

woods, as they emerged in the morning twilight from sheltered places where the evergreens stood thick and the birds apparently had their nightly roosts. Apart from the singing before sunup, birds were also heard later in the day on nine occasions: six times during the forenoon and three times during the afternoon; once, on January 29, as late as 4:42 p. m. or just before sunset. On January 1, two black-capped chickadees sat on song perches and gave three minutes of competitive singing. On January 2, the first chasing was observed; chasing was also observed three or four times later in the month.

In connection with weather conditions, I took the following notes. During four of the five non-singing days, the temperature was below zero Fahrenheit, once reaching 43 degrees below zero. On two days, the weather was clear, on two overcast and on one snowing. On 13 of the 24 days during which the birds were heard singing, the temperature at the time of song was below zero. On January 31, one bird was heard singing twice at 43 degrees below zero. The birds sang on eight days when the weather was clear and cold, on nine days when it was overcast and milder, and on seven days during moderate to heavy snow. From this, it may be concluded that weather conditions had little influence on their singing, especially towards the end of the month.

Of other birds heard singing during January, 1948, I may mention the purple finch, *Carpodacus purpureus*. It is the first time I have observed this species wintering in this region. On January 5, a mild and sunshiny day, I saw an immature male sitting in the top of a tree, giving the "vireo song" (Saunders, 'A guide to bird songs,' 1935: 246) continuously for about 10 minutes. Again on January 21, a mild and overcast day, and on January 29, a clear day with below zero temperature, I heard this finch sing the same song. Mr. Saunders gave as his first date of the "common song," January 30, 1926 (Auk, 64: 103, 1947), while the earliest record I have of this song is February 20, 1948. On January 20, I heard the Red crossbill, *Loxia curvirostra*, singing; the white-winged crossbill, *Loxia leucoptera*, sang on January 2, 9 and 13; and the pine siskin, *Spinus pinus*, was heard singing on January 29, 30 and 31. With regard to the two last species, it may be of interest to mention that the pine siskins were seen chasing before they were first heard singing, and a white-winged crossbill was observed in a magnificent flight display on January 2. In the red crossbill, courtship feeding was observed on February 3.

In 1946, four brown-headed chickadees, *Parus hudsonicus*, spent part of the winter in this area, and I had the opportunity several times of hearing their song which I believe to be the counterpart of the blackcap's "phoebe" song. The birds, according to my notes, began singing on January 29, but it was not until March 13 that I realized the significance of the song and made comparative notes on the singing of the two species. I described the song as a half whistled, half warbled "eet-tulu" with variations of "eet-tulululu" or "eepit-tulululu," given at about the same pitch as the blackcap's song. The accent was always on the first or second note with the ending trill, quite musical and of a liquid quality, uttered rather like an afterthought. Like the blackcap, the brown-headed chickadee generally took up position on a singing perch and would give song after song.

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LOUISE DE KIRLINE LAWRENCE, *Rutherglen, Ontario, Canada.*

Courtship feeding by the Carolina chickadee and tufted titmouse.—Neither Lack's review of courtship feeding in birds (Auk, 57: 169-178, 1940) nor Bent's volume on the Paridae (U. S. Nat. Mus. Bull. 191, 1946) records courtship

feeding in the Carolina chickadee, *Parus carolinensis*, or the tufted titmouse, *Parus bicolor*. Laskey (Auk, 58: 57, 1941) reported it in the Carolina chickadee in April, but the stage of the breeding cycle was unknown. She also described an incident suggesting courtship feeding in a tufted titmouse before nesting had started. Odum (Auk, 59: 430, 1942) mentions that at a nest of Carolina chickadees the male accompanied and fed the female during the inattentive periods of incubation.

TUFTED TITMOUSE. On April 18, 1948, I color-banded in quick succession two titmice on my feeding shelf; neither had a brood patch. On April 25, one of these birds fed the other, twice within a minute or two, in a tree near my home. Little calls were given continuously by, I thought, the one thus shown to be the female, during some minutes that the birds spent in the tree; the female quivered her wings during the male's approaches with food. The female also appeared to be foraging for herself. As just a week earlier she did not show a brood patch, laying may not yet have begun. On June 26, these birds were caring for flying young.

CAROLINA CHICKADEE. In Dickeyville, a suburb of Baltimore, in 1948, I saw the male of a color-banded pair of chickadees feed the female on April 18, while she was building in a nest-box; this box was not the one finally used. In 1947, I had seen courtship feeding by this pair of birds, both at the nest and away from it, from May 4 when incubation appeared to be under way, until May 17 when both parents were feeding young in the box. The female also foraged for herself during her inattentive periods throughout this time. The following notes are on the nesting in 1947.

Nesting stages. Because the nest-box these birds used could not be opened it was impossible to follow the nesting with precision, and I made observations only on scattered days. The male was feeding the female off the nest on May 4, when incubation apparently was under way. On May 10 to 13, definite incubation days, he fed her repeatedly, both on and off the nest. On May 17, when both parents were feeding young and the female was also brooding for long periods, the male at least once fed the female off the nest; he also repeatedly gave food to her on the nest, but whether she ate any of this or passed it all on to the young could not be determined. On May 21 and later dates, there was no indication of feedings off the nest; the ultimate recipient of food the male gave to the brooding female remained undeterminable.

On-the-nest feedings. When the female was fed on the nest, the male would cling at the hole, and the female came up to it. This occurred in 10 of 15 complete sittings by the female; these 10 periods ranged in length from five to 51 minutes. On four other occasions she ended sittings of eight to 16 minutes by leaving the nest-box to receive the food on the male's arrival. One sitting of nine minutes was the only one I saw during which, or as a conclusion to which, she was not fed.

There was no regularity about the male's visits to the box with food. For example, during one sitting of 41 minutes the female was fed three times; during another sitting of 43 minutes she was fed only once. The male appeared with food as soon as one-fourth minute after the female began a sitting, and as tardily as 24 minutes after.

Once, on May 12, during an 18-minute inattentive period by the female the male went to the nest-box with food while she was still away. After looking into the box, he moved to a perch for a few seconds with the food, then flew away; whether he himself ate his offering at the last moment I could not see. This 18-minute period of inattentiveness on the part of the female was the longest seen in 500 minutes of observation of incubation; the average length was 6.1 minutes.

Off-the-nest feedings. Of the 17 complete inattentive periods that I watched

during incubation, the female spent 14 away from the tree that held the nest-box. During eight of these I could not tell whether the male made feedings. During six he did, and at least sometimes he made repeated ones; I saw two during a five-minute inattentive period, and three during a six-minute period. There may well have been more each time. In addition, the female foraged for herself.

On the other three occasions, upon the male's arrival with food, the sitting female left the box simply to be fed and after one-fourth, one-half, and one and three-fourths minutes returned to the eggs without having been fed again or doing any foraging herself. These three occurrences were successive ones on the afternoon of May 13, when I thought hatching was near; except for these brief respites, the female made a sitting of 71 minutes.

Female's behavior when fed. When the female was fed on the nest I noticed no calls or begging display, although I regularly watched from a distance of only 20 feet. Off the nest, the female begged for food by quivering her wings and giving calls 'dee, dee, dee; swee-dee-dee; chick-a-dee-dee-dee' while her mate was foraging near by, even when he seemed to be out of her sight, and while he was approaching and delivering the food.—HERVEY BRACKBILL, 4608 Springdale Avenue, Baltimore, Maryland.

House wrens feeding a cowbird.—On July 12, 1947, while on a field trip along Duck Creek, Scott County, Iowa, I came upon an immature cowbird, *Molothrus ater*, perched on a low limb of a tree. The cowbird gave low calls. I concealed myself to wait and see who the foster parents were. A few seconds later a western house wren, *Troglodytes aëdon*, flew to the fledgling cowbird and fed it. The wren was soon joined by its mate which also fed the cowbird. My presence was detected by the wrens and they gave the usual alarm and scolding calls, but the cowbird gave no heed to the excited house wrens and kept calling for more food. The wrens flew to some underbrush 50 feet away, and the cowbird immediately followed them. While watching this trio through field glasses, the cowbird was fed several more times.

This is the first time I have found the house wren to be a molothrine victim. Frances Hamerstrom reported (Wilson Bull., 59: 114, 1947) a similar affair, but his wrens were nesting in boxes while the wrens that I observed were nesting, so I believe, in the wild state. The wrens use deserted woodpecker holes and natural cavities as nesting sites, making it much more difficult for a cowbird to deposit eggs in their nests.—JAMES HODGES, 3132 Fair Avenue, Davenport, Iowa.

Catbird's defense behaviorism.—We have hanging on one side of our yard a suet "stick" for the birds. Among other species the blue jay and the catbird, *Dumetella carolinensis*, are fond of the suet. After the blue jays brought forth their young, they became very possessive of the "stick" and drove away any other birds caught feeding there. When the catbird was so attacked, it squaled like a lusty, young bird and launched forth from the tree like a fledgling with half-open, feebly-fluttering wings—sinking rapidly until it nearly touched the ground and then rising up until it gained the branch of an apple tree on the other side of the yard. There it paused briefly, shook itself, looked around alertly, and flew off in normal fashion toward its nesting area. The psychology of the action reminds me of the way a puppy will roll over on its back when approached by a strange dog, submitting as its sole defense the fact that it is just a puppy.

This catbird went through this performance many times this summer. It would be interesting to learn if this is normal behavior for all catbirds or just the particular reaction developed by this individual.—F. J. FREEMAN, Itasca, Illinois.