

R.16W.), Schoolcraft County, on July 8, 1941. The bird was in view for five or six minutes, but it flew nervously about among the crowns of the tall spruce trees, making it difficult to obtain a good view. Finally it flew down to within about 30 feet of me, and I noted most of the identifying features; just before it flew out of sight I saw the white wing patches characteristic of the Cape May Warbler. Throughout this time the bird held a caterpillar in its beak. Previously, on June 23, 1941, I had made a similar observation at the same place, but on that occasion the bird in question had remained near the tops of the tall spruce trees, and I could not identify it with complete certainty. It also held something in its bill.

Connecticut Warbler, *Oporornis agilis*. I heard and observed a Connecticut Warbler at close range in a wet poplar woods adjacent to a meadow three miles east of Shingleton, Alger County, on July 1, 1941. The bird sang repeatedly from the same perch and allowed me to approach to within about 30 feet. The white eye ring, comparatively large bill, the light mandible, and the other characteristic features of a male of this species were clearly discernible with the aid of 8-power binoculars.

Brewer's Blackbird, *Euphagus cyanocephalus cyanocephalus*. There is apparently but one specimen record for Michigan of the Brewer's Blackbird, a female collected by Leonard Wing, near Ironwood, Gogebic County, on July 26, 1932, and sight records are extremely rare. I saw a pair of Brewer's Blackbirds southeast of Crystal Falls (Sec.7, T.42N., R.31W.), Iron County, on May 1, 1941. The birds alighted about 25 feet from the car, and with the aid of 8-power binoculars, I clearly saw the light iris and purplish head of the male, and the dark iris of the female.

Hoary Redpoll, *Acanthis hornemanni exilipes*. On March 25, 1941, two miles west of Creighton, Schoolcraft County, I saw a flock of eight redpolls that appeared strikingly light-colored in comparison with most of the redpolls seen during that winter. One or two in this flock (probably adult males) were extremely light, and their breasts were suffused with a delicate pink. I collected two of the flock, and P. Brodtkorb identified them as *exilipes*. Only two earlier Michigan records of this form have been confirmed by specimens.

Alaskan Crossbill, *Loxia curvirostra minor*. In the winter of 1940-41 Crossbills were abundant in the Upper Peninsula from early November to February. Twenty-one specimens which I collected were identified by J. Van Tyne as the Alaskan form, following Griscom's revision of the species (*Proc. Bost. Soc. Nat. Hist.*, 41: 77-210). Many of these specimens were found dead on Highway 28, between Shingleton and Seney, Schoolcraft County, where they had apparently been attracted by salt or calcium phosphate on the road and been hit by cars. Manville (*Wils. Bull.*, 53, 1941:240-241) found crossbills common the same winter in the Huron Mountains, Marquette County, and found some specimens in breeding condition. The testes of two males I collected on January 29, 1941, were enlarged, averaging in greatest diameter 2.7 and 5.2 millimeters. Two females were collected on the same day, one with several ova 0.5 millimeter in diameter, the other with the largest ova 1.0 millimeter in diameter.—GEORGE ANDREW AMMANN, *Camp Carson, Colorado*.

Circulatory congestion as a possible factor regulating incubation behavior—It is generally assumed that periodic hunger is the chief factor regulating attentive-inattentive incubation behavior in birds. But other physiological factors, especially restriction of circulation and related discomfort, may have more to do with determining the length of the attentive period than hunger as such. Recent experimental work (*Ann. Rev. Physiol.*, 3, 1941: 343) has emphasized the importance of the activity of the skeletal muscles in maintaining blood flow in the veins, where the pressure is usually very low. When the body is at rest the action of gravity, reduced arterial pressure, and absence of the kneading action of the skeletal muscles

all tend to produce restriction of circulation, which eventually results in considerable discomfort. Even in sleep, periodic movements occur reflexively, a result, at least in part, of stimuli from congested regions. Jackson (*Science*, 96, 1942: 564) has recently shown that in the sleeping human being an anticipatory increase in heart rate occurs before a general movement. Stimulation of receptors by local congestion, pressure, and increased skin temperature is interpreted as bringing about a reflex acceleration of the heart rate before the impulses are strong enough to bring about activity of skeletal muscles and a change in position. In recording the heart rate of incubating birds on their natural nests (Odum, *Ecol. Mon.*, 11, 1941: 318) a similar anticipatory acceleration in heart rate, occurring just before the bird left the nest, was often noted. Indeed, when a quickening of the heart (readily detected by ear) occurred without apparent cause, it was usually safe to predict that the bird would leave the nest within the next few seconds to begin an inattentive period. If circulatory congestion, together with local pressures and heating of ventral skin areas in contact with eggs or nest, is the cause of these anticipatory responses, then we have an indirect indication that the bird may end an attentive period on the nest as a result of the discomfort produced by sitting still. Since the smaller the animal the more rapid the heat loss and circulation rate, we would expect circulatory congestion to be felt more quickly in small birds than in large ones during periods of inactivity. Correspondingly, the length of the attentive period is generally shorter in the smaller species.

One might inquire at this point as to the condition at night. Even though the incubating bird remains continuously on the nest, it does not necessarily remain still. In making records with passerines at night, I was much impressed with the amount of muscular activity which often occurred (Odum, *Ecol. Mon.*, 11, 1941: 318). Sometimes the bird even left the eggs for short periods to move to the edge of the nest or to the front of the nesting box.

Since activity on the nest may serve the same purpose in relieving discomfort as leaving the nest, and since anticipatory cardiac acceleration by no means occurred in my records at the end of every attentive period, it cannot be concluded that circulatory congestion with related discomfort is the sole regulator of attentive-inattentive behavior. Also, psychic factors cannot be ruled out; perhaps cardiac acceleration results from cerebral stimulation, that is, occurs when the bird thinks about leaving the nest (granting that it does think at all). The physiological basis here, as in other forms of behavior, is probably complex, and regulatory factors may well vary at different times or in different species.—EUGENE P. ODUM, *Department of Zoology, University of Georgia, Athens, Georgia.*

An unusual song from a House Wren.—The note by Edward S. Thomas (*Wils. Bull.*, 55, 1943: 192–193) on a wren which sang the songs of both the Bewick's and the House Wren reminded me of an odd song which I heard near Lexington, Virginia, on May 18, 1943, from a wren which I definitely identified as a House Wren (*Troglodytes aëdon*). At first, when the bird was singing in thick underbrush, I thought that the song might be coming from either a Carolina Wren or a Kentucky Warbler, for it was like that type of Carolina Wren's song which so much resembles the song of the Kentucky Warbler. Later, when a glimpse showed me that the singer was a wren, I thought that it was an unusual song of the Carolina Wren, but as I followed the bird, it came out into the open and sang from a tree, showing itself unmistakably to be a House Wren.

Phonetic rendering of bird sounds is notoriously unsatisfactory, but this song sounded clearly to me like the syllables, "turple, turple, turple, teer teer," with a heavy accent on the first "teer." This the wren sang again and again. Later it sang several times another two-part song, the first part of which was like the song of the Carolina Wren, the second being the normal rippling notes of the House Wren.—J. J. MURRAY, 6 *White Street, Lexington, Virginia.*