slightly but distinctly convex; more prominent antennal tooth; the mesonotal sculpture less dense.

The interest attached to this species lies in its *Hylocrabro* affinities. Dr. R. C. L. Perkins, in a letter to me about this insect, remarks that it "connects *Hylocrabro* still more closely with *Melanocrabro* and I should not wonder if its female is not what I call *Hylocrabro.*"

## New and Little-Known Derbidae.

BY F. MUIR.

The species described in this paper were collected by the writer during 1913-14, or were presented to him by entomologists in Formosa during his visit there. The addition of 17 species to the Java list indicates the richness of that island, especially when we consider that the writer only had three days collecting in suitable localities, and that nearly all his specimens were taken at Bendoredjo during one morning's collecting. Formosa and Philippines will also prove to be very rich. The family already has some eighty genera and nearly four hundred species, and when the South and Central American, as well as the Indo-Malayan areas, are more closely worked this number will be easily doubled. They are forest insects, all the nymphs as far as is at present known, living in rotten trees.

The measurements are from the apex of head to anus, and from base to apex of one tegmen.

### Vekunta Dist.

(1) *pseudobadia* sp. n.

♂ This differs from the Bornean species *badia* in the spot on costa being smaller and having no darker spot in center of it, also in the genitalia as follows: Apex of anal segment truncate or slightly emarginate instead of pointed; styles narrower, ventral edge entire, dorsal edge produced into wide angular process in middle, apex blunt, turned inward; whereas in *badia* they are broader, the dorsal edge straight and the apex with small, sharp, inwardly turned apex.

Length 2.5mm.; tegmen 4mm.

Hab. Bendoredjo, Java; on palms (Muir, March).

(2) *lineata* Melichar.

♂ Ventral and lateral edges of pygophor straight; anal segment long, anus in basal third where segment slightly widens, then gradually narrows to point, the apical third turned ventrally and cleft from apex to angle of head; styles long, narrow, apical third turned upward, apex pointed, basal two-thirds subparallel sided, dorsal margin slightly incrassate, a small quadrate process on inner surface near base.

Hab. Mount Maquiling, Luzon (Muir, February).

(3) *malloti* Mats.

*V. malloti* Matsumura 1914, Ann. Mus. Nat. Hung. XIII, 288.

*V. okadae* Muir 1914, Pro. Haw. Ent. Soc. III, 1, p. 45.

LAMENIA Stal.

*Thyrocephalus* Kirkaldy 1906. H. S. P. A. Bull. I, p. 429.

Dr. Melichar in describing *L. flavescens* (Philip. Jour. Sci. 1914, IX, D. 2, p. 179) has placed this genus in the *Achilinae*. To this I cannot agree, as this genus has the characteristics of the family (or subfamily); should it be upheld then some fifteen or sixteen genera of the *Cenchrea* group will also have to be moved to *Achilinae*. The two following species have the characteristic subantennal plate as long as, or a little longer than, the antenna.

(1) *javanica* sp. n.

♂ Stramineous, fuscous over keels of face, clypeus, labium, tibiae, margin of tegulae, tergites of abdomen and genitalia, a dark round spot on propleura; tegmina stramineous, opaque with waxy secretion, fuscous over clavus, along hind and costal margins and an acutely angular mark on margin between subcosta and media; wings opaquely white with waxy secretion, veins brown.

Ventral edge of pygophor straight, lateral edges rotundate; anal segment large, much longer than broad, basal portion subparallel sided, then gradually narrowed to pointed apex which is turned ventrally, anus about a third from base; styles reaching to end of anal segment, narrow, semispatulate, the dorsal edge nearly entire, curving slightly upward and broadly dilatate, the ventral edge roundly produced beyond the middle and narrowly dilatate, apex pointed and turned inward, a small round knob on niner side near base from which rises a small sharp spine.

♀ Last abdominal sternite longer than broad, posterior edge steeply curved from sides near base to middle; anal segment ovate, anus near base.

Length 2.5mm.; tegmen 3.5mm.
Hab. Buitenzorg, Java (Muir, May).

(2) *albipennis* sp. n.

♂ Stramineous, fuscous on keels of face, tibiae, especially apices of hind pair, and dorsum of abdomen; tegmina white, opaque with waxy secretion, slightly infuscate along hind margin, especially from end of clavus to cubitus, three fuscous marks on border, one at apex of first median sector, one at apex of radia and the third at apex of subcosta; wings opaquely white with waxy secretion, veins white.

Ventral edge of pygophor straight, lateral edges slightly sinuous; anal segment large, sides subparallel, slightly narrowed before apex, apex truncate, anus one-third from base; styles reaching to end of anal segment, dorsal edge nearly straight, subparallel to ventral edge for basal two-thirds, then ventral edge narrowing to sharp apex which is turned inward, a rounded keel runs from base to apex on outer surface, a small round process on inner side on basal half.

Length 3.3mm.; tegmen 5mm.
Hab. Bendoredjo, Java, on palms (Muir, March).

Pyrrhoneura Kirk.

(1) *javana* sp. n.

♂ Vertex and face in profile slightly more rounded than in type species. Vertex, base of face, dorsum of thorax and all abdomen and genitalia dark reddish brown, apex of face, antennae, clypeus, ventral surface of thorax and legs yellow; tegmina reddish fuscous, veins darker except costa and apical veins which are lighter red, a dark spot on cross-vein at base of fourth median sector; wings fuscous, veins dark.

Ventral edge of pygophor straight, lateral edges subangularly produced in middle; anal segment much longer than broad, broadest at base, gradually narrowing to apex which is rounded, anus at apex; styles reaching to end of anal segment, narrow, dorsal edge almost entire, ventral edge gradually produced to about a third from apex, then narrowing to the rounded apex which is turned upward and inward, on inner surface a small plate runs from base to about middle where it is rounded off.

♀ Hind border of tegmina bearing light mark along clavus and between cubital veins. Last abdominal sternite broader than long, hind margin subangularly produced from sides near base to middle,

the sides of production being very shallowly excavate, the disk of angularly produced portion slightly depressed.

Length 2mm.; tegmen 4.5mm.
Hab. Bendoredjo, Java (Muir, March).

### Tempora Mats.

*Tempora* Matsumura 1914, Ann. Mus. Hung. XII, p. 290.

This genus is placed by its author next to *Vekunta*, but the neuration of tegmina show that it belongs to the *Otiocerus* group; it comes next to *Pyrrhoneura* Kirk., from which it differs only in having the lateral keels of face approximate or touching near their bases, a character found in *P. rubida*. It will be difficult to keep these two genera apart.

### Swezeyia Kirk.

#### (1) *vandergootii* sp. n.

♂ Antennae slightly smaller than in *lyricen* Kirk., otherwise typical.

Stramineous, a dark mark over sides of face in front of eyes, and from behind eyes over sides of thorax down middle to tip of tegmina; tips of labium and tarsi slightly infuscate. Tegmina hyaline slightly opaque with waxy secretion, veins yellowish except where fuscous mark passes down tegmina through clavus, over base of cubitus and along median, mark darkest at base of third median sector; wings hyaline, slightly opaque with secretion, veins reddish.

Ventral edge of pygophor straight, lateral edges slightly curved, anal segment about twice as long as broad, subparallel sided, apex slightly rounded, tip turned down, dorsal surface sloping from middle to sides, anus at apex; styles reaching beyond anal segment, slender, slightly broadened and curved upward at apical half, apex bluntly pointed and curved inward.

Length 2.3mm.; tegmen 3.2mm.
Hab. Bendoredjo, Java, on palm trees (Muir, March).

I name this little insect after Mr. P. van der Goot, to whose help in entomological matters while in Java I am greatly indebted.

### Nesokaha Muir.

#### (1) *philippina* sp. n.

♂ In profile vertex and face rounded, no angle where they meet;

antennae slightly more ovate than in *N. piroensis*. Light yellow, eyes brown, light brown over keels of face; tegmina light yellow, slightly opaque with waxy secretion, veins yellow, a black spot at apex between third and fourth median sectors, a small dark mark at end of subcosta; wings very light yellow, opaque with waxy secretion, veins yellow.

Ventral edge of pygophor straight, lateral edges angularly produced in middle; anal segment longer than broad, slightly narrower at apex than base, apex slightly emarginate (a little spine at each corner), anus at apex; styles narrow, reaching to end of anal segment, curved slightly upward on apical portion, apex pointed, ventral edge entire, dorsal edge having a small angular projection near base and a minute spine in middle.

♀ Last abdominal sternite wider than long, hind margin angularly produced from sides to middle, the apical portion turned upward; in lateral view sternite concave at base and convex in middle.

Length 2mm.; tegmen 4mm.

Hab. Mount Maquiling, Luzon. (Muir, February.)

(2) *lineata* sp. n.

♀ Light yellow, eyes brown, keels of face brownish. Tegmina hyaline slightly opaque with waxy secretion, veins white except costa, subcosta and apical veins which are yellowish, a black line on basal portion of costa through subcostal cell to radial cross vein, continued very faintly to basal portion of fourth median sector, another black line from base of claval margin to apex of first median sector, a round black spot in middle of fourth median sector; wings opaquely white with waxy secretion, veins white.

Last abdominal sternite broader than long, hind margin angularly produced from sides to middle, apex turned dorsad.

Length 2.4mm.; tegmen 4.2mm.

Hab. Los Banos, Luzon. (Muir, February.)

Devadanda Distant.

(1) *leefmanii* sp. n.

♂ Face produced in front as in *pectinata*; first joint of antennae small, second joint bilobed, a smaller, rounded, basal part which bears the arista and scattered small "scales" and a long cylindrical portion bearing long "scales". Dirty yellow, face hyaline above eyes, brownish below, darker around eyes and along edge of hyaline area, two dark marks on apex of face, dark across base and aper of clypeus, along medio-lateral portion of thorax, over ventral surface of thorax, coxae,

base of femora, abdomen and genitalia. Tegmina hyaline, slightly opaque with waxy secretion, veins yellow on basal half, reddish brown on apical half, apical veins and transcostal veins red, fuscous along costal, apical and hind margins, subcostal and radial veins darker, a dark mark at base of fourth median sector, two small marks in clavus and one in median cell; wings hyaline, opaque with waxy secretion, veins basally yellow apically fuscous.

Ventral edge of pygophor straight, lateral edge slightly curved; anal segment long, dorsal surface angular, sloping from middle to sides, apex rotundate, anus at apex; styles long and narrow, apices rounded and turned inward, ventral edge gradually produced into a short wide angle about middle, dorsal edge produced into a small rounded process near base and a small spine about middle.

♀ Second joint of antennae globose, covered with short sense organs as in *Kaha*; posterior margin of last sternite angular, apex turned upward into base of styles. Body lighter colored than male.

Length 2.5mm.; tegmen 4mm.

Hab. Buitenzorg, on palms. (Muir, May.)

I name this species after Mr. F. Leefman, to whose guidance I owe some very pleasant collecting trips.

(2) *perplexa* Muir.

From Buitzenzorg, Java, on palm trees, both sexes in numbers. (Muir, May.)

♀ Antennae small, globous, with elevated sense organs and small "scales", last abdominal sternite as in *leefmanii*.

(3) *extrema* (Muir).

*Kaha extrema* Muir, 1913 H. S. P. A. Ent. Bull. XII, 52.

This species was described from a single specimen with damaged antennae. I can now recognize that it should be placed with the above species. All three differ from the description of the generic type in the form of antennae, but I think there is some mistake, as *pectinata* is described as having antennae different from any Derbid yet known. I submitted specimens of one of the above species to Mr. Distant, who considers it distinct from *Devadanda*, but I shall await the opportunity to examine the type before I erect a new genus.

## Eosaccharissa Kirk.

### (1) *ouwensii* sp. n.

♂ Yellow; eyes brown, vertex and basal portion of face whitish, fuscous mark across apical portion of face. Tegmina white, opaque with waxy secretion, veins yellow spreading into cells, five black hair-lines across costal and apical radial cell more or less bordered with yellow, a small black dot in first medio-apical cell, another in fifth, a light yellow mark across clavus and over cubitus, the upper portion of cubitus and the median cross-vein bordered with fuscous.

Ventral edge of pygophor produced in middle into acutely angular process, lateral edges into sharply pointed angle in middle; anal segment much longer than broad, slightly broader at base than apex, apex truncate, anus at apex, from the ventral surface near apex arises a minute pointed process curved backward; styles reaching to end of anal segment, narrow, curved upward, apex rounded and turned inward, ventral edge produced into small angular process near base, dorsal edge near base produced into rotundate process with a fine spine on top.

♀ Last abdominal sternite longer than broad, hind edge produced acutely angularly in middle.

Length 2.5mm.; tegmen 3.8mm.

Hab. Buitenzorg, Java, on palm trees. (Muir, May.)

I have named this little insect after Major Ouwens of the Zoological Museum, Buitenzorg.

## Leptaleocera Muir.

The following species differs from the type in having the head in profile ovally produced, the junction of vertex and face being at the apex of the extension; the lateral edges of the pronotum are curved forward; the antennae flat but not quite so large proportionally. Until I have examined the type of *Nicerta* and *Interamma* I am dubious as to the validity of this and certain allied genera.

### (1) *coccinella* sp. n.

♂ Bright scarlet, antennae fuscous along edges, clypeus and coxae yellowish.

Ventral edge of pygophor produced in middle into small plate longer than broad, slightly narrowing to apex which is formed by two arcs touching in middle, lateral edge of pygophor rounded; anal segment boat-like, longer than broad, narrowing to apex which is subtruncate, sides turned upward, anus situate in concavity of dorsal surface near

base; styles long, narrow, curved slightly upward, apex round, ventral edge slightly sinuous, dorsal edge complex, a small process with rounded apex arising from middle.

♀ Yellow, inclining to scarlet, a dark scarlet mark through middle of face to eyes, antennae brown; tegmina white, opaque with waxy secretion, veins yellow, reddish along costa, yellowish over clavus, along hind margin, apical portion of cubital cell and more or less over apical cells, scarlet mark near base of media, on cubitus and over median cells to apex; wings hyaline opaque with waxy secretion, reddish yellow veins.

Last abdominal sternite a little wider than long, rotundately produced from sides to middle; anal segment large, boatshape, bluntly rounded at apex, anus in middle.

Length 2.5mm.; tegmen 4.5mm.

Hab. Bendoredjo, Java, on palm tree. (Muir, March.) In spite of the difference in color I feel sure that these are the sexes of the same species; more mature females may be scarlet like the male.

## Epotiocerus Mats.

### (1) *flexuosus* (Uhler).

*Otiocerus flexuosus* Uhler, 1896, Pro. Nat. Mus. U. S. A., p 283; Matsumura, 1904, 1000 Ins. Japan, II, p. 61., Pl. XXI, fig. 13.

*Nicerta flexuosa* Muir 1914, Pro. Haw. Ent. Soc., VIII, 1, p. 48.

*Epotiocerus flexuosus* Matsumura 1914, Ann. Mus. Nat. Hung., p. 300.

The validity of this genus cannot be judged without comparison with the type of *Nicerta*.

♂ Ventral edge of pygophor produced into a small trapezoidal plate, longer than broad, base slightly broader than apex, each corner of apex produced into a small spine; lateral edges entire, slightly curved; anal segment slightly longer than broad, sides turned upward boatshape, apex slightly emarginate, anus in middle; styles longer than anal segment, ventral edge slightly sinuate, curved upward towards apex, dorsal edge deeply sinuate, pointed apex turned inward, a keel runs from apex to base on outer surface.

♀ Posterior edge of last abdominal sternite steeply and rotundately produced to middle, the produced portion longer than the basal portion, middle slightly "lipped".

Specimens from Formosa differ slightly in genitalia from

Japanese specimens, but without fresh material for comparison they cannot be separated.

### Megatropis Muir.

*Mesotiocerus* Matsumura 1914, Ann. Mus. Nat. Hung. p. 301.

#### (1) *formosana* (Mats.)

♂ Ventral edge of pygophor straight, lateral edges slightly curved; anal segment medium size, basal half tubular, distal half semi-tubular, apex forming small downward turned lobe, anus in middle within the tubular portion; styles projecting slightly beyond anal segment, edges subparallel, curved slightly upward towards apex where slightly sinuate, apex rounded.

♀ Last abdominal sternite as broad as long, hind margin angularly produced from sides to middle.

#### (2) *interruptolineata* Melichar.

Three specimens from Los Banos, Luzon, 1 ♂ and 2 ♀. In the male the antenna has a projection from base of second joint somewhat similar to *obliquefasciata* Mel. which the female does not possess.

♂ Ventral and lateral edges of pygophor straight; anal segment fairly large, basal half tubular, distal half subtubular, apex rounded, anus in middle within tubular portion; styles projecting slightly beyond anal segment, edges very slightly sinuate, slightly increasing in width from base to middle then gradually narrowing to blunt inward-turned point.

♀ Last abdominal sternite broader than long, steeply and rotundately produced from sides to middle; anal segment as in ♂ but basal tubular portion shorter.

### Mysidioides Mats.

*Mysidioides* Matsumura 1904, 1000 Ins. Japan, II, p. 60.
*Neocyclometopum* Muir 1913. H. S. P. A. Ent. Bull. XII, p. 61.

#### (1) *jacobsoni* (Mel.)

*Neocyclometopum jacobsoni* Melichar Notes Leyden Mus. XXXVI, p. 102.

Two male specimens from Bendoredjo, Java, on palms, (Muir, March), which appear to be this species, the tegmina very slightly infuscate along margins.

Ventral edge of pygophor straight, two small, pointed processes arising from middle, their apices diverging, lateral edges of pygophor drawn out into sharp point in middle; anal segment large, subparallel sided, apex emarginate (each corner drawn out to a point); styles reaching beyond anal segment, dorsal edge curved slightly upward, ventral edge deeply emarginate on basal half, apical half gradually narrowing to apex which forms a small, inwardly turned point.

### (2) *sapporensis* (Mats.)

Two ♀ specimens from Arisan, Formosa (Maki, July), and one ♂ from Japan (Okada, on bamboo); until a male from Formosa has been examined there will be some uncertainty as to the right identification.

♂ Ventral edge of pygophor straight, from between styles arises a small triangular plate, the apex produced into two divergingly curved sharp spines; lateral edges straight with a small sharp spine about middle; anal segment broad at base gradaully narrowing to downward turned apex, which is deeply emarginate (apex forming two spines); styles reaching beyond anal segment, subparallel sided to beyond middle, where it widens out on ventral edge then narrows to the inwardly turned blunt apex, a small rounded process arises about middle on inner side of ventral edge.

♀ Last abdominal sternite broader than long, posterior edge very slightly and angularly produced from sides to middle.

### (3) *infuscata* sp. n.

♀ Stramineous with castaneous markings on sides of clypeus, inner sides of antennae, between keels of pronotum and scutellum; dark brown at posterior portion of scutellum and over abdomen, legs with faint bands. Tegmina yellowish with yellow veins and irregular dark brown markings as follows: spot at base, two small bands across middle and small spot near apex of costal cell, at base of radial through median and over second cubital cells, spots at bases of sectors, over most of apical cells, especially along apical veins, spots at base and through middle of cubital cell and in clavus.

Last abdominal sternite large, shield-shape, posterior margin steeply and rotundately produced from near the sides; anal segment small, rotundate, anus in middle.

Length 4.2mm.; tegmen 8.4mm.

Hab. Arisan, Formosa. (M. Maki, July.)

No angle at junction of vertex and face, keels of face contiguous at base.

### (4) *maculata* sp. n.

♂ Fuscous yellow, dark on face, antennae, ventral surface of thorax and over abdomen. Tegmina dirty white, opaque with waxy secretion, veins light yellow, black mark on hind margin at end of clavus, in some specimens forming small V, and infuscate spot in clavus, over radial cross-vein, end of subcosta and more or less over all apical cells; wings dirty white with yellowish veins.

Ventral edge of pygophor straight with a small rotundate projection in middle, from the middle inner surface arises a pair of flattened divergingly curved spines bluntly pointed at apex, lateral edges slightly curved; anal segment large, sides subparallel, anus in middle, beyond anus segment curved ventrally, apex broad, roundly excavate, (each corner produced into a point); styles large, reaching beyond anal segment, dorsal edge straight, ventral edge sinuous, produced in middle half, apex pointed and turned inward, from inner surface near base arises a small round-pointed process.

♀ Markings on tegmina much smaller and fainter. Last abdominal sternite wider than long, median three-fifths roundly produced.

Length 3.5mm.; tegmen 7mm.

Hab. Arisan, Formosa. (M. Maki, July.)

The male has no angle at junction of vertex and face and the keels of face are contiguous at base; the female has the vertex slightly flattened, slightly angular at junction with face and the keels of face not contiguous till a little beyond base.

## Platocera Muir.

### (1) *albipennis* sp. n.

♂ Antennae as in *nigrifrons* but not quite so flattened, sense organs equally distributed over its surface.

Head and body stramineous to light castaneous, darker over face, edges of antennae, lateral portions of pro and mesonotum and sides of abdomen. Tegmina and wings white, opaque with waxy secretion, veins light yellow.

Ventral edge of pygophor slightly and evenly convex, between the styles a bifurcate process, the apices pointed and divergingly curved with a small projection below apices on outer sides, lateral edges straight, a small angular projection from inner surface near middle; anal segment large, base broad tapering to pointed apex, anus about middle; styles large, broadest on distal half, curved slightly upward,

apices rounded, ventral edge produced into a small angular point about third from apex, a little below this a small process with round apex arises from inner surface.

♀ Posterior edge of last abdominal sternite slightly rounded.

Length 4.8mm.; tegmen 9mm.

Hab. Arisan, Formosa. (M. Maki, July.)

### Sikaiana Dist.

(1) *makii* sp. n.

Wings half as long as tegmina, anal area forming stridulating organ.

♂ Stramineous, eyes brown, fuscous on antennae, apices of tibiae and sides of abdomen; tegmina white, opaque with waxy secretion, veins yellowish, a black mark across tegmina, widest over base of second and middle of first median sectors, eight small red dots on costa, at second and third red dot a black mark through costal cell, two small black spots near base, another in clavus, another at end of clavus, from apex of costa to base of third median sectors a larger black mark, black marks on hind margin near apex of median sectors; wings white, opaque with waxy secretions, a black mark in middle of hind margin.

No medio-ventral process on pygophor, lateral edges roundly produced on sides of anal segment; anal segment longer than broad, apex round, dorsal surface convex, ventral concave, anus near apex on ventral side, anal style large, subcordate, concavo-convex, looking as if apical portion of segment; styles shorter than anal segment, broad at base narrowing to apex which is turned in and ends in a minute fine spine with another slightly before apex, dorsal edge nearly entire, ventral edge roundly produced on basal half.

♀ Anal segment very short, anal style large, subcordate.

Length 2mm.; tegmen 5.5mm.

Hab. Arisan, Formosa. (M. Maki, June.)

### Zeugma West.

(1) *monticola* Kirk.

Several specimens from Bendoredjo, Java, on palm trees. (Muir, March.)

In the description of the genitalia of this species the apex of anal segment is described as "angularly emarginate". This would be more correctly described as being cleft nearly down to anus, so that the apex is formed of two long ensate processes. The lateral angular projection of the pygophor has a suture

across the lower portion, cutting off a small triangular portion. It is very probable that this is the same as *vittata* Westwood.

### (2) *javana* sp. n.

♂ Vertex and face narrower than in *vittata*, but not so narrow as in *makii*; a faint keel dividing vertex from face. Tegmina broader than in *vittata*, being produced on hind margin beyond clavus, a character shared by *makii*.

Stramineous or light brown, dark brown or black between keels of vertex, face and clypeus, and along outer sides of keels, dark mark down first and second coxae, two longitudinal marks on femora, the tarsi and tips of tibiae fuscous, six dark marks down scutellum, abdominal segments lightest on posterior edges; tegmina light stramineous, veins yellow bordered with fuscous, fuscous over radial cell and gradate cross-veins, a round black spot at base of cubitus.

Ventral edge of pygophor slightly angularly produced in middle, lateral edges forming a broad angular plate, the ventral edge of which is toothed near apex; anal segment quadrate, longer than broad, anus about middle, a small ridge across base, apex forming a flattened surface; styles longer than anal segment, lanceolate, the apices turned upward.

♀ Last abdominal sternite broader than long, posterior edge produced angularly towards middle, the apex turned upward, a slight longitudinal depression near lateral edges.

Length 4mm.; tegmen 9mm.

Hab. Bendoredjo, Java, on palm trees. (Muir, March.)

## Proutista Kirk.

It is to be regretted that several Homopterists actively engaged in describing Derbidae refuse to recognize this genus. Bierman* showed the validity of Buckton's genus *Assamia* and Kirkaldy recognized it also, *Proutista* being the new name he proposed, as Buckton's was preoccupied.

### (1) *pseudomoesta* sp. n.

This species differs from *moesta* in having the face, antennae, middle of thorax, lateral keels and apex of scutellum and pleura of thorax yellowish; the dark markings on tegmina slightly reduced.

♂ Ventral edge of pygophor produced into small point in middle, anal segment shorter, straight, apex rounded and not turned ventrad, styles long, narrow, edges subparallel except at base where inner edge

* Notes from Lyden Mus. XXXIII (1910), p. 35.

broadens out, apex sharply pointed turned inward and upward, from inner surface near base arises a quadrate process about twice as long as broad.

♀ Anal segment cylindrical, as long as broad, apex of abdomen (genital area) cylindrically produced.

Length 2.5mm.; tegmen 6mm.

Hab. Bendoredjo, Java, on palms; Pasoeroean, Java, on sugar-cane (Muir); Buitenzorg, Java, on palm (Leefmans).

In collecting I passed over this species for *moesta* and it was only by chance that I secured a series.

(2) *dolosa* sp. n.

♂ This species differs from *pseudomoesta* by its darker thorax and by the markings on tegmina and wings being still more reduced, in radial cell it only forms three bands, one near base, one over cross-vein and one at apex; on hind margin the markings form a series of fine dot at apices of veins; wings hyaline, veins dark, fuscous mark on apex.

♀ Anal segment cylindrical, much shorter than broad, apex of abdomen (genital area) flattened, sunk between two small lateral plates. In the shape of genital area this is nearer to *moesta* than to *pseudomoesta*.

Length 2.5mm.; tegmen 6mm.

Hab. Bendoredjo, Java, on palms; Pasoeroean, Java, on sugar-cane (Muir, March).

*P. fenestrata* (Bier.) is intermediate between these two species.

## Paraproutista Muir.

At the time of erecting this genus I had doubts as to the value of its chief characteristic, the furcation of the third median sector. Experience has shown its constancy; of its utility there can be no doubt for the facies of the species of this and some allied genera are so similar that any good distinction is an advantage. Whether it should be considered as generic or subgeneric is a matter of personal opinion. In *albicosta*, *pseudoalbicosta* and *brunnia* the keels of face do not meet till below eyes or thereabout and are not so closely contiguous.

(1) *albicosta* sp. n.

♂ Dark stramineous or light brown, clypeus and abdomen red slightly fuscous, veins red, some eight or nine small white spots in

costal cell connected together by the white or yellowish white costa, small white spot on apical border with fuscous spot in middle.

Pygophor very short, ventral edge straight, lateral edges angularly produced, the lower edge of angle slightly sinuous and longer than upper edge; anal segment about twice as long as wide, sides subparallel, apex rounded, lateral edges about middle produced into a small downward-turned angular process, anus about middle; styles in ventral view sublanceolate, apex forming blunt, hollow cone, the apical edge being rounder, below and inside of this apical cone dorsal edge complex forming a long inwardly pointed process and a smaller outwardly turned curved spine.

♀ Anal segment exceedingly short, forming ring in apical portion of the ovate genital area.

Length 2.7mm.; tegmen 7mm.

Hab. Bendoredjo, Java, on palms. (Muir, March.)

This species is very like *coccineo-venosa*, but the genitalia is quite distinct.

(2) *brunnia* sp. n.

♂ Light brown, darker over apex of clypeus, labium and apical edge of genital styles, yellowish over keels and apex of scutellum; tegmina fuscous brown with lighter mottlings over posterior half, veins dark brown with lighter marks, lighter markings through costal and apical portion of subcostal cells and at apices of radia and media; wings light brown, veins dark.

Pygophor very short, ventral edge subangularly produced in middle, lateral edges slightly and roundly produced; anal segment little longer than broad, apex broadly rounded, anus in apical half; in ventro-lateral view styles ovate, dorsal edge produced into a subquadrate process, depressed in middle and bent inward, a little distad of this a small blunt angular process turned inward.

Length 4mm.; tegmen 9.5mm.

Hab. Macassar, Celebes, on palms. (Muir, May.)

This has the tegmina more uniformly colored than *ceramensis* and the genitalia is distinct.

(3) *pseudoalbicosta* sp. n.

♂ Light brown, apex of clypeus and abdomen darker, antennae, legs and keels of thorax lighter, tegmina very like *albicosta*, veins not such a bright red, whitish spots along costa not so pronounced and confined more to distal half.

Pygophor very short, ventral edge slightly curved in middle, lateral edges angularly produced, anal segment little longer than broad, anus

before middle, beyond anus segment curved downward, slightly narrowed to truncate apex; styles broader than long, in latero-ventral view sublanceolate, apex turned inward, dorsal edge incrassate, the margin turned inward and produced into a complex process, differing considerably from that of *albicosta*.

♀ Anal segment exceedingly short set between two angular plates, ventral border of genital area sinuate and elevated.

Length 3mm.; tegmen 8mm.

Hab. Urai, Formosa. (Muir, August.)

Besides the slight difference in color this species is differentiated from *albicosta* by genital structures.

(4) *sauterii* sp. n.

♂ Stramineous tinged with green, a small black dot on each side of the third abdominal tergite another at each corner of last sternite and on anal segment above anus; tegmina hyaline, opaque with waxy secretion, veins yellow tinged with red along costa and subcosta, slightly fuscous over radial and median basal cells and on veins, especially cross veins and in apical radial cells, faint spot at end of veins on hind margin.

Pygophor very short, anal segment longer than broad, sides subparallel to anus where there is a slight constriction, rounded beyond anus with a small median lip-like process in middle; styles subquadrate, base much narrower than apex, apical margin as long as dorsal margin, both entire and slightly rounded, a deep depression near base of ventral edge, a small, broad outwardly turned spine about middle.

♀ Apex of abdomen (genital area) flattened, triangular; anal segment very short, below anus two downward and inward curved pointed processes, near basal line of genital area two rounded knobs.

Length 4mm.; tegmen 9mm.

Hab. Arisan, Formosa. (M. Maki, June; Muir, August.)

This species is near *variegata*, especially in shape of *genitalia*. I have named it after Mr. H. Sauter, whose work in Formosa has added so much to our knowledge of the zoology of that interesting island.

ZORAIDA Kirk.

One of the chief characters of this genus is the narrow face formed by the contiguous lateral keels, which are continuations of the lateral keels of the vertex. Several allied genera have been erected having wider faces, with a carina or a fine groove down the middle. The nymphs of all the narrow-faced Derbidae, including Zoraida, have broad faces. In the nymph of *Z.*

*insolicola* the face is as broad as long, the lateral edges arcuate, two pair of carinae, one lateral and one medio-lateral. At the last ecdysis the face is invaginated down the median line, the lateral keels coming together and more or less coalescing. If the head of an adult *Zoraida* be boiled in caustic potash the face will open out, showing, during the process, characters attributed to certain genera. From observations made on several species it appears probable that some of these genera are only imperfectly developed specimens of *Zoraida*.

(1) *cydista* Dist.

One ♀ specimen from Bendoredjo, Java, which agrees with specimens from Papua and Amboina. (Muir, March, on palm tree.)

Peggiopsis Muir.

The two following species have the bulging eyes very slightly emarginate on lower margin, and the long, flat antennae of the type; the clypeus not so large proportionately as is general in *Zoraida*.

(1) *nigrovenosa* sp. n.

♂ Stramineous, white with waxy secretion over pronotum, eyes brown, fuscous on antennae, tarsi and abdomen; tegmina and wings hyaline, veins dark brown or black, ends of four in apex of tegmina colorless with a small black dot where color ends.

Ventral edge of pygophor produced into small lanceolate process in middle, lateral edges angular beside anal segment; anal segment spatulate with wide and short base, anus about middle; styles longer than anal segment, narrow, tip narrowed to a rounded apex and turned upward, ventral edge produced into small blunt angle before middle, dorsal edge with small round process near apex.

Length 2.5mm.; tegmen 8mm.

Hab. Bendoredjo, Java, on palms. (Muir, March.)

(2) *javana* Mel.

♂ Ventral edge of pygophor produced into small spatulate process, lateral edges subangularly produced; anal segment much longer than broad, slightly widened beyond middle then gradually narrowed to rounded apex which is turned down slightly and "lipped", anus in middle, dorsal surface of basal half sloping to sides, a small projection in middle half way to anus; styles not reaching to end of anal seg-

ment, very similar to *nigrovenosa* but more curved, the apices blunter and turned inward nearly at right angles.

Bendaredjo, Java, on palms. (Muir, March.)

These two species are very close, but the color of the neuration and the shape of genitalia, especially the anal segment, distinctly separates them. My five specimens of *javana* are males, the species was described from a single female.

DECORA Dammerman.

*Dichotropis* Muir 1913, H. S. P. A. Ent. Bull. XII, p. 83.

(1) *pavo* Bireman.

♂ Edges of pygophor entire; anal segment as long as width of base, narrowing to truncate apex, anal style projecting beyond apex of segment; styles subovate, apex somewhat truncate, on dorsal edge from near base arises a small spine with apex bent outward.

DECORA Dammerman.

(1) *pavo* Bierman.

♂ Edges of pygophor entire; anal segment as long as width of base, narrowing to truncate apex, anal style projecting beyond apex of segment; styles subovate, apex somewhat truncate, on dorsal edge from near base arises a small spine with apex bent outward.

One ♂ specimen from Bendoredjo on palm tree, which conforms very closely to Bierman's description. *Dichotropis* only differs from this in the degree of development of keels of face and slight difference in width of vertex, character not sufficient to justify its retention.

MECYNORHYNCHUS Muir.

(1) *kershawi* Muir.

Four specimens from Mount Maquiling. (Muir, February.)

The single ♂ specimen of *kershawi* on which the genus was founded was taken in Borneo.

♂ Pygophor very short, ventral edge straight, lateral edges slightly arcuate; anal segment very short; styles longer than broad, gradually widened to apex which is broad and rounded, ventral edge entire dorsal edge in middle produced into a long curved spine.

♀ Last abdominal sternite very short and broad, posterior edge straight except in middle where it is produced into a minute angle.

(2) *hyalinus* sp. n.

♂ Light yellow, darker on keels of face and vertex and over mesonotum and dorsum of abdomen. Tegmina hyaline, slightly opaque with waxy secretion, veins yellow, a black mark in middle of costal cell and one on hind margin at apex of cubitus, slightly fuscous over radial cross-vein.

Pygophor exceedingly short, ventral and lateral edges straight; anal segment very short, anal style projecting beyond apex; styles acinacicate, apex truncate, reaching to anal segment, from dorsal edge near apex a small spine with small knob on apex.

Length 1.6mm.; tegmen 3.5mm.
Hab. Bendoredjo, Java, on palm tree. (Muir, March.)

(3) *stramineus* Muir.

One ♂ specimen from Buitenzorg, Java, off palm tree, which I cannot separate from the Formosan species.

(4) *obscurus* sp. n.

♂ Yellow, fuscous over face and vertex, apex of clypeus, apex of labium, femora and apices of tibiae, blood red mark on middle of first and second tibiae, dorsum of abdomen and genitalia brown, anal style brown. Tegmina hyaline, slightly fuscous and opaque with waxy secretion, veins very light yellow or white, costa darker yellow, slightly infuscate over basal half of subcosta, and bases of median sectors, wings hyaline, veins white. The basal portion of subcosta raised considerably.

Pygophor very short, anal segment longer than wide, anal style projecting beyond apex from under side; styles longer than wide, widest near apex, apex rotundate, dorsal edge roundly produced near base and drawn out into a sharp spine about middle, the spine curved at apex.

Length 1.4mm.; tegmen 3.5mm.
Hab. Buitenzorg, Java, on palm tree. (Muir, May.)

(5) *fuscus* sp. n.

♂ Yellow, fuscous over dorsal surface of head and thorax, abdomen and genitalia fuscous, pleura tinged with red. Tegmina fuscous, veins dark except in costal cell and apical margin where they are yellow, basal portion of costal cell nearly hyaline; wings fuscous with dark veins; both tegmina and wings with slight waxy secretion.

Pygophor very short, edges straight; anal segment short, anal style projecting beyond apex; styles subquadrate, base narrower than

apex, apex slightly rounded, spine on dorsal edge curved, with small knob at apex. This genitalia comes near to *hyalinus*.

Length 1.5mm.; tegmen 3.5mm.

Hab. Buitenzorg, Java, on palm tree. (Muir.)

## Levu Kirkaldy.

The presence of a well-developed shoulder keel on the pronotum distinguishes this genus from *Rhotana;* there is a slight difference in neuration of tegmina and in general shape. The genus is not recognized by some Homopterists, but the distinction is useful even if only considered as of subgeneric value.

### (1) *toroensis* (Mats.).

*Rhotana toroensis* Matsumura.

### (2) *hopponis* (Mats.).

*Rhotana hopponis* Matsumura.

### (3) *matsumurae* sp. n.

♂ Yellowish red, apical portion of abdomen darker red, legs light yellow. Tegmina, vitreous, veins yellowish, at apex of clavus a brown or fuscous mark from hind margin to first median sector, brownish at base of second median sector and over apical cross-veins, four small black dots on basal half of subcosta; wings hyaline, veins white.

Pygophor laterally compressed, ventral edge not produced, lateral edges broadly anugularly produced in middle; anal segment small, little longer than broad, anus at apex, anal style spatulate, longer than broad, projecting beyond end of segment; styles longer than broad, slightly narrowed at base, apex rounded, a small curved blunt pointed spine on inner surface near base.

♀ Last sternite of abdomen broader than long, hind margin in middle produced into angular process which turns up between base of styles; anal segment exceedingly short, anal styles small, narrowly spatulate.

Length 2.5mm.; tegmen 4mm.

Hab. Arisan, Formosa. (Maki, July; Muir, August.)

### (4) *quadramaculata* sp. n.

♂ Light yellow, slightly tinged with red on face, tegmina hyaline slightly opaque with waxy secretion, veins yellow, a yellowish band bordered with fuscous from the hind margin apical of clavus to

costa, broadest over media then narrowing to costa, fuscous yellow over apical portion of subcosta and radia and over apical cross-veins, a row of four black spots on cross-veins between median sectors; wings hyaline, opaque with waxy secretion, veins white or light yellow.

Pygophor laterally compressed, ventral edge not produced, lateral edges slightly and very broadly angularly produced in middle; styles considerably longer than broad, narrowest at base, apex narrowly rounded, from middle of inner surface arises a small, outwardly curved, blunt pointed spine, a small rounded process arises near base.

♀ Last abdominal sternite broader than long, hind margin angularly produced from sides to middle.

Length 2.5mm.; tegmen 4.5mm.

Hab. Arisan, Formosa. (M. Maki, July.)

(5) *lucida* sp. n.

♀ This species differs from the type of the genus in having the basal half of the costa arcuate and the costal cell very broad, especially the basal half.

Light yellow, front and middle femora streaked with red. Tegmina yellowish and dull in middle, brown and glittering around borders, three glittering spots at apex, one hyaline and two black; veins in median portion white with fuscous marks, in other parts of tegmina yellowish, wings white with white veins.

Length 2.5mm.; tegmen 4mm.

Hab. Poespoe, East Java. (Muir, April.)

## Notes on Hawaiian Roaches.

BY J. F. ILLINGWORTH.

*Leucophaea surinamensis* Fab.

On May 21st, 1914, I collected 10 pairs of this burrowing roach from the loose soil, under stones, on the College Farm. I placed these in a large jar with a quantity of the soil in which I had found them. They were fed on various substances, but I found that they took kindly to bread and the inner part of banana skins; refusing meat, butter, insect remains, etc.

June 1st, I found many young had been born—it has been noted that this is one of our four viviparous species. During