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A STUDY OF THE SINGING OF OUR BIRDS.

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(Continued from p. 140.)

Anthus pensilvanicus (*Lath.*) *Thienem.** AMERICAN
TITLARK.

EVERY autumn, late in September or early in October, Titlarks appear in restless flocks, flitting about the brown fields and salt meadows, the quick double-note of many individuals sounding in agreeable consonance when the flocks are on the wing.

Before the present year I never knew them to occur in the spring, but this season they were present in large flocks through the greater part of April, first appearing on the 3d. On the afternoon of the 20th, I was quite sure I heard them sing — some short trills, sometimes broken into separate notes, certainly came from a flock of Titlarks in a large tulip tree standing alone in a wide field. Though the songs of Robins and Meadow Larks confused my hearing, before the flock took wing I heard enough to satisfy me that the Titlark does sometimes sing while it is with us on its spring migration. *

* Cf. Stejneger, Auk, Vol. I., pp. 167, 168.

Mniotilta varia. BLACK-AND-WHITE CREEPING WARBLER.

With this species, singing continues from its arrival in late April until the end of June. In some years I have not heard its song at all in July; in other years it sings occasionally up to the end of that month. The second song-period begins about the middle of August (9th to 22nd), and may last for a few days only, or for over two weeks; concluding dates fall between August 18 and 28. An exceptional date for song is September 23, 1879, when one of these birds was heard to sing perfectly several successive times. Final departure occurs five or six weeks after the cessation of song.

Helminthothenus vermivorus. WORM-EATING WARBLER.

Commonly remains in song after its arrival until the second week of July. Sometimes singing ceases a little earlier than this; again, in other years, songs are to be heard into the third week of the month.

The second song-period of this Warbler I can speak of only from one season's experience. On July 10, 1881, several of these birds were silently inhabiting a small tract of woodland, their first season of song having passed; here, on August 14, and again on the 21st, they were found in fine plumage and in full song.

The songs of no other three birds known to me are more alike than those of the Worm-eating Warbler, the Chipping Sparrow, and the Slate-colored Snowbird.

Helminthophila pinus (L.) Ridgw. BLUE-WINGED YELLOW WARBLER.

My data relating to the ending of the first song-period, in the case of those of our summer birds which earliest become silent, are less complete than I could wish; for experience had to teach me that observation which would discover the time when several species left off singing must begin before the middle of June.

The Blue-winged Yellow Warbler is perhaps the first of our summer birds to withdraw from the feathered choir. After its arrival in early May, scarcely a month elapses before singing has begun to wane; and it is not often continued after the middle of

June. Absence about this time in several recent years has interfered with my observations, but attentive visits to favorite haunts of the species in the last week of several Junes failed to show that it had not then become silent. Sometimes, indeed, it appears to cease singing soon after the end of May; again it may continue intermittently nearly to the end of June, and I have recorded a few isolated dates of song in early July.

A supplementary song-period occurs in August, usually about the middle of the month; beginning, according to my records, August 5 to 15, and ending August 18 to 24. Though the true spring song is then recovered, it is largely superseded by a markedly different song, which seems to be especially characteristic of the later season.

I have heard both songs succeed one another from the same bird. Representing the spring-song as *Ce-e-e-e—ker-r-r-r-r*, the later song would compare somewhat as follows: *Ker-r-r-r—kik-kik-kik-kik*. An approach to this song is sometimes noticeable towards the end of June; and the only songs of the species that I ever heard in July were much like it. In one season its song was not infrequent during the spring.

At the time of the resumption of singing in mid-August, before the species has come into possession of its full powers, I have sometimes heard some singular vocalization from it—a series of low, disconnected notes, unrecognizable as being from this species, sometimes, however, ending with the sharp *Kik, kik, kik, kik*, of the later song. This song sometimes strikingly suggests that of the Nashville Warbler.

At the time of this strange vocalism I have found the species completing a renewal of plumage, but with many feathers still in active growth. A little later, when singing is regularly resumed, the bird appears in its new attire, which is of a silken beauty, with even fresher and brighter colors than in the spring.

In view of the fact that hybridization seems to be established among certain species of the group to which this Warbler belongs, the above noted variations in song and time of singing may be due to other than merely individual and seasonal causes.

***Helminthophila ruficapilla* (Wils.) Ridgw. NASHVILLE
WARBLER.**

Sings regularly on its spring migration, but I have never heard it in the fall.

***Helminthophila peregrina* (Wils.) Ridgw.** TENNESSEE
WARBLER.

The transient presence of this species, in the upper foliage of the woodland in May, is usually revealed by its attractive song. In the autumn it passes in silence.

Compsothlypis americana* (L.) Cab. BLUE YELLOW-
BACKED WARBLER.

A constant songster on its spring migration, but ordinarily silent in the fall, unless individuals sometimes cause exceptions to the rule. I feel quite positive of having heard a faint song on September 18, 1881, from one of a small party of these birds; but it was not repeated, and I could not verify my conviction. A little farther north, however, the species does sing on its return migration; for I am told by Dr. E. A. Mearns that, near West Point, he has sometimes found it in full song in the autumn.

The Blue Yellow-backed Warbler has two different songs. In one the notes coalesce into a fine insect-like trill; in the other four similar notes are followed by four others, weaker and more quickly given.

This species arrives in the fall in full plumage, and somewhat fat. The color of its fat is a very pale sulphury, in contrast to that of other species, as the Nashville Warbler or the Redstart, in which the fat is more opaque and of an orange or reddish color.

***Dendroeca æstiva*.** SUMMER WARBLER.

Sings from its arrival in late April through July, but usually with diminished frequency toward the end of the month, although in some years it continues in full song nearly until mid-August. Ordinarily singing ceases in the second week of August; rarely earlier, but sometimes later. Extreme dates are August 4, 5, and 9, and August 18 and 19. This is the season of the bird's departure.

* Cf. Stejneger, Auk, Vol. I, pp. 169, 170.

***Dendroeca cærulescens.* BLACK-THROATED BLUE
WARBLER.**

Passes by in full song in May. Though usually silent on its migration in the autumn, it is sometimes to be numbered among the birds which sing at that season. On September 22, 1878, a morning when birds were abundant and active, and a number voiceful, including the House Wren, Blue-headed and White-eyed Vireos, Swamp and Song Sparrows, several of these Warblers were observed in fine plumage and full song. It arrives in autumn with renewed plumage and usually with little fat.

Dendroeca coronata, Yellow-rumped Warbler; *D. maculosa*, Black-and-yellow Warbler; *D. pennsylvanica*, Chestnut-sided Warbler; *D. castanea*, Bay-breasted Warbler; *D. striata*, Black-poll Warbler; *D. blackburniæ*, Blackburnian Warbler; *D. virens*, Black-throated Green Warbler; *D. palmarum hypochrysea*, Yellow Red-poll Warbler; *D. tigrina*, Cape May Warbler.

All of these spring and autumn migrants sing as they pass north, but are silent when they return.

***Siurus auricapillus.* OVEN-BIRD.**

Toward the end of June the song of this bird, which has been so constantly accentuated through our woodland for two months, becomes less frequent, and though heard into July, comparatively few individuals sing through the month. In some seasons I have missed it after the first week, but in others have heard it with some regularity through the second week, with rarely a chance song in the week following; July 23 is my latest date.

The second song-period occurs in August, and is transient and irregular; with varying seasons shifting a little to either side of the middle of the month. Rarely it continues imperfectly into September. August 9 and September 5 constitute extreme boundary dates, but at neither limit were the songs perfect. As if the power of song was gradually regained at the maturity of the new plumage, the time of silence which follows the breeding season, accompanying the moult, is finally interrupted, not with

a sudden recommencement of song, but gradually with the cessation of feather-growth. About the middle of August a few notes suggestive of their song may now and then be heard about woody tracts where for weeks the birds have conducted themselves with silence and seclusion. These preliminary notes are hesitating and faintly uttered. On succeeding days they become louder and more extended, suggesting the beginning of the true song, but there is an uncertainty about their delivery which seems to betray either inability or lack of confidence. Later, a sudden bold effort may be made, when the bird follows the successively higher notes of its true song until a point is attained beyond which it seems incapable of proceeding, and abruptly discontinues. But after a brief season of such efforts and failures the true song is attained. Though the apparent inability of the bird to sing may result from lack of vigor after the moult, the manner in which song is regained suggests vocal disability as a not improbable cause of the preceding and succeeding silence. In the supplementary song-period, song is to be heard only for a few days and in the early morning hours, and seems never to reach the precision and vigor of the true spring song.

The ordinary song of the Oven-bird, but for its inseparable association with the quiet recesses of summer woods, would certainly seem to us monotonous and commonplace; and the bird's persistent reiteration of this plain song might well lead us to believe that it had no higher vocal capability. But it is now well known that, on occasions, as if sudden emotion carried it beyond the restrictions that ordinarily beset its expression, it bursts forth with a wild outpouring of intricate and melodious song, proving itself the superior vocalist of the trio of pseudo-Thrushes of which it is so unassuming a member. This song is produced on the wing, oftenest when the spell of evening is coming over the woods. Sometimes it may be heard as an outburst of vesper melody carried above the foliage of the shadowy forest and descending and dying away with the waning twilight.

Siurus nævius. SMALL-BILLED WATER-THRUSH.

In full song while passing in the spring. On its return visit it is ordinarily silent, though probably not invariably so. The song of a Water-Thrush heard in the evening of August 25, 1879, I felt very sure was of this species.

Siurus motacilla. LARGE-BILLED WATER-THRUSH.

My notes on this species, although incomplete, seem to indicate two song-periods; the first ending in June or early in July; the later confined to a brief period of late July or early August. I do not regularly hear its song after June has well advanced, but as the birds are not common near me, I have not had opportunity for full observation. Before the end of July the birds seem to feel the migrating impulse and begin to grow restless. They may then be found in places which have not known them through the breeding season, and songs, often of full continuance and power, may again be heard. My record gives July 22 and August 4 as limiting dates for the brief second song-period.

Geothlypis trichas. MARYLAND YELLOW-THROAT.

There is probably a dual season of song with this species, which is obscured by variation in the singing-time with individuals. Though it usually remains in song all through the summer, in the last weeks of July and the first of August singing is less general and less spirited than either before or after. Often after the middle of August songs will be louder and more frequent than for weeks previously. Singing may cease at any time from about the middle of August to the end of the month, or first part of September (August 12 and 19, to September 3, 4, 11 and 13); but September singing is unusual. The moult takes place in August, and is completed in September, when the birds become fat.

With this species the habit of song-flight is well developed. The little black-masked bird seems to believe it necessary that singing should continue through the whole course of the flight, and as the ordinary song, with which it begins, comes to an end while yet the bird is in the air, the time is filled out by a disarranged medley of notes very different from its usual utterance. I have not often seen these performances before mid-summer, and the August songs of the species are most frequently those which accompany these flights, which are oftenest indulged in the late afternoon or towards evening. This species, and the Oven-bird, and Yellow-breasted Chat appear to be the

only members of the family Mnioiltidæ with which the song-flight is a normal and regular habit.

Icteria virens. YELLOW-BREASTED CHAT.

Regularly up to the middle of July, and sometimes through the third or even fourth week of the month, this species continues in song. Imperfect songs may sometimes be heard in early August, but rarely later, although my record extends to August 14. Dates of fairly perfect final songs range between July 15 and August 1. After the cessation of song the singular *chat* note of the species may yet be heard about the shrubbery which it still closely haunts; but even this seems to be discontinued before its departure.

This eccentric bird is perhaps our only species which regularly sings at night. Where Chats abound, it is a common experience to hear at one time several singing with full vigor at most untimely hours; and from my window I have listened to such serenades on many successive nights. They sing both when the moon is bright and when the night is clear and dark; their odd notes interrupting the midnight stillness with peculiar effect. Thus have I heard them into the small hours.

Myiodiocytes mitratus. HOODED WARBLER.

The first song-period of this species seems rarely to pass early July—latest dates, July 10 and 15. Perfect songs heard in the fourth week of August locate the second song-period. At this time the plumage is approaching maturity.

As has before been reported, this species possesses two different songs, or perhaps more truly, two distinct variations of one. These differences, however, are neither individual nor seasonal, but seem to come within the normal vocal compass of the species, both songs being used indiscriminately by the same bird. This fact has been noted by Rev. J. H. Langille in the 'Bulletin of the Nuttall Ornithological Club' for April, 1882 (pp. 119, 120), whose experience in its discovery was very similar to my own. I well remember with what interest and excitement I followed one of the songs of this bird about the woods on many different days, expecting to make a new bird acquaintance, and with what sur-

prise and chagrin I discovered that it proceeded from the Hooded Warbler, which had been constantly about me, but which I had never suspected to possess such versatility.

Myiodioctes canadensis. CANADIAN FLYCATCHING
WARBLER.

Myiodioctes pusillus. BLACK-CAPPED FLYCATCHING
WARBLER.

Both these species are in full song while passing in the spring, but I have never heard either sing on the opposite migration in the autumn. Then they appear with perfected plumage and usually with considerable fat.

Setophaga ruticilla. AMERICAN REDSTART.

In some years I have found this species songless soon after the beginning of July. In seasons when it thus early becomes silent singing is resumed in the first part of August, and continues for two or three weeks. But the period of July silence is inconstant, and sometimes singing is little interrupted through the month. When this is the case singing seems to cease finally at the end of the month or early in August, and is followed by no supplementary song-period. It is not probable that these indications of my records have resulted from incomplete observations; for records of the time of singing and silence of other birds go to show that the singing of a species in what is normally its central time of silence is at the expense of later song; and that the supplementary song-period is sometimes thus wholly sacrificed. My dates of last songs are limited by the third week of August, except in one exceptional instance when one of the birds was heard to sing on September 5. In the summer a song is commonly heard from the Redstart which is weaker and otherwise different from the normal, and which is probably produced by immature males.

Vireo olivaceus. RED-EYED VIREO.

A most untiring vocalist, maintaining song almost uninterruptedly through the summer, and only relinquishing it in September—from the 1st to the 10th. My records fail to show any regular time of silence before this; but singing is at a low ebb about

mid-August, and in seasons of heat and drought almost fails at that time. Towards the end of the month, however, there is usually an accession of vocal energy.

With individuals of no other one of our birds is singing so continuous as with the Red-eyed Vireos. They are often to be heard in full song for a great part of the day about one spot in the woods or even on the same tree. I have watched single birds singing for many minutes uninterruptedly; that is, with no rests save the slight natural pauses between the different sets of notes that make up the song.

In August while the species is still in song, it is undergoing a change of plumage; this is consummated in September, when the bird soon becomes fat. I have shot individuals in August which, though in an active stage of feather-growth, were nevertheless in song.

Vireo gilvus. WARBLING VIREO.

In favorable seasons this Vireo sings through May, June, July, and the first half of August. But, whether it be because of unfavorable conditions or from scarcity of birds, in some years its song is so interrupted in July that during most of the month singing is the exception rather than the rule.

Singing may cease at any time during the first two weeks of August: later in the month the species is not often heard from, although I have a few dates of song in the third and fourth weeks. The true second song-period seems not to begin before the last days of the month, or September, when for a week or more the species may be generally in song. Latest dates for singing are September 14 and 18.

(To be continued.)

THE BREEDING HABITS OF THE PECTORAL SANDPIPER (*ACTODROMAS MACULATA*).

BY E. W. NELSON.

DURING my residence in Alaska I found this Sandpiper — the *E-a-bóuk-kî-äg-i-shü-ÿ-ä-gúk* of the natives of Alaska — to be