

the swamp, in immense numbers. A thorough exploration of the swamp would no doubt have added largely to the list of Water Birds, but I could not afford the time and labor necessary to accomplish even a partial exploration after the birds had begun breeding.

NOTES ON THE HABITS AND CHANGES OF PLUMAGE OF THE ACADIAN OWL (*NYCTALE ACADICA*), WITH SOME ADDITIONAL RECORDS OF ITS BREEDING IN MASSACHUSETTS.

BY WILLIAM BREWSTER.

In the Bulletin for July, 1881, I gave an account of the breeding of the Acadian Owl at Tyngsboro', Massachusetts, with a description of a set of eggs taken there by Mr. Perham on April 5. Early in June of the same season Mr. Perham sent me a brood of four young Saw-whets which he had taken from the nest about the 15th of the preceding month. They were all in the plumage of *N. "albifrons,"* and showed little individual variation, save in respect to size, the two females being slightly larger than their brothers. In their fresh, silky feathering they were beautiful little creatures, the warm sepia-brown of the upper parts harmonizing well with the rich fulvous beneath, and their white foreheads showing in strong contrast with both. Nor were their manners less engaging than their plumage, for, unlike most Owls, they were perfectly gentle from the first, never attempting to bite or scratch those who handled them. With each other they were really affectionate, often going through a caressing performance with their bills, and showing a mutual forbearance at meal-times which was very pleasing. They eat all kinds of meat with avidity, but seemed especially fond of mice. The latter were invariably skinned and the flesh torn in shreds and devoured, the skins being swallowed afterwards as dessert. I often saw them eject those peculiar pellets of bones, fur, and other indigestible fragments which all Owls and many Hawks are in the habit of depositing

about their haunts. The operation was a peculiar one. The Owl would gape several times, then the head would be violently shaken sideways, and finally the pellet, coated with mucous, would shoot forth, frequently falling several inches in front of the spot where the bird was sitting. After it was all over the little fellow assumed an expression of relief and contentment which was very comical.

Although not less grave and solemn than other Owls, their movements were much more animated and restless. They were continually flying or hopping from place to place, even in the day-time, and they had a frequent habit of oscillating the head, at the same time lengthening and shortening the neck. This was apparently done for the purpose of fixing the exact position of some distant object, as afterwards the bird usually flew to the top of some door or book-case towards which its eyes had evidently been directed. Their only cry at this time was a shrill bat-like squeaking, which was frequently given by all four at once. Altogether they were unusually interesting pets and when the time came for preparing three of them as specimens, I found it very hard to break up the affectionate and attractive little family.

I believe it is now generally admitted by ornithologists, that the so called "*N. albifrons*" is simply the young of *N. acadica*. Indeed, Mr Ridgway satisfactorily settled this point when he cited* the testimony of Dr. J. W. Velie of Chicago who kept a live "*albifrons*" "until it moulted and became a fine specimen of *Nyctale acadica*." But as no one seems to have published a detailed account of the transition it may be worth while to briefly record some observations made on the survivor of the brood just mentioned.

This bird was placed in a large cage where it had abundant room to fly about, and was kept well supplied with food. Through June and July there was absolutely no change in its plumage, but on August 1 I noticed a few medially spotted feathers pushing their way through the uniformly brown ones of the fore part of the crown. Through the next two weeks they gradually increased and developed until the full-face aspect of the head was that of an adult Saw-whet. At this stage there was no

* Baird, Brewer and Ridgway's Birds N. Am., Vol. III, p. 45.

indication of any second plumage on the other parts, but about August 15 a few streaked feathers appeared along the central line of the breast and abdomen, while a little later the moult began over the back and wings and quickly became general. Through the last two weeks of the month the new plumage gained daily, and by Sept. 1 the final stage was perfected and the bird had become a remarkably beautiful Saw-whet Owl. From this it appears that the "*albifrons*" condition is simply the first plumage, which in the Saw-whet is apparently better defined (as contrasted with the earlier downy stage and later autumnal plumage), as well as longer worn, than in most other Owls.

The specimen just mentioned is still (at the date of this writing, Dec. 1) alive and well. It has become rather wilder and less gentle than formerly, and lately has acquired a habit of swelling its plumage and snapping the bill when closely approached. Shortly after the moult it began a new cry, which is now frequently heard at night and occasionally also in the day-time. This utterance consists of a series of five or six low, chuckling but nevertheless whistled calls, which remind one of that peculiar, drawling soliloquy sometimes indulged in by a dejected hen on a rainy day. I cannot reconcile these notes with descriptions of the saw-filing ones which are supposed to have given the species its name, but they perhaps represent the unfinished performance of a young bird. The bat-like squeaking was discontinued before the bird began to whistle, and has never since been heard.

At the time of writing the article already referred to I received the impression that the nest then mentioned was the only one that Mr. Perham had found. But I have since learned that, including the two taken the present season, he has actually examined no less than seven during the past ten years, all of which occurred in or near the township of Tyngsboro'. Most of these nests were, however, broken up by red squirrels before the full complement of eggs was laid. The nesting places were usually of the artificial sort which I have already described, but occasionally use was made of a deserted Flicker's hole. Mr. Perham frequently hears the notes of Saw-whets during the month of March, and believes that many pairs breed about Tyngsboro' every season. The region is a heavily wooded one and apparently offers exceptional attractions to all kinds of Raptorial birds.