on County Highway S. The opening to the nest cavity was approximately 15 feet from the ground and had a diameter of about two inches. The entrance to the nest cavity seemed quite small considering the size of the adult bird. The depth of the nest cavity was estimated to be about nine inches.

Some six feet from the nest tree was a second cavity (also in a white cedar) which was empty and may well have been a former nest site since the shape and position of the cavity were essentially the same as that of the active nest.

When found, the nest contained five fully developed young which were close to leaving the nest. The young were observed poking their heads out of the nest cavity on several occasions. It is interesting to note that the young males also possessed a yellow crown patch similar to that of the adult male.

During our observations at the nest, the adult bird remained nearby (usually about 20 feet away) and uttered a few distress notes, but generally remained silent and seemed fairly undisturbed by our presence. The young, on the other hand, were extremely noisy and maintained a constant racket of peeping notes in an attempt to be fed. In fact, the various sounds from the young led us to the nest.

On the following day, George LaBar, Bernard Klugow and I revisited the nest site and observed that the young woodpeckers (still noisy) were in the nest. On this occasion, the female soon appeared and fed the young (various unidentified larvae) but some 10 to 15 minutes passed before the male appeared. He also fed the young some larvae and then flew to a nearby tree.

During both visits, we noted that the adults did not enter the nest cavity but remained in the vicinity of the nest site while we were present.

The finding of this nest establishes the Black-backed Woodpecker as a breeding species in Douglas county.

Department of Biology
Wisconsin State University
Superior, Wisconsin

The Care of Nestling and Orphaned Birds

By MURRAY and JANE OLYPHANT

During the spring, many of us find baby birds on the ground that are too young to fly, and are apparently deserted by their parents. Unless there is positive proof that the parent birds are dead or have actually deserted the bird should not be removed from the area. Nine times out of ten the parent birds are nearby.

What to Do

Although a baby bird should seldom be taken into a house, there are a few things that can be done for its safety. Young birds that are hopping about will be safer if placed high in a nearby tree or dense shrubbery. Nestling birds unable or barely able to perch should be returned to the nest. If the nest has been destroyed or cannot be located, a substitute nest can be made, lined with grass, cotton, or other soft material, and securely placed well off the ground in a nearby bush or tree. An Easter egg basket or perhaps a shoe box hung from a rope can be used. When this is done the parent birds will very likely return to the area to care for the nestling, who will usually let himself be known by continual peeping. In any case, remember: baby birds are very nervous and easily injured. Handle gently and as little as possible.

Abandoned Young Birds

In those cases where there is proof that a young bird is permanently abandoned its chances of survival may be improved by caring for it until it can fly. This is no easy job and the mortality rate is high. The original nest or a suitable substitute will be needed. For nestlings the bird and nest should be brought indoors and covered with a lightweight cloth so that air will pass through for breathing. The temperature of the room should be fairly constant between 70-80 degrees, and the nest should be kept out of drafts. For more active birds place the nest in a larger, high-walled box with some branches or twigs for perching. Between feedings cover the box with a lightweight cloth. The cloth serves not only to keep the bird in and retards drafts, but quiets the bird and thereby insures proper rest. Birds are agitated by the sight and sound of humans so the less disturbance the better.

Feeding

During daylight all young birds should be fed every 20 to 30 minutes. Regardless of species, baby birds will usually take one or more of the following items.

Reprinted by the kind permission of Dr. Phillip Taylor, Director, The Science Museum, and Mr. John Fletcher, Director, St. Paul Como Zoo, St. Paul, Minnesota.

Suggestions in this paper follow closely those in Chicago Park District Zoo Pet Bulletin #11. In addition, the authors acknowledge suggestions and help from Dr. Dwain Warner, Curator, Museum of Natural History, University of Minnesota, John Fletcher, Director, St. Paul Como Park Zoo, and Phillip S. Taylor, Director, The Science Museum, St. Paul.

(1) Ground up or very finely chopped 10-minute boiled egg including the shell chopped up and mixed in with the addition of vitamin drops, cod liver oil and small amounts of water to moisten ingredients (this is recommended for all birds).
(2) Finely chopped hamburger.
(3) Pablum mixed with small amount of milk or water to moisten.
(4) Section of earthworm or cut-worm grub.
(5) Small amounts of mealy apple or banana.

If nesting box is rocked slightly, very young birds will open their bills in anticipation of food: in the wild, of course, as the bird lands, the nest is jostled slightly. Possibly because they are frightened, older birds may not open their bills. If this is so, the bill should be very gently opened with finger and toothpick. A good feeding tool is a flat toothpick with food stuck on the end. Small tweezers are also very good.

Never give water or milk to baby birds with an eye dropper. Liquids thus forced on young birds are frequently fatal because of choking or drowning. Only when a bird is old enough to perch on a twig, should it be offered water in a shallow saucer or plate.

Handling

Because of the bird's unnatural confinement and consequent nervousness, it is very important not to handle or pick it up except when absolutely necessary. If the bird must be picked up, cover its back with the palm of your hand and have its head protruding between the first and second fingers. In this way the thumb and other fingers gently enclose the body and restrain the wings. A small bird's bones are tiny and fragile and are easily injured or dislocated. In particular avoid pressure on breast and abdomen (belly).

Release

As soon as a young bird can fly slightly, turn it loose to forage for itself. Although parent birds normally teach their young to find food, a young bird has some foraging instincts. However, a bird which has been hand fed too long will generally become very dependent and will probably not be able to take care of itself. If release comes when the bird shows signs of flying, its chance of leading a healthy life in its normal wild state is much increased.

Sick or Injured Adult Birds

Nature is cruel. There is little hope for distressed birds. Leave such birds alone; they may be carrying diseases communicable to man. An injured bird stands some chance in the care of a qualified expert.

What Kind of Bird is It

Identifying baby birds can be very puzzling. Baby birds generally differ markedly from the adults in plumage, shape of bill and other characteristics. Hence, by themselves they can be positively identified only by an experienced ornithologist. Most of us will have to depend on seeing the parent bird for proper identification.

Good references include Roger Tory Peterson's, **A Field Guide to the Birds,** and **Birds,** Golden Nature Guide Series.

4000 Hidden Bay Road
St. Paul, Minnesota 55109

Keep Those Feeders Full

By DOROTHY STEINBACH

If you have encouraged birds to remain in your garden in the fall by establishing feeders for them, it is now of utmost importance to keep them well supplied with food. These are the months when deep snow covers the natural feeding sources, and the feathered creatures have be-

MRS. STEINBACH MAKES CERTAIN THAT "HER" BIRDS RECEIVE AN AMPLE AND VARIED DIET.

MILDRED LAIB PHOTO

come almost completely dependent on you to feed them. This is an excellent time to review the "gastronomic" needs of the birds, and perhaps you will find that you can add to the staples you have been providing. Birds, too, like variety, and different birds prefer different foods.

There is, of course, the commercially mixed bird seed which is available in the stores, and it is a well known fact that sunflower seeds are the favorite of many birds. However, did you know that the cardinals like squash and pumpkin seeds practically as well as sunflower seeds? I make it a point to save these seeds whenever I serve these vegetables to my family, and since we raise large quantities of squash and pumpkins, I have more than the usual access to the seeds.

Medium sized chick feed is eaten by many birds. If you mix in five pounds or more of sunflower seeds to 50 pounds of chick feed, and also

five pounds of fine gravel or oyster shell, you will have a fine, general, bird seed mixture.

Suet and peanut butter are quick energy foods. Suet should be enclosed in a "cage" to discourage greedy birds from carrying off large chunks at one time. String or nylon mesh bags are ideal. They may be tied to a branch of a tree. Peanut butter is best when mixed with a binder or extender of cracker crumbs or corn meal (I prefer corn meal), using one part peanut butter and one part meal, or until the mixture is of putty consistency. Birds have been known to choke on just the peanut butter alone. This mixture can be pressed into holes bored into a log or stick, or between the petals of large cones, then hung in convenient places. I find that empty sunflower heads, spread with the mixture and tied onto a tree branch, are favorite snack bars in our back yard.

For variety, place pieces of raw apples, grapes, raisins and small pieces of white bread in the feeders. Peanuts, corn, left over pie crust, baked and crumbled into the feeder, are also tasty snacks.

You can also cater to the birds by including pork rinds, bones with shreds of meat, cooked meats, chopped hard cooked eggs, cured cheese, corn bread, broken-up doughnuts, cracked nuts and oatmeal. In other words, you can easily keep the bird cafeteria filled from items readily available.

An Important Rule

The important rule: Do not start feeding the birds in the fall unless you seriously intend to continue without fail. The lapse of a day or two during severe weather may find many birds starving to death because they have come to depend upon you.

Today, at the time of this wrting, I have seen the following birds in our feeder which is placed about 10 feet from the the dinette window: cardinal, nuthatches, chickadees, down woodpeckers, evening grosbeaks, a pair of blue jays, and juncos.

Continue to feed the birds until late in the spring and even into and through the summer. This will supply their needs and keep the damage in your fruit garden to a minimum.

RFD 1,
Clintonville, Wisconsin

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BOOK REVIEWS

WATERFOWL TOMORROW. Edited by Joseph P. Linduska and Arnold L. Nelson. Art work by Bob Hines. U. S. Department of the Interior, Fish and Wildlife Service, Washington, D. C., 1964. xii + 770 pp., photographs, map. For sale by the Superintendent of Documents, Washington D. C. 20402. $4.00.

The ever changing story of waterfowl in North America is the result of powerful forces—natural and manmade. This book, written for the ordinary citizen, unfolds this story in a strikingly interesting and informative manner. All of the forces that impinge on the welfare of our 48 species of swans, geese and ducks are considered in this volume.

This is probably the most comprehensive book on migratory waterfowl in North America and their habitat ever written. This work is a cooperative undertaking of 103 authors from all parts of the continent. The book is composed of 69 chapters and 194 photographs plus a fold-out map of "Names and Places, North American Waterfowl." The art work of Bob Hines is excellent.

In the Foreword of **Waterfall Tomorrow,** Steward L. Udall, Secretary of Interior, writes, "There is growing uneasiness and deep concern for the preservation of the wildlife of the Continent. This book is a manifest of the ceaseless work for the perpetuation and wise use of North America's magnificent migratory bird resources—resources that Canada, the United States, and Mexico must share and manage for the benefit of mankind. It is both encouraging and gratifying that officials and citizens of the three countries have combined efforts to make possible the writing of this volume.

"It is for us to give conservation a new focus, a specific application not only to broad fields of lands, forests, and water but also to living creatures that inhabit them."

Three Wisconsinites contributed to this work: Lawrence R. Jahn, field representative in the North Central States for the Wildlife Management Institute, coauthored the chapter, "Plants on Parade"; Russell G. Lynch, retired natural resources writer of **The Milwaukee Journal,** coauthored "No Place to Hide"; and Daniel O. Trainer, associate professor of veterinary science at the University of Wisconsin, was coauthor of the chapter, "Blood Parasites."

This book is written at a time when man's dominion over the land may spell doom for many wild creatures. And this includes our swans, geese and ducks. Waterfowl are particularly vulnerable to man's reshaping of the land and water resources on this continent. What we do or don't do—what we do wisely through planning based on research, or what we do impetuously—will determine the fate of waterfowl tomorrow.

I highly recommend this book to all WSO members.—Nils P. Dahlstrand.

Books reviewed in **The Passenger Pigeon** may be purchased from the WSO Supply Department at the 10% discount available to members. See the back cover of this issue for the Supply Department's address.

THE WORLD OF BIRDS. By James Fisher and Roger Tory Peterson (with 709 paintings by Roger Tory Peterson). Doubleday & Company, Garden City, N. Y., 1964. 288 pp. 9½ x 11½ inches on special heavy paper. $22.95.

No matter how you look at it, this book is the "major venture" of these two already famous ornithologists. It is a five-year dream come true—a labor of love completed lovingly and beautifully. Here is a book that is created with the finest craftsmanship in paper, printing and binding. Its paintings by Peterson are produced using six to eight colors and over 1,100 species are represented. An atlas of bird families of the world contains 195 colored maps showing distribution and other information.

Everyone will find something here that intrigues him beyond all else. It may be the infinite variety of 8,580 species of all shapes and sizes; their fantastic plumage or habits; the historical past or their threatened future; the impact of birds on mankind—or of man on birdlife. The bibliophile will see the title pages of earliest bird books, the falconry enthusiast rare photos of hawking in Central Asia. Bird banders will learn the history of their worldwide hobby and wildlife research is explained in terms everyone can understand. There also is advice from the experts on how to keep good bird records and observe or photograph them in the wild.

Peterson here has accomplished the difficult task of producing beautiful and artistically arranged pictures which complement the text, while Fisher consistently has synthesized the maze of scientific facts into simple and understandable terms.

Unusual features of the book are many: comprehensive bibliography; black list of 76 birds which became extinct since the dodo disappeared about 1680; red list of 143 birds in danger of extinction because they each number less than 2,000 population; and an index of all animals mentioned by common name and most accepted scientific name (following in parenthesis). The many photos are well selected and innumerable text figures and maps are valuable additions. It can be said there is no significant aspect of ornithology which is not considered in both depth and breadth.

Here are a few of the many miscellaneous things that were especially interesting to the reviewer:

—Starlings are among the birds listed as "inedible" (and this may be one reason for their success?).

—Some bird eggs are unpalatable to humans.

—Names of birds are fascinating—such as two on the "Red List": Diabolical Nightjar and Fearful Owl.

—One of the most recent new species discovered was the pigmy tit babbler found August 11, 1961 on the Island of Leyte in the Philippines. There still are new fields to conquer in the ornithological world! Some birds are known only from a single type specimen.

This is just a smattering of the irrisdescent qualities of this book. To those of us who cannot travel the world in search of birds, Fisher and Peterson have brought them to our very living rooms. And what I personally like most about their work is the fact that they pull no

punches when it comes to telling how pesticides affect wildlife and how our fish-eating birds, such as the osprey, are endangered.

Two slight errors of Wisconsin concern were noted: on page 98 Dr. John T. Emlen, Jr. was quoted but his name was incorrectly listed as "James," while on page 277 the Wisconsin Society for Ornithology was indicated with other "Audubon Societies," although **The Passenger Pigeon** was correctly mentioned.

In conclusion, it should be said that "The World of Birds" approaches this large subject from an entirely different way than Austin's "Birds of the World" (1961) and Gilliard's "Living Birds of the World" (1958). The Fisher-Peterson team aimed at analyzing the galaxy of birds as beautiful and observable animals. To this the authors add deep insight into the habits of bird watchers themselves. Bird watchers, they claim, have friends in every country and nearly every town where people thrill to the challenge of discovery in the pursuit of these beautiful creatures. They observe that "the secrets of the fellowship of ornithology are not difficult to find." Similarly, the reasons why this book will be a treasured possession of every serious bird student "are not difficult to find." It is the least costly ticket to far-off lands and distant climes—and with the wings of birds at that!—Walter E. Scott.

BIRD MIGRATION by Donald Griffin. Doubleday and Company, Inc., New York, 1964. 180 pp. $1.25 (paperbound)

This volume, one of the popular Anchor Science Study Series, will enhance the reputation of this group of paperbacks for lucid, interesting presentations of monographic studies at a level understandable to mature high school students and yet thorough enough to satisfy the curious, but non-specialist, adult.

Dr. Griffin, Professor of Zoology at Harvard, has subtitled his book "The Biology and Physics of Orientation Behavior." Introductory chapters enumerate some of the observed facts of migration; its timing, extent, and preferred routing. It has been fairly well demonstrated that the changing hours of daylight provides the trigger, probably through the pituitary gland, that sets off the hormonal activity associated with readiness for breeding and for migration. The real mystery of migration is the means of navigation. How does a bird know the direction to his winter, or summer, home? Dr. Griffin discusses, and disposes of, many migration theories; among these are the earth's magnetic field, thermal radiation, Coriolis and other earth rotational effects, and random or accidental navigation. In recent years it has been found that some birds can orient, in cages at least, in a constant compass direction, using the sun and a biological sense of time, as well as by the North Star. The description of the experiments that established these facts and gave a basis for the celestial navigation theory are most fascinating.

Bird Migration is generously illustrated with simple, clear, line drawings and charts. This small book deserves high praise. Any birder who reads it will finish with a renewed respect for and interest in these small creatures with their amazing capabilities.—F. T. Ratliff.

LIFE HISTORIES OF NORTH AMERICAN WOODPECKERS. By Arthur Cleveland Bent. Dover Publications, Inc., New York, 1964. xii + 335 pp., 39 plates. $2.75.

LIFE HISTORIES OF NORTH AMERICAN PETRELS AND PELICANS AND THEIR ALLIES. By Arthur Cleveland Bent. Dover Publications, Inc., New York, 1964. xiv + 335 pp., 69 plates. $2.75.

LIFE HISTORIES OF NORTH AMERICAN CUCKOOS, GOATSUCKERS, HUMMINGBIRDS AND THEIR ALLIES. By Arthur Cleveland Bent. Dover Publications, Inc., New York, 1964. In two volumes, total of xvii + 506 pp., 73 plates. Part 1, $2.50; Part 2, $2.50. Two-volume set, $5.00.

LIFE HISTORIES OF NORTH AMERICAN JAYS, CROWS AND TITMICE. By Arthur Cleveland Bent. Dover Publications, Inc., New York, 1964. In two volumes, total xv + 495 pp., 68 plates. Part 1, $2.50; Part 2, $2.50. Two-volume set, $5.00.

The reprints of Arthur Cleveland Bent's life histories series continue to roll off the presses much to the delight of bird watchers and ornithologists everywhere.

Life Histories of North American Woodpeckers, first published in 1939, contains detailed information about 64 kinds of woodpeckers, sapsuckers and flickers.

In **Life Histories of North American Petrels and Pelicans and Their Allies,** first published in 1922, you will find a collection of information on 69 species of petrels, pelicans and their allies. These include albatross, fulmar, petrel, shearwater, booby, cormorant, pelican, tropic-bird, water-turkey, man-o'-war, cahow and gannet.

In **Life Histories of North American Cuckoos, Goatsuckers, Hummingbirds and Their Allies,** 59 species of birds are described. These include cuckoos, hummingbirds, whip-poor-will, nighthawks, poor-wills, parrots, parakeets, kingfishers, swifts, ani, trogon, and roadrunner. This work, first published in 1940 in one volume, is now reprinted in a two-volume set. One error that I noted in my set was that the table of contents and pages 245 through 268 were missing in the front part of the second volume.

Ninety-eight species of the birds are covered in **Life Histories of North American Jays, Crows and Titmice.** Species covered in these volumes are jays, magpies, rooks, ravens, chickadees, bushtits, nutcracker, titmice, and verdins. This work is also reprinted as a two-volume set, whereas the original work was one volume when published in 1946.

At the present time more than half of Bent's life histories series have now been reprinted.—Nils P. Dahlstrand.

AUDUBON'S WILDLIFE. By Edwin Way Teale with selections from the writings of John James Audubon. The Viking Press, 1964. viii + 256 pp. $15.00

A picture book, a gift book, but not quite a non-book, as many similarly large, luxurious volumes are described. **Audubon's Wildlife** consists of 96 pages of black and white and 32 of colored reproductions of Audubon's birds and animals, 95 pages of the writings of Audubon,

and about 30 pages of biography, introductory material and descriptive notes by Mr. Teale.

The selections of Audubon's writings from his **Ornithological Biography** and **The Viviparous Quadrupeds of North America** make fascinating reading. The written portion of this book leaves three dominant impressions: 1) Audubon was a meticulous observer and recorder, fully as capable of describing his observations in words as in illustrations; 2) during the years of Audubon's most active work (the early 1800's) this country must have held an unbelievable amount of wildlife; and 3) the slaughter of birds and animals in those days, even by the naturalist himself, was also on a scale which almost defies belief today.

The black and white illustrations, printed in Switzerland, are of superb quality. The mechanical quality of the full color pictures is excellent. However, their artistic quality was harmed, for this reviewer, by the use of glossy paper and of colors much more brilliant than most familiar Audubon reproductions. Some of the illustrations are too large to be appreciated while holding the book at a good reading distance. Several of the pictures are two-page spreads; in some of these a focal point was placed, disconcertingly, exactly in the break between the pages. The pictures are scattered in groups of 4 to 20 throughout the book, uncoordinated with the text.

The book is well made. The paper is heavy and of high quality, the typography excellent. It is a good sampling from our most renowned early naturalist, fit for the shelves of any nature lover.—F. T. Ratliff.

THOREAU ON BIRDS. Compiled and with commentary by Helen Cruickshank. McGraw-Hill Book Company, New York, 1964. 331 pp. $7.95.

Henry D. Thoreau was an observer of the world about him. For two years (1845-1847) he directed his attention to the study of nature and philosophical meditations at Walden Pond, a small body of water on the outskirts of Concord, Massachusetts. It was here, living in a crude hut, that he denied himself the luxuries of life (and also most of the accompanying problems) and delved deeply into the world of nature. In addition, he observed and wrote about other areas in the New England states.

His nature writings, of course, included birds. Many references are found in **Walden, or Life in the Woods,** his **Journal,** and other works. His references to birds may not have been particularly scientific; but then, he was a philosopher, not a scientist. His observations, however, are of value in measuring the ebb and flow of birdlife around Concord and the New England states.

Helen Cruickshank has extracted the numerous bird observations from Thoreau's works and arranged them in an interesting book. Her comments on Thoreau's observations form the thread of the book. And these comments are highly readable—more readable, in fact, than Thoreau's (who liked long sentences). Mrs. Cruickshank's commentary supplies the necessary background to fully appreciate Thoreau. She also

interprets his observations in terms of present day nature conservation.

If you enjoy reading Thoreau, you will like this book. In any event, I'm sure you will like Helen Cruickshank.—Nils P. Dahlstrand.

The 1964 May Count

By THOMAS K. SOULEN

Close to 200 of Wisconsin's amateur ornithologists took to the field during the period May 9-17, finding on organized one-day counts some 239 species of birds. There were miscellaneous reports of an additional 15 species during the period. The total number of counts submitted this year was 32, considerably more than in any previous year. A few of the counts were not restricted to one day, but represented instead a listing of species seen throughout the May count period. While these counts differ from the majority, they nevertheless are welcome, since in many cases those reporting did not submit other observations. The information they supplied for the May count period was thus the only information your seasonal editor received from those parts of the state.

We know very little about the distribution of certain early migrants during the period in which the May counts are usually taken. These pages, in previous years, have contained pleas for details in support of mid-May observations of species such as the Rough-legged Hawk, Brown Creeper, Hermit Thrush, Golden-crowned Kinglet, Slate-colored Junco, and Tree and Fox Sparrow.

Documentation Is Needed

Yet with only one exception this year, none of the May count reports of any of these species was accompanied by any form of documentation. These birds may not be difficult to identify. It may be that every one of these records is a perfectly good one. But it is difficult to reconcile repeated May count occurrences of these species year after year with the fact that few (or none) of the regularly reporting observers—who frefrequently spend considerable time in the field—report them after the first few days of May. If these early migrants do linger as late as May count reports indicate, then perhaps we should revise our ideas regarding departure dates of these species.

People are not apt to document observations of birds "out of season" as rapidly as they will document observations of birds far from their normal breeding range. To understand the status of birds in Wisconsin, however, we should pay attention to the early, late, or out of season common species as well as to the accidentals. After all, if someone found a Yellow Warbler here in January, it would be more unusual than finding a Louisiana Heron during migration or the breeding season. For at these respective seasons, the warbler would be farther from others of its species than would the heron. The example cited is admittedly extreme, but if we are to refine our knowledge of migration of the more common species, we obviously need statements accompanying future re-

ports of straggling migrants, including sufficient detail to indicate that the species was seen well enough to be identified without question.

On the plus side this year was the still increasing number of May count reports which indicated the number of individuals of many of the species seen. We hope that this trend continues, since each year—even with rather scanty information of this type—we can note some interesting things. Most obvious is simply the numbers of individuals of some species which can be seen as a result of the concerted effort of many observers. Wausau's 30 people, for instance, recorded 88 Eastern Kingbirds, 60 Crested Flycatchers, 17 Phoebes, over 300 Robins, 27 Bluebirds (highest in several years of May counts), and no less than 198 Rose-breasted Grosbeaks.

Several years ago your seasonal editor mentioned that it was not generally recognized that the Clay-colored Sparrow was rather common in the central and northern parts of the state. This year the combined total of Clay-colored Sparrows seen on just three central and northern counts (Douglas county, St. Croix county 1, Wausau) was 53, rather more than many of us have seen in our lifetime.

We can even detect rather striking changes in distribution by moving relatively short distances. In St. Croix county, for instance, Sam Robbins found the Eastern Meadowlark far outnumbered by the Western Meadowlark, 100 to 4, while just 150 miles straight west, the Wausau

people found the reverse, the Eastern Meadowlark predominating 80 to 26.

Differences in peaks of migration also emerge, as illustrated by two of the Empidonax flycatchers. During the period of the May counts (May 9-17), those who reported numbers of individuals found 106 Least Flycatchers and only 6 Traill's. (This bears out the need for details accompanying reports of Traill's Flycatchers before about May 15; color alone is not sufficient). That the Dickcissel is a late migrant is shown by its presence on only 3 of 32 May counts, and this in a year which proved to be the most phenomenal Dickcissel year in the memory of many a birder.

Certain species which are considered to be fairly common (or which have been considered thus in recent years) showed up on relatively few counts. Precisely what sigificance we can attach to this fact is unknown. Yet it seems strange that these species are found by so few. Here are the numbers of May counts which included records of the following: Double-crested Cormorant, 1; Black-crowned Night Heron, 5; Least Bittern, 2; Bobwhite, 4; Screech Owl, 1; Cedar Waxwing, 6; and Henslow's Sparrow, 4.

While some of us may question the scientific merits of what is for many a purely "fun" day or an attempt to increase one's annual list, we hope that people will continue their enthusiasm for the May counts and that others will join in, wherever they may live and however many or few may be the friends who can accompany them. Of all, however, new and old, we ask two things: 1) give us enough information about rarities or stragglers so that someone 100 years from now will be convinced that the record is a valid one, and 2) pick out at least a few common species and report on each May count the number of individuals of that species seen.

Thanks go again to the compilers of the May counts. Each year the number who provide the "extras" of neatness and added information increases, and thus each year we can learn more about Wisconsin birds from this activity at the peak of spring migration.

The 1965 May Count

Considering the enthusiastic participation in the 1964 May count despite the fact that the best period of migration seemed to be over in some areas even before the official period began, we are going to begin this year with a more uniform way of setting up the suggested dates within which to take a count. Rather than try to guess which "nine-day week" (including two weekends) will highlight a big migratory wave, we are simply going to say that counts should be taken within the period May 5-20 this year and in the future. More and more people have been keeping track of the number of individuals of some species on May counts; let's have more of you try it!—Thomas K. Soulen.

SUMMARY OF THE MAY COUNTS

MADISON: 172 species. Twelve observers went up to 25 miles north and west of Madison from dawn to dark on May 16, finding Canvasback, Bufflehead, Peregrine Falcon, King Rail, American Golden Plover, White-rumped and Stilt Sandpiper, Hudsonian Godwit, Bell's Vireo, Pine and Hooded Warbler, Dickcissel, and Lark Sparrow. 30 species of warblers. Reported by Tom Soulen.

RACINE: 169 species. 32 Racine people spent about 90% of the hours from 4:15 a. m. to 8:00 p. m. May 16 within 10 miles of Racine. Rain changed through fog to sun by 11:00 a. m., with a slight SW wind and temperatures of 60° to 80°. Of note were 60 male Wood Ducks, Canvasback, Common Goldeneye, American Golden Plover, several groups of Whimbrel (total 40-50), White-rumped Sandpiper, Franklin's and Laughing Gull, Saw-whet Owl, Brown Creeper, Mockingbird, Prothonotary, Black-throated Blue, Pine, Kentucky and Hooded Warbler, and Yellow-breasted Chat. 31 warbler species. Reported by Louise Erickson.

GREEN BAY: 161 species. Green Bay Bird Club members were able to find the following species from 6:00 a. m. to 8:00 p. m. on May 17: Horned Grebe, Blue Goose, Rough-legged and Pigeon Hawk, Golden Plover, White-rumped Sandpiper, Northern Phalarope, Hermit Thrush, Golden-crowned Kinglet, Prothonotary and Pine Warbler, Yellow-headed Blackbird, and Fox Sparrow (apparently injured). 25 warbler species. Reported by Edwin D. Cleary.

ST. CROIX I: 155 species. Sam Robbins was out for a selected 12½ hours of the period from 4:30 a. m. to 8:30 p. m. on May 15. The sky was cloudy with showers later in the day, the wind shifted from S to NE, 5-10 mph, and the temperature was 58-73°. He found Bufflehead, Rough-legged Hawk, White-rumped and Stilt Sandpiper, Hudsonian Godwit, Long-eared Owl, Western Kingbird, Blue-winged and Cerulean Warbler, Le Conte's Sparrow, and 30 Clay-colored Sparrows. 26 warbler species.

APPLETON: 149 species. Five observers searched areas within 15 miles of town from 5:00 a. m. to 8:00 p. m. on May 16 under mainly clear skies, with 54° to 74° temperatures and very little wind. Interesting species were Least Bittern, Common Merganser, White-rumped and Baird's Sandpiper, and Evening Grosbeak. 22 species of warblers. Reported by Daryl Tessen.

MILWAUKEE: 145 species. Various groups covered the Milwaukee area and parts of Ozaukee county from 4:00 a. m. to 5:00 p. m. on May 17. The sky was clear and the temperature 58-87°. Of note were Common Goldeneye, Oldsquaw, Winter Wren, and Kentucky Warbler. 23 warbler species. Reported by Mary Donald.

WAUSAU: 133 species. Thirty observers spent a total of 171 hours walking 45 miles and driving 446 miles within 7 miles of Wausau on May 17, finding about 4,800 individuals. Territory covered was 50% woodland, 30% field, 15% urban, and 5% water. Temperature was 45-75°, barometer 30.15 and rising, wind calm to 5 mph. Of interest were Goshawk (no details), Sandhill Crane (seen well), Red-bellied Woodpecker, Brown Creeper, Mockingbird (seen well), 27 Bluebirds, Black-throated Blue Warbler, Yellow-headed Blackbird (have been seen previously here), Evening Grosbeak, Slate-colored Junco, Tree and Fox Sparrow. 20 warbler species. Reported by Emily Bierbrauer.

OCONOMOWOC: 131 species. Members of the S. Paul Jones Bird Club were out from 6:00 a. m. to 6:00 p. m. on May 10 under partly cloudy skies, with the temperature 44-68° and the wind SW 10-18 mph. They saw Bobwhite, Hermit Thrush, Black-throated Blue and Hooded Warbler, and Yellow-breasted Chat (banded). 27 species of warblers, of which 13 were banded. Reported by Ed Peartree.

WAUKESHA: 127 species. Members of the Benjamin F. Goss Bird Club began at 5:30 a. m. to search Waukesha county on May 17, a clear, calm day with temperatures 65-78°. They found Hermit Thrush and Dickcissel. 21 warbler species. No reporter indicated.

DOUGLAS COUNTY: 125 species. Eleven observers concentrated on the Superior and Brule areas on May 17, from 4:30 a. m. to 8:30 p. m . Clear skies changed to cloudy, the temperature went from 38° to 74°, and the wind was 10-15 mph. About 1,800 individuals were observed with the following species of interest noted: Horned Grebe, White-rumped and Stilt Sandpiper, Common Raven, and Evening Grosbeak. 17 warbler species. Reported by Richard F. Bernard.

GRANT COUNTY: 109 species. Members of the Southwestern Wisconsin Audubon Club spent the hours from 7:00 a. m. to 8:30 p. m. on May 10 roaming this fascinating but rarely investigated region of the state. Skies were clear, the wind

0-5 mph, and the temperature 55-80°. They found Common Egret, Bobwhite, Bewick's Wren, Pine Warbler, and Dickcissel. 17 warbler species. No reporter indicated.

MANITOWOC: 105 species. The hours from 6:00 a. m. to 5:45 p. m. on May 16 were very pleasant for those who visited various parts of Manitowoc county in search for birds. They found Rough-legged Hawk, Baird's Sandpiper, and Clay-colored Sparrow. 19 warbler species. Reported by Merle N. Pickett.

YELLOWSTONE LAKE: 100 species. Five observers were able to uncover a fair amount of interest from 6:30 a. m. to 7:30 p. m. May 9 in this area of Lafayette county: Little Blue Heron, Swainson's Hawk, Stilt and Western Sandpiper (all these species seen well, with details provided), and Bonaparte's Gull. 17 warbler species. Reported by N. R. Barger.

There were an additional 19 counts, some quite local. A few were also brief, lasting only a few hours, while others stretched over most of the May count period. These counts were in the following areas: Milwaukee Parks (two counts, 99 and 92 species, Jim Meyer and Ken Holt), Antigo (90 species, Audubon Club members and friends), Fort Atkinson (80 species, Emil Stock), Sheboygan county (77 species, Harold Koopmann), Viroqua (65 species, Viratine Weber), St. Croix county 2 (58 species, E. M. Hayes), La Crosse (57 species, Jonathan and I. T. Wetzel), Tomahawk (56 species, Donald J. Hendrick), Sheboygan and Manitowoc counties (52 species, Gordon and Carol Bly), Barron county (44 species, Nopeming Audubon Society), Evansville (43 species, Mrs. John Brakefield and Mrs. Ruth Livengood), Pulaski (40 species, Brother Daniel and Brother Jude), Clearwater Lake (38 species, Emma Fell), Weyauwega (36 species, Mrs. Clarence Radtke), Melrose (35 species, Ethel and Virginia Printz), St. Croix Falls (27 species, Mrs. J. A. Riegel), Oshkosh (25 species, the Fred W. Riddells), and Black River Falls (21 species, Mrs. Joe Spaulding).

2297 Standish, Apt. 11.
St. Paul, Minnesota 55108

Henry C. Greene Becomes Life Member

Henry C. Greene, Madison, Wisconsin, is WSO's newest life member. Even though he does not claim to be an ornithologist, Mr. Greene became a life member because he is vitally interested in the program of the Society, especially the land acquisition phase as exemplified by the Honey Creek Natural Area. Mr. Greene said, "I have been very much impressed with the WSO Honey Creek project and have often visited it. I am pleased to see that Prof. Steenbock has done so much to help."

Mr. Greene is on the staff of the Botany Department at the University of Wisconsin. His specialty is the study of fungi that parasitize plants. He has written many papers on this subject.

He is a life member of the Friends of the University of Wisconsin Arboretum and a long-time member of the UW Arboretum Committee. He has devoted much of his spare time in developing the Grady Prairie in the Arboretum.

Mr. Greene sums up his feelings this way: "I have been dismayed at the rapid disappearance of various natural areas that I have known in the past, and I am for anyone who is doing something about preserving what is left."—Nils P. Dahlstrand.

A North American Nest-Record Card Program

Beginning in January, 1965, the Laboratory at Cornell University will operate a nest-record card program on a continent-wide basis and would like the assistance of everyone.

Through the cooperation of Dr. David B. Peakall and the Onondaga (New York) Audubon Society, the Laboratory has carried on a nest-record card program on a local basis for two years. The aim of the program, which is similar to one used in Britain, is to collect specific data on bird reproduction in a form convenient for statistical analysis. The results of this two-year trial have been so gratifying that we are encouraged to make the program continent-wide.

For this to be a success we will need the cooperation of all bird observers in all parts of the continent, particularly the United States and Canada. We will also need—because we are certain that regional centers can handle the distribution of data cards and their return to the Laboratory better than individuals—the cooperation of all bird clubs and other societies whose members make field observations of birds.

The Laboratory will provide bird clubs or individuals with cards. The observers will record the contents of each nest found on a separate card and make dated notations on the same card for each subsequent visit to the nest. Each card will then contain all the data from a single nesting. While one observation of a nest will be valuable, additional observations over a period of days or weeks will increase the worth of the record. Our goal is to have hundreds, possibly thousands, of cards containing data on each species from all parts of its range.

We are well aware that there are other local nest-record card programs in this country and in Canada, and, naturally, we do not intend to infringe on them in any way. We only hope that they will cooperate with us and help broaden the scope of the whole endeavor. The net result should be the accumulation of far more data on every species than heretofore and the centralization of these data for comprehensive and intensive study, much as is true of the bird banding program of the U. S. Fish and Wildlife Service. All of the information from our program will, of course, be available to anyone who is interested.

Clearly this is a program in which every person seriously interested in birds can participate, be he a seasoned nest finder or one who merely watches a nest from a window.—Olin Sewall Pettingill, Director, Laboratory of Ornithology, Cornell University, Ithaca, New York 14850.

Editor's note: At its January, 1965, meeting the WSO board of directors discussed this program and heartily endorsed it. WSO will distribute cards to members with the cooperation of the Biology Department, Wisconsin State University-Stevens Point.

Every member is urged to participate in this nest-record card program. Send your request for cards to: Prof. Arol Epple,
Biology Department,
Wisconsin State University,
Stevens Point, Wisconsin 54481

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Editorial Staff

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Circulation Manager: Frank H. King, 646 Knickerbocker Street, Madison 53711

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Seasonal Editors:

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(summer) Mr. and Mrs. Harold Roberts, 818 Clark Street, Stevens Point 54481
(autumn) Dr. Charles A. Kemper, 733 Maple Street, Chippewa Falls 54729
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