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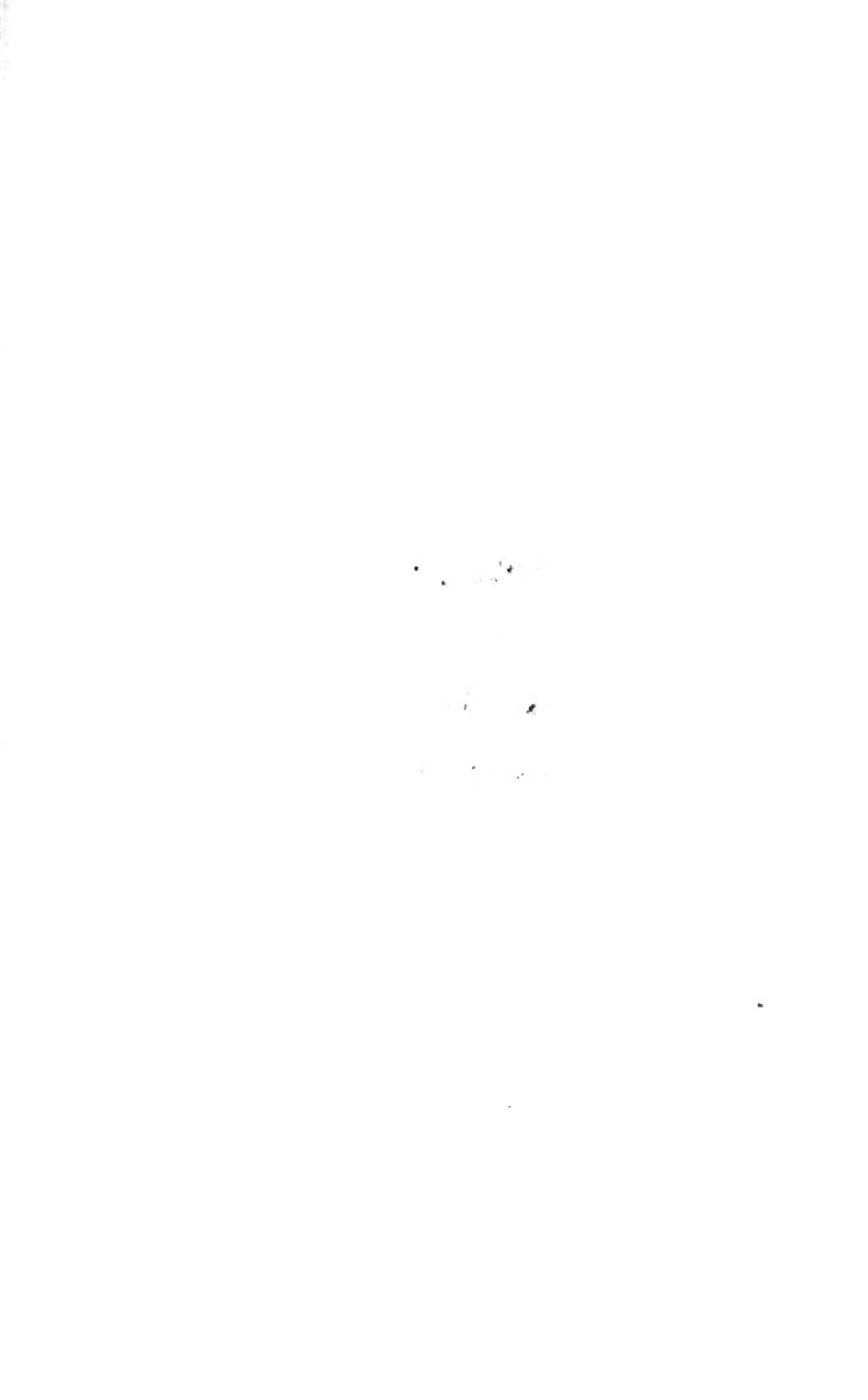
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The Tongue and Nest of Certain Flowerpeckers (Aves: Dicaeidae)

AUSTIN L. RAND

CHIEF CURATOR, DEPARTMENT OF ZOOLOGY

The tongue of the flowerpecker *Dicaeum nigrilore* Hartert of the Philippines and the nest of the flowerpecker *Melanocharis versteri* Finsch of New Guinea are herein described, it is believed for the first time, and as each is rather different from the known condition in the family, the implications for classification are discussed.

Tongue.—The tongue of *D. nigrilore* was attached to a conventional study skin sent to Chicago Natural History Museum by our Associate, Dr. D. S. Rabor, of Silliman University, Dumaguete, Negros, Philippine Islands. Figure 104, A, gives a general dorsal view of this tongue (tip somewhat spread), which is about 14 mm. long. The basal portion is flat, tipped proximally with small spines. Near the mid-point, the edges curl together and overlap to form a tube. The one exposed, overlapping edge becomes fimbriate anteriorly. The distal one-fifth or so of the tongue becomes divided into six conspicuous elements (three pairs), four of them fimbriate, which form a complicated brush-like tip.

The enlarged and spread-out tip of the tongue is illustrated (fig. 104, B). In this, each pair of dorsal elements bears a conspicuous fringe on one margin. Each of the lateral elements is a simple prong. The pair of ventral elements is more or less fringed and notched by splitting in a manner which suggests that some of it, at least, may be the result of fraying and splitting with use.

The heretofore known condition of the tongue in the family is as follows: it varies with the species, from a triangular, fairly flat structure, slightly notched at the tip (*Melanocharis* and *Paramythia*), to a more specialized nectar-feeding type in which the edges curl to form a semitube or a tube cleft at the tip to form two semitubular tips (*Dicaeum*, six species); or there may be a slight notching in

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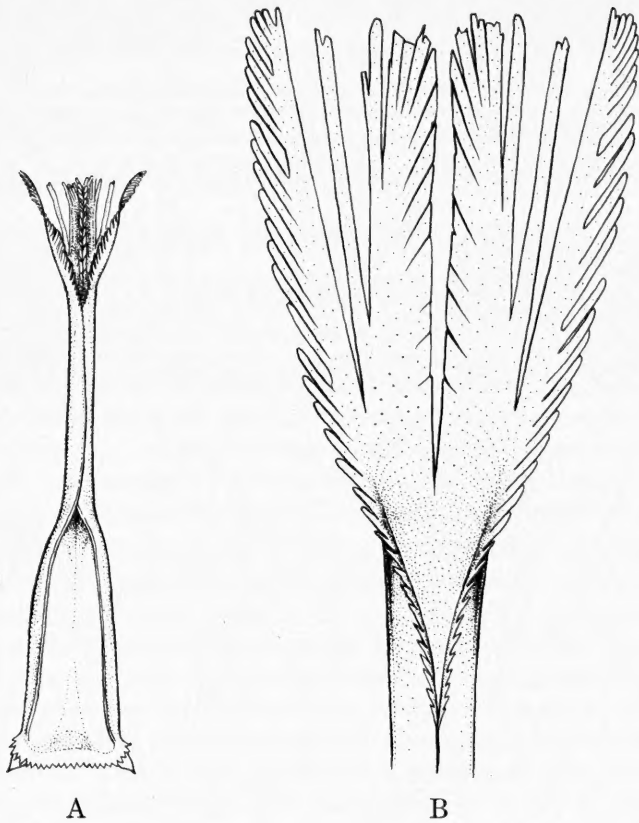


FIG. 104. Tongue of *Dicaeum nigrilore*. A, dorsal view, tip somewhat spread; total length 14 mm. B, enlarged tip. Collected by D. S. Rabor, April 15, 1956, on Mount Malindang, altitude 5000 feet, Mindanao, Philippine Islands.

each tip, giving a tendency for four tips (*D. aureolimbatum*); or these notches may deepen to actual splitting with the formation of four semitubular, fringeless tips (*Prionochilus*). That is, there is curling and splitting of the tongue, but no fraying or fimbriation, and no brush tip (Mayr and Amadon, 1947, pp. 3 and 4, fig. 2, with summary of earlier work of Gadow and Gardner).

The members of the family Dicaeidae typically have short, stout bills, but *D. nigrilore* is one of several members of the genus *Dicaeum* which have a more attenuated, rather slender bill, approaching the condition in some nectar feeders, such as sunbirds and honeyeaters; and the monotypic *Rhamphocharis* of New Guinea has the bill still more attenuated. Whether or not greater bill length and brush-

cop. 3
tipped tongue are correlated, as one could suppose, remains to be determined. On external characters, the closest relative of *D. nigrilore* is *D. aureolimbatum* of the Celebes, with a shorter bill and a simpler tongue. However, in only eight of the 33 species of *Dicaeum* is the tongue known, and the condition in the long-billed *Rhamphocharis* is also unknown.

D. nigrilore has been a little-known bird and considered rare. However, Dr. Rabor found the species common on Mount Malindang in western Mindanao. It frequented tall, fruiting trees in the forest, much as other flowerpeckers (*Dicaeum*) did.

The tongue of *D. nigrilore* is most like that of the honeyeaters (family Meliphagidae), which typically have a tubular tongue with a four-pronged tip, each tip with a fringe, giving a brush tip (Gardner, 1925, pp. 28, 29, fig. 6, and Scharnke, 1931, p. 454, figs. 24-26; 1932, fig. 6), though *Melipotés* has a fairly simple, flat tongue notched at the tip (Scharnke, 1933, pp. 354-359, fig. 1). Further variation in the family is discussed by Dorst (1952, pp. 185-214, figs. 1-14). The structure of the tongue of the sugarbird, *Promerops*, of South Africa, is similar to the typical honeyeater pattern (Scharnke, 1932, p. 117, figs. 4, 5).

The tongues of the other nectar-feeding songbirds are very different. That of sunbirds is characterized by a tubular shape with splitting, but not fringed at the tip, though one species, *Anthreptes singelensis*, does have a small brush tip (Gardner, 1925, pp. 26, 27, figs. 139, 141; Scharnke, 1932, pp. 115-117, figs. 1-3; Delacour, 1944, p. 17, 18).

Hawaiian honey creepers, family Drepanididae (Drepaniidae and Drepanidae of authors), have tongues varying from simple to elongated and tubular, with little splitting but much fraying near the tip where the fimbriations interlace in a complex manner, finally forming a whipped-out brush (Amadon, 1950, p. 222, fig. 16, where the earlier work of Gadow, Rothschild and Gardner is summarized; see also Scharnke, 1932, p. 119, figs. 7, 8).

The tongue of the American honey creepers, family Coerebidae of earlier authors, is variable, from simple to elongated, tubular and split at the tip into two semitubes with frayed margins (*Coereba*, *Diglossa*; see Gardner, 1925, p. 28, fig. 5).

One should not attach too much importance to a single character, such as the form of the tongue, as has been pointed out a number of times. But the similarity of the tongue of the flowerpecker, *D. nigrilore*, and the typical honeyeater is suggestive. (See discussion below.)

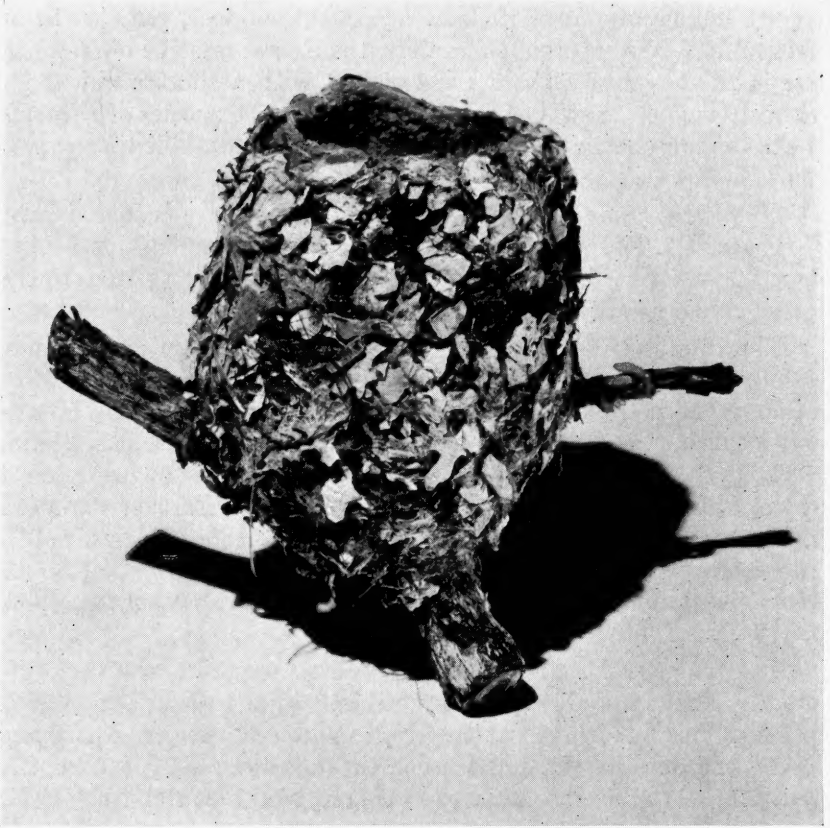


FIG. 105. Nest of *Melanocharis versteri*. Collected by E. T. Gilliard on Mount Hagen, altitude 8200 feet, central highlands, New Guinea.

Nest.—Through the kindness of Dr. E. Thomas Gilliard, I have two nests of *Melanocharis (Pristorhamphus) versteri*, which he collected on Mount Hagen, 8200 feet altitude, Central Highlands, New Guinea, July 15, 25, 1950. The two are very similar. As they were brought in by native collectors, definite details of position are lacking. Identification was based on the natives' description of the adults and the nearly full-grown young in one nest.

The nest (fig. 105) is a very neat structure, large for the size of the bird, and in the form of a cup with a very deep base so that it is higher than wide outside. The nest was saddled on a more or less horizontal branch (in one case, involving a smaller lateral branch), and the material of the base was carried smoothly around the supporting branch to attach the nest firmly. The bulk of the nest is

compactly felted of blackish and dark brown fibers, presumably from ferns, and it has a thick felted lining of orange-brown fluff from the bases of fern leaves. The outside is bound together with animal silk, and enough small pieces of tan or buff lichen are embedded in this to cover more than half the surface, as if for decoration or camouflage. The nest thus looks like a great enlargement of the branch on which it rests. The nests measure (outside) about 70–80 mm. wide, 100–110 mm. deep, with the hollow for the eggs about 45 mm. wide and 40 mm. deep.

The other known nests of the members of this family (see Mayr and Amadon, 1947, p. 12) are: (a) *Dicaeum* and *Prionochilus* (*Anaimos* of authors); a pendent oval nest with entrance at side, made of plant down, animal silk and some fibers, or of dead grass ornamented with leaves; apparently usually, but not always, with thin walls and little felting. (b) *Pardalotus*; the nest in a hole in a tree or a burrow in the ground, in which a cup or domed structure is made. (c) *Paramythia*; the nest a bulky, deep cup, loose and untidy externally, and placed in the twigs of a dense shrub. The material in the bulk of the nest is moss and lichen, a scant lining of grass and semi-woody stems, and in the bottom of the nest hollow a pad of orange-brown tree fern fluff.

Following up the relationships of the flowerpeckers suggested by the tongue, comparisons with the nests of honeyeaters (Meliphagidae) are in order. These are extremely variable, ranging from open cups to pendent structures with a side opening. One of them, that of *Toxorhamphus poliopterus*, is similar in general to that of *M. versteri* in being a neat, deep cup saddled on a slender branch with the base of the nest carried around the supporting branch. The interior of this nest is composed of a thick layer of well-felted white plant down, and outside of this is a layer of fine green moss and some fibers, the whole bound together smoothly and firmly with animal silk which contains a few small white pieces of spider egg cases. The nest measures (outside) 60 mm. wide by 80 mm. deep, with the egg cup 45 mm. wide and 30 mm. deep (for a photograph of this, see Mayr and Gilliard, 1954, pl. 33, no. 2).

However, in general appearance this nest recalls vaguely the nests of some such unrelated birds as frogmouths (*Batrachostomus*), some hummingbirds (family Trochilidae), the wood peewee, a tyrant flycatcher (family Tyrannidae), and the gnatcatcher (*Polioptila*). Obviously, such a character must be used with caution in affirming or denying relationships.

Discussion.—In a recent review of the flowerpeckers, Mayr and Amadon (1947) consider that they are related to the sunbirds, and that the similarities of certain flowerpeckers to certain honeyeaters is due to parallelism. The differences in the tongues in the two groups seem to have been an important deciding factor. The new data presented above indicate that this criterion breaks down.

Other similarities between flowerpeckers and honeyeaters are seen in comparing flowerpeckers such as *Melanocharis* with honeyeaters such as *Timelopsis* and *Oedistoma* (Mayr and Amadon, 1951, p. 25), and *Rhamphocharis* with *Meliphaga* (Rothschild and Hartert, 1903, p. 448), and the nests of *Melanocharis* and *Toxorhamphus* (see above).

In this connection, Dorst (1952) considers the honeyeaters an unnatural, heterogeneous family, and suggests that certain genera might be transferred elsewhere; for example, *Toxorhamphus* might be placed with the sunbirds.

However, with the details of so many species of flowerpeckers unknown, it seems advisable to expand our concept of the flowerpeckers to include these new data on the family as currently understood, rather than to shift species to retain our old concepts of family characters. Further, an actual, closer relationship than has been thought to exist between the flowerpeckers and honeyeaters seems indicated.

REFERENCES

- AMADON, D.
1950. The Hawaiian honeycreepers (Aves, Drepanidae). *Bull. Amer. Mus. Nat. Hist.*, **95**: 151-262.
- DELACOUR, J.
1944. A revision of the family Nectariniidae (sunbirds). *Zoologica* (New York), **29**: 17-38.
- DORST, J.
1952. Contribution a l'étude de la langue des Meliphagides. *L'Oiseau*, **22**: pp. 185-214.
- GARDNER, L. L.
1925. The adaptive modifications and the taxonomic value of the tongue in birds. *Proc. U. S. Nat. Mus.*, **67**, art. 19, pp. 1-49.
- MAYR, E., and AMADON, D.
1947. A review of the Dicaeidae. *Amer. Mus. Nov.*, no. 1360, pp. 1-32.
1951. A classification of recent birds. *Amer. Mus. Nov.*, no. 1496, pp. 1-42.
- MAYR, E., and GILLIARD, E. T.
1954. Birds of central New Guinea. *Bull. Amer. Mus. Nat. Hist.*, **103**: 317-374.

ROTHSCHILD, W., and HARTERT, E.

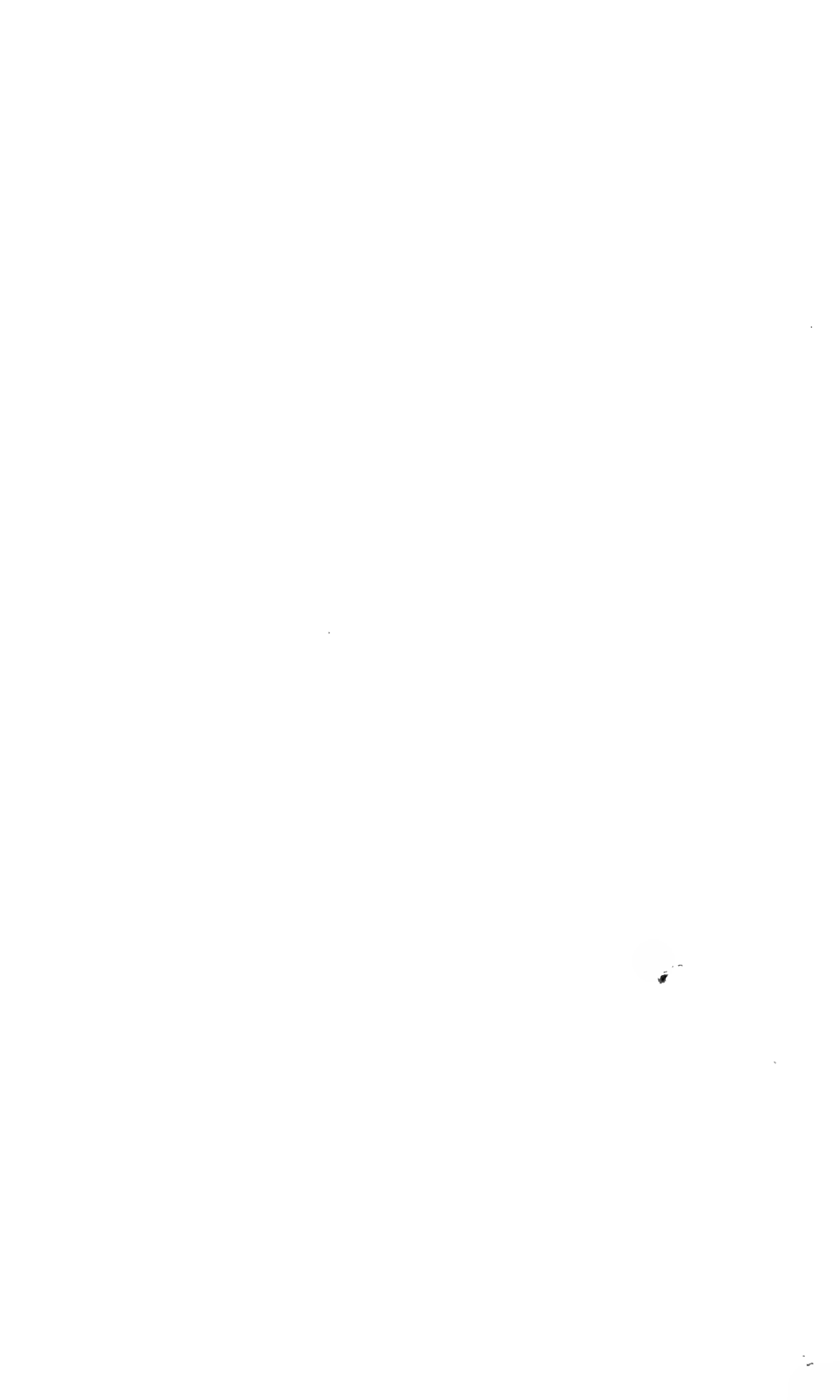
1903. Notes on Papuan birds. *Nov. Zool.*, **10**: 435-479.

SCHARNKE, H.

1931. Beiträge zur Morphologie und Entwicklungsgeschichte der Zunge der Trochilidae, Meliphagidae und Picidae. *Jour. f. Orn.*, **79**: 425-491.

1932. Über den Bau der Zunge der Nectariniidae, Promeropidae, und Drepanididae nebst Bemerkungen zur systematik blütenbesuchen den Passeres. *Jour. f. Orn.*, **80**: 114-123.

1933. Über eine rückgebildete Honigfresser-Zunge. *Jour. f. Orn.*, **81**: 354-359.



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