

Taylor (op. cit.), walks as well as hops (Table 1). If we also add to this list Ender's (op. cit.) notes quoted above, at least seven species of double-scratchers are known to move over land by some means in which the legs are not moved together.

A point overlooked by Harrison when he described species as having "hopping locomotion" is that in hostile chasing emberizines appear often to run. This behavior was noted in my study of *Passerculus princeps* (Hailman, op. cit.), and previously unpublished observations of other species are shown here in the last column of Table 1. Harrison noted that "*Junco* spp." double-scratch, and this column adds evidence that *J. oreganus* moves its legs alternatively in at least one type of terrestrial locomotion.

There are, then, at least eight known species that do not fit a strict interpretation of Harrison's hypothesis. The hypothesis might be rephrased to state that double-scratchers hop, even if they use other terrestrial locomotory patterns as well. While I have not seen *Passerculus sandwichensis* hopping, Robbins et al. (Birds of North America, p. 308, 1966) state that it "runs and hops, rarely walks." Perhaps then all emberizines that double-scratch also hop as well as run or walk. However, Harrison notes that the Old World emberizines do *not* double-scratch, yet possess hopping *as well as* running and walking. The double-scratchers hop, run and walk and the "non-double-scratchers" also hop, run and walk.

Finally, a few further complications exist. A fifth form of terrestrial locomotion in emberizines is "*side-stepping*," which was described more than a decade ago (Hailman, Auk, 77:349-350, 1960) in a foraging Song Sparrow. I have only one other such observation in my notebooks: a Slate-colored Junco (*Junco hyemalis*) side-stepping along a tree-branch, which is not, of course, truly terrestrial locomotion. Another point to be reckoned with in attempting to correlate scratching and locomotion is raised by my field notes of 11 January 1959, in which the leg movements of a "double-scratching" Song Sparrow were noted as being somewhat asynchronous.

On the basis of this relatively scanty evidence it would be unwise to reject the notion of *any* correlation between scratching and locomotory patterns. We require evidence on more species, more detailed observations on the synchrony of leg movements in scratching of various species, an understanding of what contexts determine locomotory gaits, and special attention to kinds of behavior that *appear* to be lacking in certain species. Furthermore, there may already exist much more published evidence than cited by Harrison, as suggested by publications of Nice and me quoted above. The importance of the subject matter, however, transcends the taxonomic usefulness of these characters. This is an example of functional relationships among physical movements that may help to clarify anatomical substrates of as well as evolutionary processes in behavior, and is thus worthy of continued attention.

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**The Purple Finch nests in central Ohio.**—Male Purple Finches (*Carpodacus purpureus*) were seen and heard regularly between early April and the middle of July of 1972 on the Ohio State University Golf Courses in Franklin County, Columbus, Ohio. At least four territories were held throughout the season in groves of scotch pine and spruce, which also contained honey locust, tulip poplar, ash, oak, and maple. The appearance of three young and an attendant female on 8 July and a similar family group on 18 July in two of these territories justify the inference that they nested.

Although the Purple Finch had been reported to nest only in Ohio's northern counties (Trautman and Trautman, *Ohio Jour. Sci.*, 68:303, 1968) it nested at East Liverpool, Columbiana County, Ohio in 1954 (Laitsch, *Redstart*, 21:66, 1954) and in subsequent years. A review of the Nesting Season Editions of Audubon Field Notes and American Birds indicates that the species has been expanding its nesting range southward in both the Appalachian and the Middlewestern Prairie Regions. They "summered at Indiana, Pa." (Hall, *Audubon Field Notes*, 18:507, 1964). In 1967 Hall stated, "The Purple Finch continues to expand its summer range to lower elevations. The species was quite common throughout Crawford County, Pa." and "Near Youngstown, Ohio a total of 16 singing males were located during late May and June" (Hall, *Audubon Field Notes*, 21:567, 1967). In 1968 it was listed at East Liverpool, Ohio, and Indiana, Pennsylvania and "A nest found near Allison Park, Pa. gave Allegheny its first record" (Hall, *Audubon Field Notes*, 22:609, 1968). In 1970 Hall reported, that "Purple Finches remained all summer and probably nested in Indiana, Pa., a continuation of the southern trend in this species" (Hall, *Audubon Field Notes*, 24:684, 1970). In 1971 it was stated in *American Birds* that "Purple Finches were common all summer at Warren and at Indiana, Pa. They nested at P.N.R. (Powermill Nature Reserve), were reported from Fox Chapel in June and at Irvona, Pa." (Hall, *Am. Birds*, 25:859, 1971).

Similar reports of southward expansion of nesting by the Purple Finch in the Western Great Lakes Region and the Middlewestern Prairie Region which includes Columbus, Ohio, are also given in *Audubon Field Notes*. In 1964 "The first actual nesting record of the Purple Finch in the Detroit area was the nest found on May 23 in Clyde Township" (Green, *Audubon Field Notes*, 18:510, 1964). The sighting of a "very late" Purple Finch at Lake St. Marys, Ohio was reported in 1969 (Petersen, *Audubon Field Notes*, 23:666, 1969) and "Purple Finches lingered long in Mansfield, Richland Co., Ohio" (Petersen, *Audubon Field Notes*, 24:691, 1970). "A June 6 Purple Finch was the first June (1970) report ever from Berrien County, Michigan" (Soulen, *Audubon Field Notes*, 24:688, 1970). It was reported in 1971 that, "Purple Finches were more abundant and in a wider distribution than is typical for the N. Ohio area, but there was no definite evidence of nesting." (Kleen and Bush, *Amer. Birds*, 25:865, 1971).

In view of these reports this record of the Purple Finch nesting in central Ohio represents a substantial extension in the southern movement of its nesting range.—MAURICE L. GILTZ, *Department of Zoology, The Ohio State University, Columbus, Ohio 43210, 27 October 1972.*