

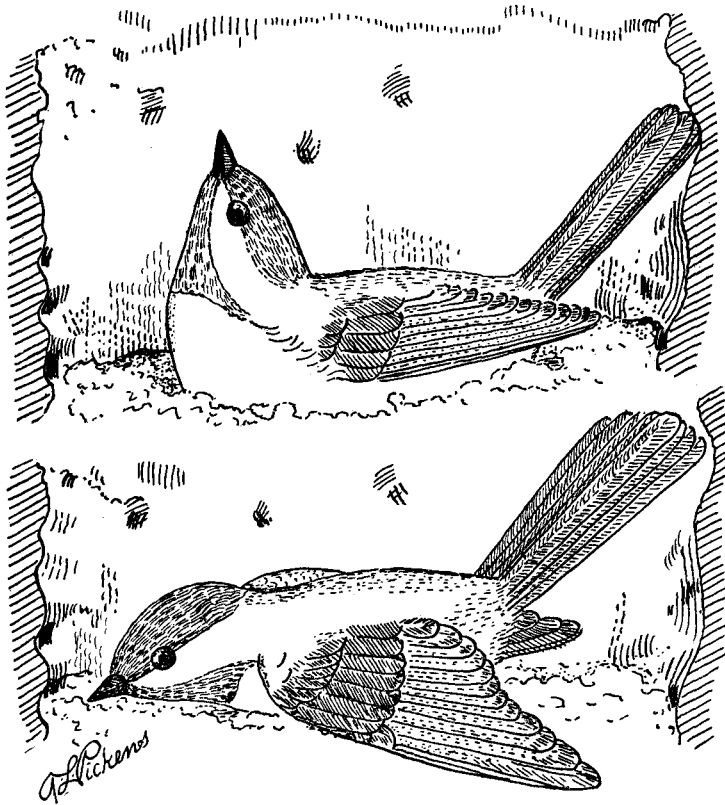
AUDITORY PROTECTIVE MIMICRY OF
THE CHICADEE.

BY ANDREW L. PICKENS.

ENTHUSIASTIC mimicry students have gone out of the way to point out similarities of form among animals. Though many have carried the theory too far, nevertheless, scientists are agreed that the facts of mimicry must be faced, though they are not agreed on the explanation. Wallace has even pointed out a number of cases of mimicry in form and color among birds, an admirable digest of Wallace's findings occurring under "Mimicry," in Newton's 'Dictionary of Birds.' No such cases, apparently, are found in the United States, but the mimicking of the serpent's hiss among birds is familiar to all careful bird students. Young Flickers and adult Geese are well-known hissers, but the Carolina Chickadee is a past-master at the art.

One of the most courage-taking sounds that I have encountered in my field studies is the hiss of the copperhead snake, (*Agkistrodon mokasen*). It lacks the animating interest we find in the ringing alarm of the rattlesnakes, and fills one with a kind of nausea. The reptile sounds as if it were inhaling a good part of the surrounding atmosphere and then discharging it in one sudden, explosive puff. There is nothing sedate and leisurely about it. Now the best imitation of that sound that I have heard is the explosive hiss of the brooding Carolina Chickadee (*Penthestes carolinensis*). This is apparently the only form that breeds locally, in fact the only one that I have observed here at all, though one student gives pretty good hypothetical evidence of having seen *P. atricapillus* in winter. Many have heard the splendid bluff the diminutive bird makes, and it is sufficient to startle even the initiated who have heard it before, and who may also know that the copperhead is not celebrated as a climber, but I do not recall having seen or heard a description of the method used to produce the sound. To be seen to advantage, the bird must perform in a fairly well-open cavity into which a sufficient amount of light can be reflected.

In preparing for the hiss, the bird, as seen from above, appears to rise slightly on the legs as if to give a freer swing to the movements of the body, while the head is thrown back over the shoulders at a right angle, or even an acute angle. The attitude of the bird is one of tense rigidity. Then, as if with a great effort, the bird



nods the head strongly forward. The whole body, with the wings and tail, seems affected. The tail moves, the expanding wings shoot out sideways and strike the surrounding wood inside the cavity, and as the head comes stiffly down the bird emits a strong hiss or puff strikingly like that of the copperhead. The head is brought down quite upon the surface of the lining in front

of the bird, and while the noise appears to be produced in part by the stiff rustling of the feathers, and the reverberations within the hollow of the surrounding wood, much, or the greater part of the noise certainly comes from the mouth and throat, and the hiss sometimes dies out in a faint little vocal squeak. All combine to make a fearful noise, and while mimicry is of course an unconscious, or better, an unintentional occurrence, there is no mistaking what the noise is to be taken for.

This method of protection probably arose by evolutionary process from the common, in fact almost universal, nest-protecting habit of feigning lameness that we find among small birds, as is indicated by the outstretched wings and the action of the head. I have illustrated the beginning and the ending of the movement in the accompanying sketch.

I regretted that one little mother unwillingly sacrificed her nest to my scientific curiosity. I had her perform too many times, and returned one day to find the eggs tucked carefully out of sight under part of the lining that had been pulled over them. The nest was apparently deserted. I wondered if this were the first step in the method one or more Warblers use, in covering up and laying on top of a set of eggs among which the Cowbird has laid. Not knowing it was there, I once accidentally dropped a bit of wood or bark into a post containing a Bluebird's nest, and though I carefully fished out the offending matter and one egg that had been slightly cracked, without touching any of the other eggs, they were buried under new material and other eggs laid above. This Chickadee, however, while covering the eggs did not return to lay others.

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