NESTING HABITS OF THE GREEN HERON.

BY IRENE G. WHEELOCK.

Plate VIII.

WHILE by no means a rare bird in southern Wisconsin, *Butorides virescens* is yet sufficiently uncommon to arouse some interest in his domestic affairs. Studied from the standpoint of an economist he merits the hearty support of every bird lover and snake hater on account of the untiring zeal with which he provides young snakes for the nourishing of his brood. Possibly he is a poorer fisherman than most of the heron family, for fish forms a comparatively small part of his diet. Snails, tadpoles, small frogs, snakes and crayfish are his chief food if one may judge by that given to the young. In studying the habits of most species, we have found it necessary to use a miniature stomach pump, in order to ascertain what food had been given to the nestlings. Heron infants, on the contrary, obligingly disgorge the contents of their crops whenever an intruder approaches the nest, thereby rendering a postprandial menu an easy matter.

Of the several broods of this species under observation during June and July, 1906, four were in evergreen trees, one in an apple tree, a part of a large orchard at some distance from water, and one in a small cottonwood at the edge of a swamp. The photographs illustrating this article were taken at the different nests as was most convenient for all concerned.

On June 16 we discovered the nests in the pines. At that date every nest contained young apparently about two weeks old, one brood numbering four, one five, and the others not being investigated closely. The nests were all at about the same height, twenty feet from the ground, about one half the diameter of a crow's nest, but much less bulky and less carefully built. For, smile as you will, *Corvus americanus is* a careful builder. Every nest of his that I have investigated has been strongly put together and lined with a felted mat of cow hair. But herons are inured to hardships from their birth, it seems, for no lining of any sort was found in any of the nests, the young reposing on the coarse twigs in the midst of indescribable uncleanness.

GREEN HERONS ONE WEEK OLD.

The same group of pines containing the heron nests was the home of numbers of Bronzed Grackles. In as much as the latter arrive from the south nearly two months earlier and nest two weeks earlier than the former, we wondered that, with all the forest from which to choose a nesting site, the herons should willingly come into such close proximity to disagreeable neighbors. The grackles were quarrelsome, thieving, noisy, and the only possible advantage the herons could hope to derive from them would be the loud alarm always given by them at the approach of danger. A 'lookout' on the top of the tallest pine scanned the country far and wide, and never once did we succeed in sneaking up unseen.

While we were still a hundred feet from the heronry, warned possibly by the outcry of this sentinel, the adult herons with one accord deserted, taking up their watch in distant trees, and only one of them all seeming to show any special interest in our proceedings. This one, whether male or female I know not, flew over the nest tree occasionally while we were photographing the young, evidently wishing to feed them. That they were not suffering from neglect in that line was evidenced by the "unswallowing" they did, one of them disgorging a fat crayfish four inches long and seemingly much too large a morsel for the size of the bird's throat. Afterward, when I viewed the æsophagus of a young heron, dissected and 'preserved,' I wondered still more how so much breakfast ever passed down so small a tube. The jointed lower mandible and pouch like throat could explain the attempt to swallow it, but the tiny æsophagus, scarcely one fourth of an inch in diameter, would seem to effectually bar its further progress. The four young herons as we approached stretched up to their tallest extent, which was about twelve inches, and 'stiffened,' swaying slightly from side to side with excitement like a lot of snakes. We thought catching a photo in this pose would be an easy task but an attempt to get nearer them resulted in a general exodus. Far out on the branches they scrambled, out of reach and as safe as though a mile away so far as my ability to follow was concerned. But a photo we must have, so we went on to the next nest. Here the birds were a day or so younger and the nest was in a better position for photographing.

During the week that followed a severe storm swept that district, bringing disaster to the heron colony. Young herons hung lifeless in every nest tree, usually head downward, having caught a twig in their strong feet and held on even after death overtook them. In one case the head and bill were hooked over the edge of the nest as if the young bird had been pushed out and had clung desperately to the last. In this same nest we found a young bird dead apparently from starvation. The storm accounted for a part of the tragedy but the fact of desertion on the part of both parents of this brood was too clearly proven. Curiously enough, the grackle nestlings, probably all second broods, were unharmed. Contrary to Mr. Finley's experience with the Night Herons, we found several young Green Herons alive and thriving under the trees where they evidently must have been fed by the adults. They squatted motionless at our approach, allowing us to catch them easily.

The heron family in the apple tree was probably a second brood as it was hatched June 27, a late date for a first brood. There were but two eggs and no evidence of there ever having been more. As soon as the little ones were fairly out of the shells and before the down was dry on their heads we had taken several pictures of them. One of these revealed a remarkable heron trait, for the brand new baby, who had *never been fed,* and who had scarcely opened his eyes upon this queer world, yet attempted to protest against our meddling by the characteristic heron method of defence. In his case the action was merely a nervous 'gagging' and would seem to indicate that this act is probably involuntary rather than intentional on the part of all herons.

In watching the various Green Heron broods develop we noted three points radically different from the habits of Passeres. First, they are fed only early in the morning and late in the afternoon, the wait between mouthfuls being also much longer. From four to six A. M. and five to seven P. M. are the periods of greatest activity. These are the only hours when the young made any clamor for food although the return of the parent at any hour was heralded by some signs of excitement on the part of the nestlings before we could perceive it even with close watching. One record, when young were seven days old, shows feedings at 4.06; 4.30; 4.58; 5.02; 5.43;

6.10; 7.04; all A. M. Another, 4.13; 4.22; 4.35; 4.50; 5.13; 5.40; 6.15; all A. M. The P. M. records were about the same, averaging about six feedings in the two hours. These were given by regurgitation but were *not predigested.* Crayfish, tiny fish, snails and slugs predominated in the morning if cloudy — frogs, tadpoles, larvæ of various insects and dragon flies, if sunny. This formed the morning meal. The afternoon, if sunny, yielded small snakes, grasshoppers, crickets, fish and tadpoles; if cloudy, frogs and crayfish and worms seemed to be the easiest catch. We could not discover that snakes were ever brought on rainy, or crayfish on bright days. I believe some one has given this heron credit for digging into crayfish holes in order to secure this choice tidbit. Without doubt this may be true but he is such a wary hunter that never were we able to watch him catch his prey except when we could find him fishing in a quiet nook and steal upon him by boat.

The second point of difference is that food seemed to be just as abundant and brought just as frequently to the heron broods on wet as on clear days. This is not the case with the Passeres. I have frequently known young Robins, Thrushes, Jays, Catbirds, etc., to remain more than two hours without food on a rainy morning, and Mr. Ned Dearborn has suggested that this disproportionate feeding on dark and bright days may account for their irregular gain in weight.

This brings up the third point, which is that young herons increase in weight in a regular ratio, not dependent upon the weather conditions, but develop less rapidly than the young Passeres. Mr. John Ferry, by a carefully kept record of the increase in weight of young birds, proves that Yellow Warblers gain four times their weight, Thrashers five and one half times, Wood Thrushes five times, Robins eight times in eight days, but that while on some days they double their weight, on others there will be scarcely any gain, making the increase per diem an uncertain quantity. But the young Green Herons gained one half an ounce in weight every day for six days, weighing three fourths of an ounce at the beginning and three and three fourths ounces on the seventh day. We used postal scales, and Mr. Ferry's ingenious idea of swaddling the infants in order to make them stay on facilitated matters greatly in weighing the young herons. After the seventh day it was necessary to shake them out of the tree and catch them as they fell in order to get them

at all and, as this seemed more or less cruel as well as troublesome, we gave up trying to record their weight.

It was also interesting to note that, when first hatched, the herons stretched up to a height of three and one fourth inches and when seven days old eleven inches. The legs and feet, at first pinkish, were, at seven days old, a yellowish green, and at fourteen days had become a pale bluish green. The legs also had lengthened from one inch to four inches. The same change in color occurred in the skin about the end of the bill and around the eyes, it gradually assuming a brilliant pale green in place of the pinkish yellow of the newly hatched chick. The bill, one third of an inch long and of a soft yellow, at hatching, at fourteen days was nearly two inches in length and beautifully streaked longitudinally with brilliant pale green. As is characteristic in all young herons, the lower mandible was longer than the upper.

Another most remarkable change had taken place in feather development, the close white down that had enveloped them like swansdown having separated with the stretching of the skin into long waving hair like filaments, among which the feather quills protruded like spines on a hedgehog. Although bill, neck and legs were remarkably strong there seemed to be no power in the wing muscles as yet and the wings hung down at the sides in a loose-jointed fashion most distressing to the photographer.

Although always described as uttering a 'squawk' when disturbed the adult herons were silent on every occasion when we were about the heronry, leaving and returning to their nests without any audible protest against our intrusion.

We at first supposed that this species, being solitary, would not indulge in the 'dances' so characteristic of herons in general and were delightfully surprised just at nightfall in June to see one of these lone fishermen indulging in a 'hornpipe.' It was evidently for his own amusement, although possibly his mate may have been an unseen witness. Backward and forward, with queer little hops, he pranced first on one foot and then on the other. Although a less elaborate performance than similar ones I have watched by the Mademoiselle Herons, and particularly by the Black-crowned Night Herons, yet it was evidently prompted by the same exuberance of spirit, like a small boy who must turn a somersault or burst. The effect is as ludicrous as though a long-legged, dignified D. D. were to pause in his learned discourse and execute a double shuffle.