

THE FORTUNES OF A PAIR OF BELL VIREOS

By MARGARET MORSE NICE

The Bell Vireo is by far the commonest of its family in the vicinity of Norman, Oklahoma; the Red-eye nests only in tall trees in woods, the Warbling is very local, having been found by us in but three places in Cleveland County, while the White-eye is rare, nesting only occasionally and then in thickets on the edges of woods. *Vireo bellii bellii* is preëminently a bird of shrubbery; it frequents the clumps of sand plums and young willows, and also adapts itself to civilization and nests in gardens.

The Song. There is no music to the Bell Vireo's refrain, but it possesses a quaint charm in its air of enthusiasm, the rapid jumble of it all. It may be phrased *whillowee, whillowee, whee* or *jiggledy, jiggledy, jee*. There are four possible variations: there may be three *whillowee's* instead of two, and either song may end with a rising or a falling inflection. These four songs are sung in no particular order, as the following record of a series taken August 10 shows (2r meaning two main phrases ending with a rising inflection, 3f meaning three main phrases with a falling inflection, etc.): 2r, 2f, 3f, 3r, 2f, 3r, 3f, 3r, 3r, 3r, 3r, 3r, 3f, 2f, 2f, 3r, 3r, 3f.

When the bird is thoroughly in the mood, his rate is a song every three seconds, about one and a half seconds for the song and the same for pause. He does not, however, sing with the regularity that many birds do, for this rapid rate is seldom kept up as long as a minute, 15, 16 and 17 songs a minute being the highest numbers I have recorded, while 8 to 12 are more commonly heard. As for hour records, a nesting bird sang the following number of times: 32, 56, 57, 61, 70, 99, 131 and 254. Bell Vireos seem to sing all day long and all summer long; they are heard through August with diminished fervor and well into September, the last songs having been recorded on the following dates: September 13, 1920, September 18, 1921, September 9, 1922, September 11, 1923, September 20, 1925, September 21, 1926.

On September 6, 1925, I noted: "The Bell Vireo sings a little each morning. One day we saw him eating berries of black alder, in the meantime singing his regular *jiggledy jiggledy jee*; he also had a scolding kind of song—*zip zip zip zip zip zip zee*. Sometimes this was preliminary to the ordinary song, sometimes not." On September 19: "The Bell Vireo gave a few explosive song and scold mixtures."

The scold, *chee chee chee chee*, is a most expressive utterance, given by both male and female. A sputtering *spee spee*, heard from the male during nest building, appeared to be a courting note. The juvenile call note is a single, nasal *pink*. A cuckoo-like *kuk kuk kuk kuk kuk* was heard August 12, and a loud *unk* on July 10; the significance of these notes is unknown.

The First Nest. In 1926, I followed the fortunes of a pair of Bell Vireos for two months on the campus of the University of Oklahoma. On May 12, I heard ecstatic singing in a honey-suckle bush; upon investigation I discovered an exquisite little nest only 15 inches from the ground; in it was one egg. The nest was largely made of birch bark (from an introduced tree near-by); spider webs, cocoons and bark fibres were on the outside, while fine pieces of peppergrass stems and horse hair served as lining. By May 15 there were four eggs; three of these hatched May 28, the last, May 29; hence, incubation must have started with the third egg and lasted 14 days.

On May 29, I watched the nest from 10:23 to 10:53, seated 25 feet to the east. The female flew off at my approach but returned in three minutes, brooding the young as long as I stayed. The male made 8 trips to the nest with insects, giving them to his mate who opened her bill very wide to receive them. He sang 19 songs, all away from the home bush.

Two days later I watched from 10:40 to 11:40 A. M. No parent was in sight at first, but both came to the nest at 10:45, feeding the young side by side. The female then settled down and brooded for 25 minutes; the male in the meantime busying himself, bringing food and singing. He greatly disliked my field glasses, scolding and hurrying away whenever I used them. During the hour, he fed 11 times, and his mate, 5; he sang 21 times in the home bush and 11 times elsewhere. While both parents were away I bent back some twigs so as to get a better view of the nest; they did not seem to mind this temporary change in the surroundings of their home. The female brooded again from 11:30 to 11:40, when I frightened her away by unbending the twigs. At 11:32 she ate the food brought her, but four minutes later she passed it on to an infant. The male nearly always announced his identity by his song, but sometimes I knew it was he because he objected to the glasses far more than did his mate.

The next day I moved my stool to within 15 feet of the nest and no longer had to use the alarming glasses; the birds objected very little. The female was brooding at the beginning and end of the hour (8:50 to 9:50), and also from 9:09 to 9:21—25 minutes in all; I had to frighten her away to fix the branches for better observation, and later to replace them. The male brooded once for about a minute, ruffled up and scolding; he left at the approach of his mate. The female fed three times, the male five; twice he gave the food to her, once she ate it herself and once gave it to the young. Fifty-five songs were given in the home bush, 15 elsewhere.

On June 2 the female failed to appear for 17 minutes, then she was so displeased with my proximity (I had now moved to within 10 feet) that she ate her caterpillar herself, scolded and scolded, flirted her tail and hopped about in the bush. Two minutes later, however, she and her mate were both on the nest rim; she fed the young, and he gave his insect to her, whereupon she *ate it herself* and flew away. In 15 minutes she returned with a green caterpillar which she presented to the young; she took an anal sac and carried it away. The two days previous each parent had eaten a sac once during the observation hour; from now on both carried them away consistently. There was no brooding today, yet the female fed only four times during the hour, while the male did so 12 times. In order to avoid the sun I moved within 8 feet of the nest; the male accepted me as harmless, but his mate was quite apt to disapprove; hence I distinguished her by her propensity to scold, him by his irrepressible tendency to sing. There were 37 songs in the home bush and 24 others during this period.

Two hours, 8:30 to 10:30, were spent at the nest on June 3, when the young were five and six days old; there had been a heavy rain in the night and the day was decidedly cooler than any of the previous ones—66° F in contrast to 75° and 87°. Consequently there was some brooding, four times by the female, twice by the male; her broodings lasted one minute, four minutes, twenty-nine and ten; his, one minute, and seven minutes. He always left at her approach, she did so at his, three times. She fed 9 times and removed excreta three times. He brought 18 meals, carried off four anal sacs, and gave 63 songs in the honeysuckle and 124 elsewhere.

Once he came to the nest, fed, picked up lice and then stood for two minutes on the nest rim, after which he popped down to brood. Unfortunately his mate came in about a minute and he slipped off. The female spent a good deal of energy in scolding me while she was on the nest; when most displeased she uttered two scolds a second, but often calmed down to about one call a second and at times would stop. A curious incident took place while she was brooding: the male gave her a green caterpillar which she merely held in her bill while she scolded. Six minutes later he reappeared with a large insect, but her mouth was already full; he ran his offering

along her bill but in vain, for she remained perfectly quiet. He seemed at a loss what to do, then with some difficulty rearranged the creature in his bill and swallowed it himself. After his departure, his mate rose and gave the caterpillar to her family; she inspected, settle down again and began to scold once more.

During her last session of brooding, the male, singing twice in the home bush, gave her a small green caterpillar; she fed this to the young and then started to scold; he gave a farewell song, left, sang once to the north, but the next minute was back in the bush singing. He gave her another insect, she went about a foot from the nest, he left, she returned and fed the young, then flew away herself. It was astonishing how he could sing while holding large creatures in his bill.

When approaching the nest both birds invariably alighted in the top of the bush and descended by easy stages, their soft colors blending beautifully with the lights and shadows on the leaves. They always stood on the north rim to feed and inspect except when both birds were present at the same time; then they stood on the east side. Until the last day, the female faced south when brooding; on June 3, she faced in all three other directions; the male faced north and northeast. Inspection was often a rather prolonged process, especially with the male; the two occasions on which I timed him, it lasted 45 seconds and two minutes. Four times I noted him apparently pecking at lice, but I did not see his mate in this act.

As to the food, with one possible exception, only one piece seemed to be brought at a time. Green caterpillars were the favorite objects, since 19 of these were brought; twice there were moths. Larger objects were brought on June 3 than before. The male gave 25 of his 54 feedings to his mate; since I did not fasten back the twigs around the nest until the middle of the second day of observation, I could not see what was done with 15 of these meals, but of the ten others, four were eaten by her and six passed on to the young.

We had to leave, June 4, for the Wild Life Conference at the Wichita National Forest; on our return, the 8th, I found the nest had been torn out and there were no signs of the young nor of the parents; this misfortune probably happened the night of the 3rd or 4th.

The Second Nest. On June 10, I located the new nest of this pair, 75 yards to the east in a hydrangea bush, much better situated than its predecessor for observation, because of the shade available all morning long. I hoped to be able to make a good study of their nest life this time. It looked as if the little birds might have learned a lesson, for this nest was three feet from the ground. It was a beautiful little thing largely made of birch bark. The male sang a great deal in the home bush, and a little in another bush. Once he dashed back to the hydrangea to drive away a Brown Thrasher; I heard a scuffling but could not see what took place. Their first home was in an isolated shrub and had had no bird visitors while I watched, but this, on the contrary, was in a row of bushes. On June 11, there was one egg, on the 14th four and the female was incubating, sitting quietly for 27 minutes of the half hour I watched, her mate singing 20 times in the home bush and six near-by.

On June 22, I watched the nest from 9:32 to 10:32, the female leaving her post as I arrived 20 feet away; I moved my stool within 15 feet and waited. Four minutes later I heard scolding in the home bush, then four songs; a parent came to the nest, inspected and settled down to brood. At 9:15, I was astonished and delighted to hear a song from the nest. The absurd little bird apparently couldn't keep quiet any longer and had to sing even in the situation which above all would seem to call for quiet. He wriggled around, ate a louse, sang again and again. He seemed to be a more restless sitter than his mate. At 10:17, after he had sung 30 times from the nest, the female

returned; he greeted her with a song and left the nest, singing once more; she scolded, came to the nest, got on, stepped off, scolded again, but after that settled down to incubate quietly. During this hour there had been 36 songs in the hydrangea and 21 from other shrubs.

On June 25, I found that the cat, besides emptying the neighboring Mourning Dove nests, had torn the bottom out of this little home.

The Third Nest. The next day I discovered that the foolish little birds had returned to their first bush and had started a nest three feet from the ground; there was material on the two supporting twigs only. I watched from 8:44 to 9:44, at first from a distance of 20 feet, later from 15. The male was in the highest of spirits, singing far more than during any of the other periods of observation, for he gave 125 songs in the home bush and 129 elsewhere. He also had a new note—something between the song and scold, *spee spee*, with which he greeted his mate. The female was the chief architect; she made seven trips, but only twice could I see material in her bill. The male came 16 times, as if he had to be always examining the structure, but I never saw anything in his bill (I have seen other male Bell Vireos carrying material). As formerly in the brooding and incubating, he acted as if his mate had prior right to the nest and always hurried away when she came. I could not make out whether he was helping or hindering, but he certainly was vastly interested in the enterprise and was always coming to tinker with it. At the end of the hour, threads had been pulled straight across from side to side.

Most of the work on the nest was apparently done that day or early in the morning of the next, for at 9:00 on June 27 it was practically all there, although not shaped at the bottom. Enthusiasm was decidedly less on that day; for each bird made but four trips in the hour, and the male sang only 99 times (31 in the honeysuckle). At 9:14 the female came to the bush with an inch-long piece of birch bark; the male went to the nest and pecked a little; she came, he sputtered and left, singing seven songs in the home bush. She stood on the rim, arranging her piece of bark, pecking and pecking, then she settled down into the nest. Her mate came near, she flew off and he followed. The next two times they came together, the female getting into the nest and turning around and around. At 9:35 he arrived alone and started to work with the fibres, teasing and stretching them, getting down into the nest and working most busily, in the meantime singing. His mate arrived above him, waited a moment until he noticed her, when he hurried off, saying *spee spee*.

On June 28 the nest looked somewhat nearer completion. At 5:00 A. M., June 29, it was all done but the lining. The next day at 8:40 it seemed entirely finished; the male was singing and sputtering in the vicinity. On July 1 at 7:00 P. M. it looked as if a little more lining had been added. On July 2, I found the male admiring the first egg. Three days later the third disaster had taken place; the nest was upside down on the ground with two tiny white eggs and a Cowbird's near-by. The nest had been made largely of birch bark and wool (from the sheep pen a few yards away), lined with peppergrass stems and horse hair; a few cocoons had also been used.

The male was singing quite a little, often in his home bush. From July 6 to 9, I heard him to some extent, but found no evidences of building. On the 10th there was no singing but some queer new notes that sounded like *unk*. The bird came into a tree and gave a squeaky, scolding series something on the order of the song and then sat with bill wide open for several minutes. After that it sat perfectly quiet in the tree for 15 to 20 minutes, not making a sound or movement; finally I left.

The birds were not seen nor heard again. I do not know whether they had the courage to try again elsewhere after three tragedies, or whether they gave up entirely.

Summary of Nesting Activities. The meals were brought at a rapid rate, once every 4.9 minutes during five and a half hours of watching. To be sure, some of these 75 meals, at least five and perhaps a dozen, went into the female's crop, so that the young received food once every five minutes on an average, or three times an hour for each little bird. The male fed 54 times, the female 21.

The average duration of brooding was 13 minutes on the part of the female and three for the male. Both parents ate the feces the third and fourth days and carried them away after that, the female disposing of seven in the five hours, the male of eight.

It is clear from the singing indulged in that the male was at the height of his enthusiasm on the first day of building the nest, giving on an average 4.2 songs a minute during the hour; the next day he sang about a third as much, that is, 1.5 songs a minute. As for his singing while feeding the young, during the first two days when the temperature reached 87° and 85° the rate was the lowest of all, 0.6 and 0.5 songs a minute; during the next two days when the temperature had dropped 10 degrees the rate was doubled, 1.1 and 1; while the last day, when there had been another 10 degree fall, the rate was three times as rapid as during the two hot days. It looks as if with this bird there is a definite increase in energy available for singing during cooler weather. However, the last three periods of observation were earlier in the morning than the first two; with most birds there is a decrease in singing zeal towards the middle of the day, independent of increase in temperature. Vireos are supposed to be exceptions to this rule, but I do not know that the matter has ever been tested carefully.

In the nine hours of observation the male sang 388 songs in his home bush and 417 elsewhere.

In this fragmentary study of the home life of a pair of Bell Vireos, the enthusiasm of the male throughout the cycle was delightful to witness—his intense interest in nest building, his exuberance while incubating, and his devotion to the young both in occasionally brooding them and in assuming the major part of the task of feeding them.

Further Data on the Bell Vireo. This bird is a summer resident in northeastern and central Oklahoma, being found in the southwest occasionally in Comanche and Tillman counties and in the northwest in Woodward County. At Norman, in the center of the state, its dates of first arrival have been as follows: April 28, 1920; April 25, 1921; April 27, 1922; April 29, 1923; May 2, 1924; April 30, 1926; April 28, 1927; the average of the eight years being April 28. In northeastern Oklahoma it comes earlier, for Mr. A. J. Kirn reports its arrival at Copan in Washington County on April 25, 1913; April 25, 1916, and April 24, 1917; while Mr. W. H. Koons' earliest dates for Tulsa are April 20, 1923; April 22, 1924; April 20, 1925; April 20, 1926; April 21, 1927. In Norman the last birds have been seen on the following September dates: 19, 1920; 18, 1921; 18, 1922; 14, 1923; 20, 1925; 21, 1926.

At Austin, Texas, Mr. G. F. Simmons (*Birds of the Austin Region*, Univ. of Texas Press, 1925, pp. 249-251) gives dates of first arrival as between March 26 and 31, and of latest occurrence in fall, September 22 and 27 and October 2. "At St. Louis," Mr. Otto Widmann (*Trans. Acad. Sci. St. Louis*, xvii, 1907, p. 212) writes, "and in central Missouri generally the first may be expected between April 27 and 29, sometimes a day or two earlier, as April 26, 1882 and April 25, 1883." Near Sioux City, Iowa, Mr. W. W. Bennett (*Proc. Iowa Acad. Sci.*, xxiv, 1917, pp. 285-293) gives the median spring date, May 16, the latest fall one, September 16.

As to nesting dates, complete sets have been found in Austin from April 25 to July 1, in Tulsa May 5 to June 30 (Mr. George W. Morse), in Sioux City the first

and second weeks in June. Near Norman we find nests in process of construction the second week in May. The latest evidences of breeding have been young out of the nest fed by their parents on July 13, 1923, and July 21, 1926.

The typical set consists of four eggs. Bennett, Simmons and Kirn report occasional instances of five eggs. If Cowbird eggs are present the Vireo quota is almost always less than four.

The height of the nest from the ground is reported by Simmons as "1.12 to 10, once 25, average 3 feet"; by Bennett as 2 to 5, average of 13 nests, 2 11-16; by Kirn as 2 to 3½, average of 6 nests, 2½; by Morse as 1½ to 5 feet; while I found them from 15 inches to 10 feet, the average of 12 nests being 3 feet.

As to the fate of nests, Bennett reported 9 failures, 3 successes and one unknown; seven of the failures were due to Cowbirds, two of the nests containing three eggs of the parasite; but in no case was a Cowbird raised. Mr. H. P. Attwater (*Auk*, ix, 1892, p. 237) writes from the San Antonio region that it is "a rare occurrence to find a Bell's Vireo's nest that does not contain one or more Dwarf Cowbird's eggs. In one case a nest of this Vireo in a thorn bush contained four Cowbird's eggs, with three others lying on the ground three feet below." Of the 17 nests found by us, the outcome of two was unknown, but 15 came to untimely ends. In three instances Cowbirds had caused desertion, two nests having one foreign egg each and one having two; but in a fourth nest a Cowbird had been successfully raised while a baby Vireo was found crushed in the bottom of the nest. Cats caused six disasters; snakes or people may have been responsible in four other cases.

Both Simmons and Morse report nests in which false bottoms had been built over one or more Cowbird eggs. A curious instance of a double nest was found by the latter near Tulsa, June 15, 1926 (*Oologist*, XLIV, 1927, pp. 23-24); the second nest was built two-thirds of the way around the first and contained two eggs, when the young of the first brood were nearly ready to fly.

Columbus, Ohio, June 5, 1928.