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### THE NESTING OF *REINARDA SQUAMATA* (CASSIN)

BY HELMUT SICK

#### *Plate 6*

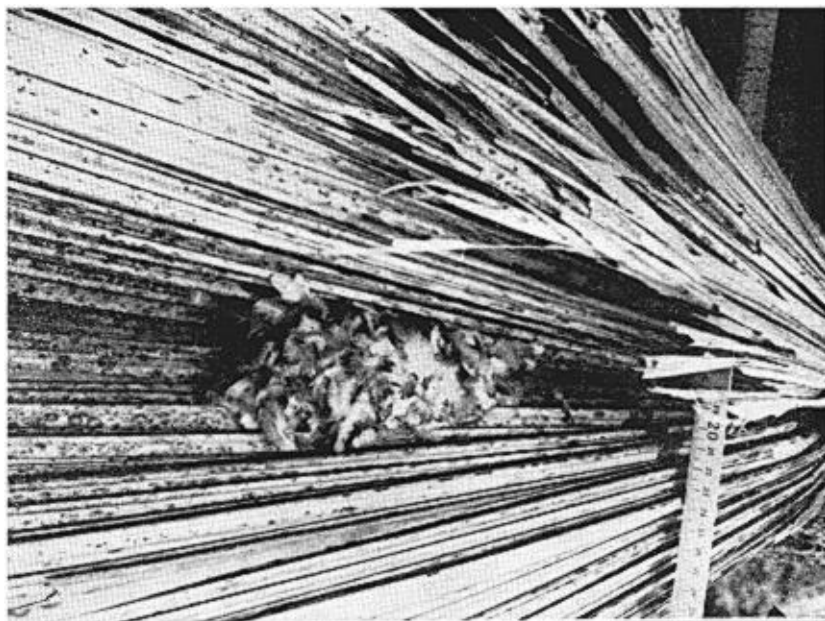
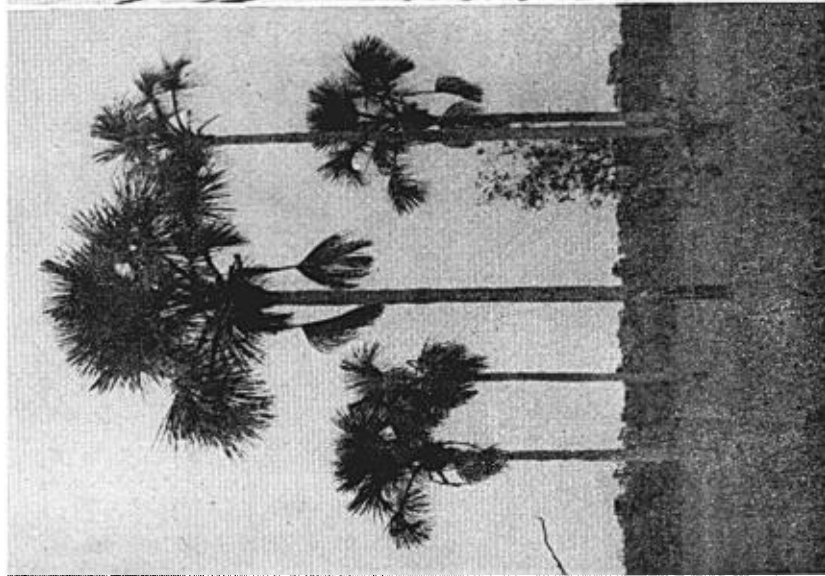
ALTHOUGH the Fork-tailed Swift is widely distributed in the northern and middle parts of South America, apparently nothing has been published to date about its nest-building. The only ecological reference known to me is in a paper by Gyldenstolpe (1945), who, from data supplied by A. M. Olalla, writes: "The fork-tailed palm swift roosts among the withered fronds of the 'burity' palms (*Mauritia vinifera* or *M. flexuosa*)."

In September and October, 1946, I had an opportunity to become acquainted with the nest of *Reinarda* on the Rio das Mortes in Mato Grosso, Brazil. The Fundação Brasil Central, for which I was studying various problems of natural science, generously arranged my stay in this very little-explored section of the country.

#### 1. *Position and attachment of the nest.*

September 27, 1946, I observed a *Reinarda* building a nest in a 'buritisa' (grove of burití palms) on the right bank of the Rio das Mortes. The nest was being constructed in a dry burití leaf and was recovered there one month later. The stalk of the fresh leaf points obliquely up towards the sky; when withering, the leaf cracks at the base and remains hanging vertically near the trunk of the palm—a phenomenon frequent among palms. The burití grows freely; its form is hardly less noble than that of the royal palm. The 'buritisa' is one of the most characteristic forms of landscape in central Brazil.

The nest-bearing fan of the palm leaf—without stalk—has an extension of 1.60 meters. It forms three large folds. Under the projection of the middle, most deeply folded part, the nest is situated, 16 cm. distant from the base of the leaf fan. It is attached to the mor-



(Left) "BURITISAL" ON THE RIO DAS MORTES, MATO GROSSO, BRAZIL. ATTENTION IS CALLED TO THE PENDENT, DRY FRONDS OF THE BURIYI PALM WHICH SERVE *Reinarda* FOR SLEEPING QUARTERS AND NEST-BUILDING. (Right) NEST OF *Reinarda squamata* ON A DRY BURIYI LEAF.

phologically upper side of the leaf, which becomes the outer side and is turned away from the trunk when the leaf hangs down vertically. The structure is well hidden by the leaf sheath that folds toward the middle of the leaf; it hangs as in an umbrella three-quarters closed. Even the observer standing vertically underneath has difficulty in recognizing something within the dark folds of the leaf. The photographs (Plate 6) were taken with the leaf unfolded.

## 2. Construction of the nest; eggs.

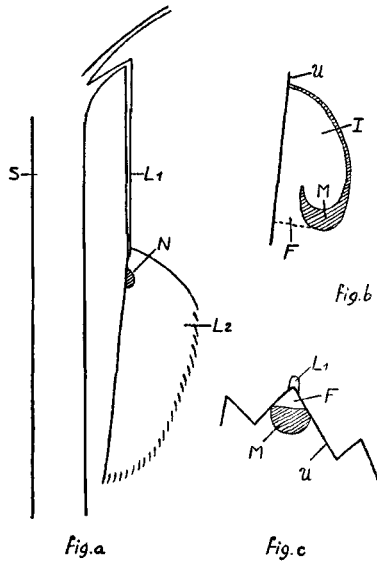
The nest has the aspect of a disorderly, elongated clump of feathers; the first impression is that of a solid mass. It is actually a thin-walled sac, ingeniously constructed, pasted laterally, with an entrance from below. The use of mucus plays a decisive part in the building of the nest with this swift as with others.

The egg shelf is attached to the inner side on the bottom of the wall, which points outward; there the nest has its largest width and depth, approximately 6–7 cm. in diameter. The egg shelf, itself, is a quite roomy trough of about 3.5 cm. diameter and about 1.5 cm. depth. The entrance to the sac, about 3 cm. wide, is opposite the egg shelf. The feathery structure, tapering off toward the top, measures about 13 cm. from entrance to the closed top of the nest.

The material used for the construction of the nest consists principally of fresh body feathers, basally rich in downs, of middle-sized birds, especially pigeons. The feathers are not worked feltlike into a uniform surface as is done by *Panyptila* (see below), but are only pasted, piece by piece. Cotton from plant seeds serves as a kind of binding material and a cover for the walls. Downy elements predominate in the interior. The walls are generally up to .5 cm. thick; only under the egg shelf one measures up to 2 cm.

The nest of *Reinarda* exhibiting this type of construction strikingly resembles the closed felt nest of *Panyptila*, to which no parallel structure has been known with certainty up to date. The principal difference between the nest of *Panyptila* and that of *Reinarda* is in the presence of a flight tunnel, added to the nest chamber under the egg shelf. The complicated nest of *Panyptila cayennensis* has recently been analyzed by the author (1947). The somewhat intricate terminology of the various parts of the nest was discussed in this publication; also the question was debated critically, whether the construction of a closed felt nest has been recorded also for a *Chaetura* (Euler, 1900; Goeldi, 1898).

The most important part of the nest—the egg shelf—of *Panyptila* was the theme of a comprehensive discussion. It varies in size a good



TEXT-FIGURE 1. Nest of *Reinarda squamata*.

*Fig. a:* Dry leaf of the "buriti" with natural connections and nest of *Reinarda*.

*Fig. b:* Longitudinal section of nest.

*Fig. c:* Cross section of nest.

Explanation of lettering: I, nest chamber; F, entrance to nest chamber; L 1, cracked stalk of leaf; L 2, fibres of leaf fan hanging down; M, nest trough or egg shelf; N, nest; S, trunk of the "buriti" palm; U, upper side of leaf to which nest is attached.

deal, apparently depending upon the varying orientation of the nest in space. One may ask whether, perhaps, the eggs are pasted on, as can be affirmed apparently for *Cypsiurus battasiensis*, *Cypsiurus parvus*, and *Hemiprocne mystacea* (Stresemann, 1927-1934; v. Boxberger, 1910; Meyer, 1928). I am unable to answer the question, although I found the nest of *Reinarda* with the eggs, because the eggs had been damaged. I had the impression, however, that the eggs were more firmly attached to the shelf than if due simply to the contents of the damaged eggs. Pasting of the eggs may be a safeguard for the conservation of the eggs—even taking into consideration the spaciousness of the egg trough—once one has seen the extent to which the dry palm leaves are jerked about by the wind. The above-mentioned species of *Cypsiurus* and *Hemiprocne* are also types with unsteady attachment of the nest to leaves of palms and small branches. This is in contrast to *Panyptila* which selects a firm foundation for attachment—trunks or strong branches, beams, or stone. These facts

strengthen the supposition that *Reinarda* is one of the swifts that paste their eggs, but not *Panyptila*.

Considering the striking similarity between the nest-chambers of *Panyptila* and *Reinarda*, one might ask whether the presence or absence of a flight tunnel may have a functional significance. Provided that such a conditional relationship exists, the free, laterally unprotected attachment in *Panyptila* and, in contrast, the enclosure within the more or less closed palm leaves may play a rôle.

There were three eggs ready to hatch. I recovered only one in condition to be measured. It was 10.00 x 15.45 mm.

### 3. *Appearance and behavior of the bird.*

*Reinarda* can frequently be seen against the sky at Chavantina, the camping post of the Fundação Brasil Central on the Rio das Mortes. Its flight silhouette differs from that of *Chaetura* by the long tail; it is also more delicate. The tail is not carried openly bifurcated but pointed, as also in *Panyptila cayennensis* (Richmond, 1898). The voice of *Reinarda* is no less characteristic—a thin screech on an E over-tone, like *gs-gs*.

I saw the Fork-tailed Palm Swift, sociable like all swifts, approach the nest under construction mostly in company, then disappear alone among the leaves. It is my impression that the nest was practically finished when first encountered. I saw the bird working on the outside of the feather clump without recognizing details within the dark leaf folds. Each visit of the bird to the nest lasted five, ten and even fifteen minutes on September 27.

During the succeeding weeks I failed to observe the *Reinarda* at the nest. October 21, at night, I went to the 'buritisa.' In the glare of my flashlight I saw a bird clinging underneath the nest. A thunderstorm was approaching and the dry burití leaves were hurled back and forth by the gusts of wind to such a degree that I feared any minute the stalk might be torn from the trunk. I decided therefore to shoot the bird clinging underneath the nest, realizing that damage to the nest and its suspected contents could not be prevented. Even before the dead bird (a male) fell, its mate flew out from the nest. The nest was not visibly damaged by the fine shot—selected especially small—but unfortunately the eggs were.

In the same 'buritisa' I found a second *Reinarda* nest, half destroyed, probably left from the previous breeding season. In November, 1946, in two other 'buritises' on the Rio das Mortes, I saw a *Reinarda* flying into the leaves of 'burití,' apparently feeding; further observations however, had to be postponed for a later occasion.

#### 4. *Descriptive notes.*

The male shot near the nest is the only specimen of the species in my collection. A full discussion is, therefore, not possible. I may mention only the following:

The Museu Nacional, Rio de Janeiro, contains a specimen from western Mato Grosso (without sex, Comissão Rondon, Comemoração de Floriano, July, 1909). It agrees well with my specimen which is characterized as follows: Upper side bluish black with a green gloss, and with light feather edges; lower side dark on account of the extensive dark brown feather bases; no marked pectoral band.

There are, furthermore, in the same museum two specimens from Pará (♂, Monte Alegre, December, 1916; ♀, Rio Mojú, December 17, 1915) and one ♀ from Ceará (Ipú, June 16, 1910)—all labeled by E. Sneathlage. These three specimens do not correspond with my specimen either in the color of the upper or under parts or the sides. The same applies to the females which Gyldenstolpe (1945) described from Manaus and from the River Juruá, adding: "more material is however needed to determine the constancy of these variations." The specimens collected by Lima near Coxim (Mato Grosso) (Pinto, 1940) are not at my disposal at the moment.

#### SUMMARY

Description and illustration of the nest of *Reinarda squamata*, encountered on the Rio das Mortes, Mato Grosso, Brazil. The nest is built in the leaves of the 'burití' palm and its construction is analogous to that of the nest of *Panyptila cayennensis* and *P. sanctihieronymi*. Measurements of the egg are given. Flight silhouette and voice of the adult bird are noted. Short remarks on coloration are added.

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## TWO DAYS WITH A WREN FAMILY

BY MINNA ANTHONY COMMON

The nest was in a coconut shell hung six feet up in a plum tree. I stood facing the entrance at a distance of three feet so that I might see the food as it was brought. The wrens were used to our close approach. With three intermissions, the position was kept up from 5:30 A. M. to 6:17 P. M. on one day. Two days later the same procedure was repeated for three hours, and that was when the young left the home.

JUNE 2: 5:30 A. M.—The female brought a small grasshopper and entered the nest with no hesitancy.

5:34.—The male brought an inch-long tent caterpillar and clung to the outside of the nest; the young put out their bills to receive the food.

5:35.—The female brought a grasshopper (one inch in length) from a southerly direction. I heard a sound in the nest like the waving of wings. The nest rocked all the time from the movement within. I could see four bills at the entrance.

5:35.—The male wren drove away a sparrow that came within twenty feet of the nest.

5:40.—The female wren drove away a Red-eyed Vireo, then brought food. Pleasant chirping issued from the nest.

5:45.—The female brought a grasshopper; removed excrement. She went some distance away. All was quiet in the nest for two minutes, then I heard wing flutterings.

5:49.—The male brought a one-inch grasshopper. A Cowbird was perched in the nest tree, but the wren paid no heed. It glanced at me but fed from outside the entrance hole as usual.