THE COMING OF THE ROBIN AND OTHER EARLY BIRDS.

"Hast thou named all the birds without a gun?
Loved the wild-rose, and left it on its stalk?"
EMERSON.

THE migration of birds is a subject which is attracting much attention in many parts of the world. From earliest historic times, naturalists and philosophers have written, speculated, and theorized upon the periodic appearance and disappearance of the species with which they were familiar; and the coming and going of many were considered of ominous portent.

In more recent times, ornithologists have watched the movements of birds with increasing interest, and have accurately recorded the facts observed. But it is only within the last few years that any thing like a systematic co-operative attempt to study bird-migration has been made. The work was begun in Germany, and was soon afterwards undertaken in Great Britain. In the United States, co-operative work was commenced in the Mississippi valley in the spring of 1882, under the superintendence of Prof. W. W. Cooke. The investigation of this subject was deemed of such importance that the American ornithologists' union, at its first congress, determined to extend it over the whole of North America, and for this purpose appointed a special committee. This committee prepared a circular (of which six thousand copies were distributed), setting forth the objects in view, and the methods by which they were to be attained. Through the co-operation of the department of marine of Canada, and of the lighthouse boards of the United States and Newfoundland, blank schedules were also supplied to the keepers of lighthouses, lightships, and beacons, throughout the whole of North America. The committee has already received returns from nearly a thousand stations, which are scattered over the whole country, extending, in the east, from Sombrero Key, Fla., to Newfoundland, and, in the west, from Arizona and southern California to British Columbia.

Most birds migrate chiefly by night. In clear weather they fly high, often from one to two miles above the country over which they are passing; while during dark nights, particularly in foggy weather, they often lose the way, become confused, and fly directly toward any light that may chance to lie within the field of vision. Thus, every year many thousands dash themselves to death against lighthouses and lightships. Birds whose summer and winter homes are widely separated often shorten their long journeys by crossing great lakes, broad bays, extensive seas, and sometimes even considerable stretches of open ocean; and observations in various parts of the world, carried on over many years, have demonstrated that the places of crossing are not accidental, but that certain definite courses are followed season after season with surprising regularity and precision. These 'avenues' or 'lines' of migration, though most strongly marked in aquatic, marsh, and river-dwelling species, are not limited to the neighborhood of large bodies of water, but may be traced throughout the entire range of migration. It is also well known that in nearly all birds the same individuals return to identical localities year after year.

The following statement of the times of arrival of the robin (Merula migratoria) at various places will serve to show in a general way the progress of its advance over the greater part of North America during the spring of 1884.[1]

Our common robin winters in vast numbers as far north as North Carolina, and more sparingly in southern New England, New York, and even in southern Ontario north of Lake Erie. On its northward journey, Dr. Wheaton's observers in the middle-eastern district found it at Columbus, O., Feb. 13; Cleveland, O., Feb. 24; Petersburg, Mich., Feb. 19; Battle Creek and Locke, Mich., March 10; Sault St. Marie, April 1. In the Atlantic district, Dr. Fisher's returns show it at Long-Island City, N.Y., Feb. 10; Sing Sing, N.Y., Feb. 14; Lockport, N.Y., Feb. 16; Watertown, N.Y., March 13; Lake George, N.Y., March 20; Hammondville (near Lake Champlain), N.Y., March 24; Boonville, N.Y., March 21; Locust Grove, N.Y., March 25. In Ontario, Mr. McIlwraith reports it at Hamilton, March 17; and at Ottawa, March 14. In New England a few wintered in the southern portions, and their march northward was irregular and often interrupted. Mr. Sage's observers recorded them from East Hartford, Conn., Feb. 2; Greenfield, Mass., Feb. 3; Thetford, Vt., Feb. 22; Hanover, N.H., March 21; Waterborough, Me., March 23; Calais, Me., March 30: Moosehead Lake, Me., April 9. In Quebec and the maritime provinces, Mr. Chamberlain's report shows them at Montreal, March 30; Quebec, April 14; Grand Menan Island, March 10; Halifax, March 18;

[1] These data, by permission of the council of the American ornithologists' union, have been selected from a part of the returns on the species named.

St. John, N.B., March 20; Prince Edward Island, April 15; Godbout, on the north shore of the mouth of the St. Lawrence, May 21; Point Rich, Newfoundland, May 1; and Greenly Island, off Labrador, May 20. In the Mississippi valley, Prof. W. W. Cooke has ascertained that robins usually winter north to about latitude 39°, but that the unusual cold of January, 1884, drove the bulk of them south of the parallel of 37°. Returning, the regular advance began March 9, and in a single week they spread over Illinois and eastern Nebraska to latitude 41° 51′; March 16 there was a slight advance in Iowa; on the 19th and 20th they pushed forward in Iowa, Illinois, and Wisconsin (but not in Nebraska), to latitude 43°; March 21 there was a sudden spreading over Wisconsin to latitude 45°. In the Red-river country, latitude 47° was attained April 3; and one week later the first robin of the season sang at Oak Point, Manitoba, latitude 50° 30′. From Mr. Belding's notes, it appears that the western race of the robin (Merula migratoria propinqua) winters more or less abundantly throughout the greater part of California, moving northward in February, March, and April. Its nest and eggs were found at Seattle, Washington Territory, May 1. In Alaska our robin has been seen in the Chilkat region as early as the end of April, and at Nulato about the middle of May.

The following statement shows approximately the average dates of arrival, in the latitude of New-York City and southern Connecticut, of a number of common and well-known birds. The yearly variation is considerable, and is greatest in the early-comers, amounting in some cases to upwards of two weeks. The robin (Merula migratoria) may be expected about the middle of February; wood-thrush (Turdus mustelinus), first week in May; brown thrasher (Harporhynchus rufus), May 1; catbird (Mimus Carolinensis), May 1; blue-bird (Sialia sialis), early in February; house-wren (Troglody tesaedon), May 1; yellow-rumped warbler (Dendroeca coronata), middle of April; barn-swallow (Hirundo erythrogastra horreorum), April 25; scarlet tanager (Pyranga rubra), May 10; red-eyed vireo (Vireo olivaceus), May 6; rose-breasted grosbeak (Zamelodia ludoviciana), May 12; indigo-bird (Passerina cyanea), May 12; chewink (Pipilo erythrophthalmus), May 1; bobolink (Dolichonyx oryzivorus), May 10; red-winged blackbird (Agelaeus phoeniceus), March 1; Baltimore oriole (Icterus galbula), May 8; king-bird (Tyrannus Carolinensis), May 8; pewee (Sayornis fuscus), early March; whippoorwill (Caprimulgus vociferus), May 1; night-hawk (Chordeiles pepetue), May 10; chimney-swift (Chaetura pelasgica), latter part of April; humming-bird (Trochilus colubris), May 5; kingfisher (Ceryle alcyon), flicker (Colaptes auratus), and fish-hawk (Pandion haliaetus Carolinensis), late in March.

TORNADOES, AND HOW TO ESCAPE THEM.

"Blow, winds, and crack your cheeks! Rage! blow!
You cataracts and hurricanoes, spout
Till you have drench'd our steeples, drown'd the cocks!
. . . . . .
Nay, get thee in. I'll pray, and then I'll sleep."

SHAKSPEARE.

TORNADOES are among the most characteristic features of the central states of the Union. Their opportunity comes when a broad cyclonic disturbance of our regular westerly winds brings cold air of the north-western plains down to meet warm southerly winds from the Gulf of Mexico. A moderate number of miles east of the average contact-lines of these two currents, the tornadoes are formed, when they appear at all. A number of them frequently occur at about the same time, for the contrasts of temperature and moisture that permit the development of one are generally widespread enough to produce several more. Fig. 1 illustrates the tracks of the tornadoes of Feb. 19, 1883, when the southern states were swept over by

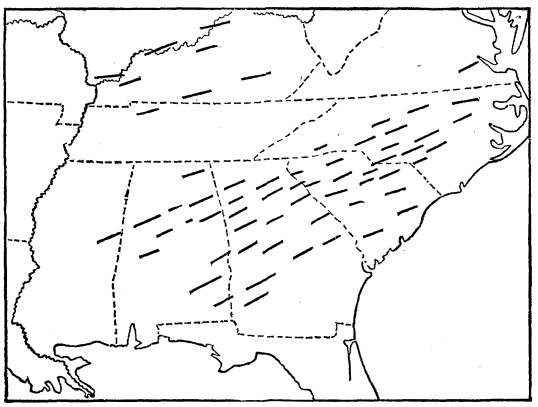

FIG. 1.

a large number of these storms, — in Kentucky and Alabama about noon, in eastern Alabama and Georgia during the afternoon, and in the Carolinas