

## THE GROWTH OF YOUNG BARN SWALLOWS

By HAROLD B. WOOD

Two Barn Swallows (*Hirundo erythrogaster*), were hatched in a nest above my window and in ten days were transferred to an artificial nest on my window-sill at a mountain cabin on the top of the Allegheny Mountains at Cherry Springs, Potter County, Pennsylvania. I had an exceptional opportunity to observe at a distance of only a few inches through a hole in the paper window covering, their being reared, and to handle them.

Two eggs were laid on successive days, and each was hatched exactly seventeen days after being laid. Coming from an egg which measured approximately two centimeters long, the young Barn Swallow had the following measurements from his crown to the end of the body: 3.0 cm. when one day old, 4.5 cm. when 3 days old, 5.8 cm. when 6 days old, 8.8 cm. when 9 days of age. The eyes of the nestling began to open on the sixth day and were completely open by the eleventh day.

When hatched the young were adorned with dark-gray downy tufts, 5 mm. long, located as frontal, occipital, scapular, and mid-dorsal. The down persisted, and one bird had a few wisps on the head when it flew from the nest. The downy tufts had no relation to the location or development of the early pin-feathers, which appeared first along the ulmer side of the wing on the 4th day, followed soon by pin-feathers over the back. These showed a bluish sheen on the 16th day. On the 8th day pectoral pin-feathers began to show, four rows on the outside of dark feathers, next one row with white tips, next six rows of white breast pin-feathers. The brown forehead feathers began to show on the 14th day. The tail was 1.1 cm. long on the 12th day, 3.0 cm. on the 17th, and 4.0 cm. on the 18th day. The wing on the 19th day, the day of flight, as 8.1 centimeters long. The measurements of the adults were: male, length 17.6 cm.; tail 9.0 cm.; wing 12.0 cm.; female, length 15.7 cm.; tail 7.5 cm.; wing 12.0 cm.

The young birds began to preen when fifteen days old, first by drawing the open bill along the shafts of the wing, then along the tail-feathers, to remove the white scales. Later the feathers were drawn through the bill by wing motion. The birds did not preen or pick at each other. They did not purposely pull out the tufts of down. Preening was done only to free the feathers from the scales, which soon formed a considerable deposit in the bottom of the nest. Neither nestlings nor adults had ectoparasites.

Feeding was done by both parents. Many observations showed that the young were given about the same number of feedings. There was no selection by the parents as to which nestling was to receive the next morsel. It was given to the young bird that was

ready first to receive it, that had its mouth open first, that was leaning farthest forward, or that called for it. When very young the nestlings would not open their mouths until the parent forced its bill inside. Later the adult would thrust its bill full length down the young bird's throat, even when the young was two weeks old, apparently to prevent a live fly from crawling out, as I saw happen. Often the adult called *asch* while holding a fly, to get the young bill opened. The usual system of feeding was for one or both adults to give all feedings to only one bird until it was satisfied, after getting from five to fifteen insects; then the young bird would turn around in the nest and sleep while the other took a turn. Sometimes both would be fed together for a while, as when the older was fifteen days old, both birds were given 12 feedings in a quarter of an hour, they rested the nest half-hour, received twenty feedings the next fifteen minutes and none the next thirty.

The feeding of the nestlings was not observed the first week, but after that I distinctly saw whole flies and small moths given them. I do not believe they were given any bolus or predigested food. When the older was only two days old, the parents changed places at the nest at intervals from a half-minute to six minutes, averaging one and a third minutes, for thirty observations. This precluded any opportunity for the adult to digest and disgorge any food. Later, the intervals for bringing up a newly caught fly were as short as ten seconds. Practically all food for the young was caught over a half-acre of ploughed ground. The young birds would swallow the recently killed flies I placed in their mouths. I was afraid to test them with old dead, possibly moldy, flies. They made no attempt to pick up flies or caterpillars placed before them, except one fly the day before the young bird left the nest. They were seen being fed a few times by their parents after leaving the nest. An extra male Barn Swallow frequently flew past the nest and looked at the young birds but never made any attempt to feed them.

Vocal development began with a little noise when three days old, a very faint squeak. When twenty days old they began to utter *schup*, later *swee* and *yec*, and were soon imitating the adult note of *asch*, using that to call for food when an adult flew past. The meaning of the various calls was not determined.

Muscular development was noted by the fact that when nine days old the birds could crawl by pushing the head along the board. They could not raise the head until sixteen days old, when they began to sit upright on the rim of the nest. When ten days old a bird was placed on the shelf facing away from the nest. It at once turned around and began crawling toward the nest. Bank Swallows will do the same.

Emotionally, the young birds responded to only one noise, the call of the parents. My imitation could not get their mouths open. A thunderstorm had no effect upon them, not even changing their

normal respiratory rate of 120 per minute. The nestlings were awake early. On the 5th and 6th days they awoke at 4.45 A.M. and 4.40 A.M. respectively. When two weeks old their first morning call was at 4.25 A.M., but on the 12th and from the 15th to the 18th day it was timed exactly at 4.35 A.M. The adults reported soon afterward for the day's activities.

Their method of defecation preserved the sanitation of the nest, all evacuation being done over the rim of the nest. The adults carried most of the sacs away in their bills, the mother getting hold before the sac was completely discharged, the father always waiting until it had fallen.

The parents were distinguishable by variations in the color of the breast-feathers, by a short outer tail-feather in the male, and by their being banded on different legs. The older nestling was given a right-leg band C46502, the younger a left band numbered C46503.

Bird behavior was closely watched. About six hundred feet from the shack where my Barn Swallows nested was a pavilion of a tourist park in which another pair of Barn Swallows built a nest on the side of a rafter. They raised four young. During the course of the raising of my Barn Swallow family a lone male Barn Swallow would fly round with the parents of my set. He flew sometimes alone in our vicinity. His mate never appeared until their young were out of the nest. When my set was in the window-sill nest, the strange male would fly past but a few feet away, and undoubtedly saw and heard the young birds, but he never made any attempt to feed them. He simply flew past, but usually when the parents were circling by. A three-foot stake had been driven into the ground twenty feet from the nest, and upon it one of the parents frequently rested, but mostly the male. Once, when the male was on the stake, the strange bird tried to alight on it also, but there was room for only one bird. Then he flew to the ground, and the father flew down and drove him away: That was the only antagonistic action shown this stranger.

After the young had begun to fly, the two families were often intermingled in flight, but I frequently saw one set of six flying Barn Swallows and another of four, flying apart. They would mix on the telephone-wires, but I often saw my two banded parents together on the wire, and their two banded young sitting separated or else very close together like doves. The bands could be seen with glasses.

The parents were attentive to the needs of their young. After the young had been removed to the nest on the window-sill the parents spent their resting time on the telephone wire about thirty feet away. They would then sally forth frequently to view their offspring, swooping past the nest. I did not see them turn the head to look at the nest while flying, but they would fly towards it and make a sudden swerve, allowing an opportunity to see the nestlings. When

hungry, the young rarely called for food except when they could see their parents flying past, or when they came to the nest.

When seventeen days old the nestlings began to try flapping their wings, while standing on the rim of the nest. They did not leave the nest until they flew away and never returned. My handling them did not induce their flight. When nineteen days old the older bird suddenly flew from my hand out the window and made its first flight 548 feet to an apple tree, to which it was followed by its mother. That evening the other bird left the nest. The family was seen to keep together until it left presumably on its southern migration, August 13th.

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### GENERAL NOTES

**Alligators Interfere with Duck-Banding.**—During the early days of September, 1936, an unusual number of migratory wild fowl were using my ponds at Avery Island, Louisiana, coming early in the fall migration, so I decided to begin banding more than a month earlier than usual.

Having baited trap No. 1 in my rest pond, using broken rice for this purpose, I set the trap on the afternoon of September 9th at four o'clock, and the ducks were taken out of it at seven o'clock on the morning of September 10th.

I expected a catch of at least one hundred and fifty ducks, as there was a large number of ducks of various species in the pond. On nearing the traps that morning, I was disappointed to see comparatively few ducks in it. The reason was soon apparent. The trap contained two alligators. One of them—a male eight feet three inches in length—had gone into the receiving pen and filled himself up on the ducks he found there. The other, a four-feet-two-inches alligator, was still in the main trap, and the ducks did not seem to pay much attention to it.

After getting the ducks out of the traps and banding them, I found there were 37 Blue-winged Teals (*Querquedula discors*)

37 Wood Ducks (*Aix sponsa*)

7 Fulvous Tree-ducks (*Dendrocygna bicolor helva*)

11 Mottled Ducks (*Anas fulvigula maculosa*)

8 Pintails (*Dafila acuta izit:ihoa*)

There were four dead ducks in the trap, killed by the alligators, and on skinning the alligators, we found the stomach of the large one to contain four Wood Ducks and three Blue-winged Teals. The small alligator had swallowed two Blue-winged Teals, and had killed two Wood Ducks, but they were too large to swallow. One of the Wood Ducks taken from the large alligator wore band number 35-514126. One of the Blue-winged Teals swallowed by the small alligator wore band number 34-551995. All of the ducks were swallowed whole, feathers and all. This is the first time in all my duck-banding experiences that I have ever taken alligators in a duck-trap, probably because my traps for migratory wild fowl are not set until the middle or latter part of October each year, and at that time of the year alligators have ceased feeding and have either gone to their winter dens or are preparing to den up for the winter. Normally alligators take no food from early October until late March, during which time they hibernate. So, generally speaking, they are not a menace to migratory wildfowl.

On Saturday, September 18, 1936, as there were quite a number of ducks in pond No. 3, I had prepared and set a large trap which I have in that pond for catching birds for banding. In this trap I annually take a great number of migratory wildfowl. The birds using this pond at this time are principally Blue-winged Teals, Pintails and Gadwalls (*Chaulelasmus streperus*). This trap has in it a decoy pen, six feet by eight, in which I had placed ten of the domestic Mallards