THE NESTING OF *CHAETURA ANDREI MERIDIONALIS*

BY HELMUT SICK

Plate 14

ON the middle Rio das Mortes (15° S., 52° 15′ W. Greenwich), Mato Grosso, Brazil, I frequently observed a swift that inhabited principally the extensive groves of "buritĺ" palms. On October 15, 1946, I located two nests of the species. One was torn from its base when I attempted to make it accessible for closer investigation; the other one was studied in detail. Later on I discovered a third nest.

On November 2, 1946, an adult bird was shot on the second nest mentioned. I determined this specimen tentatively as *Chaetura andrei meridionalis* Hellmayr and my supposition has now been confirmed in the collection of the Department of Zoology, São Paulo. The locality of the present studies was the same as that of the previous studies on *Reinarda squamata* (Sick, 1947b).

1. THE NEST IN LITERATURE

The question concerning the structure of the nest of this *Chaetura* has been mentioned several times in publications, but it has not been satisfactorily answered. What Wied (1830) writes under *Chaetura pelasgius* relates apparently to the North American *Chaetura pelagica*. Euler (1867) refers definitely to "*Acanthylis oxyura*" (= *Chaetura andrei meridionalis*), describing a big, closed, bag-like nest of felt with the entrance from below. This account was confirmed by Goeldi in his own observations in 1894 and 1898 and was again repeated by Euler (1900) and Ihering (1900). Hartert (1892) cites the publication of Euler by title only; one may therefore draw the conclusion that he did not have full confidence in the observation. Ridgway (1911) openly doubts the Goeldi-Euler observations.

It never appeared very probable that a *Chaetura* would build a nest resembling that of *Panyptila;* the authors of the observations, however, were serious scientists and confirmed each other's observations. Therefore, in my publication on the nest of *Panyptila cayennensis*, I proposed the theory that *Chaetura andrei meridionalis* perhaps might occasionally use the ready-built nests of *Panyptila* and thus might be observed on the felt nests of this species.

2. DESCRIPTION OF THE NESTS FOUND ON THE RIO DAS MORTES

I had the pleasant satisfaction to encounter the debated swift breeding in central Brazil. The nest is an open cup similar in construction to that of the Chimney Swift (*Chaetura pelagica*). In the

National Museum, Rio de Janeiro, I compared it with a nest of *Chaetura cinereiventris*, collected in Teresópolis (State of Rio de Janeiro) which shows the same type of construction (*vide* Miranda Ribeiro, 1929).

Nest 1 (A. 121, F. B. C.); *see* Plate 14. Constructed almost entirely of one type of dry leaf stalks having a length of 5 cm. The natural bend of the stalks is seldom embodied into the shape of the nest. The arrangement of the layers is crude but fixed; the ends of the stalks frequently project far outside.

The stalks are probably those of a Bombacaceous tree. When the foliage begins to fall, first the small leaves drop off and then the stalks. One may assume that the bird, while passing by in flight, picks off the leafless stalks that are still attached to the tree. Should the stalk still have leaves attached to it, they certainly become detached during transport. The observation that the stalks found in the nest sometimes include a piece of branch may lead one to assume that they are torn from the branches in the manner that *Chaetura pelagica* uses to tear similar material with its feet.

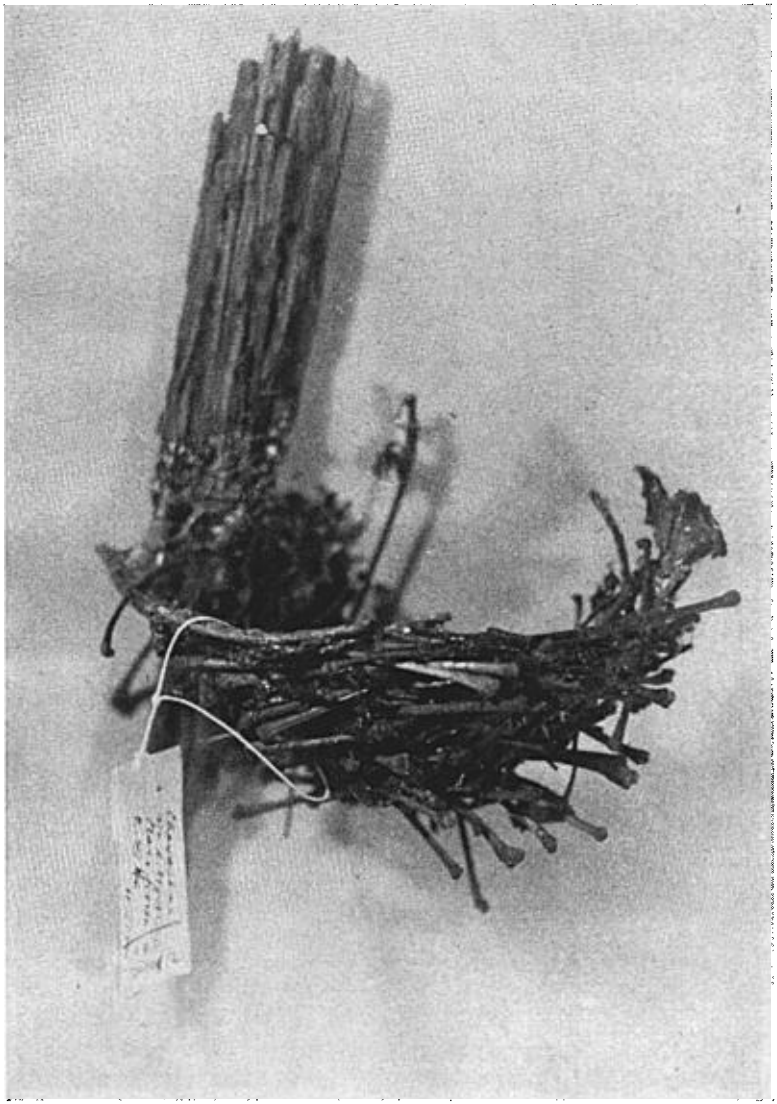
The stalks are blackened, and must have come, therefore, from a tree that was reached by fire and thus defoliated. Such burned material would furnish the preferred supply for the bird at times when Bombacaceae do not shed their foliage seasonally. The wild Chavantes Indians inhabiting the Rio das Mortes region frequently fire the savanna and one finds partially burnt vegetation everywhere in that otherwise uninhabited territory.

The structure of the nest lacks density and is therefore transparent. Adhesive saliva is seen as a thick, yellow, glue-like mass on the place of the attachment of the nest and to a lesser degree on its front side. The nest does not have a rear wall, which is represented by the side of the tree; its suspension is effected by attachment at the circumference (compare *Panyptila cayennensis* [Sick, 1947a]).

The nest was found in a hollow, 6-meter-high trunk of a "buritĺ" palm (*Mauritia* sp.) which had lost its crown. The opening at the top formed the only entrance into the trunk. The nest was attached to the inner side of the trunk, about one meter above the ground in the darkness. The trunk had to be broken open on the side in order to gain access to the nest.

Measurements (without the protruding stalks): left to right, 9.5 cm.; site of attachment to the front, 5 cm.; depth of nest trough, almost 3 cm.

Nest 2 (A. 123, F. B. C.). Structure not as uniform as that of nest 1; only a few of the above described leaf stalks present; mostly



NEST OF *Chaetura andrei meridionalis;* RIO DAS MORTES, MATO GROSSO, BRAZIL. THE HIGHLIGHTED SPOTS AT THE LEFT ARE FROM THE HARDENED MUCILAGINOUS SALIVA USED AS AN ADHESIVE.

twigs of varying thickness. Measurements: left to right, 8.5 cm.; rear to front, 3.5 cm. The nest appears as if pressed flat, probably adapted to the non-vertical site of attachment. Depth of the nest-trough about 3 cm. Nest placed in a hollow, 7-meter-high "buritĺ" trunk without a crown, but closed on the top. There are two openings in the sides of the trunk, one about the size of a hand, 5 m. above the ground, and another one smaller and nearer the ground. This nest was found 3 m. above the ground inside the trunk.

Nest 3 (A. 47, F. B. C.). Material of construction the same as in nest 2. Beside twigs, some fibers of dry "buritĺ" leaves of which also one was found in nest 1. Measurements: left to right, 7.5 cm.; rear to front, 4.5 cm.; depth of trough, 2.5 cm. Placed in a hollow "buritĺ" trunk, open at the top and about 6 m. high. Nest inside the trunk about 2.5 m. above ground.

3. EGGS

All the collected nests contained eggs.

Nest 1 contained five eggs on October 15, 1946. On October 18, only four were left which were collected November 2 (A. 122, F. B. C.). Measurements: 13.1 x 19.1; 13.0 x 18.0; 13.4 x 18.2; 13.2 x 17.5 mm.

Nest 2 was found in a fallen trunk and the eggs had rolled out. Of four, only two could be measured (A. 124, F. B. C.): 13.2 x 18.7; 13.4 x 18.8 mm.

Nest 3 had five eggs, of which two were destroyed during collection. Measurements of the others (A. 46, F. B. C.): 13.0 x 19.0; 13.1 x 18.7; 13.1 x 19.0 mm.

The average measurments of the nine eggs are 13.2 x 18.6 mm. The differences in size of the eggs encountered in nest 1 are surprisingly great. The relatively high number of eggs in each nest (four to five) is found also among other Brazilian swifts. Holt (1928) encountered five young birds in the nest of *Cypseloides fumigatus* as did Miranda Ribeiro (1929) in the nest of *Chaetura cinereiventris*.

4. FURTHER BIOLOGICAL NOTES

Breeding in hollow trees has already been observed for other species of *Chaetura* such as *C. pelagica* and *C. vauxi*. It is interesting that, although the sleeping place of *Chaetura andrei meridionalis* was described a hundred years ago, the nest remained unknown until now. Nosada (according to Azara, from Burmeister, 1856) found a flock of forty birds in a hollow tree. I noted for *Reinarda squamata* that the sleeping place can be indicative of the probable breeding place.

It may be added that Wied (1821; 1830), under his "*Cypselus pelasgius*" mentioned large flocks of birds which settled for sleep on the "mangue" bushes of the coast of middle Brazil. Wied, however, only suspected that he was dealing with this species. According to our present knowledge of the anatomy of swifts, it is not very probable that a *Chaetura* will perch on branches.

The state of development of the eggs in the three nests was very similar and points to a simultaneous start of breeding. October 15, 1946, two sets of fresh eggs. The condition was directly determined for set no. A. 46; and for set A. 122, which was found (but not collected) on the same day, it was concluded from the size of the embryos on November 2, *i. e.*, 19 days later. Set A. 124 showed the same size of embryos on November 2 that A. 122 exhibited. According to these dates the breeding period of the *Chaetura* corresponds with the end of the dry season to the beginning of the rainy period. A brood of *Reinarda squamata*, observed in the same region, was seen two weeks earlier.

Since I failed to capture or shoot a swift while it was leaving the trunk, I was forced to shoot the bird sitting on nest 1 (A. 120, ♀). I left the nest and also the eggs, not damaged by the shot, untouched during the same afternoon and the following evening in order to gain some knowledge about the second adult bird. Shortly after midnight I approached the location carefully. Neither at the nest nor in proximity to it in the inner part of the tree (which had been made accessible and could be illuminated) could a swift be seen. Upon knocking on the trunk, a slight scratching was heard from above, a noise I had heard on other occasions when swifts left "buritĺ" trunks. Though I failed to see the bird, little doubt remains that it was the male belonging to nest 1 which had slept higher up in the trunk.

This may be indirect proof that the male does not take part in incubation and does not take over the duties of substituting for the missing female. I may repeat that with *Reinarda* I found the female on the eggs at night, while the male slept clinging below the nest.

Chaetura andrei meridionalis is found in many parts of Brazil. Its flight silhouette and voice have been known to me from the states of Rio de Janeiro and Espirito Santo. In contrast to the long-tailed and on the whole more slender *Reinarda*, *Chaetura* seems to consist almost completely of wings. Its call is a *tip-tip-tip* in series, often carried over into a song-like *dlui-dlui-did*.

As enemies of this *Chaetura* there can be considered only those animals which may capture the bird on the nest, probably the same which endanger eggs and young birds in the nest. It may be assumed

that lizards go after the bird. They are very common in the region and prefer to stay on the outside of the smooth, hot palm trunks; they may perhaps lie in wait for the bird leaving or arriving at the tree. In dead palm trees certainly loss of eggs and young birds is not infrequent when the decayed tree falls down, such as was observed with nest 2.

SUMMARY

Description of the nest of *Chaetura andrei meridionalis*, three of which were found on the Rio das Mortes, Mato Grosso, Brazil. The nest is constructed in the hollow trunks of "buritĭ" palms. It is an open cup, roughly glued with dry twigs, similar in construction to the already known nests of other *Chaetura* species. Description of the eggs. Two sets of eggs with five and one with four eggs were found. Notes are given about breeding, possible enemies, flight silhouette, and voice.

I take pleasure in expressing my gratitude to Minister João Alberto, founder of the Fundação Brasil Central, and Dr. Manoel J. Ferreira, its present president, who made my studies on the Rio das Mortes possible. Thanks are due to Da. Heloisa Alberto Torres, director of the National Museum of Rio de Janeiro, and Dr. Olivério Pinto, director of the Department of Zoology São Paulo, who facilitated my studies in their institutes. Dr. Kuhlmann and Dr. A. C. Brade of the Botanical Garden, Rio de Janeiro, kindly determined the material used in the construction of nest 1, described in the text.

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THE BONY PALATE OF BIRDS. PART I THE PALAEOGNATHAE

BY SAM MCDOWELL

THIS is the first in a series of papers in which the author intends to describe the osteology of the known birds with the end in mind of throwing more light on their higher systematics. I have chosen as my first topic the bony palate because of the stress laid upon this part of the avian skeleton from Cornay to the present in the classification of birds.

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