

A FURTHER STUDY OF THE HOME LIFE OF THE
NORTHERN PARULA, AND OF THE YELLOW
WARBLER AND OVENBIRD

BY HENRY MOUSLEY.

Plate VIII.

IN 'The Auk' for April, 1924, I recounted my experience in June 1921 with that little feathered mite the Northern Parula Warbler (*Compsothlypis americana usneae*). Ever since then, I have lived in the hope of again meeting with a pair of these birds, and making a more complete study of their home life. On May 25, 1924, in the same wood where the previous nest had been found, I flushed a male off the ground, and I thinking it very probable that he was attending the female whilst gathering building material, I watched him closely. At first he remained in the branches of the lower shrubbery—which still further confirmed my suspicions—and then flew into the top of a tall elm tree, some little way off, where I had first heard him sing on May 11. In the neighborhood of this elm tree, I remembered there was a tall dead balsam fir with some usnea lichen hanging from it. To this tree I quickly made my way, just in time to see the female leave one of the drooping branches 40 feet up, near the top.

Concealing myself, I had not long to wait before the female returned, and then I saw that my wildest hopes were about to be realized, for the nest was only in the making. The favorite singing tree of the male, the tall elm, was just 20 yards from the nest, but there were two others as well, also elms, one 22 yards, and the other only 9 yards, from the nest. It will be seen on reference to the accompanying plate, that the nest is somewhat different from the one portrayed in my previous paper ('Auk,' vol. xli, 1924, pp. 263-88) being deeper, although similar in its suspended nature—as opposed to being enclosed between two long hanging streamers of usnea as is more often the case—and perhaps more nearly resembling a Baltimore Oriole's nest, than the other

¹ Read before the Province of Quebec Society for the Protection of Birds, Montreal, January 12, 1925.

one did, which is shallower, and not unlike a Vireo's nest. It was composed entirely of usnea lichen, with perhaps a suspicion of fine down as a lining, and taken all round, is the largest example of a nest of this species I have so far found, the dimensions being as follows: Outside diameter 3, inside $1\frac{1}{2}$ inches; outside depth 3, inside 2 inches. The thick bunch of usnea hanging below, and at the side of the nest, does not belong to it at all, the nest being entirely constructed by the bird from materials brought from a distance, agreeing in this respect with the other. Had I not watched the female arrive and depart, it would have been perfectly impossible in the first instance to have detected any outline of a nest whatever, just a few strands woven together indicating its position, and which were, no doubt, placed there that very day or the one previous. Unfortunately, not having the necessary materials with me on this first day I was unable to make any specific notes concerning building operations, and it was not until the morning of the 28th, that I was again able to visit the nest.

During the three and one-half hours I spent with the birds, the female brought 62 loads of building material to the nest, always arriving and entering it by a certain well defined route, the male singing on forty of these occasions, and at other times as well, usually from his favorite tree. The female chipped five times when arriving at the nest, and twice on leaving it. In the afternoon, I spent another two and one-half hours with the birds, the female bringing 43 loads of material to the nest, whilst the male sang on fourteen of these occasions. It was interesting to notice that even on the very first day, the inherited, or inborn habit of moulding the nest into shape, was indulged in, the female turning round in it on several occasions, even when there was hardly any semblance of a nest, and the act seemed fraught with considerable danger to the fabric. At 3.32 p.m., the male, who was singing in elm tree, No. 2, suddenly flew into the nesting tree, apparently in search of the female. Not finding her at the nest, he got into it, and turned round two or three times as if desirous of moulding it. Coming out, he perched on a branch, and seeing the female in a large cedar tree nearby, he gave vent to an outburst of the well known "buzz" notes only, there being no time for any other part of the song, as he dashed after her. This was the only occasion

on which he ever attempted to sing in the nesting tree, although I have known him to do so after having fed the young. Eight minutes later, the male, who was again singing in elm tree No. 2, flew into the nesting tree, drove the female onto the nest, and then went off. It would seem from his especial activity on these two occasions, that he was not satisfied with the progress that was being made in the construction of the nest, although he never once brought any material to help in its completion, i.e., during the seventeen hours I spent with them at various times, from eight o'clock in the morning, to half past four in the afternoon. He usually, however, accompanied his partner during her foraging excursions, returning with her, and singing from his favorite trees, 111 times out of the 221 journeys she made, which journeys were at the rate of one in every 4.6 minutes. Speaking of these journeys, and more especially of the loads that were brought each time, I wish it to be understood that the word load must not be construed too literally, as in many cases it consisted of one tiny thread of usnea only, the bird really never coming with its beak crammed full, as Robins do.

Few people realize the labor entailed in the construction of one of these lovely little nests, this one possibly necessitating from 500 to 750 journeys if not more with materials, before it was completed to the liking and requirements of the female. In constructing it, she worked from the top downwards, strengthening and thickening the rim and sides first, whilst the bottom was left so thin, that I could see her through it, and at times, when moulding operations were in progress, I often thought she would drop through. On June 1, the male sang in a small birch tree only four yards from the nest, this being the nearest approach. In the afternoon, neither bird appeared at the nest during the hour I was there, but the male was heard singing on four occasions at some distance away. I concluded the nest was completed the next day, as on the three following ones, although I spent eight hours altogether at the nest, I never once saw either bird near it, the male, however, was heard singing in the distance on five occasions. I thought nothing of this at the time, concluding that the eggs were being laid, and that I did not happen to be there when the female was on the nest. I did not visit the site again until the 15th, but

neither on this date, nor on the 16th, or 20th, did I see anything of either bird, the male, however, was heard singing in the distance on a few occasions only. I then realized that some tragedy must have happened, so I cut down the tree and secured the nest, which was 8 ft. from the top of the tree, and 2 ft. from the trunk. It contained no eggs, nor could I find traces of any on the ground, which would have been the case had they fallen out whilst the tree was coming down. Thus once again, disaster overtook my enterprise, but it left me fortunately somewhat the wiser, as to another phase of the home life of this delightful and smallest of eastern Warblers.

The male of my pair of Yellow Warblers (*Dendroica aestiva aestiva*)—which are by no means common at Hatley—was first observed in the village on May 18, 1924, but it was not until June 13, that I happened to be near the spot again, and noticed him singing in a dead maple tree, in a large disused garden with a stream running through it, and later he fed the female, upon her leaving a large cedar hedge. Proceeding to the spot from which she came out, I found the nest, which, unlike the usual run of nests of this species, was heavily lined with feathers, instead of plant down, as will be seen in the plate. It was nine feet above the ground, in the forks of a small cedar tree, and contained five heavily incubated eggs which hatched out on the morning of the 17th. I had spent four hours with the birds during the days intervening between the finding of the nest and hatching of the eggs, my seat of observation being under the drooping boughs of an apple tree, eleven yards from the nest. During these four hours, I saw the male feed the female on the nest four times, and once he chased a Catbird away who had ventured too near. On another occasion, the female had left the nest and on returning, found a young Song Sparrow clamoring loudly for food. This, as is usual, aroused the parental instinct, and caused her to at once find food and feed the youngster. On the morning of the 17th, I watched the birds for only three-quarters of an hour. During this time, the male sang ten times in his favorite tree—the dead maple, five yards from the nest—and once in the apple tree, just above my head. It was then that I decided to keep a very careful account of the exact number of times that he sang, and this I carried out to the end, it

being one of the items not dealt with by Mr. Bigglestone, in his study of the species.¹ Besides singing, the male assisted in feeding his offspring, on one occasion arriving at the nest at the same time as his partner, whereupon, they both stood side by side on the edge of the nest—and fed the young. In the early stages of a Warbler's home life, brooding the young is the order of the day, this duty almost always devolving upon the mother. On the 18th, during the one and one-half hours I was at the nest in the morning, all but seventeen minutes was spent by the female on the nest, the male never once engaging in this duty during the whole time I spent with them. The male on arrival at the nest, often sang very near it, with his mouth full of food, which proceeding is nothing unusual of course, but the fact of his singing so often, and so very near the nest, was a new experience, which was further exemplified on the 19th, when he actually sang on the nest itself, thereby, "giving the show away"! a most unusual thing for a Warbler to do in my experience.

This bird sang twenty-seven times on the nest itself after having fed the young—once eight times in succession—besides thirty-five times very near it, and one thousand seven hundred and thirty-eight times away from it, making a total of one thousand eight hundred times that I heard him sing in the twenty-nine hours I was at the nest, or at the rate of rather more than once every minute! At times, the song was repeated at the rate of six times to the minute, but never more, although Mr. Harrison F. Lewis once heard it twelve and once fourteen times to the minute, but this is exceptional I think, three or four times being the more general thing.

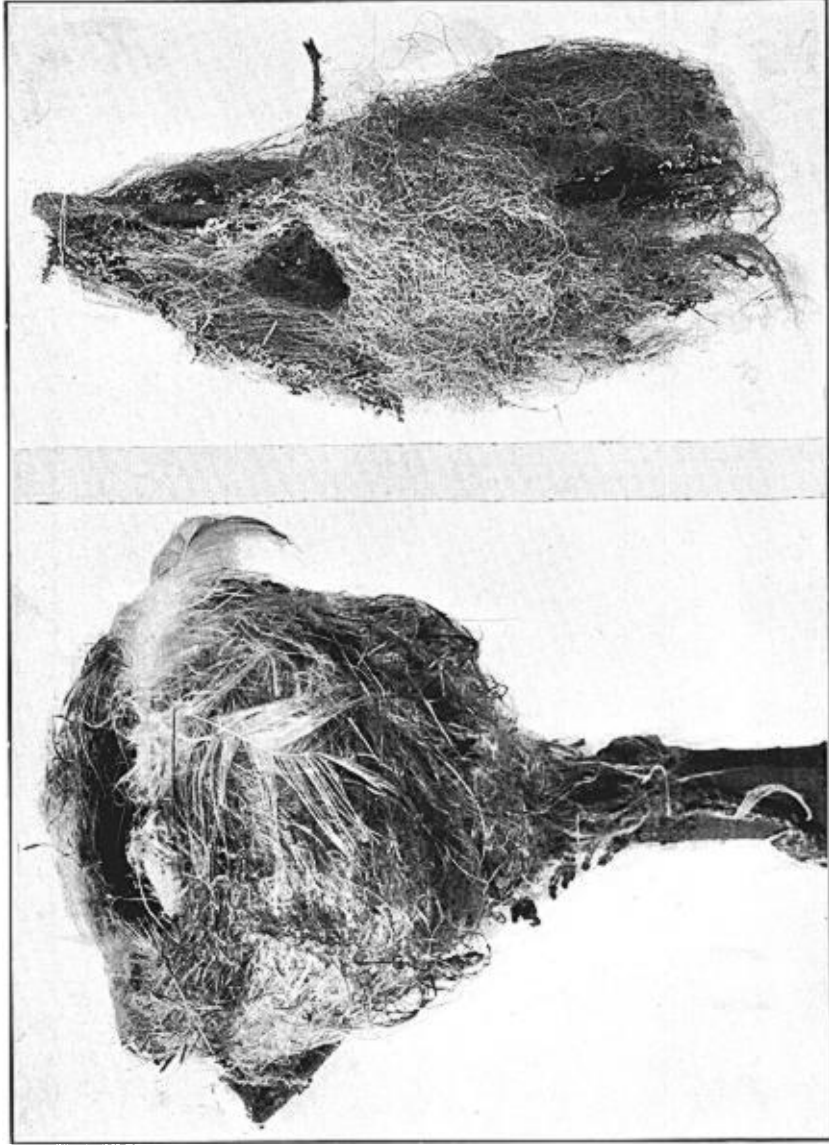
Notwithstanding the large number of birds which frequented the old garden at Hatley—I only twice saw this male try to chase any of them off, once a Catbird, and once a Song Sparrow. This, I think, is a good instance of the well-known fact that males, as a rule, are tolerant of the approach or company of other birds, providing they are not of their own, or related species. Had another Yellow Warbler, or any other species of Warbler for that matter, have put in an appearance, I think it, or they, would have been promptly chased off. As is customary in the early stages, the

¹ Wilson Bulletin xxv, 1913, pp. 49-67.

excreta or feces are usually eaten by the parents, more especially by the female, who generally keeps the nest clean whilst brooding is the order of the day. In the present instance, she attended entirely to this matter until the fourth day, when the male commenced to remove the fecal sacs, as did also the female, the former in some cases depositing them on the roof of an adjacent house, but more often—as was the rule with the female—flying with them into a tree, and dropping them on the ground, or leaving them on the bough of the tree. Each bird on one occasion dropped the sac near the nest, but as I have always observed in cases of this kind, they at once descended, and picked it up again and carried it off. On the 23rd, a most unusual thing occurred, the female flying from a height direct onto the nest, instead of approaching it in the usual stereotyped way. The nest during a part of the day, was a good deal exposed to the sun's rays, at which times, the female brooded the young with outspread wings, rarely leaving them to seek food, this being brought by the male, who usually passed it on to his partner, and she in turn gave it to the young. On this same day, the young began to get very lively, stretching their wings and moving about in the nest, which seemed to overjoy the male, for he sang no less than five hundred and fifty-two times in four and one-half hours, or at the rate of a little over twice to the minute, four times on the nest itself, fourteen very near it, with food in his mouth, and the remainder mostly in his favorite singing tree. Singing when near the nest with food in his mouth, was usually, I think, a warning to the female of his arrival, as she was generally on the nest at these times, and left it at once. On the following day, the 24th, the young became still more lively, and during this, and the previous day, they kept their parents pretty busy feeding them, the former on several occasions arriving at the nest simultaneously, when they stood side by side—and fed the young. Possibly, some of the evening sessions were as interesting as any, for then the parents invariably kept close to the nest, gathering little insects off the surrounding vegetation, and lice no doubt from the outside of the nest, as the female usually spent a good deal of time at this work in the evenings, as well as catching small flies on the wing, which the male did also. The latest I heard him sing was 7:45 p.m., and usually when I left, he was perched near the nest, whilst his mate brooded the young.

During the afternoon of the 26th, I could see that the young would probably be leaving the nest early the following day, and so it turned out, for on arrival at 8:15 a.m., the parents were feeding them in the adjacent shrubbery. They had been thus exactly ten days in the nest, corresponding with the time given by Mr. Bigglestone. During the twenty-nine hours of this period that I was with them, they were fed 112 times by the male, and 277 by the female, at the rate of once in every 4.5 minutes, the time brooded by the female being eight hours on 77 occasions, the length of each brooding being 6.2 minutes, the longest fifteen minutes. There can be no hard and fast rules as to the length of each brooding, as this is governed by a variety of circumstances, such as weather, location of nest, whether exposed to the sun or not, and the frequency of the male's arrival with food, etc., etc. As regards the periods of feeding, I find Mr. Bigglestone's birds fed their young on 2,373 occasions, during the 144 hours of observation, which gives an average for the whole time, of once in every 3.7 minutes, mine once in every 4.5 minutes which is very close indeed. Both birds were quite fearless, the female perhaps rather more so than the male, although the latter often gathered food in the apple tree under which I was sitting, this food for the most part consisting of soft green larvae and small insects of various kinds, which were always conveyed to the nest by a certain well defined route, not only by the male but by the female also. In arriving and departing from my seat of observation, I never once approached the nest, always taking a circuitous route, in order to avoid as much as possible upsetting the natural functioning of the birds. In this, I think, I was entirely successful, and obtained as perfect a picture of their home life as it was possible to do, whilst sitting in full view of them, which I much prefer to being imprisoned in a tent.

The Ovenbird (*Seiurus aurocapillus*) is a species, the study of whose home life I very soon found out would have to be conducted on somewhat different lines to that of any of the other Warblers I had so far come in contact with, i.e., I had partly to conceal myself behind an improvised screen of green boughs, owing to the nervous temperament of the birds and their secretive ways. The nest was found accidentally by flushing the female off it on June 18, 1924, on which date it contained three fresh eggs, which number



NESTS OF YELLOW WARBLER (LEFT) AND NORTHERN PARULA WARBLER (RIGHT)

was not increased, so that it looked as if incubation had just commenced that day. Two of the eggs hatched out on the 30th, the third one proving to be addled, so that incubation had lasted exactly twelve days. The nest as will be seen from the photograph, was situated on some sloping ground, in an open spot in a large wood, being surrounded on all sides by spruce and balsam fir trees. It was composed of dry leaves and grasses, with fine grasses and black hair-like rootlets as a lining, with a broken down stem and frond of the bracken fern incorporated as a kind of shield or covering. The opening to the nest faced nearly due east, and this was in my favor, as the ground dipped away, then suddenly rose, and almost as suddenly dipped again, thus forming a ridge, behind which I was enabled to secrete myself, just seven yards from the nest, the overhanging boughs of a balsam fir acting as a partial screen. As only two of the eggs had hatched out on June 30, I decided to wait until the following day before commencing operations. Arriving the next morning at 7:45 a.m., I found the female on the nest brooding.

Nothing happened until 8:30 a.m., when I heard the male singing some distance away, but it was not until 8:53 a.m. that he arrived in the trees to the north of the nest with food in his mouth. Approaching nearer, he unfortunately espied me, and would not venture near the nest, flying round about and above me, chipping loudly all the time, and eventually dropping the food. Then he commenced to sing, and kept this up until 10:47 a.m., singing altogether on forty occasions. By this time, I was beginning to get desperate, for the female had not left the nest, and the young had had no food for two hours. However, I stayed on until eleven o'clock, and then pretended to leave the spot, but when out of sight doubled back again, and hid behind a tree some way off from the nest, but where I could see it with my glasses. It had the desired effect, for five minutes afterwards the female left the nest. I at once set about making an improvised blind by placing a quantity of fir boughs all round my seat of observation, I also had a look at the two young, and removed the third egg which had not hatched, and then returned to my blind to await further developments. It was not, however, until 11:20 a.m. that the female returned with food, and then she was too much afraid to go to the

nest with it, hanging about for another twenty-five minutes, before she ventured to feed the young, which had had no food for four hours! After feeding them, she brooded them, with her head facing inwards, and her tail practically blocking the entrance to the nest. Hitherto, she had brooded the young with her head facing the entrance, and her eyes almost always looking in my direction. At 12:15 p.m., she cleaned the nest, and twenty-five minutes later left it, walking very quietly and secretively away. Five minutes later, the male began to sing, and this he kept up until one o'clock, after which I never saw or heard him again for the rest of the day. At 1:05 p.m., the female returned, walking to the nest and feeding the young, and then leaving. This she repeated on several occasions until 5:45 p.m., when I left, after having been at the nest for ten consecutive hours. During that time, the young had only been fed on seven occasions, or once in every eighty-six minutes, and that by the female alone, who had also brooded them for seven hours and twenty-two minutes, out of the total of ten hours. All the male had done to encourage her was by singing on sixty-one occasions only. Needless to say it was a very strenuous day, not only for the mother bird, but for myself as well. However, I looked forward to my next visit with pleasure, seeing that I had still to learn how long it would take the male bird to overcome his shyness, and feed his offspring.

On arrival at the nest at 12:45 p.m. the following day, much the same kind of thing went on as on the previous one, the female was brooding when I arrived, and continued doing so until 2:55 p.m. During that time, the male sang eleven times, and it was his arrival at the nest with food, that caused the female to leave. Instead of arriving in the trees to the north of the nest, he now appeared walking very carefully and secretively—down a very narrow little run-way, directly to the left of the nest. As he emerged from under the ferns, and came out into the open space between these and the nest, he looked furtively in my direction, and continued doing so each time after delivering a morsel to the young. When this was finished, he walked quietly away in the same direction as he had come. Twenty-three minutes later, I was somewhat surprised to see the female also arrive with food, following in the footsteps of her partner, as previously to this she had approached the nest

from the north. However, from now on, both birds without a single exception, approached the nest from the south, down the little run-way, which brought them almost to the site without having to come out into the open. After this, each bird fed the young once again before I left at 4:45 p.m., having been at the nest for four hours, during which time the young had been fed four times only. However, matters were improving in every way, the male having overcome his shyness, feeding his offspring as often as his partner, and moreover, the intervals of feeding had increased from once in every eighty-six minutes, to once in every sixty minutes, which average was still further increased on the following and succeeding days. So intensely interested had I become by this time, that I determined to spend the greater part of the next day—July 3—at the nest. Arriving at 8:15 a.m., I remained until 4:45 p.m., eight and one-half consecutive hours, during which time the young were fed on thirteen occasions, six by the female, and seven by the male, once in every thirty-nine minutes, the food consisting mostly of soft green larvae, small flies and insects, with a good sized moth now and again. The young were now getting older, requiring more food and less brooding, the periods of the latter extending to fifty-three minutes at a time, instead of seventy-two, as on the two previous days. The male sang on fifty-eight occasions. The following day I spent another seven and one-half hours with the birds, but in this case they were not consecutive ones, from eight-thirty to eleven-thirty in the morning, and from two to six o'clock in the afternoon. Up to this time there had been no visible signs of how the fecal sacs had been disposed of, but this being the fourth day, I expected to see both birds either eat them, or carry them away. That the female had eaten them up to now, whilst cleaning the nest, there was no shadow of a doubt, but when a bird is rooting about with its head buried in the nest—and in this case with its back and tail turned towards me—it is very difficult indeed to see the actual process of eating, notwithstanding that one knows it is taking place. The male more often than not, rarely devours the sacs, preferring to carry them away, but in this case he broke the general rule and was the first to devour them, the female following suit shortly afterwards. The male sang fifteen times only in the morning, and not at all in the afternoon, but he

fed the young nine times to his partner's six, but beyond this nothing unusual took place except in the afternoon, when the female chased and drove off a chipmunk, who had ventured too near the nest. On the following day, the 5th, the male gave up eating the excreta as I expected, but the female continued doing so to the very last, differing in this respect from all my previous experiences, for it is the general rule for both parents to fly away with the fecal sacs in the later stages of the home life. In this case, the male walked away with them, on this, and the following day, but on the 7th, reverted to the usual custom, and flew away with them. On the 5th I arrived at the nest at 5 a.m., to find both parents away and the young moving about in the nest—one more than the other—as though they were anxious to vacate it. At a quarter past five, the female returned, and soon after the male joined her, both birds flitting about and walking along the boughs of the trees near me, whilst chipping softly, the male singing on one occasion. Their actions, which were so entirely different to those I had hitherto been accustomed to, coupled with the activity of the young—only confirmed my suspicions that the following or eighth day, would be the one on which they would leave the nest. Three minutes after the male had sung, another pair of Ovenbirds—which had a nest not far off—appeared in the trees, and then a battle royal ensued, my male chasing the intruding one up and down through the trees, with both females in attendance. Finally he drove him off, together with his partner, when he gave vent to his feelings by singing again. During the two hours I was with them, much the same kind of thing went on as at first, both birds almost constantly flitting about in the trees and chipping at the same time. I was unable to visit them again that day, but when I arrived the following morning, only the female was near the nest, flitting about in the trees as on the day previous, but more excitedly now. Looking at the nest, there appeared to be only one young bird in it, with its head half way out of the opening, and looking as though it might leave it at any minute. The female now became more excited than ever, chipping loudly in the boughs which overhung the nest. Finally, unable to contain herself any longer, she at last flew down, and literally poked the youngster out of the nest, the time being 10:35 a.m. Just previous to this, I heard the male

sing not far off, but did not see him. Hurrying to the nest, I was unable to detect the young bird amongst the dead leaves and bracken, so wandered some little way off in the direction I had heard the male sing. There I found young number one, who must have left the nest just previous to my arrival, and who was evidently being attended to by the male. It was no doubt a more lusty youngster than the other one, going off at a great pace, so I did not follow it, but returned to the nest at once, as I felt sure the other young one could not be far off. After a considerable search I at last found it, just one foot from its home, but so still had it kept, and so well did it harmonize with its surroundings, that I had failed to notice it in my first hurried search. Dropping my cap over it, I carefully lifted it up, which brought both parents on the scene at once, in a most excited state, trailing themselves along the ground, then suddenly springing up, and flying at me as it were, in an endeavor to make me give up their young. Not wishing to cause them any further anxiety, I let the little fellow go, when it at once fluttered off in the direction the other one had taken, both parents being in attendance. Thus ended my first, and so far perhaps, the only really intimate study of the home life of the Ovenbird that has yet been made.

I had spent forty-eight hours altogether at the nest, during which time I met with many new experiences, not the least of which was the much longer intervals between the feedings, and the greater length of each brooding, which may perhaps be universal in the case of ground nesting Warblers, of which this is my first study. In the present case, the average interval between feedings for the whole period, was thirty-eight minutes, and the length of each brooding, sixty-five minutes, as against a general average for the other seven studies I have made, of eleven minutes interval between feedings, and twelve minutes the length of each brooding, a marked difference, which, however, appears to have had no ill effects upon the young, as they left the nest quite as hale and hearty as any of the other young. As in the case of the Yellow Warblers, I never once approached the nest, and the young certainly could not have seen me, but what material effect, if any, my presence may have had on the behavior of the old birds, has yet to be seen by further studies. In the meantime, I am not expecting any very

startling change, looking to the proverbial shyness and secretiveness of the birds.

Before closing, I should like to draw attention to the great difference in the singing propensities of the male Yellow Warbler, and that of the male Ovenbird. In twenty-nine hours, the former sang eighteen hundred times, or on an average of rather more than once every minute, whilst the latter, during a period of forty-eight hours, sang only two hundred and fifteen times, or on an average of little more than once every thirteen minutes, quite a marked difference. This, I think, is a case of what Mr. J. P. Burkitt in his paper, "Birds' Song," (*Irish Naturalist*, vol. xxi, 1922, No. 11, pp. 117-25), calls "mating putting a brake or stopper on song," hence a declension of song for first nests and broods in some species of Warblers, more especially in British, than in North American Warblers. After the first brood there is a recrudescence of song as Mr. Burkitt goes on to say, and this is exactly what we find in the case of the Ovenbird, its loud "teacher, teacher," notes being heard all day long from the middle of May to the end of June, then falling off in July, if not ceasing altogether for a time, with a recrudescence in August. In other words, I think it is a species whose song is affected by parental cares, similar to that of many British Warblers, as recorded by Mr. Eliot Howard in his "British Warblers," 1907-14, and by Mr. Burkitt in the above, and other papers in the 'Irish Naturalist.' Appended will be found a table of Summaries on these three nests similar to that on the previous seven.

469 Harvard Ave., Montreal, Canada.

TABLE OF SUMMARIES ON THREE WARBLERS' NESTS

Species	Period of Observation	Hours	Times Male Sang	Number of Times Fed by		Number of Times Brooded by		Average Rate of Feeding in Minutes
				Male	Female	Male	Female	
Yellow Warbler Ovenbird	June 17-27	29	1800	112	277	Nil.	77	4.5
	June 30-July 8	48	215	37	38	Nil.	24	38.4
				Loads of Nesting material brought by female		Rate of Delivery of nesting material in minutes, once in		
Northern Parula	May 25-June 2	17	111	221		4.6		-----

Species	Period of Observation	Hours	Total Time Brooded Hours and Min.		Times Feeces Eaten by		Times Feeces Removed by		Age of Young at Beginning of Observation
			Hours	Min.	Male	Female	Male	Female	
Yellow Ovenbird	June 17-27	29	8.01		Nil.	7	27	49	Just hatched
	June 30-July 8	48	26.04		4	17	10	Nil.	" "
Northern Parula	May 25-June 2	17							