Lake and on Moses Lake, in Douglas County. Twenty or thirty seen in 1905, 1906, and again in 1908.

Dendrocygna bicolor. FULVOUS TREE-DUCK.— One specimen secured from a flock of ten on Gray's Harbor, Oct. 3, 1905, by Willis G. Hopkins, Esq., of Aberdeen, and now in his possession. It is interesting to note in this connection that a flock of eleven birds appeared at Alberni, B. C. (Vancouver Id.), on the 29th of September of the same year. From this flock five were secured by Mr. J. S. Rollin, a rancher; and one of these, a handsome male, now stands in the Provincial Museum at Victoria.

Puffinus opisthomelas. BLACK-VENTED SHEARWATER.— "Off Cape Flattery in June." (A. W. Anthony, *in epist.*, Jan. 15, 1907.)

Puffinus tenuirostris. SLENDER-BILLED SHEARWATER.— "Off Cape Flattery in October and November." (A. W. Anthony, *in epist.*, Jan. 15, 1907.) In August, 1905, Mr. Bowles witnessed the migration of countless thousands of these birds a quarter of a mile off-shore, at Moclips, and secured specimens.

Oceanodroma furcata. FORK-TAILED PETREL.— "Just off the Cape." (A. W. Anthony, as above.)

Phaleris psittacula. PAROQUET AUKLET. "I have seen it between Port Townsend and Cape Flattery." (A. W. Anthony, *in epist.*, Jan. 15, 1907.)— W. LEON DAWSON, *Seattle, Washington.*

Averaging Migration Dates.— What is the best way of averaging the dates of bird arrivals? This is a question that often arises in connection with the migration work of the Biological Survey.

Commenting on the method used here, Mr. Witmer Stone says (Proc Acad. Nat. Sci. Phila., 1908, p. 138): "As so little has been attempted in the way of combining local migration records, I find it difficult to discuss the comparative value of different methods. Some casual allusions by Prof. Cooke to the methods employed by him, form indeed the only contribution to the subject with which I am familiar. He recognizes the danger of including the latest dates of arrival in computing averages and rejects them, just as I have advocated above, but in deciding how many to reject his method seems to lack definiteness and to involve the personal equation. He says (Auk, 1907, p. 347), 'When using migration records for the calculation of average dates of arrival, I usually discard dates that are more than six days later than the probable normal date of arrival.' This would seem to imply an arbitrary selection of 'the probable normal' date before any averaging is done, which seems to be a dangerous method."

For the benefit of any that are interested in the subject I will give my method in full and if any one can suggest a better, I am open to conviction.

What is desired in our work, is a date that represents the average time of the arrival of the first in normal migration. The securing of such a date requires the rejection of both extra early and extra late dates. The principal problem is the determining of where to draw these limits. My study of the relation of bird migration to the weather has convinced me

that birds seldom vary on account of the season more than six days either way from their average date of arrival. An example will show how this limit of six days is employed. The Hooded Warbler has been reported as arriving at Washington, D. C., on the following dates during fifteen different years: April 19, 26, 27, 27, 29, 29, 30, May 1, 1, 3, 6, 8, 9, 10, 12. The average of these fifteen dates as they stand is May 2. The first rejection drops April 19 as too early, and May 9, 10, and 12 as too late. The average of the remaining dates is May 1. It is now seen that May 8, should also be discarded. The average of the ten dates left is April 30. This date of April 30 is considered as the "probable normal date of arrival," so far as our records stand at the present time, and is published as the "average date of spring arrival" based on ten years' records.

How near this date is to the truth can be surmised from the amount of variation in the records. The differences between each of the ten dates used and April 30 is, in days, as follows; 4, 3, 3, 1, 1, 0, 1, 1, 3, 6 — a total of 23, which divided by ten gives 2.3 days as the probable error; *i. e.*, it is probable that the date April 30 is within 2.3 days of correct. The greater the number of observations and the closer these are in agreement, the smaller will be the probable error. Thus in the case of the White-eyed Vireo at Washington, D. C., the earliest dates of arrival for twenty-two years are: April 18, 18, 19, 19, 20, 21, 21, 22, 22, 22, 22, 23, 23, 23, 24, 24, 24, 25, 25, 26, 26, 26 — average, April 23; average variation from this date, 2.1 days. The most uniform record we have in all our four hundred thousand notes on bird migration is that of the Chimney Swift at New Market, Va. The dates of arrival are: April 10, 11, 11, 12, 12, 12 12, 14, 14, 14, 15, 15, 15, 16, 16, 16, 16, 16, 16. Average, April 14; average variation, 1.7 days. This indicates that if the record was extended indefinitely, to a hundred years or more, the probability is that the average date finally obtained would not vary more than 1.7 days from April 14.— WELLS W. COOKE, *Biological Survey, Washington, D. C.*

Ontario Bird Notes.— BRÜNNICH'S MURRE. A flight of Brünnich's Murre *Uria lomvia*) appeared at Toronto on November 29, 1907, and for several days dead birds were picked up on the shores of Lake Ontario. They were reported in the Niagara River below the Falls and in Lake Erie on December 1, and in the Detroit River on the 4th and individuals were picked up at Woodstock, Strathroy, and other inland points in southwestern Ontario. All the birds examined had empty stomachs as has been the case in all previous migrations.

GANNET. A young Gannet (*Sula bassana*) was picked up dead, about the last week of November, 1907, by Mr. Joseph Gilmore, on his farm in the township of Wainfleet, ten miles southwest of Welland, Ont., and several miles from Lake Erie. The bird was in bad condition when found and had lost a leg, but it was preserved and is in the possession of Mr. Gilmore. Mr. Jos. S. Wallace was the first to recognize the bird and I am indebted to him for the record and photographs of the specimen.