

longer photoperiods, as the following preliminary experiment vividly shows. Nine male Bobolinks, captured during northward migration in early May (at Raleigh, North Carolina) were maintained during the summer in an outdoor aviary under natural day-lengths (Lat 36° N) until 2 October. On this date they were brought indoors and exposed to daily 12½-hour photoperiods for five weeks. On 6 November, the photoperiod was increased to 18 hours for five of these birds, to 14 hours for the other four. Within *sixteen* days thereafter (22 November) all of the "18-hour" birds had developed the black beak pigmentation indicative of the production of male sex hormone. All nine birds were killed on this day. Testes of the four "14-hour" birds were minute, as expected, with an average weight of 1.75 mg per bird (1.1–2.2 mg). Contrarily, the testes of the five "18-hour" birds were conspicuously enlarged, with an average weight of 54.4 mg (19.8–115.1 mg). This latter is the sort of response one would expect of a Temperate Zone migrant. To make a specific comparison we may estimate roughly the testicular growth rate constant ( $k$ : the average increment, per day, in the logarithm of the weight in mg) by assuming (1) that the increase in weight is a logarithmic function of time, linear, or nearly so, as in White-crowned Sparrows (*Zonotrichia leucophrys*), and (2) that the testicular weight in the "14-hour" birds, after only 16 days, very nearly represents the inactive (initial) weight. With these assumptions, the value of  $k$  for an 18-hour photoperiod is approximately 0.09 in this transequatorial migrant, a value of the same general order of magnitude as has been indicated for the Temperate Zone migrant *Zonotrichia leucophrys gambelii* by Farner and Wilson (*Biol. Bull.*, 13: 258, 1957). Contrarily, for 14-hour photoperiods, the  $k$  value in Bobolinks obviously approaches zero, but is at least 0.04 in *Zonotrichia*.

These preliminary data suggest that 14-hour photoperiods, although acting as long photoperiods in maintaining refractoriness in the post-breeding phase of the annual cycle in Bobolinks (as in Temperate Zone migrants), act as relatively very short photoperiods in the succeeding, photosensitive phase (in contrast to Temperate Zone migrants). This would serve admirably to retard testicular recrudescence during the long days of the Southern Hemisphere summer. The *maximum* day-lengths experienced by Bobolinks in South America (at the December solstice) range from less than 13½ hours (including civil twilight) at Lat 8° S (in Peru, west of the Andes) to less than 14¾ hours at Lat 27° S (the most southerly latitude, in Argentina, for which I have found records of occurrence for the species).—WILLIAM L. ENGELS, *Department of Zoology, University of North Carolina, Chapel Hill, North Carolina*.

**Nesting of Worm-eating Warbler and Slate-colored Junco in eastern Massachusetts.**—In June, 1962, two unusual breeding records occurred at Weston, Massachusetts, Middlesex County, 15 miles (24 km) west of Boston. A pair of Worm-eating Warblers (*Helmitheros vermivorus*) and a pair of Slate-colored Juncos (*Junco hyemalis*) were found nesting within 200 yards (183 meters) of each other on Doublet Hill, the highest elevation in the town (360 feet or 109 meters).

The nest of the WORM-EATING WARBLER was the joint discovery of William H. Burt, III, and John J. Fitzpatrick of Weston (both aged 14). They saw the adults on 18 June and on 19 June found the nest containing five well-grown young. On 21 June two young were still in the nest, and it was empty on 24 June. The adults were seen carrying food for two days afterward. This record was confirmed by Mr. Wayne M. Petersen of Wellesley, Massachusetts, and myself. I photographed the nest and its surroundings on 26 June and took the nest which has been given to

the Museum of Science, Boston, Massachusetts. It was typical (A. C. Bent, *Life histories of North American wood warblers*. U. S. Natl. Mus., Bull. 203: 40, 1953), lined with stems of *Polytrichum*, and built on the ground beneath an overhanging lowbush blueberry (*Vaccinium angustifolium*) on a southwest slope in open deciduous woods, about six feet from a sheer rock face.

Mr. Henry Ala, Waltham, Massachusetts, first discovered the nest of the SLATE-COLORED JUNCO about 20 June and showed it to the boys on 24 June. Mr. Petersen and I saw it on 25 June, when it contained five eggs. The eggs hatched on 29 June. I watched the adults feed the young on several occasions, and they fledged 7 July. William Burt saw three young in the vicinity on 27 July and again on 9 August. The nest of dried grasses was built about four feet (1.2 m) above the ground in a dense English Ivy (*Hedera helix*) growing on the east side of a brick house. I took pictures of the locality and the nest *in situ*; then it was taken and is now in my possession.

WORM-EATING WARBLERS have been reported nesting in Massachusetts in the southwestern corner of Berkshire County at South Egremont and Mount Washington, and in the Connecticut River Valley at Easthampton and Sunderland (Griscom and Snyder, *The birds of Massachusetts*, Salem, Peabody Museum, 1955, see pp. 191-192; *Bird News of Western Massachusetts*, 1: 45, 1961). Eliot (*vide* W. Bailey, *Birds in Massachusetts*, South Lancaster, Mass., by the author, 1955; p. 175) suspected breeding in Berkshire County when he saw an individual on 15 June 1939 in Mount Washington. For the next 10 years, adults were seen regularly in this region, and in 1948 Eliot (*vide* Bailey, *op. cit.*) reported four probable nesting sites. McCarty and Minecci (*vide* B. Hendricks, *Berkshire Birds*, Boston, Massachusetts Aud. Soc., 1950; p. 44) found a nest containing four eggs on 19 June 1949 at South Egremont. Apparently this is the only nest previously found in Massachusetts. Eliot and Edwards (*Records of New England Birds*, 7: 146, 1951) first suspected nesting at Mt. Tom in Easthampton, Hampshire County, in 1951 when on 27 June they heard two adults "chipping anxiously—probably young around"; and adults have been seen regularly at Bull Hill in Sunderland, Franklin County, since 1959 (*Bird News of Western Massachusetts*, 1: 45, 1961; 2: 45, 1962).

SLATE-COLORED JUNCOS are summer residents on the higher elevations in central and western Massachusetts, but rarely nest in the eastern part of the state. The last previous record appears to be in Lexington, Middlesex County, 10 miles northwest of Boston, where Govan saw adults feeding a fledgling during June and July, 1954 (*Records of New England Birds*, 10: 171, 1954).

Recent reports suggest a steady northward expansion of the breeding ranges of southern species such as the Tufted Titmouse (*Parus bicolor*), White-eyed Vireo (*Vireo griseus*), Hooded Warbler (*Wilsonia citrina*), and Cardinal (*Richmondia cardinalis*) into the northeastern states. In our preoccupation with these southern species, we may have overlooked the fact that successful species are expanding their ranges in all directions, and that, simultaneously, northern species abundant in our area in winter have been unobtrusively colonizing marginal areas to the southward.

These two records from Weston reveal a meeting of "Canadian" and "Carolinian" species where oak-hickory forests interfinger with hemlock-white pine-northern hardwoods.—CHARLOTTE E. SMITH, 75 Westland Road, Weston, Massachusetts.