

MIGRATION.

Exclusive of the work of the United States Biological Survey but little effort has been made in this country toward detailed co-operative investigations on a large scale of this phenomenon ; therefore the finished systematized report produced from the vast mass of accumulated data should be the most important publication ever issued by that branch. We know very little of the migratory habits of the Flicker beyond that it occurs in large loose flocks by night, published data being meagre ; under the circumstances no excuse need be offered for the tabulated forms, incomplete as they are, owing to the varied terms of years, 1875 to 1899, and fragmentary nature of the reports. In spite of all that has been said to the contrary, the homing instinct must have much to do with the annual northward movement and the alleged failure of the food supply has less to do with the retrograde movement than the approach of cold and stormy weather and consequent disappearance of sheltering foliage. In common with a large number of our birds, the Flicker is peculiarly sensitive to meteorological changes which govern its movements to a large extent. The discussion of the probable causes of the semi-annual restlessness and irresistible impulse to move to more favorable climes lies beyond the scope of this paper. If migration consisted of a uniform dispersion and progression throughout the country instead of lines of flight along the coast, rivers and valleys and in irregular waves, the significance of the dates would be more apparent ; as it is, a record may be that of the arrival of a Summer resident or transient, according to the remoteness or proximity to the line of flight. W. W. Cooke in " Bird Migration in the Mississippi Valley," states that the Flicker travels faster on the east than the west side of the Mississippi river. He estimates its average daily speed at about 12 miles. My calculations place the relative speed at about the same figure, but varying according to season

and weather conditions from 7 to 48 miles per night. It is absolutely certain that it does not move steadily night after night, but only as the weather permits or necessitates and its physical condition allows; the actual distance covered in a night's journey is therefore much greater than at first apparent.

Vernal. During January and February it is found in flocks of fifty or more individuals in Charleston, S. C. (Wayne), and the forward movement takes place in the first mild weather; the forerunner appearing at Berwyn as early as Feb. 2 or as late as April 6, according to the promises of the season, correlating in a measure with the date at which the first frog is heard peeping. The first arrivals are often solitary birds, frequently hardy old males, that have wintered nearby, accounting for the irregularity of first appearance.

LOCALITY.	1892	1893	1894	1895	1896	Aver.	No.Yrs.	Earliest	Latest
Berwyn, Pa.	Feb. 25	.....	Mar. 20	Apr. 2	Mar. 30	Mar. 13	10	Feb. 2	Apr. 6
Germantown, Pa. ....	.....	.....	.....	.....	.....	.....	.....	Mar. 13	Mar. 25
Croton Falls, N.Y.	Apr. 4	Apr. 6	Mar. 22	Apr. 6	Apr. 12	Apr. 6	7	Mar. 22	Apr. 14
Cincinnati, N.Y. ....	.....	Apr. 5	.....	Apr. 9	Apr. 14	Apr. 13	6	Apr. 5	Apr. 20
Penn Yan, N. Y.	Apr. 3	Apr. 3	.....	.....	.....	Apr. 8	10	Mar. 21	Apr. 18
Toronto, Ont.	Apr. 21	.....	.....	.....	Apr. 26	.....	.....	.....	.....
Westbrook, Me.	Apr. 6	Apr. 8	.....	Apr. 20	.....	Apr. 12	7	Apr. 4	Apr. 20
Cornish, Me.	Apr. 9	.....	Scarce	Apr. 22	Apr. 15	Apr. 15	5	Apr. 9	Apr. 27
N. Brighton, Me. ....	.....	.....	.....	Apr. 26	Apr. 20	Apr. 21	10	Apr. 12	Apr. 28
Pittsfield, Me.	Apr. 6	Apr. 22	Apr. 18.	Apr. 21	Apr. 15	Apr. 18	7	Apr. 6	Apr. 23
Bangor, Me.	Apr. 6	.....	.....	Apr. 20	Apr. 22	.....	.....	.....	.....
Waynesburg, Pa.	Mar. 27	Mar. 25	Mar. 19	Jan. 21	.....	Mar. 2	6	Jan. 21	Mar. 27
Oberlin, O. ....	.....	.....	Mar. 5	Feb. 26	.....	.....	.....	.....	.....
Wady Petra, Ill. ....	.....	.....	Mar. 8	Feb. 28	Feb. 24	Mar. 2	3	Feb. 24	Mar. 8
Glen Ellyn, Ill. ....	.....	Mar. 26	Mar. 25	Apr. 1	Apr. 5	Mar. 29	4	Mar. 25	Apr. 5
Delavan, Wis.	Apr. 2	.....	Mar. 18	Apr. 2	Mar. 31	Mar. 29	4	Mar. 31	Apr. 2
Mt. Sterling, Wis. ....	.....	.....	Mar. 22	Mar. 31	.....	.....	.....	.....	.....
Meridian, Wis. ....	.....	Apr. 3	Apr. 2	Mar. 24	Mar. 20	Apr. 3	6	Mar. 24	Apr. 13
Beatrice, Neb. ....	.....	.....	Feb. 17	Feb. 27	.....	.....	.....	.....	.....
Odell, Neb. ....	.....	.....	Apr. 4	Apr. 20	.....	.....	.....	.....	.....
Iowa City, Iowa. ....	.....	.....	Mar. 10	Mar. 4	Mar. 5	Mar. 6	6	.....	.....
Grinnell, Iowa. ....	.....	.....	.....	.....	.....	Mar. 30	3	Feb. 18	Apr. 3
Ferry, Iowa. ....	.....	.....	Mar. 19	Apr. 2	.....	.....	.....	.....	.....
Waseca, Minn.	Apr. 3	Mar. 28	.....	.....	.....	Apr. 2	12	Mar. 21	Apr. 9

Narbeth, Pa., March 20-25; Vincennes, Ind., about March 9; Forest City, Ia., Feb. 14 ('91); Dawson, Y. T., May 22 ('99).

The condition of the weather has much to do with the irregularity, as it has been observed that of the earlier records those of January and February especially were made in mild open weather, while the latter dates with one exception were made after a season of irregular weather; March '93, however, was generally open and mild, yet it did not put in appearance until the 25th; the next day more arrived, and in a

few days it became common. It returns each succeeding year to the same locality (Jacobs). It often makes its first appearance at Iowa City, Iowa, in small flocks; at Delavan, Wis., in pairs or small bunches, and at Meridian, Wis., often in quite large flocks, at other times in pairs or families.

The bulk ordinarily arrives between two and three weeks later, in Pennsylvania and Illinois, but the number of days intervening gradually diminishes as it moves northward, and the van leads by scarcely a week in the northern tier of states. As far as I have observed, the males appear before the females, and the migrations are conducted in small companies, these forming the bulk of transients; while like most all species migrating, there are forerunners and stragglers (Miller). At Berwyn, Pa., it becomes common soon after the hardy willow has unfolded its leaves, and about the time the fragrant spice-wood blossoms, when the ants, spiders and beetles become active once more, and just in the height of the arbutus season. It appears to average earlier in the West than in the same latitude in the East.

LOCALITY.	1892	1893	1894	1895	1896	Aver.	No. Yrs.	Earliest	Latest
Columbia, Pa.									
Berwyn, Pa.			Apr. 1	Apr. 20	Apr. 12	Apr. 1	11	Apr. 1	Apr. 10
Penn Yan, N. Y.						Apr. 18	3	Feb. 27	Apr. 23
Cincinnatus, N.Y.		Apr. 9		Apr. 20				Apr. 17	Apr. 19
Buffalo, N. Y.								Apr. 10	Apr. 20
Westbrook, Me.	Apr. 21	Apr. 24	Apr. 22		Apr. 18	Apr. 20	7	Apr. 18	Apr. 24
Cornish, Me.			Rare	Rare	Apr. 19			Apr. 18	Apr. 24
N. Brighton, Me.				Apr. 22	Apr. 20	Apr. 21	10	Apr. 12	Apr. 28
Pittsfield, Me.	May 1	May 1	Apr. 28	May 1	Apr. 29	Apr. 29	7	Apr. 23	May 1
Waynesburg, Pa.	Apr. 1					Mar. 18	3	Mar. 12	Apr. 10
Oberlin, O.			Mar. 9	Apr. 5	Apr. 11	Mar. 21	6	Mar. 9	Apr. 11
Wady Petra, Ill.			Apr. 6	Apr. 3					
Glen Ellyn, Ill.		Apr. 2	Mar. 25	Apr. 14	Apr. 12	Apr. 9	7	Mar. 25	Apr. 19
Delavan, Wis.			Mar. 21	Apr. 5	Apr. 2	Mar. 30	3	Mar. 21	Apr. 5
Mt. Sterling, Wis.				Apr. 13	Apr. 2				
Beatrice, Neb.			Apr. 13	Mar. 20				Mar. 20	Apr. 13
Grinnell, Iowa.						Mar. 28	5	Mar. 19	Apr. 3
Perry, Iowa.				Mar. 30					
Waseca, Minn.		Apr. 15	May 1			Apr. 11	6	Mar. 26	May 1

Boothby Harbor, Me., April 10 ('98); Vincennes, Ind., about the middle of March; Red Wing, Minn., last of March or first of April; Ramsey, Hennepin, Dakota and Washington counties, Minn., last of March to April 10. It is found sparingly during the Winter at Hillsboro, Ia. Feb. 24, '99, it began to increase, March 15th the great wave appeared, April 2, all gone except the goodly number that remain to breed. April 17, '98, when some twelve or fifteen miles off Cape Ann, at sea, a Flicker came aboard, perching for a few minutes on

the top sail before continuing its northerly course (Morrell). As numerous as and even more noisy than the Robins, during migrations, calling uneasily, flying from tree to tree, often in considerable companies. It is not confined to the woods, but is everywhere. This vast multitude passes northward within a week after arrival, leaving only the local breeders (Jones). Some notes taken in the Spring of '96 at Delavan, Wis., by Mr. Ned Hollister are interesting on account of the waves recorded; March 31, first heard at daybreak, calling loudly from the heavily wooded island in Delavan lake; five seen during the day in a walk over this island, all low down near underbrush between wood and marsh; April 1, about the same number in same place; April 2, common about lake; April 4, common everywhere around the shores, having steadily increased since first arrivals; in the morning, soon after the first signs of daybreak, it was heard calling from all sides. On moving into town none were observed until the 12th, when it became very abundant all at once, a perfect wave taking the place of a very large wave of Yellow-bellied Sapsuckers that had taken the town by storm the two previous days. The Flickers were everywhere, especially in the marshes, orchards and woodland; burnt marshes seem to be a favorite place, feeding on the ground in dozens and large flocks, far from water. April 19, 20 and 25, abundant; April 28, 29, common; April 30, abundant; after this date common until Fall.

During the season of 1895 there was a marked decrease in numbers in some localities: for instance, at Columbia and Berwyn, Pa., it became rather uncommon, and at Cornish, Me., from abundant to quite rare, none remaining to breed. At only one point was it particularly noticeable in the West, about Meridian, Wis., where the decrease was placed at 50 per cent at least. It seems almost incredible that so hardy and resourceful a bird should have suffered so severely from that long-to-be-remembered blizzard.

While the retrograde movements are conducted in larger numbers, being recruited by great numbers of birds of the year, it is scarcely as noticeable, lacking the noise and bustle of Spring arrivals. Like the Robin, its whole nature seems to have undergone a change. It no longer solicits notice by song or display of plumage, but becomes shy and suspicious,

and while gregarious to a great extent, in flight every one is capable of looking out for itself. The mature birds are the most wary, and by example prepare the young for the dangers of migration and Winter residence in the South, where it is constantly menaced by hunters. Acknowledging the difficulties in the way, it seems to me that the departure of the bulk has been sadly neglected nevertheless. In this species at least its value over dates of last seen is apparent.

LOCALITY.	1893	1894	1895	1896	Average	No. Yr's	Earliest	Latest
Berwyn, Pa.	Oct. 19	Oct. 19	Oct. 5	Sept. 6	Oct. 9	7	Sept. 13	Oct. 19
Oberlin, O .....	.....	.....	.....	Nov. 10	Nov. 14	4	Nov. 1	Dec. 6
Glen Ellyn, Ill.	Sept. 20	Sept. 25	Sept. 26	Sept. 20	Sept. 25	4	Sept. 20	Sept. 28
Delavan, Wis.	" 12	Oct. 7	.....	.....	Oct. 1	3	" 12	Oct. 12

At Buffalo, N. Y., the bulk retires in October; Dunrak, Pa., first week in October; Meridian, Wis., by Oct. 10; and the same date is given for Hillsboro, Ia. The departure of the bulk is always dependent upon weather and foliage. In '98 the foliage was unusually late in falling, but in '99 rather unusually early with some chilly weather in October (Jones). During the cold windy days in October at Taunton, Mass., it may be found in large numbers huddled together in hollows and sheltered localities, where it may be easily approached (Bent). The last seen are represented by a number of irregular dates.

LOCALITY.	1892	1893	1894	1895	1896	Aver.	No. Yrs.	Earliest	Latest
Bangor, Me. ....	.....	.....	.....	Sept. 28	.....	.....	.....	.....	Oct. 21
Pittsfield, Me. ....	.....	Sept. 30	.....	Sept. 29	Sept. 9	Sept. 27	5	Sept. 9	Oct. 6
Westbrook, Me.	Sept. 19	.....	.....	.....	.....	Oct. 11	4	Sept. 14	Nov. 28
Toronto, Ont.	Oct. 4	Oct. 11	none	.....	Oct. 1	Oct. 2	5	Sept. 25	Oct. 11
Cincinnati, N.Y.	Oct. 6	.....	.....	.....	.....	.....	.....	.....	.....
Penn Yan, N. Y. ....	.....	.....	.....	.....	.....	Nov. 4	3	Sept. 26	Dec. 29
Croton Falls, N.Y.	Oct. 4	Oct. 11	not seen	.....	.....	Nov. 4	3	Sept. 26	Oct. 11
Berwyn, Pa. ....	.....	Oct. 19	Oct. 19	.....	Nov. 12	Nov. 12	6	Oct. 19	Dec. 8
Waynesburg, Pa. ....	.....	.....	.....	.....	.....	.....	.....	Nov. 10	Dec. 10
Delavan, Wis.	Sept. 27	Sept. 19	Oct. 19	Oct. 18	.....	.....	4	Sept. 19	Oct. 18
Wady Petra, Ill. ....	.....	.....	Oct. 15	Oct. 21	.....	.....	.....	.....	.....
Perry, Iowa. ....	.....	Nov. 18	Dec. 22	Sept. 4	.....	.....	.....	.....	.....
Grinnell, Iowa ....	.....	.....	.....	.....	.....	Oct. 22	5	Oct. 5	Nov. 21

At Croton Falls, N. Y., not present during the fall of '91 and '94; Dunrak, Pa., last by October 15; Germantown and Narberth, Pa., by last of October; St. Paul, Minn., late in October, one lingering until November 7, '95; Iowa City, Iowa, and Glen Ellyn, Ill., last week in October; Hillsboro, Iowa, November 6, '99, all but the few that winter.