

clearly definable from the preceding. Very extreme cases of individual variation will probably fall under this head. With the Song Sparrow I have observed several instances of abnormal variation in song, in one case the song being strikingly like that of the little Field Sparrow.

A case of abnormal variation in song of another species, the Red-shouldered Blackbird, may be here instanced. The song of this species is a characteristic and usually very constant one, especially when we take into consideration the number of birds that are commonly found singing together. Their song is thus written by Nuttall: "*Kong-quer-ree.*" I have, however, heard the first note doubled, and in one case it was the only note heard, the remainder of the song being either so faintly uttered as to be inaudible or entirely omitted. The low guttural quality of the single note, and its measured repetition, gave it a noticeably corvine character.

In treating of the songs of birds we must not confine ourselves too narrowly to the class Oscines or true Singing Birds. Birds of lower grade, which are denied the power of true song, are usually endowed with a capability of producing either orally, through physical action or mechanically, sounds as characteristic as the songs of their more gifted relations. Thus the hooting of the Owl, the drumming of the Grouse, the hammering of the Woodpecker, must be regarded as the equivalents of song.

(To be continued.)

BIRD MIGRATION.

AT the first congress of the American Ornithologists' Union, held in New York City, September 26-28, 1883, a Committee on the Migration of Birds was appointed. It is the purpose of this Committee to investigate in all its bearings, and to the fullest extent possible, the subject of the migration of birds in the United States and British North America. The work will not be limited to the accumulation of records of the times of arrival and departure of the different species, but will embrace the collection of all data that may aid in determining the causes which influence the progress of migration from season to season. For example, severe storms, gales of wind, protracted periods of

unusually high or low temperature (for the locality and time of the year) are among the atmospheric conditions that are known to exert marked effects upon the movements of birds. The opening of the leaves and the flowering of certain plants, with the correlative appearance of a multitude of insects, are also among the factors that have to do with the abundance of many species. Hence the careful registration of certain meteorological phenomena, and of the state of advancing vegetation from day to day, will constitute prominent items in the record books of the observer.

For the purpose of rendering the result of the season's work as full and valuable as possible, the Committee earnestly solicits the co-operation of every ornithologist, field-collector, sportsman, and observer of nature in North America. Indeed, a large corps of observers is absolutely essential to the success of the undertaking, and the Committee hopes to receive substantial aid from many who profess no knowledge of ornithology. Efficient service can be rendered by those familiar with only our commonest birds, and the Committee will gladly accept data concerning any of the following well-known species:—

Robin.	Junco; Slate-colored Snowbird.
Mockingbird.	Cardinal Redbird.
Catbird.	Rose-breasted Grosbeak.
Brown Thrasher.	Indigo-bird.
Bluebird.	Bobolink; Ricebird.
House Wren.	Cowbird.
Yellow-rumped Warbler; Myrtlebird.	Yellow-headed Blackbird.
Yellow-breasted Chat.	Red-shouldered Blackbird.
Redstart.	Meadow Lark.
Maryland Yellow-throat.	Oriole.
Cedarbird; Waxwing.	Crow Blackbird.
Purple Martin.	Horned Lark; Shore Lark.
Barn Swallow (fork-tailed).	Kingbird; Bee Martin.
Violet-green Swallow.	Pewee; Phœbe.
Scarlet Tanager.	Eastern Hummingbird.
Pine Grosbeak; Bullfinch.	Eastern Chimney Swift.
Purple Finch.	Whippoorwill.*
Red-poll Linnet.	Nighthawk.†
Yellowbird; Thistlebird.	Kingfisher.
Snow Bunting.	Fish Hawk.
Eastern Chewink; Towhee.	Wild Pigeon.

Also any of the Waders, "Shore-birds," and Ducks.

* When first heard.

† When first seen.

PLAN OF THE WORK.

For convenience in collecting and arranging the enormous mass of material which will be accumulated by the joint labors of this army of field workers, it has been deemed advisable to divide the vast expanse of territory embraced in the United States and British North America into thirteen Districts, each of which will be placed under the immediate direction of a competent Superintendent. The Districts, with their respective Superintendents, are:—

ALASKA, Supt., John Murdoch, Smithsonian Inst., Washington, D. C.

NORTH-WEST TERRITORIES, Supt., Ernest E. T. Seton, Assinaboia, *viâ* Carberry, Manitoba.

NEWFOUNDLAND, Supt., James P. Howley, St. John's, Newfoundland.

BRITISH COLUMBIA, Supt., (not yet determined).

MANITOBA, Supt., Prof. W. W. Cooke, Caddo, Indian Territory.

CANADA, Supt., Montague Chamberlain, St. John, New Brunswick.

ATLANTIC SEABOARD (Lighthouses and Lightships from Canada to the Gulf of Mexico), Supt., (not yet determined).

NEW ENGLAND, Supt., John H. Sage, Portland, Conn.

ATLANTIC DISTRICT (New York, Pennsylvania, New Jersey, Delaware, Maryland, Virginia, North Carolina, South Carolina), Supt., Dr. A. K. Fisher, Sing Sing, New York.

MIDDLE-EASTERN DISTRICT (Southern Michigan, Indiana, Ohio, West Virginia, Kentucky and Tennessee east of the Tennessee River, Alabama, Georgia, Florida), Supt., Dr. J. M. Wheaton, Columbus, Ohio.

MISSISSIPPI VALLEY (Dakota, Minnesota, Wisconsin, Nebraska, Iowa, Illinois, Kansas, Missouri, Indian Territory, Arkansas, the small portions of Kentucky and Tennessee west of the Tennessee River, Texas, Louisiana, Mississippi), Supt., Prof. W. W. Cooke, Caddo, Indian Territory.

ROCKY MOUNTAIN DISTRICT (Idaho, Montana, Wyoming, Utah, Colorado, Arizona, New Mexico), Supt., Dr. Edgar A. Mearns.

PACIFIC DISTRICT (Washington, Oregon, California, Nevada), Supt., L. Belding, Stockton, California.

The home of each observer is called a Station, and is recorded by number upon the books of the Committee. The Committee particularly requests that all persons who read this circular, and are willing to aid in the work, will *immediately* communicate with the Superintendents of their respective Districts. Those residing in Districts whose Superintendents have not as yet been named may address the Chairman.

It is the duty of each Superintendent to exert himself to the utmost to increase the number of observers in his District; to answer the questions they may put to him concerning the details

of the work, etc.; to collect at frequent intervals the product of their labors; to ascertain from these data the whereabouts of certain species in winter, and the times of leaving their winter homes; to determine if possible the number and extent of the chief avenues of migration within the limits of his District, and the average rate of speed at which the different species travel; to locate the *breeding areas* of the summer residents; and, finally, to submit the result of the season's work to the Chairman of the Committee. The Chairman shall, in turn, arrange, condense, and systematize the material received from the Superintendents of the several Districts, and shall present to the Union the fruits of the joint labors of all the collaborators, together with any comments, deductions or generalizations he may have made upon the same.

INSTRUCTIONS TO COLLABORATORS.

The data collected may conveniently be arranged in three general classes: *a.* Ornithological Phenomena. *b.* Meteorological Phenomena. *c.* Contemporary and Correlative Phenomena.

(*a*) *Ornithological Phenomena.*

Each observer is requested to prepare, at his earliest convenience, a complete list of the birds known to occur in the vicinity of his Station, and to indicate (by the abbreviations enclosed in parentheses) to which of the following five categories each species pertains:—

1. *Permanent Residents*, or those that are found regularly throughout the entire year (R).

2. *Winter Visitants*, or those that occur only during the winter season, passing north in the spring (WV).

3. *Transient Visitants*, or those that occur only during the migrations, in spring and fall (TV).

4. *Summer Residents*, or those that are known to breed, but which depart southward before winter (SR).

5. *Accidental Visitants*, or stragglers from remote districts (AV).

It is desirable also to indicate the relative abundance of the different species, the terms to be employed for this purpose being: *Abundant, Common, Tolerably Common, Rare.*

In many species the males arrive in advance of the females, hence it is important to note the sex of the first comers, and the date at which the opposite sex is first seen.

In recording arrivals and departures it is highly important to distinguish between the movements of the great bulk of the species and those of the forerunners or advance guard. For this purpose two dates should be recorded for the incoming, and two for the outgoing of every non-resident species, as follows:—

1. The first appearance of the species (F).
2. The arrival of the bulk (BA).
3. The departure of the bulk (BD).
4. The last individual seen (L).

In addition to the above, which may be regarded as *essential data*, there are many other noteworthy details that bear more or less directly upon the complicated problems involved in the study of migration. Among such may be mentioned the bodily condition of the bird (whether fat or lean), the moult, and the periods of song. The time of mating, when observed, should always be recorded.

(b) *Meteorological Phenomena.*

Extended meteorological data are not required, though the observer would derive material assistance from a systematic weather record. The Committee desires information upon:—

1. The direction and force of the wind.
2. The direction, character and duration of storms.
3. The general conditions of the atmosphere, including rainfall.
4. The succession of marked warm and cold waves, including a record of all sudden changes of temperature.

(c) *Contemporary and Correlative Phenomena.*

The Committee desires that the data under this head be as full and complete as possible, and requests exact information upon:

1. The date at which the first toad is seen.
2. The date at which the first frog is heard.
3. The date at which the first tree-toad or "peeper" is heard.
4. The dates at which certain mammals and reptiles enter upon and emerge from the state of hibernation.

5. The dates at which various insects are first seen.
6. The dates of the flowering of various plants.
7. The dates of the leafing and falling of the leaves of various trees and shrubs.
8. The dates of the breaking up and disappearance of the ice in rivers and lakes in spring, and of the freezing over of the same in the fall.

C. HART MERRIAM,
Chairman of Committee on Migration,
Locust Grove, Lewis County,
New York.

RECENT LITERATURE.

Nelson's Birds of Bering Sea and the Arctic Ocean.*—The late Mr. G. R. Gray, who had a habit of literal exactitude in handling the names of birds, might have reaped a fine crop of new generic and specific terms from this treatise, in which many of the scientific designations are misprinted in bold-faced type, not all of these being accounted for in the list of errata which constitutes page 56 *c*. It is easy to see that a page of matter relating to the Spoon-billed Sandpiper divorces two species of *Actodromas* from the other two treated; but by the erratum leaf alone can we discover that the matter headed *Arquatella maritima* relates to a bird "lately described by Mr. Ridgway";

* Contained in: Cruise of the Revenue-steamer Corwin in Alaska and the N. W. Arctic Ocean in 1881. — Notes and Memoranda: Medical and Anthropological; Botanical; Ornithological. — Washington: Government Printing Office. 1883. 1 vol. 4to, pp. 1—56, 56 *a-f*, 57—120, with 12 pls. not numbered and some not lettered, and various woodc. in text. The ornithological matter is half-titled — Birds of Bering Sea and the Arctic Ocean. By E. W. Nelson. — 55 | It occupies pp. 55, 56, 56 *a-f*, 57—118, with 4 colored plates.

In mechanical execution this piece of book-making is a miraculous botch. One familiar with the possibilities of political printing has still something to learn from inspection of this realization. In the copy examined, for example, the title-page is upside down, and makes the fifth leaf of the book, preceded by a bastard title-page and two pages of text, likewise upside down, and faced by a plate of a fish which belongs to an ichthyological article at the end of the book—though no hint of ichthyology is given in the statement of 'Notes and memoranda' which the title duly sets forth, while the broken pagination and the entirely unnumbered and partly unlettered plates prepare us for the typographical eccentricities above noted.