

I made no attempt to keep close record, but in 1941 the first brood of young left the nest on May 28. Eggs appeared in the nest almost immediately afterwards, and the young left while I was on a field trip. The third family was well grown before my return; the two young departed on August 16 and 17. There were two eggs in the nest to start the fourth brood on August 20, and the young seemed nearly grown by September 12; they were gone three days later.

In 1942, eggs were first noted May 15, and the young left June 8; the second set of eggs was in place June 11, and one egg hatched June 25. Both young were gone by July 8. There were two more eggs in the nest on July 13 for the start of the third brood, and both young were on the wing August 6. The first egg of the fourth set was laid August 12, and the young were large on September 4.

An adult bird was seen on the nesting ledge of the Auditorium on April 2, 1943, to start the third season, but for some reason nesting was delayed, and the first set of young did not leave until the latter part of June. Two eggs were in the nest July 1, and the young of the second brood left July 24. The third set was observed July 28, and both eggs were hatched on August 10.

In 1944, a crippled bird was seen on the ledge on May 4; two eggs were in the nest May 19, and the young left 24 days later. We have no way of knowing whether the same birds used the nesting place, but 12 sets of young were raised in four years time. Incubation seemed to take between 12 and 14 days, and the young remained in the nest for a like period.—ALFRED M. BAILEY, *The Colorado Museum of Natural History, Denver, Colorado.*

Crow feeding from the surface of water.—On July 3, 1944, while we were on a high bluff overlooking Lake Michigan, about eight miles south of Saugatuck, Allegan County, Michigan, Robert Hale called my attention to a Crow, some 300 yards from shore, "diving" into the lake, evidently for food. When I turned to observe the bird, it was rising from the surface of the lake, with apparently some sort of food in the bill. The lake was calm at the time. Older summer residents stated that the Crow did this daily during the summer unless the lake was rough. We again observed this behavior on July 4, July 9, and July 16 during the early morning (and once late in the evening), always when the lake was calm or covered with long sweeping swells.

Crows (*Corvus brachyrhynchos*) were rather plentiful in the beech-oak woods on the bluff overlooking the lake, and we regularly observed a family group nearby. Apparently one or both of the parents made these flights out over the lake searching for dead fish or refuse. When these were observed the Crow would drop to the water, seize the food with its bill, then immediately rise to bring it back to the clamoring young in the bordering trees. The Crows usually managed to get the food by barely touching the surface of the water, but once one produced a considerable splash with its wings, immediately rising again into the air. Food was also taken from the water's edge, where it had been left by the incoming waves.—LAWRENCE H. WALKINSHAW, *1703 Central Tower, Battle Creek, Michigan.*

Notes on the Arrow-headed Warbler.—There are two resident warblers on the Island of Jamaica, the familiar Yellow or Golden Warbler (*Dendroica petechia*) of the coastal mangroves, and the little known and odd-appearing Arrow-headed Warbler (*Dendroica pharetra*) of the mountain forest. The latter was discovered and described by Gosse, who obtained a single specimen on the summit of Bluefields Peak in western Jamaica. Subsequently it was found to range widely through the higher parts of Jamaica, but, except in the Blue Mountains, where it may be said to be fairly common, it is a rare bird.

This warbler is for the most part a silent bird. When not breeding it utters a weak *git*, readily distinguishable from the *chip* of migrant species. In the nesting

season, during May and June, one may hear the territorial song of the male, a rapidly uttered trill much like that of a Worm-eating Warbler (*Helmitheros vermivorus*). I also heard on one occasion its protracted, rather canary-like "whisper song." This was given by a male just prior to copulation, so that it would seem that song plays a part in courtship in this species. The "whisper song" of the Arrow-headed Warbler resembles that of the Prothonotary Warbler (*Protonotaria citrea*) as described by Brewster (*Bull. Nutt. Ornith. Club*, 3, 1878: 157), although the latter "is apparently uttered only while on the wing." I have also heard similar canary-like whisper songs—though never when the bird was in flight—from the Oven-bird (*Seiurus aurocapillus*), Yellow-throat (*Geothlypis t. trichas*), and Gray-crowned Palm Tanager (*Phaenicophilus poliocephalus coryi*). All were uttered by males during the nesting season and were so low as to be barely audible at a distance of 30 feet. The tanager sang while approaching the female with outstretched wings, but no female was seen near the Oven-bird or Yellow-throat.

Usually the Arrow-headed Warbler is found in, or about the edge of, humid mountain forest where it does not have to compete with the hosts of migrant warblers, which prefer the more open, sunnier parts of the island at lower elevations. During my exploration of the Blue Mountains in 1931, I found three nests of the Arrow-headed Warbler. These were placed at elevations of from 5 to 12 feet above the ground. Two were old, disused nests; the third, which contained two slightly incubated eggs when discovered on June 24, was described in my "Birds of the West Indies" (1936:315).—JAMES BOND, *The Academy of Natural Sciences of Philadelphia*.

The Cardinal's period of dependency.—Gaps in a table on the development of young birds in the new Song Sparrow volume of Margaret M. Nice (*Trans. Linn. Soc. N.Y.*, 6, 1943:70) indicate that data are lacking on the age at which the Richmondinae attain the power of flight, and independence.

Recent observation of color-banded young Cardinals (*Richmondena cardinalis*) showed weak but effectual flight on the day of nest-leaving, at about 10 days of age, the birds being able to keep in cover well above the ground; strong flight by the age of about 19 days, partial independence at about 38 days, complete independence at 45 days, and severance of family ties at 56 to 59 days. The findings in detail are:

♂ AW-0: Hatched June 16–18, 1942; banded in nest; next seen July 29, partly dependent; last seen fed by parent July 31, age 43–45 days; last seen with parent August 12, age 55–57 days.

♂ A-W2J: In nest with 2 other young, estimated age 4 days, found August 3, 1943; young left nest August 9, age about 10 days; A-W2J and at least one other flew weakly same day. A-W2J alone: flying strongly August 18, age about 19 days; first seen to forage September 6, age about 38 days; last seen to be fed by parent September 12, age about 44 days; last seen with parent September 26, age about 58 days.

The 45-day age of attaining independence thus determined for the Cardinal is a higher one than Mrs. Nice gives (p. 70) for any temperate zone passerine of comparable size, and is closely approached only by the "40 plus" of the Cinclidae. However, in view of her comment (p. 253) that with multiple-brooded birds the bond between parents and young may be longer than usual in the case of the final brood, and that "this is certainly true of Cardinals," I should add that I believe my 1942 nest to have been a final one, and know that the 1943 nest was that.

In the presence of a parent both of the juveniles that I kept under observation begged for food to the very end of their association, although during the final