

Article XXIV.—STUDIES IN WEST INDIAN EARWIGS (DERMAPTERA).

BY JAMES A. G. REHN AND MORGAN HEBARD.

PLATES LXII AND LXIII.

In recent years, extensive field work has been undertaken in the West Indies by the American Museum of Natural History. The present paper deals with the Dermaptera taken on these expeditions, excepting the material from Porto Rico, which will be separately treated. In addition, the West Indian material of the order collected by the junior author is included and also some few noteworthy other specimens in the Philadelphia collections, the United States National Museum, the Museum of Comparative Zoölogy and the Brooklyn Institute of Arts and Sciences. Our thanks are due to the curators of these institutions for the loan of this material.

The number of specimens treated is two hundred and forty-five, representing nine genera and fifteen¹ species, of which one genus and three species are here described as new. The West Indies are by no means rich in forms of Dermaptera, though individual species are sometimes found in great abundance. A number of the forms there found are, however, intensely interesting, owing to the fact that they are endemic. Eight species, nearly half of the total there found, are peculiar to the West Indies. Furthermore, the structure of some of the forms is very exceptional; this is true of *Formicilabia caribea*, *Cipex schwarzi*² and *Doru albipes*.

The distributional data in full for the species may be graphically indicated as follows:

Species	Greater Antilles	Lesser Antilles	Exotic
<i>Pyragropsis buscki</i> ³	× Cuba	0	0
<i>Psalis americana</i>	×	0	Central and tropical South America
<i>Anisolabis maritima</i>	×	×	Cosmopolitan, temperate and tropical
<i>Euborellia ambigua</i>	×	×	Central America
<i>Euborellia minuta</i>	×	×	0
<i>Euborellia annulipes</i>	×	0	Cosmopolitan, temperate and tropical

¹ Seventeen species of Dermaptera are known from the regions under consideration.

² We have examined the material of this species previously recorded; no additional comment is at this time necessary.

³ This species belongs to a genus also found in Central and tropical South America.

Species	Greater Antilles		Lesser Antilles	Exotic
<i>Labidura bidens</i> ¹	×		0	Temperate and tropical America
<i>Labia curvicauda</i>	×		0	Cosmopolitan, tropical
<i>Labia dorsalis</i>	0	Dominica	×	Central and tropical South America
<i>Formicilabia caribea</i>	×	Hispaniola	0	0
<i>Prolabia dominicae</i> ²	0	Dominica	×	0
<i>Prolabia jamaicana</i> ³	×	Jamaica	0	0
<i>Prolabia unidentata</i>	×		0	0
<i>Prolabia arachidis</i> ⁴	×		0	Cosmopolitan, tropical
<i>Cipex schwarzi</i> ⁵	×	Cuba	0	0
<i>Doru lineare</i>	×	Cuba	0	Southwestern United States to Central and tropical South America.
<i>Doru albipes</i> ⁶	×		×	0

We would note that the length of body is given exclusive of the forceps. This method is uniformly followed in our studies in the Dermaptera.

PYGIDICRANIDÆ.

PYGIDICRANINÆ.

Pyragropsis buscki (Caudell).

1907. *Pyragra buscki* CAUDELL, Jour. N. Y. Ent. Soc., XV, p. 166. [Baracoa, Cuba.]

CUBA.—Santiago de Cuba, 1♂, [A. M. N. H.].

This is the third specimen recorded of this interesting species; it agrees fully with the type, except in having the pronotum buffy meso-laterad in a brief and narrow area, the tegmina proximad, and proximal half of the exposed portions of the wings, of the same color.

¹ A very closely related type is found throughout the temperate and tropical regions of the Old World.

² A closely related species is found in Trinidad.

³ The species nearest allied to *jamaicana* and *unidentata* is found in the southeastern United States. No members of this group are known from the mainland of tropical America.

⁴ We have this species, previously correctly recorded, in the West Indian material before us.

⁵ We have examined the material previously recorded. No unrecorded material has been found.

⁶ This is a type rather distinct from the other species of the genus found over North Central and South America.

LABIDURIDÆ.

PSALINÆ.

Psalis americana (*Beauvois*).

1817. *Forficula americana* BEAUVOIS, Ins. Recueil. Afr. Amér., p. 165, Orth. pl. 14, fig. 1. [San Domingo.]

CUBA.—Havana, 1 ♀, [A. N. S. P.]. (Large, antennæ yellowish without annuli, tegmina with large and decided orange suffusion, limbs yellowish.)

JAMAICA.—No exact locality, 3 ♀, 1 juv., [A. M. N. H.]. (Large, antennæ yellowish without annuli, tegmina with weak orange suffusion, limbs yellowish suffused with brown to varying degrees.)

HISPANIOLA.—Puerto Plata, San Domingo, III to IV, 1916, (N. L. Orme, Jr.), 1 ♂, 1 ♀, [A. M. N. H.]. La Vega, San Domingo, I, 1916 (C. Sebastian), 1 ♂, [Hebard Cln.]. (All large, antennæ yellowish without annuli, tegmina with weak orange suffusion, limbs yellowish.)

Five Porto Rican adults before us are entirely shining black, the antennæ with a white distal annulus, the wings projecting beyond the tegmina very briefly or entirely concealed. A sixth specimen at hand from that island is similar, but has the tegmina very weakly tinged mesad with orange.

Color variation and differences in the development in the organs of flight has led to the considerable synonymy of this plastic species. The names were based on the following conditions.

A. Tegmina unicolorous, dark.

B. Wings visible.

C. Wings strongly projecting. Limbs and antennæ rather dark.

(Hayti) *americana*

CC. Wings very slightly projecting. Limbs and antennæ very dark.

(Porto Rico) *gagathina*

(Porto Rico) *buscki*

BB. Wings entirely concealed. (Limbs and antennæ pale.)

(Ecuador) *robusta*

(Colombia) *colombiana*

AA. Tegmina with transverse yellowish-orange band. (Wings fully developed.

Limbs and antennæ rather dark).

(West Indies) *procera*

(Cuba) *distincta*

Burr's *P. festiva*, described from Brazil, has the wings entirely concealed, the tegmina reduced, with a transverse yellowish-orange band. That

insect, at present, is best considered distinct. The present species is widely distributed over northern South America, Central America and the West Indies.

Anisolabis maritima (*Géné*).

1832. *Forficula maritima* GÉNÉ, Sagg. Monogr. Forfic. Indig., p. 9. [Genoa, and Tuscany, Italy: Nice, France.]

CUBA.— 24 kilometers north of Vinales, Pinar del Rio, IX, 16 to 22, 1913, (C. W. Leng; under boards in mangrove swamp). 1 juv. ♂, [A. M. N. H.]. San Antonio de los Baños, Habana, IV, 9, 1905 (G. Dimmock), 1 juv., [U. S. N. M.].

DOMINICA.— No exact locality, IV, 26, 1910, 1 juv., [A. M. N. H.].

BARBADOS.— No exact locality, III, 27, 1910, 1♂, 2♀, 1 juv., [A. M. N. H.].

This cosmopolitan species does not appear to be abundant in the West Indies. It has been previously reported from the Bahamas, Porto Rico and Barbados.

Euborellia ambigua (*Borelli*).

1906. *Anisolabis ambigua* BORELLI, Boll. Mus. Zool. Anat. comp. Torino, XXI, No. 531, p. 3. [Jesús Maria River, Costa Rica.]

BAHAMAS.— Nassau, New Providence Island, II, 3, 1904, (M. Hebard; in limestone wall and under limestone boulders near Fort Charlotte), 2♂, 2♀, 1 juv. ♀,¹ [Hebard Cln. and A. N. S. P.]; V and VI, 1904, (W. M. Wheeler), 4♀, [A. M. N. H.]. Sisal Plantation, New Providence Island, VI, 26, 1904, 1♀, [A. M. N. H.].

CUBA.— Jesús Del Monte, Havana, I, 23, 1904, (M. Hebard; from pile of rubbish), 1♀,² [Hebard Cln.].

JAMAICA.— Stony Hill, St. Andrew Parish, X, 25, 1913, (M. Hebard; in leaves under jungle brush), 1♀, [Hebard Cln.]. Montego Bay, III, 6 and 15, 1911, (J. A. Grossbeck; under fermenting chowchow fruit and under dung), 1♂, 3♀, 2 large juv., [A. M. N. H.]; XI, 1 and 2, 1913, (M. Hebard; under bark on logwood docks), 1♂, [Hebard Cln.].

DOMINICA.— No exact locality, IV, 5, 1912, (in rotten wood), 1♂,³ [A. N. S. P.]. Roseau, VI, 8 to 16, 1911, (Crampton and Lutz; under stone, on ground, at foot of palm), 1♂, 2♀, 1 large juv., [A. M. N. H.].

The species is also known from Porto Rico.⁴ This series averages

¹ Recorded by Rehn as *Anisolabis annulipes*, in 1906.

² Recorded by Rehn as *Anisolabis annulipes* in 1909.

³ Recorded by Rehn as *Anisolabis janeirensis* in 1905.

⁴ The insect recorded as common on St. Vincent by Brunner, as *janeirensis*, is probably this species.

smaller than the types, which possibly is due to insular conditions, but not sufficient in degree to warrant racial distinction.

We agree with Burr that antennal annulation is often a dangerous character, but in the present case find it to be constant, and, in consequence, we do not consider *ambigua* (without annuli) a synonym of *janeirensis* (with annuli). Of the smaller species of the *Psalinæ* represented by large series before us, we find antennal annuli invariably absent in *Anisolabis maritima* and *Euborellia ambigua*, invariably present in *Euborellia minuta* and *Euborellia annulipes*. The extremes in the series before us are: ♂, length of body, 8.2 to 12., length of forceps, 1.8 to 2.3; ♀, length of body 8.4 to 11., (in Porto Rican material the maximum is 13.5; in the Costa Rican types 16.), length of forceps, 2.2 to 2.7 mm.

***Euborellia minuta* (Caudell).**

1907. *Anisolabis minuta* CAUDELL, Jour. N. Y. Ent. Soc., XV, p. 168. [Arroyo, and Mayaguez, Porto Rico.]

BAHAMAS.—Nassau, New Providence Island, 1♂, [Bklyn. Inst.]; II, 3, 1904, (M. Hebard; in limestone wall and under limestone boulders near Fort Charlotte), 3♂, 5♀,¹ [Hebard Cln. and A. N. S. P.]; V and VI, 1904, (W. M. Wheeler), 1♂ 1♀, [A. M. N. H.].

CUBA.—Marianao, Havana, I, 23, 1904, (M. Hebard; under stone in tangle of vines and shrubs), 1♂,² [Hebard Cln.]. Havana, XI, 5 and 6, 1915, (in University hall), 1♀, [A. M. N. H.]. San Antonio de los Baños, Habana, IV, 9, 1905, (G. Dimmock), 1♂, 1♀, [U. S. N. M.].

JAMAICA.—Montego Bay, III, 6 and 13, 1911, (J. A. Grossbeck), 2♂, 4♀, [A. M. N. H.]; XI, 1 and 2, 1913, (M. Hebard; under wood on logwood docks), 3♂, [Hebard Cln.]. Palm Beach, Montego Bay, III, 3, 1911, J. A. Grossbeck), 1♂, [A. M. N. H.].

BARBADOS.—No exact locality, XI, 10, 1903, (H. A. Ballou), 1♀,³ [A. N. S. P.].

This insect is also common in Porto Rico. It is apparently the most numerous and generally distributed of the West Indian *Psalinæ*, which rather contradicts Burr's supposition that the typical material probably represented an accidental introduction of the East Indian *stali*. The description of *stali* shows that species to be larger (length of body 10 mm.), with forceps more elongate (length 2.5 mm.), than the largest of the con-

¹ Recorded by Rehn as *Anisolabis annulipes*, in 1906.

² Recorded by Rehn as *Anisolabis annulipes*, in 1909.

³ Recorded by Rehn as *Anisolabis janeirensis*, in 1905.

siderable series of *minuta* now before us. The size difference is unimportant and that of the forceps would be a weak character for specific separation, but better knowledge of the Oriental *stâli*, we believe, will show these species to be distinct. The extremes of the present series are: ♂, length of body, 6.5 to 9., length of forceps, 1.4 to 1.7; ♀, length of body, 6.5 to 9.5, length of forceps, 1.4 to 2 mm.

Euborellia annulipes (*H. Lucas*).

1847. *Forficelisa annulipes* LUCAS, Bull. Soc. Ent. France, (2), V, p. XXXIV. [Jardin des Plantes, Paris, (probably introduced).]

BAHAMAS.—Little Golding Key, Andros Island, VI, 1904, (W. M. Wheeler), 1 large juv., [A. M. N. H.].

JAMAICA.—Cinchona, II, 26, 1911, (J. A. Grossbeck), 1 ♀, [A. M. N. H.].

This cosmopolitan species, common in the southeastern United States, does not appear to be abundant in the West Indies, the majority of the records of this species from these islands being referable to *E. ambigua* and *E. minuta*.

LABIDURINÆ.

Labidura bidens (*Olivier*).

1791. *Forficula bidens* OLIVIER, Encycl. Méthod., Ins., VI, p. 466. [Jamaica.]

BAHAMAS.—Nassau, New Providence Island, 1♂, [Bklyn. Inst.].

CUBA.—24 kilometers north of Vinales, Pinar del Rio, IX, 16 to 22, 1913, (under boards etc.), 1 ♀, [A. M. N. H.]. Guane, Pinar del Rio, IX, 24 to 26, 1913, 1 ♀, [A. M. N. H.].

The species is found on the American continent as far north as the southeastern United States. It is known in the West Indies also from Porto Rico.

The male from Nassau has the projections of the ultimate dorsal abdominal segment and disto-median tooth of the forceps weakly developed.

LABIIDÆ.

LABIINÆ.

Labia curvicauda (*Motschulsky*).

1863. *Forficelisa curvicauda* MOTSCHULSKY, Bull. Soc. Nat. Moscou, XXXVI, pt. II, p. 2, pl. II, fig. 1. [Nura-Ellia Mountains, Ceylon.]

CUBA.—Cayamas, Oriente, VI, 11 to XII, (E. A. Schwarz), 1♂¹, 2♀², [U. S. N. M.]. Baracoa, VIII and IX, 15, 1901, (A. Busck), 3♀,³ [U. S. N. M.].

HISPANIOLA.—Grande Anse, Hayti, (P. R. Uhler), 1♂, 1♀, [M. C. Z.].

JAMAICA.—Grange Lane, St. Catherine Parish, X, 25, 1913, (M. Hebard; under bark of dead limb of jungle tree, with *Prolabia unidentata*), 1♂, [Hebard Cln.].

There is little doubt but that the Cuban records of Gundlach and Bolivar, of *Labia arcuata* Scudder, apply to the present species.

This insect is widely distributed in the New World, though probably adventive in this hemisphere. A large series is before us from Long Key, Florida, and also examples from Utuado, Porto Rico; Corozal, Panama; Trinidad, and Pará, Brazil. In the latter country the species has been also reported from Santarem and São Paulo.

***Labia dorsalis* (Burmeister).**

1838. *F[orficula] dorsalis* BURMEISTER, Handb. Ent., II, Abth. II, pt. I, p. 754. [Colombia.]

MONTSERRAT.—No exact locality, IV, 8 (H. G. Hubbard; under bark), 1♂, [U. S. N. M.].

***Formicilabia*,⁴ new genus.**

The present genus is readily separated from the species assigned to the genus *Labia* by the more slender form, more bulbous head, remarkably elongate and distinctively shaped pronotum, convexity of the dorsal surface of the tegmina and distinctive type of female forceps. The male will probably show other features of generic value.

The genus is monotypic. Genotype.—*Formicilabia caribea*, new species.

Form very slender. Head evenly convex, without trace of sutures. Eyes large, longer than cheeks. All but proximal antennal joints ovate. Pronotum very elongate and slender, broadening suddenly near the caudal margin, with this margin obtuse-angulate produced. Tegmina with dorsal surfaces convex. Female forceps strikingly triquetrous. Caudal metatarsus longer than combined length of second and third joints.

¹ Recorded by Burr in 1910 as *Labia trinitatis*.

² Recorded by Burr in 1910 as *Labia unidentata*.

³ Recorded by Caudell in 1907 as *Labia* sp. The material recorded at that time as *Labia trinitatis* is before us. The female from Dominica represents an apparently undescribed species, nearest *Labia dorsalis*, the male from Trinidad, is the specimen which Burr in 1910 similarly misidentified.

⁴ A member of the Labiinae, but very ant-like in appearance.

Formicilabia caribea, new species.

Plate LXIII, Fig. 6.

1910. [*Labia*] *maeklini* BURR ("apparently new"), (not of Dohrn, 1864), Proc. U. S. Nat. Mus., XXXVIII, p. 455. (Specimen here considered.)

Of the described species which have been referred to *Labia*, *maeklini* is the only one showing any resemblance to the present insect. Dohrn's description is very inadequate, but the coloration is given as very different from that of the present insect. Burr's assignment carries little weight, as his treatment of the smaller American species referred to *Labia* in that paper is in large part incorrect, clearly due to hasty comparisons and deductions. The pronotal shape suggests that of *Solenosoma birmanum* (Bormans) as figured by Burr.¹

Type: ♀; San Francisco Mountains, San Domingo. September, 1905. (A. Busck.) [U. S. National Museum.]

Size minute, form extremely slender. Head bulbous, much wider than greatest width of pronotum, nearly equalling width of tegmina across shoulders. Eyes very broad oval, distinctly longer than cheeks. Antennæ with first joint rather short and stout, hardly more than twice as long as broad, slightly less than combined length of second and third joints; second joint small, subquadrate; third pyriform; fourth ovate, three quarters as long as third; succeeding joints increasing in length distad, the longest about twice as long as broad. Pronotum very elongate and slender; surface feebly convex, but narrowly deplanate laterad and more broadly so caudad; lateral margins cingulate, parallel in proximal two-thirds, then slightly diverging, forming the broadly rounded latero-caudal angles, which project distinctly laterad; caudal margin obtuse-angulate produced. Tegmina with dorsal surface convex, caudal margins rather strongly oblique produced to sutural margins. Exposed portions of wings rather elongate. Ultimate dorsal abdominal segment large, slightly broader than long, with numerous minute rugæ on distal half of surface, which is weakly convex above bases of forceps and weakly concave meso-distad. Pygidium minute, declivent, triangular, with apex broadly truncate. Forceps strongly triquetrous; with dorsal, internal and ventral faces deplanate; dorso-internal margin cingulate, with numerous irregular rugæ proximad; ventro-internal margin more strongly cingulate throughout, but particularly proximad, with numerous, irregular, rounded teeth. Penultimate ventral abdominal segment strongly transverse, nearly rectangulate, with lateral margins broadly rounding into the broad, transverse, weakly concave distal margin, which is supplied with a thick fringe of short hairs.

Length of body, 3.26; of pronotum, .62; of tegmen, 1.16; of exposed portion of wing, along costal margin .68; of exposed portion of wing, along sutural margin, .5;

¹ Gen. Ins., Dermaptera, Fasc. 122, pl. v. fig. 20a.

of forceps, 1.09: width of abdomen, greatest, .8; of pronotum, cephalic, .41; of pronotum, caudal .54 mm.

Head shining blackish chestnut brown. Antennæ buffy, suffused with prout's brown. Pronotum and limbs light buff. Tegmina prout's brown, paler at angle formed by distal and sutural margins. Wings in exposed portions prout's brown, except large, irregularly subquadrate proximo-external areas, which are light buff. Abdomen buffy, suffused with prout's brown laterad, and with ultimate dorsal abdominal segment prout's brown. Forceps buffy suffused with brown, with internal margins and distal portion prout's brown.

The type of this remarkable species is unique.

Prolabia Burr.

This genus, like the genus *Labia*, includes a number of groups, some at least of which will certainly require generic separation. In the West Indies, the Dominicæ and Unidentata Groups are represented by several distinct species, that of the former showing some convergence toward the general type found in the Championi Group of the genus *Labia*. In addition to these forms, a single cosmopolitan species, *arachidis*, belonging to the Arachidis Group, is found in the West Indies.

Prolabia dominicæ, new species.

Plate LXII, Figs. 1 and 2; Plate LXIII, Fig. 2.

This species and *P. modesta* (Bruner) are the sole members of the Dominicæ Group, showing some convergence toward the Championi Group of the genus *Labia*, in the almost unarmed male forceps and type of male pygidium. The insect is quite as smooth, however, without any hairs on the forceps, as *P. unidentata*, and could easily, at first glance, be mistaken for a diminutive condition of that species. The distinctive form of the male pygidium shows nearest similarity to that of *Labia micans*. The male forceps are clearly a simplified condition of the *unidentata* type, evenly and very weakly curved, with only minute denticulations proximad on the ventro-internal margin. In the female sex of both *dominicæ* and *modesta* (Plate LXIII, Fig. 1) the forceps lack the large, blunt projection found in females of the species of the Unidentata Group.

The ultimate dorsal abdominal segment is distinctive in both sexes of the species.

Type: ♂; Long Ditton, Dominica. June 20, 1911. (F. E. Lutz.)
[American Museum of Natural History.]

Size smaller than in *unidentata*, form similar. Head similar, with occiput smoothly rounded and faintly sub-bilobate. Antennæ with first joint not very elongate, but equal to combined length of second and third joints; fourth joint but very slightly longer than broad; succeeding joints weakly pyriform, longest about two and one half times as long as broad. Pronotum subquadrate; lateral margins subparallel, weakly cingulate; caudal margin feebly convex; prozona weakly convex, this continued weakly mesad on metazona to caudal margin, other portions of metazona deplanate. Tegmina about twice as long as pronotum¹; wings fully developed, exposed portion about equal to length of pronotum. Abdomen smooth and shining; dorsal surface with distal segments, excepting ultimate segment, microscopically pitted, stink glands of third and fourth segments very weak; ultimate segment over twice as broad as long, caudal margin broadly and weakly convex at internal margin of forceps, between feebly concave, with margin thickened and supplied with a row of minute, bead-like projections (six in type), surface of segment, before this portion, feebly concave. Pygidium perpendicular as far as ventral surface of forceps, there suddenly horizontally produced, with lateral margins parallel and feebly thickened and distal margin evenly and strongly arcuate-emarginate, leaving the disto-lateral angles as acute points directed caudad.² Forceps moderately slender; shaft evenly and very weakly curved, internal face deplanate in proximal half, with dorsal margin very feebly thickened briefly proximad and ventral margin weakly thickened for slightly over half the distance to apex, this margin showing a few feeble denticulations in proximal portion, terminating in a minute, subobsolete tooth, a distance beyond the pygidium equal to the pygidial production. Penultimate ventral abdominal segment with distal margin convex, except beneath the pygidium, where it is moderately concave, thus appearing weakly bilobate. Limbs short; femora stout; caudal metatarsus about equal to combined length of second and third joints, ventral surface supplied with an internal row of minute spinulæ, with a few similar spinulæ adjacent proximo-mesad and an external thick fringe of minute hairs.

Allotype: ♀; same data as type. [American Museum of Natural History.]

Agrees with type except in the following features. Ultimate dorsal abdominal segment narrowing caudad, with meso-caudal depression more decided and concavity of distal margin between forceps more pronounced, but showing an exactly similar row of bead-like projections. Pygidium very small, strongly declivent, then vertical, with two microscopic lateral points at the angle thus formed; minute disto-ventral portion subquadrate, with disto-lateral angles produced in microscopic points. Forceps stout, triquetrous, subcontiguous; shaft straight to weakly incurved apex, dorso-internal margin broadly rounded in proximal third, with two rows, each of a few microscopic rounded projections, thence obsolete, internal face concave in proximal third and supplied with microscopic pubescence, ventral margin lamellate, bluntly denticulate, nearly straight to near apex, with a single, minute, subobsolete tooth toward end of proximal third.³ Penultimate ventral abdominal segment with distal margin convex, showing a feeble angulate tendency.

¹ In condition with wings not showing, about one and one-half times as long as pronotum.

² In some specimens the produced portion is slightly longer than wide, with lateral margins feebly convergent.

³ In the species of the Dominicæ Group, the females have no large, blunt projection on the internal face of the forceps, just beyond the pygidium; this condition is strongly developed in the species of the Unidentata Group — *unidentata*, *pulchella* and *jamaicana*.

Measurements (in millimeters).

	Length of body	Length of pronotum	Length of tegmen (wings showing)	Length of tegmina (wings concealed)	Length of forceps
♂					
Type	.5.	.9	1.8	—	2.3
Paratypes (7)	4.7-5.2	.8-1.	1.6-1.7	1.2-1.6	1.8-2.4
♀					
Allotype	5.8	1.1	2.	—	1.9
Paratypes (10)	5.2-6.	1.-1.2	1.7-1.9	1.4-1.7	1.7-2.

General coloration shining auburn, tinged with chestnut on abdomen. Head and lateral portions of abdomen shining blackish brown. Proximal antennal joints ochraceous-buff, other joints dark. Pronotum auburn, buffy narrowly laterad. Limbs ochraceous-buff, the femora suffused dorsad with auburn. Though normally the tegmina and exposed portions of the wings are solid auburn, the latter show, in occasional specimens, a buffy line at the tegminal extremities.

The immature examples before us have the pronotum pale, except narrowly caudad, where it is dark. This is a condition found in adults of certain species of *Labia* and, from the present material, would indicate possibly the survival of a primitive type in adults of those species.

Specimens examined: 33; 8 males, 11 females and 14 immature examples.

DOMINICA.— Long Ditton, VI, 17 to 20, 1911, (Lutz and Miner; under bark of decaying logs and in black forest soil), 8♂, 9♀, *type, allotype, paratypes*, 12 juv., [A. M. N. H.]. Laudet, VI, 10 and 13, 1911, 2650 feet, (F. E. Lutz; in friable rock of crater of boiling lake), 2♀, *paratypes*, 2 juv., [A. M. N. H.].

***Prolabia jamaicana*, new species.**

Plate LXII, Figs. 3 and 4; Plate LXIII, Fig. 3.

The present species is the largest known of the Unidentata Group. It shows nearest relationship to *P. unidentata*, differing in the decidedly larger size, beautifully and distinctively pitted ultimate dorsal abdominal segment, distinctive male pygidium and forceps of both sexes, which, though of generally similar character, show differences of diagnostic value.

Type: ♂; Mandeville, Manchester Parish, Jamaica. November 6, 1913. (M. Hebard.) [Hebard Collection Type No. 438.]

Size large for the group, form much as in *unidentata*. Head similar, but with occiput showing hardly a trace of bilobation, its caudal margin transverse. Antennæ with joints more elongate; first joint equalling combined length of second and third; fourth about half again as long as broad; succeeding joints elongate pyriform, longest about three times as long as broad. Pronotum similar to that of *unidentata*, slightly longer than broad, but otherwise as described for *P. dominice*. Tegmina about one and one-half times as long as pronotum, caudal margin transverse with angles sharply rounded.¹ Abdomen smooth and shining proximad; fifth to ninth dorsal segments

¹ In none of the adults before us are wings apparent.

becoming increasingly heavily but finely pitted caudad, these pits fusing toward the caudal margins of the distal segments, forming irregular, impressed, longitudinal lines; stink glands of third and fourth segments very weak; ultimate segment over twice as broad as long, surface finely pitted, except for a narrow, elongate, proximo-longitudinal area latero-dorsad and a broader area mesad, which areas are smooth, a very brief medio-longitudinal sulcus is sharply defined meso-distad and in the distal area minute, bead-like projections are scattered through the numerous microscopic pits and rugæ, the caudal margin is very briefly and weakly convex at the internal margins of the forceps, between very feebly convex. Pygidium large, strongly declivent in brief proximal portion; remaining portion subquadrate, weakly declivent, with surface convex, latero-ventral margins feebly convex to a minute, bead-like, mesal projection, thence feebly convex and convergent to the acute-angulate disto-lateral angles, between which the caudal margin is moderately angulato-concave.¹ Forceps much as in *unidentata*, but somewhat simplified, with the moderately conspicuous tooth less distal in position; shaft with inner surface deplanate to this tooth,² dorso-internal margin rounded and unarmed, ventral margin lamellate and serrulate in proximal half, terminating in a subobsolete tooth,³ just before the distal tooth the shaft suddenly broadens and thence is weakly flattened and narrows very gradually to the slightly incurved, blunt apex. Penultimate ventral abdominal segment with lateral margins feebly convex and convergent, rounding into a broad but weak concavity below the pygidium, thus bilobation is even more faintly suggested than in *dominicæ*. Limbs short; femora stout; metatarsus as in *dominicæ*.

Allotype: ♀; same data as type. [Hebard Collection.]

Agrees with type except in the following features. Ultimate dorsal abdominal segment narrowing caudad, but with pitted and smooth areas and distal specialization similar. Pygidium very small, vertical; minute disto-ventral portion with disto-lateral angles acutely and minutely produced laterad and distal margin feebly convex. Forceps stout, triquetrous, subcontiguous; shaft straight to weakly incurved apex, dorso-internal margin in proximal two-thirds broadly rounded, with a proximal, heavy, bluntly bidentate projection, succeeded by a row of a few, microscopic, blunt projections toward the internal face, internal face concave in proximal two-thirds and supplied with short, straight, microscopic hairs, ventro-internal margin lamellate, bluntly denticulate, nearly straight to apex, with a slightly heavier tooth proximad and another similar tooth at end of proximal third. Penultimate ventral abdominal segment with distal margin angulato-convex.

Measurements (in millimeters).

	Length of body	Length of pronotum	Width of pronotum	Length of tegmen	Length of forceps
♂					
Mandeville. <i>Type</i>	8.8	1.3	1.2	1.8	3.1
Cinchona. <i>Paratypes</i> (6)	8.8-10.8	1.4-1.7	1.2-1.6	1.8-2.1	3.6-4.1
♀					
Mandeville. <i>Allotype</i>	9.8	1.8	1.7	2.	2.8
Cinchona. <i>Paratypes</i> (2)	10.6-11.1	1.9-1.8	1.8-1.7	2.1-2.2	3.6-3.3

¹ The width of the caudal margin varies in the series before us, from distinctly more, to distinctly less than half the mesal width of the pygidium; the pygidium is also produced to different degrees, but its distinctive form, described above, is never changed.

² In the series situated from one half to three fifths the distance from base to apex.

³ In some specimens the distal tooth is well developed and this tooth is distinct, though small.

General coloration dark and shining. Head blackish chestnut. Antennæ prout's brown. Pronotum and tegmina mummy brown. Abdomen and forceps mahogany red, the abdomen becoming darker proximad. Femora prout's brown, tibiae and tarsi ochraceous-buff. In one female the ultimate dorsal abdominal segment and forceps are strikingly paler, vinaceous-rufous. This condition is even more conspicuously shown in the immature examples before us.

Specimens examined: 24; 7 males, 3 females and 14 immature individuals.

JAMAICA.—Cinchona, II, 25, 1911 (J. A. Grossbeck), 6♂, 2♀, *paratypes*, 11 juv., [A. M. N. H.]. Mandeville, XI, 6, 1913, (M. Hebard; on ground under log in upland pasture, under the bark of this same log was a colony of *Prolabia unidentata*), 1♂, 1♀, *type*, *allotype* [Hebard Cln.]. Montego Bay, III, 15, 1911, (J. A. Grossbeck; taken by sweeping), 2 juv., [A. M. N. H.]; XI, 3, 1913, (M. Hebard; in dead agave in dense hillside jungle scrub), 1 juv., [Hebard Cln.]. No exact locality, 1♂¹, [U. S. N. M.].

***Prolabia unidentata* (Beauvois).**

1805. *Forficula unidentata* BEAUVOIS, Ins. Recueil. Afr. Amér., p. 165, pl. XIV, fig. 3. [San Domingo.]

BAHAMAS.—Nassau, New Providence Island, II, 3, 1904, (M. Hebard; near Fort Charlotte), 1 juv., [Hebard Cln.].

CUBA.—Cayamas, Oriente, VIII, 3, (Schwarz; Baker), 2♂, 1♀,² [A. N. S. P.]. San Carlos Estate, Guantanamo, X, 4 to 8, 1913, (in and under rotten logs), 2♀, 3 juv., [A. M. N. H.].

HISPANIOLA.—San Francisco Mountains, San Domingo, IX, 4 to 27, 1905, (A. Busck), 4♂, 4♀,³ [U. S. N. M.].

JAMAICA.—Botanical Gardens, XI, 13, 1902, 1♀,⁴ [U. S. N. M.]. Grange Lane, St. Andrew Parish, X, 25, 1913, (M. Hebard; under bark of dead limb of jungle tree), 3♂, 3♀, [Hebard Cln.]. Mandeville, XI, 6, 1913, (M. Hebard; under bark of log in upland pasture), 4♂, [Hebard Cln.]. Montego Bay, XI, 1 and 2, 1913, (M. Hebard), 1 juv., [Hebard Cln.].

In the present series, one from Guantanamo, seven from the San Francisco Mountains and two from Grange Lane, have fully developed wings, showing a buffy proximal spot. Five adults of the species from Porto Rico are before us, of which one male and two females show this condition.

Compared with the extensive series from the southeastern United States before us, we find that the mainland insect is a different species, the male pygidium being particularly distinctive. Thus the name which must be employed for the mainland insect is *Prolabia pulchella* (Serville), (Plate LXII, Figs. 7 and 8; Plate LXIII, Fig. 5), under which, and not under *unidentata*,

¹ Recorded by Burr in 1910 as *Prolabia unidentata*.

² Recorded by Rehn as *Labia brunnea*, in 1909.

³ Of this series Caudell, in 1907, recorded a male as *Labia pulchella* and three females as *Labia brunnea*.

⁴ Recorded, in 1907, by Caudell as *Labia gravidula*.

must be placed the synonyms *guttata*, *burgessi* and *melancholica*. These two species are very similar in general appearance and both show two conditions, one with wings not showing, the other with wings fully developed and with a buffy proximal spot. Burr's conclusion that these two species were not distinguishable is proven erroneous by the series now at hand. With more material, that author could hardly have failed to recognize the fact that in the Labiinae great numbers of species exist, many showing general superficial similarity to their nearest allies. In the Unidentata Group the form of the male pygidium is distinctive and constant in all of the species.

The characters of chief importance in the male sex of *unidentata* are as follows:

(San Francisco Mountains, San Domingo.) Size medium small for the group, form moderately slender. Head smooth, occiput smoothly rounded and sub-bilobate. Antennal joints much as in *P. dominica*, but with distal joints elongate pyriform, with a fusiform tendency. Ultimate dorsal abdominal segment almost perfectly smooth, a very faint creasing of the surface indicated in the areas which in *P. jamaicana* are strikingly defined by punctæ; caudal margin between forceps smooth, transverse. Pygidium feebly declivent, with surface convex; slightly longer than broad; lateral margins subparallel and feebly tuberculate to minute disto-lateral angles, distal margin with lateral portions straight, convergent, to brief median portion, which is briefly and very weakly obtuse-angulate emarginate. Forceps much as described for *jamaicana*, but with contour more decided; tooth of ventral margin just before end of proximal third, heavy; internal surface feebly convex from there to feeble distal tooth, which is situated slightly less than half the distance from the proximal tooth to the apex. Penultimate ventral abdominal segment with distal margin showing scarcely any median emargination.

In the series of males before us we find that the forceps vary conspicuously in the development of contour, occasional specimens showing much more simple forceps than is usual. Such variation occurs in all the species of the Unidentata Group and is strikingly shown in many other forms of the Dermaptera.

FORFICULIDÆ.

FORFICULINÆ.

Doru lineare (*Eschscholtz*).

1822. *Forficula linearis* Eschscholtz, Entomogr., p. 81. [Santa Catharina, Brazil.]

CUBA.—7 kilometers north of Vinales, Pinar Del Rio, IX, 16 to 22, 1913, (in meadow grasses and those growing about water hole), 11♂, 9♀, 8 juv.,

[A. M. N. H.]. Pinar del Rio, Pinar del Rio, IX, 9 to 24, 1913, (weeds and grasses in meadow), 4♂, 1♀, [A. M. N. H.]. Cerro Cabras, Pinar del Rio, IX, 11, 1913, (sedges in moist place, weedy yard), 7♂, 3♀, 16 juv., [A. M. N. H.]. Cabañas, Pinar del Rio, IX, 5 to 8, 1913, 1♀, 3 juv., [A. M. N. H.]. Zaza de Media, Santa Clara, IX, 30, 1913, (Lutz; along track through cane fields), 2♂, 3♀, 1 juv., [A. M. N. H.]. Santiago de Cuba, 2♂, 1♀, [A. M. N. H.].

These specimens, for the species, are all of medium to rather slender build. The males have the medio-distal tooth of the forceps moderately decided in five, small in nine, small on one side and absent on the other in two, and absent in eight. The extremes are: length of body, ♂, 8.3 to 12.7, ♀, 8.7 to 12.1; length of forceps, ♂, 3.7 to 5.8, ♀, 2.9 to 3.3 mm. The male pygidium shows scarcely any variation.

The distribution of this widespread insect is extremely interesting. It is abundant throughout tropical South America, extending northward on the continent as far as the southwestern United States, but is not found east of Brownsville, Texas, in that country. In the West Indies, it is known only from Cuba, where Gundlach has already reported it everywhere common.

Doru albipes (*Fabricius*).

Plate LXIII, Figs. 7-10.

1787. *F[orficula] albipes* FABRICIUS, Mantissa Ins., I, p. 224. [West Indies.]

1817. *Forficula bimaculata* BEAUVOIS, Ins. Recueil. Afr. Amér., p. 165, Orth. pl. XIV, fig. 2. [San Domingo.]

1911. *P[haulex] albipes* BURR, Gen. Ins., Dermapt., p. 78. (New genus described.)

1911. *D[oru] bimaculatum* BURR, *ibid.*, p. 79. (Assignment of Beauvois' name.)

VIRGIN ISLANDS.—Charlotte Amalie, St. Thomas, VI, 3, 1911, (F. E. Lutz; grassy and herbaceous roadside), 1 juv., [A. M. N. H.]. Christiansted, St. Croix, VI, 3, 1911, (F. E. Lutz; sweeping along road near harbor), 1♂, [A. M. N. H.].

DOMINICA.—Roseau, VI, 23, 1911, (F. E. Lutz), 1 juv., [A. M. N. H.]. Laudet, VI, 11, 1911, (F. E. Lutz; beating moss-covered branches of lime trees), 1♂, 1 very small juv., [Hebard Chn.].

In addition, there are now before us from Porto Rico, three males, ten females and four immature examples. The series at hand, though not extensive, proves conclusively the synonymy of Beauvois's *bimaculata*. The pronotal coloration ranges from dark, with caudal portion nearly white (as described for *albipes*), to solidly yellowish (as figured for *bimaculata*).

Conditions variously intermediate between these extremes are also represented.

Burr's action in separating the species as a distinct genus, *Phaulex*, is unwarranted; the characters given being invalid and no features existing of generic value. The slenderness of the first and third tarsal joints varies individually but not decidedly, the different degrees found in the present series being easily matched in the very extensive series before us of *Doru lineare*. The pronotum is found to vary from slightly broader than long (normal), to slightly longer than broad; this is of neither generic or specific value. The pygidium of the males of this species has a distinct spine, heavier and shorter than in *lineare*, it is true; the contradiction of this feature in the description of *Phaulex*, we can only ascribe to the probability that, when the evidently hurried diagnosis was drawn up, females only were at hand. The forceps of *albipes* are indeed stouter and more depressed than in *lineare* (the dorsal surface being deplanate in males, with lateral margins raised and moderately cingulate), this condition being of excellent specific diagnostic value, but having not the least generic significance. It is particularly surprising to find such diversity of assignment of names applicable to the same species, when we note Burr's almost contemporaneous suggestion that "perhaps *albipes* and *bimaculata* are identical."¹

The three adult males before us are each different in general appearance. The one from Christiansted is heavier, with coloring more contrasted, than the one from Adjuntas, Porto Rico. The male from Laudet is much larger, dark in coloration, the characteristic pale markings apparently obscured by discoloration, while the pronotum is slightly longer than broad. The ultimate dorsal abdominal segment in these males bears four heavy, blunt projections mesad at the caudal margin.

The distinctive color pattern of this species is shown by the figure.

Measurements (in millimeters).

♂	Length of body	Length of pronotum	Width of pronotum	Length of tegmen	Length of forceps
Adjuntas, Porto Rico	9.7	1.3	1.4	2.6	2.8
Coamo Springs, Porto Rico(2)	10.-11.7	1.6-1.75	1.7-1.85	2.8-3.4	3.7-4.1
Christiansted, St. Croix	10.7	1.7	1.8	3.1	3.7
Laudet, Dominica	15.	2.1	2.	3.3	4.7
♀					
Mayaguez, Porto Rico	9.7	1.65	1.7	2.9	2.8
Adjuntas, Porto Rico	9.8	1.65	1.75	3.2	2.7
Aibonito, Porto Rico	8.7	1.4	1.55	2.8	2.6
Coamo Springs, Porto Rico (7)	9.4-11.3	1.4-1.7	1.45-1.8	2.6-3.1	2.2-2.8

¹ Proc. U. S. Nat. Mus., XXXVIII, p. 464, (Aug. 20, 1911). Genera Insectorum dated July 15, 1911.

EXPLANATION OF PLATES LXII AND LXIII.

PLATE LXII:

Figures of pygidia all greatly magnified.

Fig. 1. *Prolabia dominicæ*, new species. ♂, *type*. Long Ditton, Dominica. Dorsal outline. (× 9)

Fig. 2. *Prolabia dominicæ* new species. ♂, *type*. Long Ditton, Dominica. Dorsal view of pygidium.

Fig. 3. *Prolabia jamaicana*, new species. ♂, *type*. Mandeville, Jamaica. Dorsal outline. (× 6.1)

Fig. 4. *Prolabia jamaicana*, new species. ♂, *type*. Mandeville, Jamaica. Dorsal view of pygidium.

Fig. 5. *Prolabia unidentata* (Beauvois). ♂. San Francisco Mountains, San Domingo. Dorsal outline. (× 8.6)

Fig. 6. *Prolabia unidentata* (Beauvois). ♂. San Francisco Mountains, San Domingo. Dorsal view of pygidium.

Fig. 7. *Prolabia pulchella* (Serville). ♂. Thomasville, Georgia. Dorsal outline. (× 6.5)

Fig. 8. *Prolabia pulchella* (Serville). ♂. Thomasville, Georgia. Dorsal view of pygidium.¹

PLATE LXIII.

Fig. 1. *Prolabia modesta* (Bruner). ♀, *type*. Trinidad. Dorsal view of ultimate dorsal abdominal segment and forceps. (× 9)

Fig. 2. *Prolabia dominicæ*, new species. ♀, *allotype*. Long Ditton, Dominica. Dorsal view of ultimate dorsal abdominal segment and forceps. (× 10.8)

Fig. 3. *Prolabia jamaicana*, new species. ♀, *allotype*. Mandeville, Jamaica. Dorsal view of ultimate dorsal abdominal segment and forceps. (× 7.3)

Fig. 4. *Prolabia unidentata* (Beauvois). ♀. San Francisco Mountains, San Domingo. Dorsal view of ultimate dorsal abdominal segment and forceps. (× 9)

Fig. 5. *Prolabia pulchella* (Serville). ♀. Thomasville, Georgia. Dorsal view of ultimate dorsal abdominal segment and forceps. (× 8.7)

Fig. 6. *Formicilabia caribea*, new species. ♀, *type*. San Francisco Mountains, San Domingo. Dorsal view. (× 12.7)

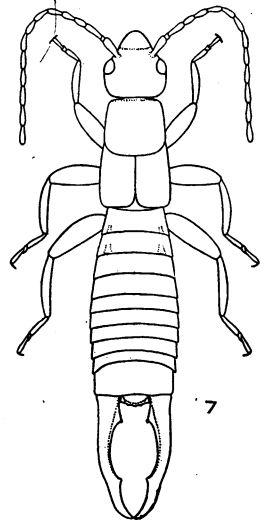
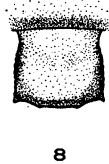
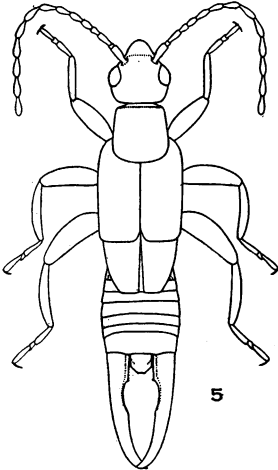
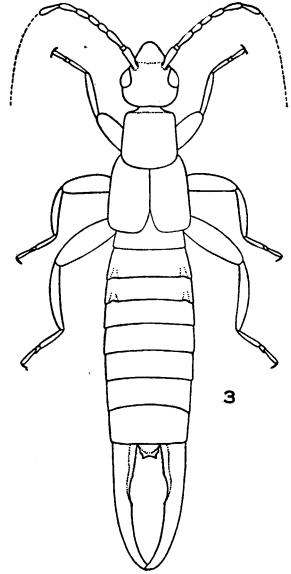
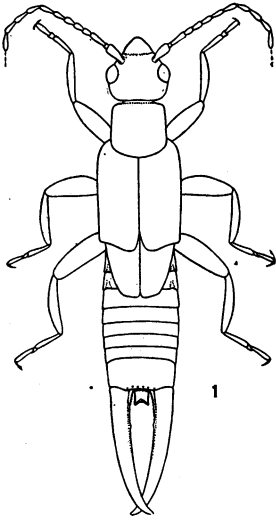
Fig. 7. *Doru albipes* (Fabricius). ♂. Coamo Springs, Porto Rico. Dorsal view. (× 5.4)

Fig. 8. *Doru albipes* (Fabricius). ♂. Coamo Springs, Porto Rico. Dorso-caudal view of pygidium. (Greatly magnified).

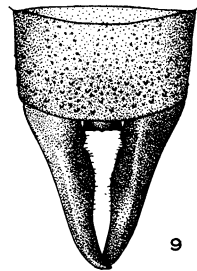
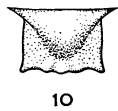
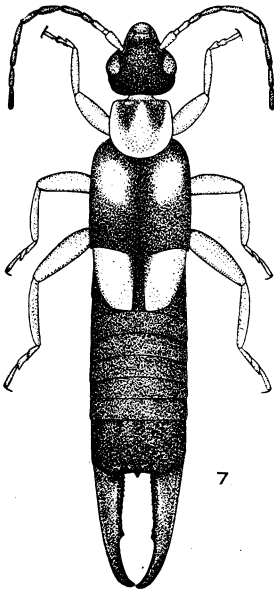
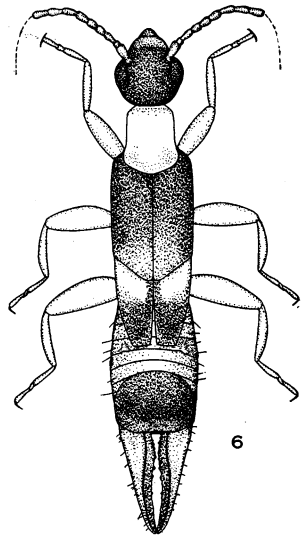
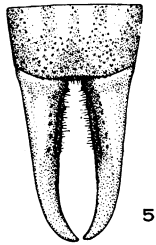
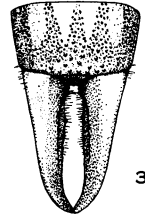
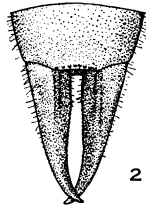
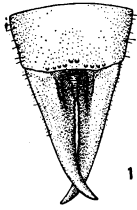
Fig. 9. *Doru albipes* (Fabricius). ♀. Coamo Springs, Porto Rico. Dorsal view of ultimate dorsal abdominal segment and forceps. (× 9.4)

Fig. 10. *Doru albipes* (Fabricius). ♀. Coamo Springs, Porto Rico. Dorso-caudal view of pygidium. (Greatly magnified).

¹ In this species the pygidium is declivent, so that, taking the whole insect into consideration, this would be a dorso-caudal view.



WEST INDIAN EARWIGS (DERMAPTERA).



WEST INDIAN EARWIGS (DERMAPTERA).

