

3:50 PM White-marked female ate dry bread; flew to nest.

4:00 PM White-marked female came, ate dry bread, swallowing with difficulty, and went to water. As she bent to drink, several crumbs fell from gape into water, apparently accidentally. She drank, then picked two crumbs from water and swallowed them; then walked back to bread, picked up a piece, walked back to water, dropped it in, and ate the wet bread; flew to nest.

4:10 PM Female came, carried a piece of bread to water, dropped it in, and ate it; then flew on to nest.

4:30 PM Female came, drank, walked over to bread, carried a piece to water, dropped it in, picked off pieces; after eating about one-half of piece, female flew back to nest.

5:00 PM Female returned to food, ate part of dry bread but too hard to manage and abandoned it; got another piece, ate it dry; walked to water, drank, flew to nest.

There is no doubt what happened. The following interpretation is possible. The grackle was in the habit of feeding on dry bread and drinking. By accident it found dropping bread into the water made it easier to swallow. This association was utilized immediately, and was used in two following periods of feeding, about 10 and 20 minutes apart. At the next feeding period, 30 minutes later, the association had been lost.

Some six or eight other grackles, males and females, came to feed on the bread and to drink during this same period and some were there while the white-marked female was "dunking" bread. At 4:35 three grackles found the bread left in the water by the white-spotted female at 4:30 and ate it greedily. But, no other bird dunked its bread. Can it be that the habit of dunking bread, a fairly common, but irregularly used one of grackles is a matter of learning by each individual? The general habits of the birds would make the acquiring of such a specialized feeding technique an easy step. The sporadic use of the technique would support this view that each learns it.—A. L. RAND, *Field Museum of Natural History, Chicago, Illinois, 29 September 1966.*

Prealternate molt in the Summer Tanager.—One of the most useful qualities of the method of study of molts and plumages introduced in 1959 (Humphrey and Parkes, *Auk*, 76:1-31) has proved to be its predictive value. It has been possible to find molts, previously unreported, whose presence in a sequence was deduced from sequences of related forms. For example, we have encountered, thus far, no bird species with two definitive ("adult") plumages per cycle which does not also have two corresponding plumages in its first year. The discovery of the "missing" first alternate plumage of the Great Blue Heron (*Ardea herodias*) is described in our later paper (1963. *Auk*, 80:500). Equally, we know of no species which has a prealternate molt in its first year of life, but never thereafter. A plumage sequence of this type has been alleged to occur in some genera of Icteridae (*Cassidix*, *Molothrus*), but the limited prealternate molt of adults of these birds had simply been overlooked (A. R. Phillips and R. W. Dickerman, MS.).

The seasonal change of plumages of males of the Scarlet Tanager (*Piranga olivacea*) is highly conspicuous, with a prealternate molt involving the exchange of greenish for bright red body feathers. Males of its close relative, the Summer Tanager (*P. rubra*), however, never lose their pinkish red color once it has been attained at the first prealternate molt. Dwight (1900. *Ann. New York Acad. Sci.*, 13:223) described in detail the "partial prenuptial moult" (= first prealternate molt) whereby the greenish or yellowish "first winter" (= first basic) plumage of Summer Tanager males is replaced by red feathers of the "first nuptial" (= first alternate) plumage. Dwight, however,

went on to say that the "adult nuptial plumage" is "acquired by wear which is not very perceptible even on close examination of the feathers. . . There appears to be no second prenuptial moult in this species."

This concept, of a prealternate molt confined to the first year, has been repeated without question in all of the subsequent literature of the Summer Tanager, culminating in the account by Bent (1958. *U.S. Natl. Mus. Bull.* 211:499-500), who quoted much of Dwight's description verbatim more than half a century after its original publication. It is perhaps understandable that Dwight, in 1900, had insufficient material available to permit demonstration of the prealternate molt of adult Summer Tanagers. Oddly, no subsequent author seems to have bothered to check the now abundant material of this species taken on the wintering ground (chiefly South America), where the prealternate molt does, in fact, take place.

The present note is based on a study of the eastern race, *Piranga r. rubra*, of which ample material was available to me, well distributed both geographically and seasonally. A similar study of the western *P. r. cooperi* would be more difficult, as the breeding and wintering ranges overlap, and the breeding season of the more southern populations in Mexico may be expected to be rather different from those in the southwestern United States. All specimens mentioned are in the collection of Carnegie Museum.

Dwight (loc. cit.) properly emphasized the variability of the extent of the first prealternate molt, by which the male attains his first red feathers. This molt may involve all of the feathers except the primaries, or may be confined to isolated patches on the head, breast, mantle, upper tail coverts, etc. There is, of course, a fundamental misunderstanding involved in the statement by Burleigh (1958. "Georgia Birds," Univ. of Oklahoma Press, p. 606) that "Occasionally an individual will be seen that has failed to acquire this adult plumage after the post-juvinal moult, and presents an odd appearance, the back and underparts being patched with rose-red and olive green." Birds of this aspect are commonly, not "occasionally" seen (as quickly evident by a glance at any museum tray of Summer Tanagers), and the "adult plumage" is acquired at the second prebasic ("first postnuptial") molt rather than "after the postjuvinal moult."

The patchy appearance of the first-year males seen in the United States in spring is misleading. Although (for example) the figure presented by Eaton (1914. *New York State Mus. Mem.* 12, pt. 2:pl. 87) is captioned "changing male," active molting has ceased by the time most migrants have reached the southern United States, in late March or early April. Examination of a series of 38 first-year spring males failed to show any evidence of active molt in the form of sheathed feathers after the end of March. The peak period of molt is probably February to early March. A 27 February and a 17 March specimen, both from Colombia, are superficially similar in appearance with respect to relative amount of red present. The earlier bird, however, has many and the later bird few incoming feathers, suggesting that the February-taken bird would ultimately have become the redder of the two.

The prealternate molt of adult males is naturally much less conspicuous than that of first-year males, simply because the incoming feathers are the same color as the surrounding old ones, which are normally relatively little faded or worn. Specimens examined suggest that the prealternate molt of adults is also highly variable in extent but probably never involves as many feathers as in the extreme cases among first-year birds. Dates of collection of eight molting adult males from Costa Rica, Colombia and Venezuela are as follows: 22 December, 12 January, 24 January, 3 February, 6 March, 11 March, 12 March, and 16 March. In none of these is there any sign of molting of flight feathers; pinfeathers are usually most easily demonstrated on the crown, but also

appear on back, throat, and breast. Even the earliest of these dates is far too late for the incoming feathers to represent the last of the prebasic molt, which takes place principally in August but may begin as early as 15 July (specimen from Takoma, Maryland).

Of female Summer Tanagers, Dwight (loc. cit.) states: "The plumages and moults correspond to those of the male, but the plumage remains similar to that of the male in first winter and the first and only prenuptial moult is mostly suppressed. Adult females may be red tinged, but regularly they are even yellower than the male in first winter dress." Roberts (1932. "The Birds of Minnesota," vol. 2, Univ. of Minnesota Press, p. 697) even goes so far as to state not only that the "prenuptial" molt of males is confined to the first year, but that even this first-year molt is absent in females.

First-year female Summer Tanagers may be recognized as such by their more pointed rectrices and brownish or grayish rather than greenish tertials. Examination of specimens reveals that, just as in males, both age classes of females undergo a prealternate molt on the wintering ground. Four adult females with sheathed incoming feathers were collected as follows: 20 January (Colombia), 23 January (Venezuela), 24 February (Venezuela), and 5 March (French Guiana). Molting first-year females were collected in Colombia on 22 January, 12 February, and 23 February, and in French Guiana on 26 January. The latter specimen is not only in heavy body molt, but is replacing rectrices. It and several other very reddish females show that Dwight was incorrect in believing that only "adult" females of this species are red tinged; reddish feathers may often be attained at the first prealternate molt. Those females with the most extensive prealternate molt are frequently those with the reddest, or most "masculine" plumage, suggesting a hormonal relationship between these two variables.

In summary, in spite of long-repeated statements to the contrary, both first-year and adult birds of both sexes of the eastern subspecies of Summer Tanager (*Piranga r. rubra*) have a highly variable partial prealternate molt, taking place on the wintering ground between late December and late March.—KENNETH C. PARKES, *Carnegie Museum, Pittsburgh, Pennsylvania, 29 September 1966.*

CORRECTION

Vol. 79, page 342, line 19 should read, ". . . Chuck-will's-widow was a nearly intact male Cape May Warbler (*Dendroica tigrina*). Only . . ."