

ON THE USE, BY BIRDS, OF SNAKES' SLOUGHS AS NESTING MATERIAL.

BY JOHN K. STRECKER.

THE following is quoted from Frank Finn's interesting book, 'Bird Behavior' (New York, Dodd, n. d., p. 311): "Rather reminiscent of both Bower-birds and Shrikes is the trick some birds have of lining, and possibly, in their own opinion, ornamenting, their nests with curious objects of animal origin, the most conspicuous cases being of those birds which insist on using a snake's slough for this purpose, such as the Great-crested Flycatcher (*Myiarchus crinitus*), one of the American Tyrants, and the Rufous Warbler (*Aedon galactodes*) of Europe; in India, the Black Robins (*Thamnobia*) and that burrowing Starling, the Bank Mynah (*Acridotheres gingianus*) also have this curious selective habit. *All of the birds with this liking for snakes' old clothes breed in holes*, and it has been suggested that the slough is used to terrify intrusive lizards, which are no friends to eggs and young birds, and are themselves preyed upon by snakes."

I have caused to be italicized the first part of the last sentence quoted from Mr. Finn's book, for his statement cannot be confirmed. For many years, in fact, ever since I first became a student of the science of herpetology, I have been interested in this peculiar nesting habit. I personally know of three species of North American birds (*Myiarchus crinitus*, *Baeolophus atricristatus*, and *Guiraca caerulea*), which almost invariably make use of one or more snakes' skins, torn into large or small fragments, in the making and ornamenting of their nests. Two of these birds, the Flycatcher and the Titmouse, nest in holes, the third does not. A fourth species, the Roadrunner, as I know from observation, as well as through my reading, frequently lines its nest with pieces of cast-off snake skins. This ground Cuckoo nests in the open.

In addition to the four so far named, I have found nests of two other species with snake-skins in their composition. One of these birds breeds in holes in logs and crevices among rocks, the other

nests in bushes. The Rufous Warbler (*Aedon galactodes*) of southern Europe and northern Africa, mentioned by Finn, does not breed in holes, but if I am to believe the notes of those who have actually studied the bird in its breeding haunts, it constructs its nest in a clump of cactus or in a small bush.

I have compiled all of the information that I have been able to discover concerning the use of snakes' skins as nesting material and find that I have a list of birds representing seven different families: *Cuculidae*, one species; *Sturnidae*, one; *Tyrannidae* (including subspecies), four, possibly five; *Fringillidae* (including one subspecies), three; *Turdidae*, three; *Troglodytidae*, one; *Paridae* one. Total, fourteen species and subspecies.

The single species of *Cuculidae* is the Roadrunner (*Geococcyx californianus* (Lesson)). This bird is now scarce in most portions of central Texas, but I find two references in my notes of finding snakes' sloughs in nests. In 1904 and 1905, I examined many nests in western Texas, but have mislaid the note-books of my mountain and plains trips and cannot be positive whether I found sloughs in any of these, but rather incline to the belief that I did. Edmund C. Jaeger (*Denizens of the Desert*, Boston, Houghton, 1922, p. 13), mentions "the Roadrunner's rude home, lined with almost everything from a snake-skin to bits of manure." Florence Merriam Bailey, in her 'Handbook of the Birds of Western United States' (Boston, Houghton, fourth edition, 1914), describes the nest of this species as containing pieces of snakes' skins. So the habit with this bird seems to be pretty generally known.

The representative of the *Sturnidae* is the Bank Mynah (*Acridotheres gingianus* (Latham)). In Hume's 'Nests and Eggs of Indian Birds' (second edition, London, 1889, Vol. 1, pp. 381-382), I find the following interesting account of the nest of this species: "The egg-chamber is floored with a loose nest of grass, a few feathers, and, in many instances, scraps of snake-skins." Then the same author follows with comments on the "snake-skin" habit: "Are birds superstitious, I wonder? Do they believe in charms? If not, what induces so many birds that build in holes in banks to select out of the infinite variety of things, organic and inorganic, pieces of snake-skins for their nests? They are at

best harsh, unmanageable things, neither so warm as feathers, which are ten times more numerous, nor so soft as cotton or old rags, which lie about broadcast, nor so cleanly as dry twigs and grass. Can it be that snakes have a repugnance for their 'worn out weeds' that they dislike these mementoes of their fall, and that birds which breed in holes into which snakes are likely to come by instinct select these exuviae as scare-snakes?"

The Flycatchers (*Tyrannidae*) all belong to the widely distributed American genus *Myiarchus*. Of these, the best known is the Crested Flycatcher (*Myiarchus crinitus*). As a boy, I made the acquaintance of this species in eastern Kansas and western Missouri, and later renewed in it central Texas. I was always told that this Flycatcher placed a snake-skin at the entrance to its nesting hollow for the purpose of frightening other animals that might attempt to steal the eggs or young birds. In some cases a long strip of skin hangs down from the inside of the hollow, but in others the slough is used as nest lining. I do not recall having ever found a nest without more or less snake-skin in its make-up. The habit is so well known with this species that mention of it is frequently found in foreign bird books.

The Mexican Crested Flycatcher (*Myiarchus magister nelsoni*) is an abundant bird in the Lower Rio Grande Valley of Texas. Dr. James C. Merrill, in 'Notes on the Ornithology of Southern Texas' (Proc. U. S. Nat. Museum, 1878, pp. 118-173), describes the nest of this species as essentially the same as that of *crinitus*, but that with one exception, no snake-skins were found in the composition of any of the nests. Florence Merriam Bailey (Handbook, p. 252) says that in the nest of this species there is "sometimes snake skin."

The Arizona Crested Flycatcher (*Myiarchus magister magister*) is merely a variety of the last. A nest found by W. E. D. Scott at 4,000 feet elevation in the Catalina Mountains in Arizona (mentioned in Davie's 'Nests and Eggs of North American Birds,' Columbus, Hann, 1889,—I have not seen the original article), was entirely similar to that of *crinitus* "even to the traditional snake skin." According to Mrs. Bailey (Handbook, p. 274), the nest of this species sometimes contains "bits of snake and lizard skin."

Of the Ash-throated Flycatcher (*Myiarchus cinerascens*) Mrs. Bailey, in her 'Handbook' (page 253) says that the nest "occasionally [contains] snake skins." I have only scanty data at hand regarding the nesting of Nutting's Flycatcher (*Myiarchus cinerascens nuttingi*), but its habits are doubtless similar to those of the typical subspecies. It is said to place its nest in old Woodpecker holes in the giant cactus.

My list includes two distinct species and one subspecies of *Fringillidae*. Both the eastern and western varieties of the Blue Grosbeak (*Guiraca caerulea caerulea* and *Guiraca caerulea lazula*), use snake skins in the construction of their nests, and they both breed in the open, in my experience in small thickly foliated shrubs and bushes, or in thick weed clumps, usually within a height of from eighteen inches to four feet from the ground. The skin is usually woven in with the other nesting material and I have examined specimens in which pieces of slough formed a continuous rim. Rarely a mass of short lengths of cast is matted in with grass to form the base of the nest.

In 1897, Mr. William Winston and I found a nest of the Gray-tailed Cardinal (*Cardinalis cardinalis canicaudus*), in which five short lengths of snake skin were part of its materials, in a small bush along the edge of a mesquite pasture in the western part of the city of Waco. Later a nest found in Gurley Park, three miles south of Waco, was brought in to me. Among the mixture of rootlets, grass and leaves of which it was composed, were two short pieces of skin.

Mr. Charles B. Pearre of Waco, Texas, reports having found a nest of the European House Sparrow in which snake skin was used. I do not include this species in my list for the reason that this was an individual instance, and in any event, a recently acquired habit of an introduced species. The Sparrow might have used the material composing an old nest of either the Crested Flycatcher or Blue Grosbeak.

The three species of the family *Turdidae* represent two sub-families—two Indian Robins (*Ruticillinae*) and an Old World Warbler (*Sylvinae*). Hume (Nests and Eggs of Indian Birds, Vol. 2, page 72), describes the nidification of the Brown-backed Indian Robin (*Thamnobia cambaiensis* (Latham)), in part as

follows: "The nest varies much in shape, size, and materials, according to situation and locality. When placed in holes, they are usually merely soft, more or less circular, pads of soft grass, with a shallow central depression lined with horse or even human hair, fine roots or vegetable fibres, feathers, cotton, wool, or anything else soft that comes handy, with very frequently scraps of snakes' skins incorporated." The same author (*ibid.*, Vol. 2, pp. 77-79) quotes letters from various correspondents who report finding scraps of snakes' skins in the nests of the Black-backed Indian Robin (*Thamnobia fulvicata* (Linn)). *T. cambaiensis* is most abundant in Upper India, while *fulvicata* is a typical species of the southern parts of the same country.

With regard to the Rufous Warbler (*Aedon galactodes* (Temminck)), Whitaker (*Birds of Tunisia*, London, 1905, Vol. 1, p. 74) has the following to say: "The nest is generally placed in a cactus clump, but occasionally in some other thick bush, and as a rule at a height of from one to six feet from the ground. It is loosely built of grasses and rootlets, plentifully lined with wool and very often has a piece of snake skin in it, though with what object this is placed there by the bird it is difficult to say. Possibly it may be for no other reason than that which leads some other birds to introduce bits of rag or similar soft material in their nests, but on the other hand, it is quite possible that the snake's skin may possess some scent or other property that serves to keep off some of the birds' natural enemies."

The single member of the *Troglodytidae* with the habit is the Carolina Wren (*Thryothorus ludovicianus*). I have examined at least a score of the nests of this species. The bird usually nests in woods, either in holes in logs or stumps, or in crevices among rocks. A few breed in old brick-yards and I once found a nest under a house, wedged in between the top of a stone foundation pillar and the floor. One nest found in a strip of woodland on the east bank of the Brazos River, was partially lined with snakes' skins. This was collected by Mr. J. W. Mann. Another discovered by me in a crevice in the rocky bank of a small wet-weather stream, had several pieces of slough in its composition. A third nest, which I found at Dripping Springs on the Brazos River above Waco, Texas, in the hollow of a stump, was lined

with fragments of at least two skins. C. C. Abbott (Naturalist's Rambles about Home, Appleton, 1885, p. 158) mentions finding a nest of this species in the state of New Jersey, which "was largely lined with snake-skins."

Family *Paridae*. It is well known among American ornithologists, especially those who have worked in the western part of Texas, that the Black-crested Titmouse (*Baeolophus atricristatus*) has this selective habit developed to a great degree. In fact, a description of the nest of this species, which usually breeds in old Woodpecker holes, would be incomplete without mention of the "casts."

The above data are all that I have been able to accumulate with reference to the habit of placing snakes' skins in nests, although I have always made note of everything that I have either observed or seen in print regarding it. In my list, there is record of fourteen species and subspecies of birds which have the habit developed to a greater or less degree. It is a usual thing with eight species, i. e., the Bank Mynah, Crested Flycatcher, both of the Indian Robins, the Rufous Warbler, and the Black-crested Titmouse. It is common with the Roadrunner, and perhaps not unusual with the Carolina Wren, Arizona and Ash-throated Flycatchers. The Mexican Crested Flycatcher seems almost to have lost the trait, although it inhabits sections where snakes are abundant.

Eight birds, the Bank Mynah, Black-backed Indian Robin, the four Flycatchers, the Carolina Wren and Black-crested Titmouse, nest in holes. Five, the Roadrunner, the two subspecies of Blue Grosbeak, the Gray-tailed Cardinal and the Rufous Warbler, nest in the open. One, the Brown-backed Indian Robin, usually, but not always, nests in holes. Therefore the ratio is less than two to one in support of Mr. Finn's statement that all birds with this nidification habit breed in holes.

There may be other species which I have overlooked; and some student of bird-behavior may yet make himself famous by writing a thesis offering a more logical explanation of the real bird reason for this bizarre peculiarity, one that might hold water after all of the evidence was in. Birds are supposed by some persons to perform all of their acts instinctively; if this be true, no feathered creature is likely ever to be superstitious, this being a failing con-

fined exclusively to reasoning creatures like the human animal! All of the theories in explanation of the habit require further confirmation before they can be considered in the slightest detail worthy of acceptance. The idea that a lizard is frightened in the presence of a shred of snake slough is not at all in keeping with my experiments with these saurians.

Baylor University, Waco, Texas.