

Bird Migration in Pennsylvania a Hundred Years Ago

BY WELLS W. COOKE

MODERN theories in regard to bird migration agree that present migration routes are but the present stage in development of routes that have been evolved from other original routes widely different. How fast changes have taken place there is no means of knowing, but the present inquiry is an endeavor to learn whether any perceptible changes have occurred in the past hundred years. The history of bird migration in the United States dates from the appearance in 1799 of Barton's "Fragments of the Natural History of Pennsylvania", which contains his migration records for the year 1791 at Philadelphia. Something about the bird life on this continent had been appearing in print for many years previously, beginning with Hernandez, who published in 1628 the first local bird list for this hemisphere, being a list of the birds of Mexico, and containing 229 out of the actual 1500 in that country. The first local list of Canada was issued by Baron de la Hontan in 1703, and six years later Lawson published his list of the birds of Carolina, the first local list of the United States. Nearly a hundred years elapsed after that before any one considered it worth while to record in print the dates of the arrival of the birds.

Dr. Benjamin S. Barton was "Professor of Materia Medica, Natural History and Botany in the University of Pennsylvania", as the title-page of his "Fragments" announces, and he wrote this tract of 42 pages as "Part First" of a series of treatises which he hoped to issue, and two others, which he says he had already in preparation. As they were never published it seems probable that the first part was not a sufficient financial success.

The "Fragments" are in three parts, an introduction of 18 pages, the main text occupying 14 pages, followed by a 10 page appendix. Barton explains that he uses Linnæan names, but sometimes those of "Professor Gmelin, the laborious and often successful editor", and sometimes had to impose new names of his own making. He first gives the dates of arrival of 99 species in the spring of 1791, of which 71 are land birds. Next come notes on 26 species of fall migrants and remarks on the time when the summer residents depart. Last are four pages of observations on the "Resident Birds of Pennsylvania."

The notes on the spring arrivals are the most interesting part of the whole treatise and these will be compared with the dates at which these same species now arrive at Philadelphia. The Biological Survey has a very large amount of data on the arrival of the birds in the vicinity of Philadelphia, and the average dates compiled from these records are used as the basis for the comparison with Barton's dates. He begins with the arrival of the Red-winged Blackbird March 1st, which is close to the average. Then no more records until on March 12th he records the arrival of six species of which the Phœbe is just about average. The Fox Sparrow is two weeks late, but Barton says that in 1792 he saw it February 28th, which is just average. Among these six are the Chipping Sparrow and the Swamp Sparrow both far ahead of their usual time and both probably errors. His Chipping Sparrow is probably the Field Sparrow. The next day he adds the Cowbird just on time; two days later the Bluebird and the Killdeer, both late; then no more until April 10th, when he notes the Purple Martin, a week late; April 15th he records six species all but one of which, the Barn Swallow, probably came long before. From April 20th to May 1st he seems to watch arrivals carefully, and most of his species were probably seen shortly after their arrival. Indeed, the Kingbird, Baltimore Oriole and Orchard Oriole are recorded earlier than they are usually seen at Washington, D. C.

After May 1st Barton seems to have lost interest in his migration watching, and reports no more arrivals until May 12th, and only a few more for the rest of the season. The eleven days then from April 20th to May 1st are the period he is

watching the birds most closely and when his notes have most value. It is fortunate that this is the part of the migration season when birds are little influenced by the variations in the seasons. The following table gives Barton's dates of arrival for the twenty-one species he noted from April 20th to May 1st, and compares these dates with the average dates of arrival for Philadelphia computed from the data of the Biological Survey.

Species.	Barton's date of arrival in 1791.	Average date of arrival during late years.
Green Heron	April 20	April 19
House Wren	" 23	" 21
Chimney Swift	" 23	" 17
Whip-poor-will	" 23	" 21
Kingbird	" 23	" 29
Baltimore Oriole	" 23	May 3
Orchard Oriole	" 23	" 2
Catbird.	" 23	April 26
Black and White Warbler.	" 23	" 17
Summer Warbler	" 27	" 23
Northern Water-Thrush	" 28	" 28
Warbling Vireo	" 28	" 30
Hummingbird	" 30	May 1
Maryland Yellow-throat	" 30	April 24
Ovenbird	" 30	" 23
Scarlet Tanager	" 30	" 30
Red-eyed Vireo	" 30	" 27
Redstart	May 1	" 24
Wood Thrush	" 1	" 27
Great-Crested Flycatcher	" 1	" 30
Yellow-breasted Chat	" 1	" 30
Average	April 27	April 26

The average dates of arrival of these 21 species agree quite closely with the dates when they were first seen by Barton. Only one-quarter of the dates vary more than three days from the average. The differences vary from nine days earlier than

the present average in the case of the two Orioles to six days later in the case of the Chimney Swift. The average of the whole 21 species is within one day of the present average day of arrival.

So far then as the report of this single season of 1791 is concerned, it indicates that birds have not changed, during the last 100 years, their times of spring arrival.

Two of Barton's birds have not been used in the above calculation. One of these, the Red-headed Woodpecker, winters sparingly at the present time in favorable localities near Philadelphia, while the other, the Towhee, is apparently much more common near Philadelphia now than in Barton's time and arrives much earlier than the date noted by Barton.

Barton's "Fragments" contains records of the dates of flowering of many of the common trees, shrubs and herbaceous plants. It is to be hoped that some Pennsylvania botanist who has dates of the vernal advance of vegetation in these later days will make a comparison of plant growth similar to that outlined above for the birds.

Some of Barton's remarks and observations are interesting from the standpoint of modern ornithology. He mentions the Rose-breasted Grosbeak, Purple Martin and Nighthawk as species known locally in Pennsylvania, but not as common near Philadelphia. Now all three of them are common there and all have been known to nest near that city. He failed to discriminate between the Marsh Wren and the Winter Wren, called them the same bird, and said they remained the whole year. He says of the Chat: "This is a bird of very singular form, manners and language." The coming of the Phoebe seems to give a "confident assurance to the farmer that he may very soon begin to open the ground and plant." The Pennsylvania Indians regarded the arrival of the Whip-poor-will as a sign of planting time, while their white neighbors commonly remarked that when the Whip-poor-will arrives it is time to go barefooted.

Barton devotes four pages to expressing his belief that birds do not hibernate, and he gives the interesting fact that previous to the cold winter of 1783-4, the Mockingbird was not rare in winter near Philadelphia. The Swallow-tailed Kite which he

saw July 4, 1791, is the earliest record for Pennsylvania, though it has since been noted a few times, but his is almost the only record for the state of the Carolina Parakeet, which he reports as occurring occasionally near Carlisle, and also the only record for the state of New York, where he reports that the Dutch settlers near Albany were exceedingly alarmed in 1780 by the arrival in the depth of winter of a very large flight of Parakeets.

Barton has been led into a queer error with regard to birds dividing their time half and half between the summer and winter homes. He says that in general those species which arrive late in the spring do not disappear until late in the autumn. The facts are just the reverse; the latest birds to arrive are most likely to leave first, and instead of spending six months near the nesting site, the extreme is reached in the Orchard Oriole, many individuals of which begin their fall migration within seventy days after they enter the state.

The last three pages of the "Fragments" are devoted to the usefulness of birds as insect destroyers and to a plea for their protection. Thus Barton was one of the first champions of that bird protection which in these later years is at last coming to fruition.