

WARBLER SONGS.

IN the development of birds away from the primitive reptilian type, there has been, in general, a tendency to decrease in size as well as to structural modifications brought about by changing environment. In order to increase greatly in numbers there must be a decrease in size if the world were to contain the host. Along with decrease in size there seems to have developed a tendency to vocal expression, culminating at the present day in utterances second only to speech—song. We are unable to attribute to a bird's vocal utterances, however complex they may seem, more than a momentary state of feeling, unless it be taught by man. Only the smaller birds truly sing; the muscles of their syrinx enabling them to give utterance to varied notes instead of a monotonous repetition of the same note.

In the higher development of the Oscines—the singing birds—there naturally grew differences in song just as there grew differences in structure and habits, producing more or less well defined groups. We might reasonably expect that if a group be sharply marked off from other groups structurally its style of song would also be sharply marked; that it would possess a distinct song-type; and if there be gradations between groups there would naturally be gradations in song likewise. In general we find this to be true, but in particular there are exceptions. Thus, while the Warblers certainly possess a song-type it distinctly grades off to the Sparrows, which are not otherwise closely related to them. So we are forced to find and define the song-type and work both ways from it out to the limits, and there seek to distinguish certainly between the two which seem to grade into each other.

The warbler song-type may be defined as a high pitched, hissing whistle consisting of two well defined parts, usually on a different pitch. There are many and decided departures from this type, the one extreme being a monotonous repetition

of a single note like the Chipping Sparrow, the other a composite song so varied that it approaches a mimicry of many songs. I have selected the Yellow Warbler as representing nearly the type song of the family. We might further say that this type song usually consists of about eight syllables, the first phrase of four or five uttered more slowly, the remainder more rapidly and on a different pitch, sometimes higher, sometimes lower. With some species the pitch is so high that it approaches the vanishing point to many ears. But there is an indefinable woodsy quality to all warbler songs which is not shared by the members of any other group which bears any troublesome resemblance to the warbler songs. It is a quality that can be learned in a little time with the birds as they sing, but cannot be transferred by word of mouth or printed signs. Before leaving the song-type let me define the hissing whistle. It can be closely imitated by forcing the breath over the tip of the tongue as it is held against the upper teeth, modulating the pitch of the resulting thin whistle with the lips instead of with the tongue as in the ordinary direct whistle.

SONG PERIODS. DIURNAL.

Having learned the Warbler song-type, we are prepared to begin a study of the separate songs as the species pass in review before us. We shall not proceed far in this study before we discover that certain times of the day are preferred for singing by most of the species. Their day begins in the early morning twilight with a burst of song, and is carried with the quest for food as the light strengthens; the intervals between songs gradually lengthening as the day advances, until the appetite is satisfied, when the bird ceases song to rest until the afternoon brings round the feeding time again. The afternoon song period is marked by less singing than the morning, and the twilight marks its close. It is difficult to say when the morning period ends and the afternoon begins in the case of any individual birds; but in general, we hear few songs between ten in the morning and three in the afternoon, especially during warm weather, when the noon hours are of high temperature. During cool or wet weather the morning period begins later and the evening closes earlier, while some

birds will be in song all day long. But it must be remembered that some species do not follow any rule about their singing, and that with the majority of the species we know little about them except as they pass us on their way to the north. It may well be that the all night journey, as they migrate, makes the noon-day sleep necessary, while at their breeding grounds they have little need for that rest and so sing all day. But with many of the species which remain with us to nest there is the noon-day resting time all the season.

SEASONAL.

There are seasonal song periods as well as diurnal. These will be spoken of in the discussion of the several species, so that I need only discuss here the general subject.

Most male Warblers sing more or less during their northward journey, and until the care of the young leaves no time for song. Singing begins at least as soon as the northward journey begins, reaches its height while the mate is brooding over the eggs, then gradually declines as the cares of the family increase, ceasing entirely with the beginning of the molt which follows closely the complete development of the young into independent foragers. After the plumage has been renewed, some species have a short song period before leaving for the south again. It is difficult to say how large a number thus renew their song, but the writer's list includes twelve species positively identified, with several others about which there may be some doubt. It is more than likely that a far larger number sing at some time during the autumn months, either regularly or occasionally. Few songs will be heard, during this second song period, except in the early morning hours under favorable conditions. With some species the second song period is marked by a somewhat different song, and with many by a weaker one.

It is suggestive that the species which are known to sing during autumn are those whose color patterns are practically the same at all seasons, or at least not markedly different in fall from the spring dress. The spring song period is accompanied by enlargement of the reproductive organs, but the resumption of song in the fall is rarely so accompanied. It is not likely that all individuals of a species which has a second

song period sing then, but that a few do. Many are too fat to sing, and no doubt many do not sufficiently recover from the debilitating effects of the molt to sing.

It is not unusual to hear feeble attempts at song early in the autumn from not fully fledged birds, sounding like a bird whose vocal chords were unable yet to respond to the will. Gradually the song becomes more and more perfect as the days pass until it again becomes normal. Many times these are not young birds, but old ones just completing the molt. Disuse of the vocal muscles, or change due to the molt may account for these first unsuccessful attempts at song renewal.

TWO KINDS OF SONG.

We shall not proceed far in our study of Warbler songs before we are greeted with surprises. We shall find that all of the individuals of a species do not sing alike, and that the same individual is not always confined to one style of song. Sometimes the variations may be considerable, sometimes scarcely worth noting. We shall not proceed far in our study of these variations before we may be greeted to a fresh surprise in the form of a song wholly different from anything before heard from the bird, which cannot be forced under the designation 'variation.' It is something apart from the ordinary utterance, both in quality and quantity. The manner of utterance strongly suggests that this is a passion song. We are now forced to distinguish between what we have before considered the song of the species and this newly discovered song. For convenience the first one may be designated the

CALL SONG.

What do we mean by Call Song? It is the song which we hear commonly: the song of every day, uttered under no special stress of circumstances, as a sort of accompaniment to the usual activities. It is an announcement to all other birds within hearing, of the singer's whereabouts. It becomes a distinct mate call when the breeding grounds have been reached, if it could not be so considered before. After mating and the selection of the nest site it becomes an announcement of ownership and a warning to all trespassers. During

mating it is often a challenge or cry of defiance, and may sometimes become the battle cry when the fight is on. With some, possibly many, species it is used during courting as a love song, when it may be somewhat modified, thus approaching the passion song. It is always an announcement of some sort to some other birds, and may, therefore, be properly termed a call song. Not usually being reserved exclusively for the mate nor for himself, it might also be designated the altruistic song, as distinct from the egoistic or

PASSION SONG.

What, then, is the Passion Song? It is an outburst of melody of such richness and fullness, such thrilling ecstasy, that the singer is lifted into the air on quivering wings to pour out his melody without a pause until the inspiration has passed. The call song is the product of a deliberate purpose, but the passion song wants no purpose. It bursts forth unbidden. We have supposed that the passion song is purely a love song, intended only for the mate, since it is usually uttered only in seclusion and at times when vulgar ears are not supposed to be listening. There is little doubt that during the mating and nesting season it is a love song, but I have repeatedly heard the song of Oven-bird long after the young had left the nest and were no longer dependent upon their parents. I venture the suggestion that this song is induced by an overflow of energy which finds expression in this way. It is a sort of hymn of praise for the mere privilege of life. It is so far different in execution from the call song that there is no ground of comparison. The performance is a continuous thrilling warble with no plan nor suggestion of pause, accompanied by fluttering flight or swift dartings about an open space in the woods. The favorite time is just as twilight begins to cast its hush over nature; but it may be heard in the morning twilight, or sometimes during a dark, damp day when there are twilight conditions. Once I heard it from an Oven-bird on the approach of a thunder storm about nine in the morning. While the song is so unlike the call song, it may be a medley of the notes of that song, or begin with a few notes of the call song and close with a complete rendering of it.

I doubt if a hard and fast line can be drawn between the two styles of song, and I question if even now there are not some species whose call songs are not growing toward the passion song. Certainly some show a tendency in that direction, both in the modification of the notes of the song and the manner of utterance at stated times or under peculiarly favorable conditions. Some species manifestly employ the call song for love making without much modification. When the song is given during the chase after the female it is uttered in the throat or only faintly warbled by many species, as tho the attention could not be divided between the flight and the song, each needing it all.

The writer knows of only a dozen species who have a fairly distinct passion song. Preeminent among these stands the Oven-bird, so often mentioned above. It is not likely that these are all that sing so, since nearly every year hitherto has seen the list swelled. I would not be bold enough to say that all Warblers sing a passion song that is unlike the call song, but there can be little doubt that more than this dozen should be found to.

VARIABILITY IN THE CALL SONG.

To the most of us a Yellow Warbler is a Yellow Warbler be he number one or number one thousand in the list of individuals. We recognize no difference in the different individuals of a species in any limited region where we study. And it is true that the individual differences of color pattern, while sufficiently unlike to make a mistake among the birds themselves as to which is their mate unlikely, are practically alike to us. But it is not so universally true with the songs. A singer is not confined to one style of utterance, even under like conditions. I mean many species are not, possibly all. But some are far more variable than others. A common variation lies in shortening or lengthening the usual song by dropping or adding syllables. Another common method is the change of position of syllables that are somewhat different, or a change of accent. Sometimes a single syllabled song may become double syllabled, or vice versa. The closing cadence may either rise or fall at the pleasure of the singer. But these variations do not much affect the character of the song, nor

make it difficult to identify to any but the one who is hearing it for the first time. Another variation often indulged in by some of the more versatile singers is the substitution of one vowel sound for another. When this is accompanied with the variations noted above there may be some difficulty at first, but when the *style* of utterance is once learned variations are not deceptive, but rather pleasing for their variety. Each species has a style all his own which can be relied upon in any given locality, however variable his song may be.

There seems good evidence that there is also a seasonal variation, or a migratory variation. Some birds sing one style of song when they start from their winter homes for the north, another during the latter part of their journey, and still another when they are well settled for the summer. How universal this is I am unable to say. With some species the difference between the songs is decided, in others much less so. It would be interesting to know whether nesting birds of one species sing the same in all localities where they nest, or whether there is variation of much consequence. My own notes show only that with the few species which nest in Lorain county, Ohio, the songs of the birds which remain are somewhat different from the songs of those that pass further north. Do the Ontario nesting birds sing like the Ohio nesting ones? Probably.

Is there a longitudinal variation as well as a latitudinal one? If any probably far less marked. With some other species, notably the Dickcissel, there is a marked difference between the singing of the Iowa and the northern Ohio birds. If there is such a difference among the Warblers the notes at hand give no evidence of it. We might naturally look for some variability in the sub-species, growing into recognizable permanent differences, since they are variations in other respects from the species. But we might argue from this that since genera are assemblages of species which in some prehistoric time evolved from a common stock by differentiation, that therefore the songs of all the members of a genus should bear a closer resemblance to each other than to those of any other genus. Either this is not true, as we shall see, or else the present system of classification is wholly wrong; an unlikely supposition. Often species of widely separated genera resem-

ble each other more than species of the same genus. But it must be said that the closest resemblances anywhere found do lie within the genus, and between the species which are placed side by side in classification. An artificial key to the songs would therefore group the species as unnaturally structurally as an artificial key to their colors. But let us defer further discussion of variability until the study of the several species again brings it into prominence.

We have become somewhat biased, I am afraid, in our opinion that among the birds song belongs only to the males. In large measure that is undoubtedly true, but it is not universally true. The female Redstart sings at least one of the variations of the male, and I have heard a feeble song from the female Maryland Yellow-throat. The female Audobon's Warbler is said to sing. I have suspected the female Yellow-Warbler and the female Oven-bird of it.