

*N. J. Stuedemann*  
*Feb. 1937*

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THE NORTH AMERICAN GENUS  
**INSCUDDERIA**

(ORTHOPTERA, TETTIGONIIDAE, PHANEROPTERINAE)

by

Morgan Hebard

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THE NORTH AMERICAN GENUS *INSCUDDERIA*  
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BY MORGAN HEBARD

During the summer of 1915, while working in a small group of cypress (*Taxodium*) at Greenville, Mississippi, the author took a small series of a striking and undescribed katydid, evidently related to the genus *Phaneroptera* Serville.<sup>1</sup> In 1921 Caudell<sup>2</sup> described the genus *Inscudderia* and a single species, *taxodii*, from males taken that year at Durant, Mississippi, and apparently representing the same insect. Comparison of our material with his type has since proven this beyond question, differences in Caudell's description and figures being entirely due to the fact that the type is distorted and in bad condition, from drying after immersion in a liquid preservative.

In 1917 a small "bay" of cypress was examined at Kissimmee, Florida, by Rehn and Hebard, and adult females and young of a similar but much larger insect were secured after long search. The desirability of finding Floridian males was communicated to Messrs. T. H. Hubbell and F. W. Walker, and a magnificent series has been taken by them, showing conclusively that a distinct species is represented.

These two species are similar in general appearance, the delicate black tracery on the green tegmina plainly suggesting the delicate foliage of the cypress in which they dwell.

Critical comparison with the species belonging to *Phaneroptera* further shows that Scudder's *strigata* must also be referred to *Inscudderia*. In that distinctively marked species the produced and specialized male ultimate tergite is, however, of a similar type to that of *Phaneroptera curvicauda* (DeGeer), demonstrating that in this genus, as in *Phaneroptera*, the type of this plate differs widely in the species, but has no generic diagnostic value.

<sup>1</sup> Known as *Scudderia* Stål until Caudell's genotypic fixation in 1921.

<sup>2</sup> Journ. Washington Acad. Sci., XI, p. 489.

The genus *Inscudderia* is, in fact, much closer to *Phaneroptera* than Caudell supposed, and is widely distinct from *Insara* Walker. The two genera, and the species of the former, may be separated as follows:

A. Tegmina decidedly broader, moderately narrow to broad; proximal branch of median vein forking, these forks reaching the sutural margin. General coloration immaculate green (rarely marked with brown).....*Phaneroptera* Serville

AA. Tegmina decidedly narrower, narrow, proximal branch of median vein joining the ulnar vein. General coloration green, strikingly marked with brown and black... *Inscudderia* Caudell

B. Male ultimate tergite not produced. Male subgenital plate narrow in lateral aspect. Tegmina green, with median vein, stripe along juncture of discoidal and anal fields and veins running to that margin for a short distance, blackish brown.<sup>3</sup>

C. Size large. Distal specialization of male ultimate tergite much narrower than the tergite, its lateral production much less prominent. Apical tooth of male cercus shorter. Subgenital plate with apex less specialized.

*walkeri* new species

CC. Size small. Distal specialization of male ultimate tergite only slightly narrower than the tergite, its lateral production very prominent. Apical tooth of male cercus very elongate. Subgenital plate with apex more specialized.....*taxodii* Caudell

BB. Male ultimate tergite produced, with apex expanded into two truncate lobes. Male subgenital plate broad in lateral aspect. Tegmina green, with a blackish brown longitudinal stripe margining anal field, which is rich cinnamon, meso-proximad with a suffusion of blackish brown.....*strigata* (Scudder)

The limbs in the species of *Inscudderia* are elongate and slender but not sufficiently more so than in *P. curvicauda* (DeGeer) (genotype of *Phaneroptera*) to warrant use as a generic character. The lateral carinae of the pronotum are rounded and weak cephalad, but no more than in the distinctive *P. septentrionalis* Serville, which like two of the species of *Inscudderia* in the male shows no production of the ultimate tergite (but has broad tegmina, with venation normal for *Phaneroptera* and comparatively short limbs). The armament of the ventral femoral margins may be said to be heavier in *Inscudderia* than in any species

<sup>3</sup> See more detailed description under *walkeri*.

of *Phaneroptera*, but there is sufficient individual variation to make this of little generic diagnostic value.

***Inscudderia walkeri*** new species (Plate XI, figures 1 to 5.)

We take pleasure in naming this species, one of the most striking of the Eastern katydids, in honor of Mr. F. W. Walker. Through his remarkable ability in the field, not only was the major portion of the very large series of this new species secured, but also equally unusual representations of a number of other forms, previously unknown, or represented in collections by but few specimens.

The present Floridian species is readily distinguished from *I. taxodii* Caudell, of the southern Mississippi Valley, by its much larger size and striking male genitalic differences. Most important of these are the ultimate tergite with distal specialization less decided and very much less in width than the tergite, the much shorter and heavier cercal tooth and the simpler apex of the subgenital plate.

These two species are otherwise generally similar and very distinct from the third known species of the genus, *strigata* (Scudder).

*Type*.—♂; Waldo, Alachua County, Florida. August 23, 1924. (F. W. Walker.) [Hebard Collection, Type no. 1037.]

Size much larger, form similar to *taxodii*. Head, pronotum, tegmina, wings and limbs much as in that species. Tegmina with ulnar vein sending four (or five) branches to the sutural margin, the last (usually) forked,<sup>4</sup> the vein itself curving distad to that margin; median vein sending proximal branch to the ulnar vein and two branches to the sutural margin. Tegmina narrow, marginal field transparent between veinlets. Ultimate tergite broad, its median portion distad raised and flattened, produced laterad in rounded projections, the margin between weakly concave mesad. This process is much smaller in proportion to the tergite than in *taxodii* and its lateral projections are much less decided than in that species. Supra-anal plate narrowing and declivent proximad, thence produced as a straight finger slightly beyond (and usually below) the cercal apices, its dorsal surface very deeply and broadly sulcate to near apex. Cerci moderately elongate, tapering and cylindrical to near distal portion, which is swollen and bent inward, surmounted

<sup>4</sup> Occasional individuals have, instead, two branches which spring from the same point on the ulnar vein.

by a heavy tooth, the disto-caudal surface of which is flattened. Subgenital plate elongate, narrow, recurved, reaching much beyond cerci; dorsal surface longitudinally broadly and deeply sulcate between the decidedly thickened lateral margins; ventral surface medio-longitudinally carinate, this decided in all but third fifth. Apex of subgenital plate V-emarginate, the lateral apices each roundly swollen on their internal surfaces, these swellings touch and each has a rounded, soft area distad occupied with a microscopic node (a vestigial style?). In cross section the subgenital plate is almost flat mesad, but V-shaped distad. Cephalic femora with ventro-cephalic margins armed with (one or two) very minute black teeth, caudal femora with (five to six) larger black teeth on each ventral margin, those of the internal margin being the heavier.

*Allotype*.—♀; same data as type, but taken July 26, 1924. [Hebard Collection.]

Agrees closely with male except in the larger size and more robust form. Very similar to the female sex of *taxodii*, except in the much larger size. Ovipositor long and broad, weakly curved dorsad, its vertical sides smooth, its dorsal and ventral margins armed with regular, rounded, microscopic teeth as in that species.<sup>5</sup>

General coloration light course green, marked with whitish green as follows; head with a vertical band on face and an oblique bar below eyes, pronotal lateral lobes with broad ventral margins, pleura with flecks and a broad vertical bar mesad, abdomen with two longitudinal bands on each side and outer faces of caudal femora with a dorsal longitudinal streak. The lateral carinae of the pronotal disk are yellowish white and frequently there is a very fine whitish medio-longitudinal line on the occiput and disk of the pronotum. Tegmina light course green; stridulating field of male cinnamon-buff, the stridulating vein darker (verona brown) and caudad of it a longitudinal suffusion of bister; anal field of female almost clear green, individually varying through cinnamon-buff to mikado brown, with two or three large blackish areas; median vein, stripe along juncture of discoidal and anal fields and distal portions of veins running to that margin, black; discoidal field usually with a whitish green streak adjacent to the median vein; marginal field transparent hyaline between the veinlets. Apices of wings light course green, with exposed portion of median vein and apices of its branches also black. Eyes usually very dark, warm sepia. Antennae with

<sup>5</sup> In the series of *walkeri* the apices of the dorsal valves of the ovipositor surpass those of the ventral valves slightly or to a considerable degree. In the single female of *taxodii* known these apices are equal. These species may show an average difference in this feature, though it is probably of little diagnostic value.

two proximal joints light green, thence cinnamon-buff becoming darker distad. Limbs with spines and spurs black, auditory foramina flecked with blackish brown and caudal femora in intensively colored specimens flecked with the same. In the very few strongly intensive specimens before us, the pale as well as the dark markings stand out much more strikingly than is usual.

*Measurements (in millimeters)*

	♂	Length of body	Length of pronotum	Caudal width of pronotal disk	Length of tegmen	Width of tegmen	Length of caudal femur
Waldo, Florida, <i>type</i> , . . . . .		18.8	4.8	3.2	30.4	5	23.8
Waldo, Florida, <i>paratype</i> , . . . . .		18.7	4.7	3.1	28	4.7	23.7
Waldo, Florida, <i>paratype</i> , . . . . .		18.3	4.9	3.1	29.3	5	24.2
	♀						
Waldo, Florida, <i>allotype</i> , . . . . .		24.7	5.1	3.7	31.8	5.2	26.2
Waldo, Florida, <i>paratype</i> , . . . . .		19.2	5	3.3	28	5.1	24.5
Waldo, Florida, <i>paratype</i> , . . . . .		23.5	5.2	3.7	31.2	5.2	26.8

The large series shows little size variation.

*Specimens Examined:* 182; 55 males, 112 females and 15 immature individuals.

FLORIDA: Sampson City, Bradford County, October 5, 1924, (O. Van Hynning), 3 ♂, 1 ♀. Waldo, Alachua County, July 18 to August 23, 1924, (F. W. Walker), 32 ♂, 60 ♀, 3 juv. ♂, 2 juv. ♀; September 23, 1924, (Walker and Hubbell), 6 ♂, 23 ♀, 3 large juv. ♀. Fairbanks, Alachua County, July 8 to August 5, 1924, (F. W. Walker), 9 ♂, 21 ♀; September 13, 1924, (F. W. Walker), 1 large juv. ♂, 3 large juv. ♀, 1 medium juv. ♀. Gainesville, Alachua County, July 21 and October 5, 1924, (F. W. Walker), 4 ♂, 4 ♀. Orlando, Orange County, September 4, 1924, (F. W. Walker), 1 ♂, 1 ♀, 1 juv. ♀. Kissimmee, September 10, 1917, (M. Hebard), 2 ♀, 2 juv. ♀.

The few specimens secured by the author were found on cypress shoots, in and on the edge of a small cypress "bay." Much work was required to locate these and a fruitless search was made nearby in several similar areas. Our notes state that, "the coloration blends perfectly with the foliage of the numerous half-withered cypress shoots."

We are informed that the Sampson City specimens were taken on cypress growing about the margins of a lake, while almost all secured by Walker and Hubbell were also found in the foliage of that tree, the few others being in adjacent vegetation.

Walker writes that, "during the day it is almost impossible to locate this species, as individuals conceal themselves in the thick foliage of the cypress, but at night they come out on the tips of the branches and can be located with the aid of a head flash-light. The majority were taken from small cypress trees and from sprouts around the stumps of cut cypress. All were found in trees or sprouts standing in water. None taken were very active, practically all being secured by hand, and where the trees were too high individuals could be brought within reach without alarming them by bending down the branches. The stridulation was rarely heard and was very low, similar to that of certain species of *Phaneroptera*, but much lower."

Hubbell records in his notes, "the song is rather low pitched and deliberate—zzzzzip——tk—tk—tk—tk—zzzzzip——tk—tk—zzzzzip——tk——tk—tk—tk—tk—zzzzzip."

It is noteworthy that, though occurring adult as early as July 8, immature material is to be found as late as September 23rd. It is probable that the species, like others in the sub-tropical Floridian environment, becomes adult over a very much wider period during the year than is the case with most species in a colder climate.

All of the adults in this series are considered paratypes and belong to the Walker, Hebard and Hubbell Collections, but specimens will be distributed to the leading museums as well.

**Inscudderia taxodii** Caudell (Plate X, figure 1; plate XI, figures 6 to 9.)  
1921. *Inscudderia taxodii* Caudell, Journ. Washington Acad. Sci., xi, p. 490, fig. 1, a to c. [♂ and juv. ♂; Durant, Mississippi; juv. ♂, Pickens, Mississippi.]

Due to the distortion of the original material, accurate description of the male genitalia was impossible. We here show these parts from well preserved specimens, giving the apex of the male subgenital plate in the extremes of our series, the apparently decided difference due largely to flattening of the lateral portions

in one, which in the other are almost vertical. In this species the genicular lobes of the caudal femora are hispinose, those of the other femora being blunt but each bearing a minute spine ventrad.

The previously unknown female agrees very closely with the males. It is slightly larger. The ovipositor is long and broad (as compared with that of the species of *Phaneroptera*), weakly curved dorsad, its vertical sides smooth, its dorsal and ventral margins armed with regular, rounded, microscopic teeth.<sup>6</sup> The female subgenital plate is small, triangular, with a percurrent median sulcation.

The measurements of our series are as follows: length of body, ♂, 14.4 to 16.5; ♀, 14.7: length of pronotum, ♂, 3.8 to 4; ♀, 4.2: caudal width of pronotal disk, ♂, 2.7 to 2.8; ♀, 2.8: length of tegmen, ♂, 23.1 to 23.3; ♀, 25.1: width of tegmen, ♂, 3.9 to 4; ♀, 3.9: length of caudal femur, ♂, 19.7 to 22.1; ♀, 22.3: length of ovipositor, 7.8 mm.

The species is yet known only from the originally described material and the series here recorded.

*Specimens Examined*: 13; 7 males, 1 female and 5 immature individuals.

MISSISSIPPI: Greenville, September 14, 1915, (M. Hebard), 5 ♂, 1 ♀, 2 juv. ♂, 3 large juv. ♀.

This series was taken in a cypress slough, where the ground was heavily covered with *Polygonum punctatum* Ell. Individuals flew rapidly and were active in their movements. When at rest and motionless on the delicate *Polygonum*, they were virtually invisible.<sup>7</sup>

**Inscudderia strigata** (Scudder) (Plate X, figure 2; plate XI, figure 10.)

1898. *Scudderia laticauda* form *strigata* Scudder, Proc. Amer. Acad. Arts and Sci., xxxiii, p. 280, fig. 4. [Jacksonville, Florida.]

1914. *Scudderia strigata* Rehn and Hebard, Trans. Amer. Ent. Soc., xl, p. 289, pl. ix, figs. 6 and 13, pl. x, fig. 18.

In this species the ulnar vein of the tegmina is frequently offset at the juncture with the first branch of the median vein.

<sup>6</sup> Again more as in *P. septentrionalis* Serville than in the other species of *Phaneroptera*, though that insect shows the opposite extreme in width of tegmina and shortness of limbs.

<sup>7</sup> The foliage of the cypress was not at that time examined, as the insects appeared to inhabit the ground cover only.



The material now at hand shows this insect to be one of the most brilliantly colored and beautifully marked species of the Phaneropterinae. The caudal femora (missing in the originally described pair) are light green, often whitish ventrad, flecked with bone brown and suffused with that color distad, this often extensive and in intensively colored specimens continued to the base as a suffused medio-longitudinal external band.

*Measurements (in millimeters)*

♂	Length of body	Length of pronotum	Caudal width of pronotal disk	Length of tegmen	Width of tegmen	Length of caudal femur
DeFuniak Springs, Florida, . . . . .	20	4.9	3	28.6	4.7	24.7
Grand Ridge, Florida, . . . . .	18.5	4.7	2.8	27	4.4	24.5
Grand Ridge, Florida, . . . . .	21	5.2	3.2	32.2	4.9	27.8
♀						
DeFuniak Springs, Florida, . . . . .	19	5.2	3.2	31	5.1	26.5
Grand Ridge, Florida, . . . . .	18.2	4.7	2.9	28.2	4.4	25.1
Grand Ridge, Florida, . . . . .	22.8	5.4	3.3	34.1	5.2	30.3
Kissimmee, Florida, . . . . .	21.2	5.6	3.6	34.2	5.4	29.3

The DeFuniak Springs series averages smallest, those from Kissimmee are largest, but considerable individual size variation occurs.

Rarely have we been more surprised and delighted in our field work than in the re-discovery of this splendid insect. It was first taken by Mr. Rehn and the author near water in the open, in a conspicuous fringe of the fine-leaved brushy plant, *Hypericum fasciculatum* Lam. Such environment is often to be seen, but search in the plant is frequently fruitless. The insect is so remarkably concealed in *Hypericum* during the day, that vigorous beating is the surest means of securing those present.

*Specimens Examined*, in addition to the originally described pair in the author's collection: 62; 14 males, 35 females and 13 immature individuals.

FLORIDA: Grand Ridge, Jackson County, September 1, 1915, (Rehn and Hebard; perched in tops of low feathery-foliaged plants (*Hypericum fasciculatum* Lam.) margining wet depressions in the open, often many plants examined with no results), 8 ♂, 24 ♀, 7 large juv. ♀. DeFuniak Springs, Walton County, August 30, 1915, (Rehn and Hebard; occasional, beaten from *Hypericum fasciculatum* Lam., along streams), 6 ♂, 2 ♀, 6 large juv. ♀. Kissimmee, Osceola County, September 10, 1917, (Rehn and Hebard; beaten from cypress shoots in and on edge of cypress "bays", with *I. walkeri* here described but much more widely distributed, and also in *Hypericum fasciculatum* Lam.), 9 ♀.

Hubbell has kindly furnished the additional data, given below, on 170 specimens, including 107 males, 53 females and 10 immature individuals.

GEORGIA: Leslie, Sumter County, September 1, 1924, (H. L. Speer), 6 ♂, 5 ♀, 1 juv. ♀.

FLORIDA: Cottondale, Jackson County, August 2, 1925, (T. H. Hubbell; on "Guinea Cypress" *Hypericum fasciculatum* Lam.), 2 ♂, 2 ♀. Waldo, Alachua County, July 13 to September 27, 1924, (Walker and Hubbell; cypress swamp margins, on *Hypericum fasciculatum* Lam.), 69 ♂, 27 ♀. Fairbanks, Alachua County, September 13, 1924, (T. H. Hubbell; on *Hypericum fasciculatum* Lam.), 3 ♂, 5 ♀. Gainesville, Alachua County, July 18 to October 5, 1924, (T. H. Hubbell; on *Hypericum fasciculatum* bushes, one male taken from young pine in middle of clump of these bushes, stridulating in the top bunch of needles, all but one of the immatures taken on first date), 19 ♂, 3 ♀, 3 juv. ♂, 6 juv. ♀. Orlando, Orange County, August 28 and September 7, 1924, (F. W. Walker; from *Hypericum fasciculatum* Lam., on edge of a cypress pond and from "Rosemary," *Ceratiola ericoides* Michx., growing around a small lake in the sand scrub), 6 ♂, 5 ♀. Taft, Orange County, September 4, 1924, (F. W. Walker; from *Hypericum fasciculatum* Lam., and sedges in cypress pond), 2 ♂, 6 ♀.

The following data on this species has also been furnished, through the kindness of F. W. Walker. "It is found in similar environment to the other insect (*I. walkeri*), but around the edges of the ponds on *Hypericum*. It also is strictly nocturnal, but individuals are far more active. The stridulation is much louder and heard more often at night."

## EXPLANATION OF FIGURES

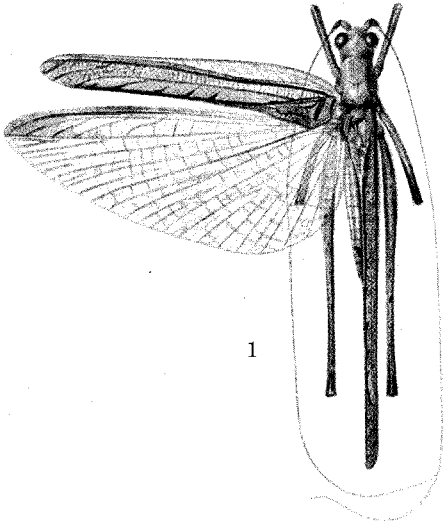
## Plate X

- Fig. 1.—*Inscudderia taxodii* Caudell. Male. Greenville, Mississippi.  
( $\times 1\frac{3}{4}$ )
- Fig. 2.—*Inscudderia strigata* Scudder. Male. DeFuniak Springs, Florida.  
( $\times 1\frac{3}{4}$ )

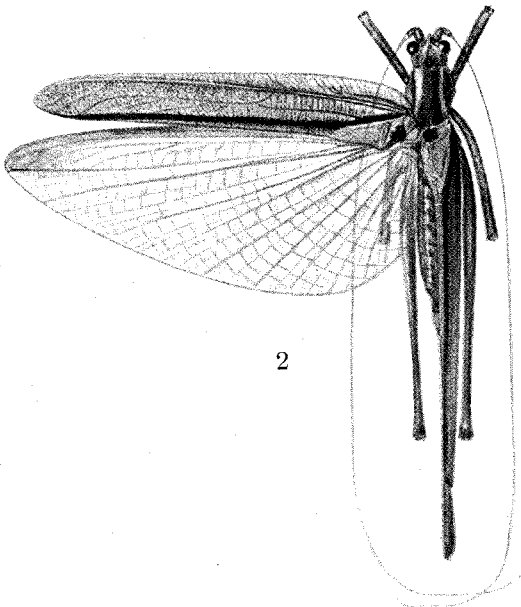
## Plate XI

- Fig. 1.—*Inscudderia walkeri* new species. Male. *Type*. Waldo, Florida.  
Lateral view. ( $\times 1\frac{1}{2}$ )
- Fig. 2.—*Inscudderia walkeri* new species. Male. *Type*. Waldo, Florida.  
Dorsal view of ultimate abdominal tergite. (Much enlarged.)
- Fig. 3.—*Inscudderia walkeri* new species. Male. *Type*. Waldo, Florida.  
Dorsal view of cercus. (Much enlarged.)
- Fig. 4.—*Inscudderia walkeri* new species. Male. *Type*. Waldo, Florida.  
Ventral view of apex of subgenital plate. (Much enlarged.)
- Fig. 5.—*Inscudderia walkeri* new species. Female. *Allotype*. Waldo, Florida.  
Lateral outline of ovipositor. ( $\times 4$ )
- Fig. 6.—*Inscudderia taxodii* Caudell. Male. Greenville, Mississippi.  
Dorsal view of ultimate abdominal tergite. (Much enlarged.)
- Fig. 7.—*Inscudderia taxodii* Caudell. Male. Greenville, Mississippi.  
Dorsal view of cercus. (Much enlarged.)
- Fig. 8.—*Inscudderia taxodii* Caudell. Male. Greenville, Mississippi.  
Ventral view of apex of subgenital plate. (Much enlarged.)
- Fig. 9.—*Inscudderia taxodii* Caudell. Male. Greenville, Mississippi.  
Ventral view of apex of subgenital plate.<sup>8</sup> (Much enlarged.)
- Fig. 10.—*Inscudderia strigata* (Scudder). Male. *Type*. Jacksonville, Florida. Dorsal view of ultimate abdominal tergite. ( $\times 6$ )

<sup>8</sup> This specimen gives the usual appearance of the apex of this plate, as seen from below, for *taxodii*. Occasionally the lateral portions are more reflexed and sometimes are nearly vertical, as shown in figure 8.

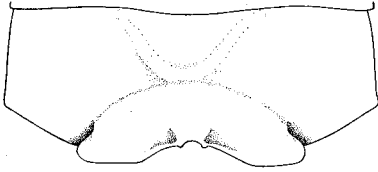


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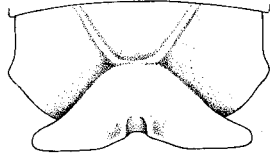


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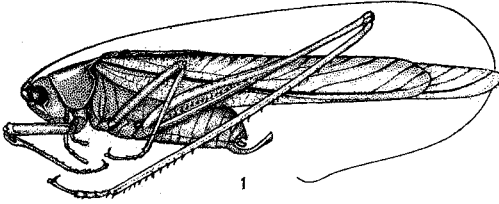
HEBARD—GENUS INSCUDDERIA (ORTHOPTERA)



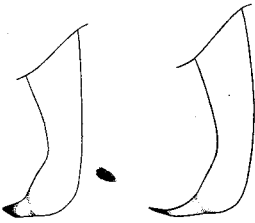
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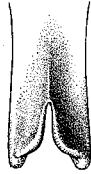


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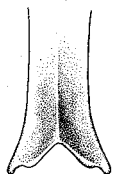


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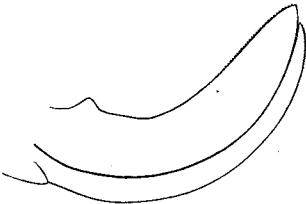
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8



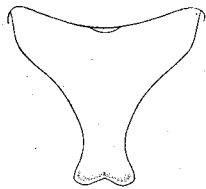
9



5



4



10