

**Wing-flashing in the Black-and-white Fantail (*Rhipidura leucophrys*).**—During observations in Kenya in 1961, I reported (Monroe, Auk, 81:91–92, 1964) wing-flashing in the turdine *Erythropygia zambesiana*; this behavior appeared in all respects identical or closely similar to that of the Mockingbird (*Mimus polyglottos*). I know of no other report of mimid-type wing-flashing in a non-mimid.

While in Australia recently, I observed wing-flashing in the Black-and-white Fantail, or “Willie Wagtail” (*Rhipidura leucophrys*), an Old World flycatcher (Muscicapinae of the Muscicapidae). On 1 August 1972 in a park on the outskirts of Adelaide, South Australia, I watched three individual fantails wing-flashing for about ten minutes. This species feeds primarily on the ground, with foraging accompanied by the exaggerated tail-wagging associated with the species. The wing-flashing in all cases noted (some 35 individual observations among the three birds) appeared identical to that of the Mockingbird. Upon alighting, the individual fantail would immediately execute the wing-flashing behavior; in each instance it was accomplished with a single “hitch,” a momentary pause close to the body as the wings were extended. Following the pause, the wings were then rapidly and fully extended in the usual slanting plane of about 45° to 60° with reference to the horizontal. The entire pattern involved about one second and was accomplished with the tail cocked about 30° to 45° to the horizontal; there was no noticeable lateral movement of the tail during flashing, but the individual would often tail-wag vigorously immediately following the flash. The behavior appeared entirely homologous to that of the mimids as well as that I observed in the African *Erythropygia*. Although there is no white in the wings of *R. leucophrys*, the inner webs of the primaries are pale gray, resulting in full sunlight in a noticeable flash as the wings are extended.

On 13 August 1972 I noted another individual fantail wing-flashing in a park in Brisbane, Queensland. This individual, also performing in open sunlight, flashed three times in about one minute of observation, but in this instance no hitch or pause was noted; in other respects, the procedure was closely similar to that of the birds in Adelaide.

During my three weeks in Australia spanning the period of the above observations, I noted more than 250 individuals of this species. The wing-flashing behavior was not otherwise observed, although I watched specifically for it. The behavior does, however, appear to be widespread among the passerine groups of this complex (muscicapid-mimid), geographically as well as taxonomically.—BURT L. MONROE, JR., *Department of Biology, University of Louisville, Louisville, Kentucky 40208, 30 October 1972.*

**The occurrence of unusually small eggs in three species of songbirds.**—Unusually small or runt eggs, variously called dwarf, cock, wind, or witch eggs, are extremely rare, occurring in the chicken (*G. gallus*), for example, at a frequency of only 0.05 to 0.09 percent (Romanoff and Romanoff, *The avian egg*, John Wiley and Sons, New York, 1949:258). Reports on the occurrence of such eggs in nature are very few. I here report the occurrence of unusually small eggs in three species of passerines, along with some data on the frequency of such eggs.

On 1 May 1971, I found a dwarf egg in a Common Grackle (*Quiscalus quiscula*) nest in a colony in Prince Georges Co., Maryland. The nest also contained three nestlings, four to five days old. The egg (Fig. 1) measured 18.75 × 13.70 mm as compared with 28.53 × 20.89 and 25.65 × 20.57 mm given by Bent (*Life histories of North American blackbirds, orioles, tanagers and allies*, Dover Publications, New York, 1965:378) as the average and smallest measurements, respectively, for this type of grackle. The egg contents were



FIG. 1. Normal and unusually small eggs of three species. The three eggs in the left half of the top row are from the Common Grackle, those in the right half of the top row are from the Red-winged Blackbird and all four eggs in the bottom row are from the Catbird.

completely dried out. Using the standard formulas for volume given by Romanoff and Romanoff (op. cit.:108), this egg is only about 28 percent as large as the average egg cited by Bent. During 1971 I examined, in four colonies, a total of 96 grackle nests containing a minimum of 356 eggs. In 1972 I examined, in seven colonies, 211 nests containing at least 921 eggs (the colonies were in Prince Georges, Anne Arundel and Queen Annes Counties, Maryland). The dwarf egg described above was the only one found, giving a rate of occurrence of one in 1,277 or 0.08 percent. I have also examined the entire collection of approximately 560 Common Grackle eggs in the United States National Museum. Three additional dwarf eggs were found. These measured  $15.91 \times 13.96$ ,  $17.54 \times 16.32$  and  $22.00 \times 17.78$  mm; the first egg was the only representative of its clutch while the latter two were accompanied by normal sized eggs. The high frequency of dwarf eggs, three in about 560 or 0.54 percent, in the museum series relative to the frequency in the eggs I studied in Maryland is possibly due to a preference oologists may have had for incorporating such oddities into their collections. I was able to detect the dwarf eggs in the museum series with great ease since they were well below the size distribution shown by the other eggs. Perhaps this criterion is a reasonable one for a definition of dwarf eggs, i.e. eggs whose extremely small size results in either a bimodal distribution for all eggs or even a discontinuous frequency distribution as relates to the sizes of all other eggs. This definition has the advantage of removing all arbitrary criteria and stresses the fact that dwarf eggs are a distinct phenomenon.

On 2 July 1971, on Grand Manan, New Brunswick, I found a dwarf egg in a Red-

winged Blackbird (*Agelaius phoeniceus*) nest which also contained two young about eight days old. The egg (Fig. 1), which measured  $17.39 \times 13.74$  mm, was partially dried out, and showed no evidence of embryonic development. It did contain yolk though, which is often missing from dwarf chicken eggs (Romanoff and Romanoff, op. cit.:295). Bent (op. cit.:133) gives  $24.80 \times 17.55$  mm as the average egg dimensions for this species and  $20.57 \times 15.75$  mm for the smallest egg in his sample. Since this Redwing nest, the only one I found on Grand Manan, contained an anomaly that is generally exceedingly rare, it is possible that dwarf eggs occur at a relatively high rate among Redwings on Grand Manan. An examination of the approximately 1,100 Redwing eggs at the United States National Museum yielded two additional dwarf eggs, measuring  $14.19 \times 12.59$  and  $17.20 \times 13.60$  mm (the latter egg was with a normal sized egg from the same clutch, the former egg was by itself) for a frequency of 0.18 percent. Like the dwarf Grackle eggs, these Redwing eggs were well below the size range of the other eggs.

The young in the Grackle and Redwing nests described above appeared to be normal so it is likely that the rest of the clutch was typical in size. However, all four eggs laid by a Cathbird (*Dumetella carolinensis*) between 13 and 16 June 1967, in New Haven County, Connecticut, were abnormally small, although possibly not small enough to qualify as true dwarfs. The two that I measured (Fig. 1) were  $20.47 \times 15.15$  and  $19.55 \times 15.18$  mm as compared with a mean of  $23.3 \times 17.5$  and minima of  $21.3 \times 15.8$  mm given by Bent (Life histories of North American nuthatches, wrens, thrashers and their allies, Dover Publications, New York, 1964:324). Besides its unusually small eggs this nest had several other possibly interrelated aberrant features (see Rothstein, An experimental investigation of the defenses of the hosts of the parasitic Brown-headed Cowbird (*Molothrus ater*), Unpubl. Ph.D. Thesis, Yale University, 1970). In addition to the above mentioned nests, I have in the past seven years sampled approximately 1500 nests of some 35 songbird species with no other dwarf eggs being found.

A critical evolutionary question concerning any abnormality, especially such a maladaptive one as dwarf eggs, relates to the manner in which the feature is maintained. Dwarf eggs seem to be caused by temporary disturbances, accidents or infections in the oviduct and apparently do not have a genetic basis (Romanoff and Romanoff, op. cit.:260-261), thus selection does not act against the genotype of the rare individual that lays a dwarf egg and cannot completely exclude the appearance of such anomalies. However, selection has undoubtedly acted upon the genetically determined aspects of egg laying so as to virtually exclude the appearance of dwarf eggs.

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**Physical combat in the Brown-headed Cowbird.**—The Brown-headed Cowbird (*Molothrus ater*) is a highly gregarious species, and, although it is territorial during the breeding season (Friedmann, The cowbirds, C. C. Thomas, Baltimore, 1929), intraspecific aggression is rare, apparently being restricted to brief clashes and chases during "communal courting parties" (Nice, Studies in the life history of the Song Sparrow, Trans. Linnaean Soc. New York, 1937). Battles of any intensity are apparently unknown.

About 13:30 on 18 April 1972 I was walking in Schenley Park in Pittsburgh, Penn-