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Taxonomic synopsis of the Old World asopine genera (Heteroptera: Pentatomidae)

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Abstract

The subfamily Asopinae of the stinkbug family Pentatomidae is revised for the Old World with a key to the genera and a review of the species with nomenclatural changes. The genus *Tahitocoris* is removed from the Asopinae and placed tentatively with the Podopinae. The genus *Breddiniella* is reduced to a synonym of *Cazira*. The genus *Incitatus* is reduced to a synonym of *Martinina*. The genus *Platynopus* is divided into three genera by the restriction of *Platynopus* to include only five Indo-Pacific species; the elevation of the subgenus *Montrouzieriellus* to the level of full genus, and the erection of a new genus *Platynopiellus* for the African species formerly placed in *Platynopus*. A new genus *Australojalla* is erected for *Jalla versicolor*. The genera *Cantheconidea* and *Eocanthecona* are defined and their respective species aligned in concordance with their definitions. Fourteen species are thus transferred from *Cantheconidea* to *Eocanthecona* creating the following new combinations: *Eocanthecona japonicola*, *Eocanthecona binotata*, *Eocanthecona latipes*, *Eocanthecona mitis*, *Eocanthecona neotibialis*, *Eocanthecona ornatula*, *Eocanthecona parva*, *Eocanthecona plebeja*, *Eocanthecona robusta*, *Eocanthecona rufescens*, *Eocanthecona shikokuensis*, *Eocanthecona thomsoni*, *Eocanthecona tibialis*, and *Eocanthecona vollenhoveni*. *Eocanthecona migratoria* is transferred to the genus *Afrius* creating the new combination *Afrius migratorius*. Also, *Canthecona populusi* is transferred to *Eocanthecona* giving the new combination *Eocanthecona populusi*. *Anasida ikrami* is transferred to the genus *Pseudanasida* giving the new combination *Pseudanasida ikrami*. *Afrius discolor glypsoides* is placed in synonymy under *Canthecona discolor*. *Asopus rufus* is synonymized under *Amyotea malabarica*. *Arma neocusta* and *Arma neoinsperata* are synonymized under *Arma custos*.

KEY WORDS: Pentatomidae, Stinkbugs, Asopinae.

Introduction

The subfamily Asopinae of the Heteropteran family Pentatomidae has as its defining synapomorphy a crassate rostrum, which is an adaptation for predation on other insects (Gapud 1991). The Asopinae are also characterized by the combination of parandria (genital plates), with a thecal shield in the male terminalia. Parandria and thecal shields occur in other pentatomids, but not in combination (McDonald 1966). Because of their entomophagous predilections, with some economic pests included among their prey, several species of asopines are of acknowledged importance as biological control agents. An American species, *Perillus bioculatus* (F.), was introduced into eastern Europe where it has had some success in the control of the Colorado Potato Beetle (Jasic 1975). A southeast Asian species, *Eocanthecona furcellata* (Wolff), was released

in Florida by the USDA, as a predator of harmful lepidopterous larvae, but the species apparently failed to establish (Henry & Froeschner 1988).

Biological studies of these predators have been hampered by the lack of a means for their identification. I have recently published keys for determination of the New World genera and species (Thomas 1992). There are at present no keys for identification of the Old World species outside of the more developed countries of Europe and Asia. For a lack of adequate study material, I can only partially remedy this situation. I have been able to study representatives of all of the Old World genera, including the majority of the described species. I am thus able to provide diagnoses and keys for the Old World genera, with an annotated list of the described species, and hopefully this will spur generic level revisionary studies by regional experts in the future.

The one available taxonomic work on this subfamily of insects is the review of the asopine genera published early in this century by Henri Schouteden (1907b). Schouteden recognized 40 asopine genera in the Old World fauna, of which two are considered synonyms by the present study. The following nomenclatural changes are enumerated.

1. *Gordonerius* Distant = *Perillus* (Herrich-Schaeffer).-

Gordonerius Distant was based on a misidentified specimen of a Mexican species, *Perillus confluens* (Herrich-Schaeffer). The specimen bore a label, "Abyss." which was interpreted by Francis Walker (1867) to indicate Abyssinia (=Ethiopia) (Thomas 1992). And, while the genus *Perillus* Stål did not occur naturally in the Old World, it does now because of its introduction into eastern Europe, and I have therefore included this genus in the key and text which follows.

2. *Breddiniella* Schouteden = *Cazira* Amyot & Serville, NEW SYNONYMY.-

The genus *Breddiniella* Schouteden, was erected to hold a single species, *B. insignis* Schouteden. Schouteden (1907b) used the name *Breddiniella* in the text of his revision, but in an uncommon lapse, used the name *Paracazira* Schouteden for the same insect in his key to the genera. *Breddiniella* and *Paracazira* are among a plethora of names including *Acicazira* Hsiao & Zheng, *Teratocazira* Breddin and *Metacazira* Schouteden, derived from the older genus name *Cazira* Amyot & Serville. I can find no justification for the continued segregation of these nominal entities from the more inclusive taxon *Cazira*. The authors of these names were evidently impressed by the substantial, but largely superficial differences in these taxa from the type species for the genus, *Cazira verrucosa* Amyot & Serville. The individual species are quite variable with respect to the form and number of gibbosities, spines and excrescences protruding from their pronota, legs and abdominal margins. Based on the examination of approximately twenty specific representatives of this genus, I am not able to recognize patterns of relationship as the cause of the variation in these characters. *Metacazira* and *Teratocazira* were considered by Schouteden (1907b) to be subgenera of *Cazira*. *Acicazira* was reduced to synonymy under *Cazira* by Zheng & Liu (1987b), a referral with which I am obviously in accord and to which I nominate *Breddiniella* as well.

3. *Incitatus* Distant = *Martinina* Schouteden; NEW SYNONYMY.

Schouteden's monograph included the description of a monotypic genus from Tibet which he named *Martinina* Schouteden, later emended to *Martinina*. A few months later William L. Distant (1908) published a description of a genus, from India, naming it *Incitatus*. Presumably, the two authors were unaware of each others specimens and pending descriptions. The published diagnoses do not indicate any meaningful difference between these and I consider them to be synonymous at the generic level. I was able to examine the female type specimen of *Incitatus primus* Distant in the British Museum. However, my requests to borrow Schouteden material from the Musée Royal du Congo Belge have not met with success. The descriptions do indicate a difference in the length of the ruga attending the scent gland orifice which would support the presumption that the specimens might represent different species. I therefore relegate *Incitatus* to the synonymy of *Martinina* while withholding judgement on the status of the species.

4. *Australojalla* Thomas, a new genus for *Jalloides versicolor* Distant.

Schouteden (1907b) erected the genus *Jalloides* Schouteden to hold an Australian species that had been described by Stål (1870) as *Jalla rubricosa* Stål. Subsequently, Distant (1911) described two additional species, also from Australia. One of these, however, *Jalloides versicolor* Distant, differs substantially in morphological character from the other two, and I am compelled to separate it as a new genus, *Australojalla* Thomas, which is described in the text that follows.

5. *Cantheconidea* Schouteden and *Eocanthecona* Bergroth, defined.

Subsequent to the publication of Schouteden's revision, several changes in generic nomenclature appeared. Schouteden's genus *Cantheconidea* was divided by him into two species groups: A, containing the type species *C. javana* (Dallas), with the metasternum modified to embrace the rostrum; and B, species without this modification. Ewald Bergroth (1915) formally proposed *Eocanthecona* for species group B. However, other than Bergroth's designation of *E. furcellata* Wolff as the type species of *Eocanthecona* and Schouteden's selection of *C. javana* as the type of *Cantheconidea*, neither author indicated which species of *Cantheconidea* constituted group B, and which would therefore be

transferred to *Eocanthecona* Bergroth. While I cannot vouch for the reliability of all species determinations in the absence of a revisionary study, I have seen identified material representing all but a few of the described species. Based on the studied material and relying on the original descriptions for the others I can place six species in *Cantheconidea*, and 21 in *Eocanthecona* using the defining character of the metasternum. Bergroth indicated in the same publication that one species, *Cantheconidea chrysopterus* (Herrich-Schaeffer) from Guam, could not be placed in either genus. Herbert Ruckes (1960) subsequently provided a new genus name *Bulbostethus* Ruckes to hold this species. Ruckes (1963) later described another new genus *Ponapea* for an unusually long-legged asopine from the south Pacific Caroline Islands.

6. *Tahitocoris* Yang, excluded from Asopinae.

Another unusual south Pacific stinkbug was described from the island of Tahiti by We Yang (1935) as *Tahitocoris cheesmanae* Yang. Yang described this insect as representing a new family of Hemiptera. Miller (1971) placed it in the Asopinae, apparently on the basis of its having the oral bucculae united posteriorly. Kirkaldy (1909a) had cited this character as a unifying feature of the asopines. However, as I pointed out in my earlier monograph, the bucculae are united in many edessines and even an occasional pentatomine. On examining Yang's female type specimen I found that the rostrum is not crassate, and that the insect is therefore not assignable to the Asopinae. Its true placement is problematic, the more so because the beast is apterous and lacks ocelli. After conferring with my colleague William R. Dolling, and largely at his suggestion, I propose the transfer of the genus *Tahitocoris*, tribe Tahitocorini, to the subfamily Podopinae. It has the pedunculate eyes and general aspect of a podopine. Miller (1971) provides a figure of this unusual bug.

7. *Parastrachia* Distant is not an asopine.

The Asian genus *Parastrachia* Distant was originally placed in the Asopinae, but was transferred to the Cydnidae by Schaefer et al. (1988). I mention this genus only because one of the coauthors of the latter paper (Dolling) has mentioned to me that he has strong reservations about the present arrangement. In an unpublished dissertation, Victor Gapud (1975) suggested that *Parastrachia* belonged in the Urostylidae. Having examined specimens of *Parastrachia* I can only reaffirm that it is not an asopine.

8. *Platynopus* Amyot & Serville restricted.

In the course of his dissertation work, which was a phylogenetic (cladistic) analysis of the asopine genera, Victor Gapud (1975) examined and determined a great deal of mounted material. I have run across much of this material in my own studies and have noted his use of a manuscript genus name for certain African asopines formerly identified in the genus *Platynopus* Amyot & Serville. In anticipation of the eventual publication of Gapud's cladistic studies, and in order to avoid the published appearance of conflicting names, I have elected to use his name, *Platynopiellus* for the African members of the genus. In fact, I have determined that the name *Platynopus* should be restricted to a few southeast Asian species. The Australian and south Pacific species properly belong to a separate taxon *Montrouzieriellus* Kirkaldy, which I consider to be a distinct and valid genus.

With the accumulation of nomenclatural and revisionary changes since the publication of Schouteden's (1907b) monograph, along with the additions and deletions proposed herein, the Old World component of the Asopinae is now comprised of 43 recognizable genera and 187 nominate species.

Materials

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Key to the Old World asopine genera

1. Eyes well separated from anterior border of the pronotum (figs. 7-8); head about as long as the pronotum except in *Leptolobus* which has dilate juga (fig. 34) 2
 - Eyes proximal to anterior border of the pronotum; head rarely as long as pronotum and the juga never dilate 5
2. Profemora bearing a distinct spine subapically (figs. 2-3) 3
 - Profemora unarmed *Stilbotes* Stål
3. Head as long as pronotum, juga not dilate 4
 - Head not as long as pronotum, juga notably dilate *Leptolobus* Signoret
4. Protibiae dilate (fig. 2) *Cecyrina* Walker
 - Protibiae not dilate (fig. 3) *Ponapea* Ruckes
5. Profemora with anteapical tubercle or spine (often minute in *Andrallus*) (figs. 2-3) 6
 - Profemora unarmed 30
6. Base of scutellum with conspicuous, gibbosity(s), tubercles or spines (fig. 15) *Cazira* Amyot & Serville
 - Scutellum without conspicuous excrescences 7
7. Abdominal venter without free basal spine or tubercle, though there may be a basal prominence (fig 1B) 8
 - Abdominal venter with a forwardly directed, free basal spine or tubercle (figs. 4-6) 13
8. Dorsal color red and black 9
 - Dorsal color somber, shades of black and brown 10
9. Apical portion of scutellum about equal in width to hemelytral corium *Perillus* Stål
 - Apical portion of scutellum much narrower in width than hemelytral corium *Jalioides* Schouteden
10. Humeral angles strongly produced 11
 - Humeral angles obtuse or prominent but not laterally produced 12
11. Exocorium pale, calloused .. *Andrallus* Bergroth
 - Exocorium concolorous with rest of corium *Picromerus* (pars)
12. Dorsum with pale median stripe and large pale spots at basal angles of scutellum. *Jalla* Hahn
 - Dorsum uniformly black *Pseudanasida* Schouteden
13. Frenal margin of scutellum much shorter than post-frenal portion of scutellum (Fig. 31) *Blachia* Walker
 - Frenal margin of scutellum longer than post-frenal portion of scutellum 14
14. Basal abdominal tubercle bifid or sulcate (fig. 6) *Glypsus* Dallas
 - Basal abdominal tubercle simple (figs. 4-5) 15
15. Basal abdominal spine long, reaching or surpassing mesocoxae (fig 5) 16
 - Basal abdominal spine not reaching mesocoxae (fig. 4) 18
16. Basal abdominal spine just reaching mesocoxae; protibiae foliate *Platynopiellus* New Genus
 - Basal abdominal spine clearly exceeding mesocoxae; protibiae modestly dilate 17
17. Abdominal spine strongly compressed, keeled; mottled brown species ... *Macrorhaphis* Dallas
 - Abdominal spine not compressed, terete; metallic green or blue species *Damarius* Schouteden
18. Juga longer than tylus and meeting in front (fig. 38) *Pinthaeus* Stål
 - Jugae little longer than tylus and not convex . 19
19. Fourth rostral segment much longer than third *Australojalla* New Genus
 - Fourth rostral segment about equal in length to third 20
20. Angle of last abdominal segment produced, spinose or terminating in a distinct spinule (figs. 16, 29) 21
 - Angle of last abdominal segment not produced or spinose 26
21. All abdominal angles strongly produced as tubercles *Friarius* Schouteden
 - Only last 1 or 2 abdominal angles strongly produced 22

22. Metasternum with lateral margins strongly elevated and embracing apex of rostrum in repose *Cantheconidea* Schouteden
 - Metasternum not embracing apex of rostrum 23
23. Anterolateral pronotal margin beaded, carinate or denticulate 24
 - Anterolateral pronotal margin obtuse, smooth 25
24. Anterolateral pronotal margin crenulate or denticulate (Asia) *Eocanthecona* Bergroth
 - Anterolateral pronotal margin smooth, carinate (fig. 44)(Africa) *Platynopiellus* New Genus
25. Protibia foliate (fig. 2) *Platynopus* Amyot & Serville
 - Protibia prismatic (fig. 3) *Montrouzieriellus* Kirkaldy
26. Anterolateral pronotal margin obtuse, semicalloused *Planopsis* Schouteden
 - Anterolateral pronotal margins distinctly crenate or dentate 27
27. Scent gland opening continuous with an elevated ruga on metapleuron 28
 - Scent gland opening continuous with a sinuate sulcus on metapleuron (fig. 61) *Hemallia* Bergroth
28. Humeral angles prolonged laterally 29
 - Humeral angles obtuse or prominent but not prolonged laterally *Afrius* Stål
29. Head broad, interocular distance greater than combined width of both eyes; males lack glandular patches of hairs on abdominal venter (Asia and Europe) *Picromerus* (pars)
 - Head narrow, interocular distance less than combined width of both eyes; males with glandular patches of hairs on abdominal venter (fig 1B)(Africa) *Canthecona* Amyot & Serville
30. Metasternum elevated into a spherical bulla *Bulbostethus* Ruckes
 - Metasternum not as above 31
31. Meso- and metasternum bicarinate, carinae embracing rostrum 32
 - Meso- and metasternum not modified to embrace rostrum 33
32. Anterolateral margins of pronotum obtuse, without marginal bead; connexival apices spinose; posterior angles of pronotum with prominent lobe (fig. 29) *Ealda* Walker
 - Anterolateral margins of pronotum with crenulate marginal bead; connexival apices not produced into spines; posterior angle of pronotum not prominently lobed (fig. 21) *Parealda* Schouteden
33. Base of abdominal venter with a distinct tubercle or spine 39
 - Abdominal venter without a distinct tubercle or spine, though base may be prominent 34
34. Juga convergent and contiguous anterior to tylus (fig. 28) *Rhacognathus* Fieber
 - Juga not convergent and contiguous anterior to tylus 35
35. Dorsal color metallic blue *Zicrona* Amyot & Serville
 - Dorsal color neither metallic or blue 36
36. Second rostral segment about as long as or longer than two posterior segments combined 30
 - Second rostral segment distinctly shorter than two posterior segments combined *Cermatulus* Dallas
37. Dorsum aposomatically colored red or orange and black *Amyotea* Ellenreider
 - Dorsum somber colors, brown or black 38
38. Scent gland orifice continuous laterally with flat, elevated ruga (fig. 59); rostrum reaching base of abdomen *Arma* Hahn
 - Scent gland orifice continuous laterally with long, narrow sulcus (fig. 67); rostrum reaching only to mesocoxae *Anasida* Karsch
39. Abdominal spine short, not surpassing metacoxae (fig. 4) 42
 Abdominal spine long, extending at least to mesocoxae (fig. 5) 40
40. Scent gland orifice prolonged into broad, flat ruga 41
 - Scent gland orifice slit-like, not attended by ruga (fig. 79) *Oechalia* Stål
41. Humeral angles of pronotum prolonged laterally (fig. 16) *Hoploxys* Dallas
 - Humeral angles of pronotum not prolonged laterally (fig. 27) *Mecosoma* Dallas
42. Juga longer than tylus and contiguous in front (fig. 37) *Dinorhynchus* Jakovlev
 - Juga slightly longer than tylus and never contiguous in front 43
43. Dorsum metallic, coppery blue or green *Dorycoris* Mayr
 - Dorsum dull black or brown 44

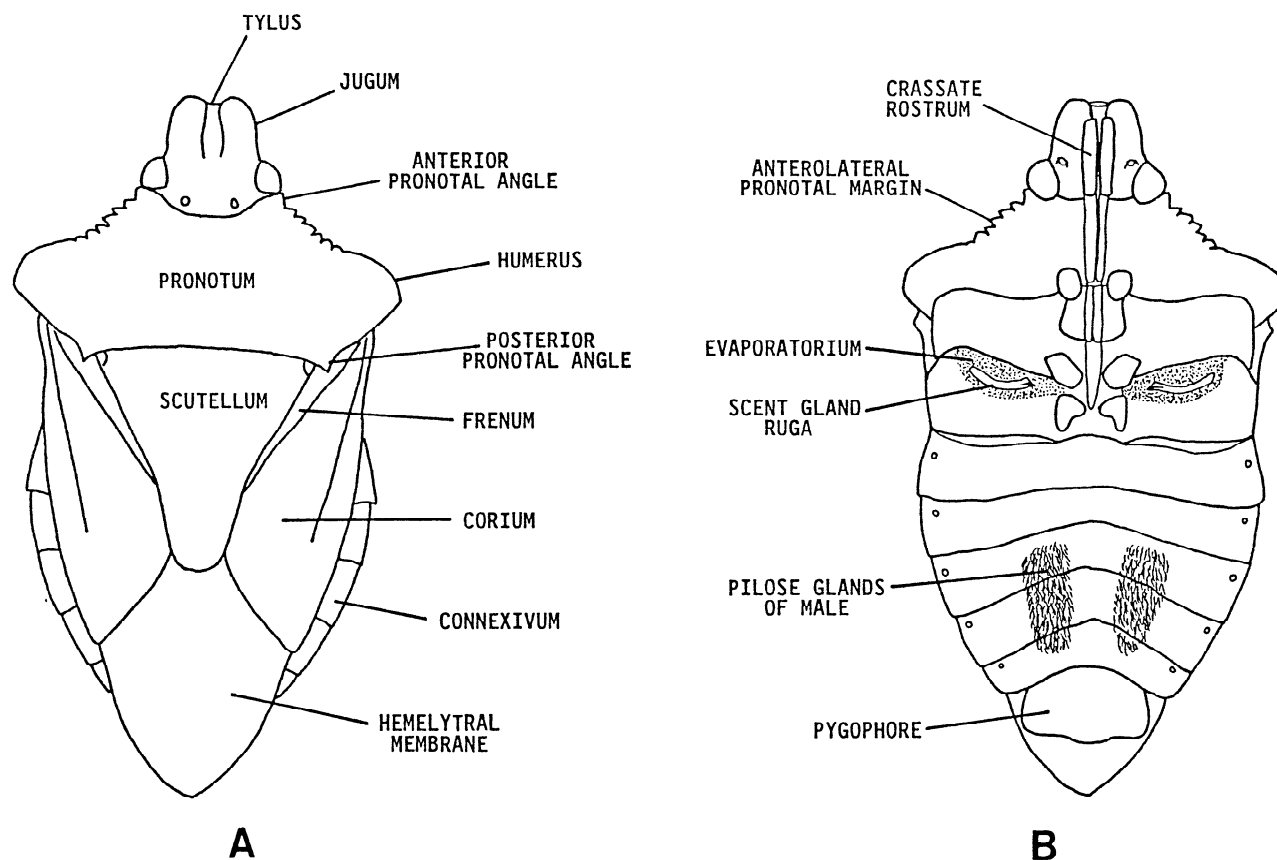


FIGURE 1. Anatomy of an asopine: A. Dorsal, B. Ventral.

- 44 Humeral angles of pronotum produced into quadrate lobe *Martinina* Schouteden
 Angles of pronotum not produced laterally (fig. 40) *Troilus* Stål

Afrius Stål (Figs. 18, 57)

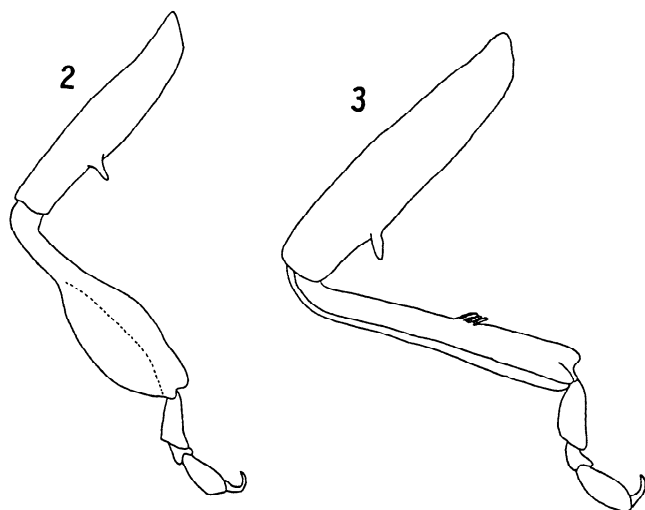
Cimex, subgenus *Afrius* Stål 1870:44. Type-species, *Asopus figuratus* Germar (= *yolofus*).
Afrius, subgenus *Afrius*: Schouteden 1907b:51.
Afrius, subgenus *Subafrius* Schouteden 1907b:51.
 Type, *Picromerus flavirostrum* Signoret.

Diagnosis: Rostrum crassate, reaching metacoxae; segment II longest, segment IV equal to III. Bucculae prominent. Juga and tylus equal or juga slightly longer. Anterolateral pronotal margins crenulate or dentate, sinuate in dorsal view; humeral apex simple or weakly notched (fig. 18). Frenal margin of scutellum longer than post-frenal part. Angle of connexival segment VI not produced. Orificial peritreme of scent gland broad, spatulate, extend-

ing slightly more than half-way to metapleural margin; not surrounded by evaporatorium (fig. 57). Metasternum subelevated, notched behind; base of abdomen with forwardly directed tubercle in apposition to notch of metasternum. Profemora with subapical spine; protibiae not dilate. Males with or without pilose glandular patches on abdominal venter.

Remarks: The subgenus *Subafrius* Schouteden lacks the male abdominal patches, but is otherwise inseparable from the nominate subgenus. There are no keys to species of the genus *Afrius*. According to Leston (1953a) *Afrius yolofus* (Guérin-Ménéville) is the commonest asopine in Africa. However almost all references in the literature and determinations on specimens refer to synonyms *figuratus* Germar and *purpureus* Westwood. Revisionary studies are needed to verify the validity of the nominal taxa.

I have seen a specimen in the British Museum (Natural History) identified as "*Afrius nigratarsis* Distant," and labeled "Type" and "Aldabra". No



FIGURES 2-3. Forelegs: 2. Dilate tibia. 3. Prismatic tibia.

such species name was ever published by Distant. I believe this specimen to be the type of *Cantheconidea migratoria* Distant, described from Aldabra in Distant's (1913) monograph on the Rhynchota of the Seychelles. I was not able to find any other specimen corresponding to the latter name in the collection of the British Museum. The specimen fits the original description of *C. migratoria*, however, the description included only scant detail useful for discerning the generic placement of the species. I have restricted *Cantheconidea* to the South Pacific. Furthermore, *Cantheconidea* is characterized by a remarkably developed sternal armature. Distant's lack of comment beyond the color of the sternum reinforces my certainty that the specimen described by Distant was not a *Cantheconidea*. Of course at the time Distant wrote his description *Cantheconidea* had not been separated from *Eocanthecona*. *Eocanthecona* is an Asian genus. If *C. migratoria* was a member of the latter genus it would be the smallest member at 8-9 mm according to Distant's description. Since Distant did remark that *C. migratoria* was the only representative of the Asopinae known to occur in the Seychelles, I am convinced that the specimen labeled "*Afrius nigratarsis* Distant," "Type," and "Aldabra," is actually the lost type of *C. migratoria* Distant. The specimen from Aldabra is markedly similar to *Afrius flavirostrum*, a Madagascan species, but I hesitate to synonymize Distant's name because of the uncer-

tainty attending the true identity of the specimen, its exotic geographic origin, and the paucity of material for study. With those provisos in mind I am transferring *Cantheconidea migratoria* Distant to the genus *Afrius*, subgenus *Subafrius*.

List of Species

Subgenus *Afrius* Stål

1. *Afrius kollerii* Schouteden

Afrius kollerii Schouteden 1911:180 [Belgian Congo].

Distribution: Zaire, Kenya, Ethiopia, Uganda, Ivory Coast.

References: Schouteden (1911) [description]; Gillon (1972) [characters, figure].

Material examined: Zaire (1), Kenya (2), Uganda (1), Ethiopia (2).

2. *Afrius marmoratus* (Dallas)

Canthecona marmorata Dallas 1851:90 [So. Africa].
Canthecona annulipes Dallas 1851:91.
Cimex (Afrius) marmoratus: Stål 1870:46.
Cimex (Afrius) annulipes: Stål 1870:46.
Afrius? marmoratus: Lethierry & Severin 1893:214.
Afrius marmoratus: Schouteden 1907b:51.

Distribution: South Africa.

References: Miller (1952) [characters].

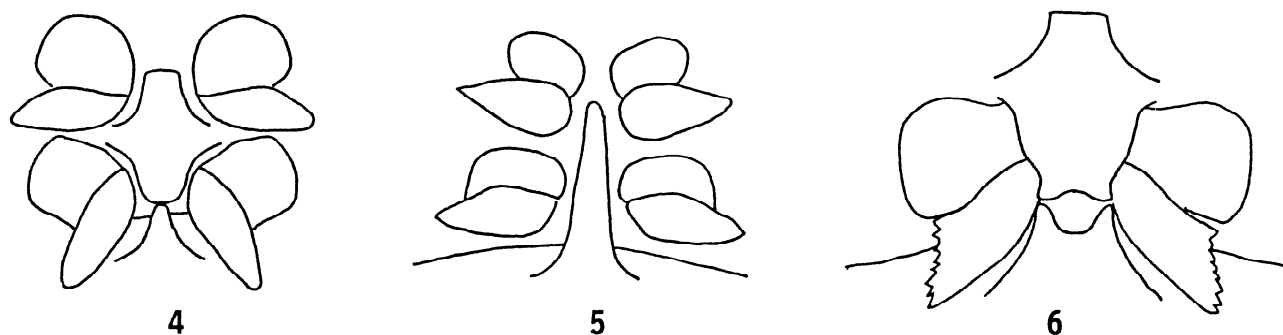
Material examined: The Holotype female of *Canthecona marmorata* Dallas was located in the BM(NH). Also, South Africa (1).

3. *Afrius rubromarginatus* Bergroth

Afrius rubromarginatus Bergroth 1903:289. [East Africa]
Canthecona rubromarginata: Schouteden 1905:150.
Afrius rubromarginatus: Schouteden 1907b:52.

Distribution: Mozambique, Botswana, Tanzania.

Material examined: Botswana (4).



FIGURES 4-6. Abdominal armature: 4. Basal spine short, 5. Basal spine long, 6. Basal spine bifurcate.

4. *Afrius yolofus* (Guérin-Ménéville)

Pentatoma yolofa Guérin-Ménéville 1831: Pl. 55, fig. 2.

Pentatoma purpurea Westwood 1837:43 [Africa].

Asopus figuratus Germar 1837:185.

Asopus figuratus: Herrich-Schaeffer 1844:113

Canthecona caerulea Dallas 1851:89.

Canthecona marginella Dallas 1851:89.

Canthecona miniatescens Stål 1853:213 [Caffraria].

Canthecona yolofa: Stål 1865:67.

Canthecona figurata: Stål 1865:66.

Cimex (Afrius) figuratus Stål 1870:44.

Cimex (Afrius) purpureus: Stål 1870:44.

Cimex figuratus: Distant 1892:248.

Afrius figuratus: Lethierry & Severin 1893:214.

Afrius purpureus: Lethierry & Severin 1893:214.

Canthecona purpurea var. *figurata*: Schouteden 1905:150.

Afrius purpureus: Schouteden 1907b:51.

Afrius yolofus: Dupuis 1952:454.

Afrius figuratus: Leston 1953a:678.

Distribution: Sudan, Liberia, Ghana, Guinea Bissau, Tanzania, Cameroon, Benin, Ethiopia, Gambia, Sierra Leone, Somalia, Zaire, Ivory Coast, Nigeria, Angola, Senegal, Zimbabwe, South Africa.

References: Villiers (1952) [characters, distribution, figure]; Dupuis 1952 [synonymy]; Leston 1953a [male genitalia]; Le Pelley (1959) [prey]; Gillon (1972) [characters, immatures, figures]; Linnavouri (1975) [listed]; Nuamah (1982) [karyotype]; Linnavouri (1982) [habitat, distribution].

Material examined: Ghana (3), Cameroon (2), Sudan (2), Nigeria (2), Guinea (1), Liberia (1).

Subgenus *Subafrius* Schouteden

5. *Afrius flavirostrum* (Signoret)

Picromerus flavirostrum Signoret 1861:921 [Madagascar].

Canthecona flavirostra: Stål 1865:68.

Cimex flavirostra: Stål 1870:44.

Afrius flavirostris: Lethierry & Severin 1893: 214.

Afrius (Subafrius) flavirostrum: Schouteden 1907b:51.

Distribution: Madagascar.

References: Cachan (1952) [description, figure].

Material examined: Madagascar (2).

6. *Afrius migratorius* Distant [NEW COMBINATION].

Cantheconidea migratoria Distant 1913:44 [Aldabra].

Distribution: Seychelle Islands.

References: Distant (1913) [description].

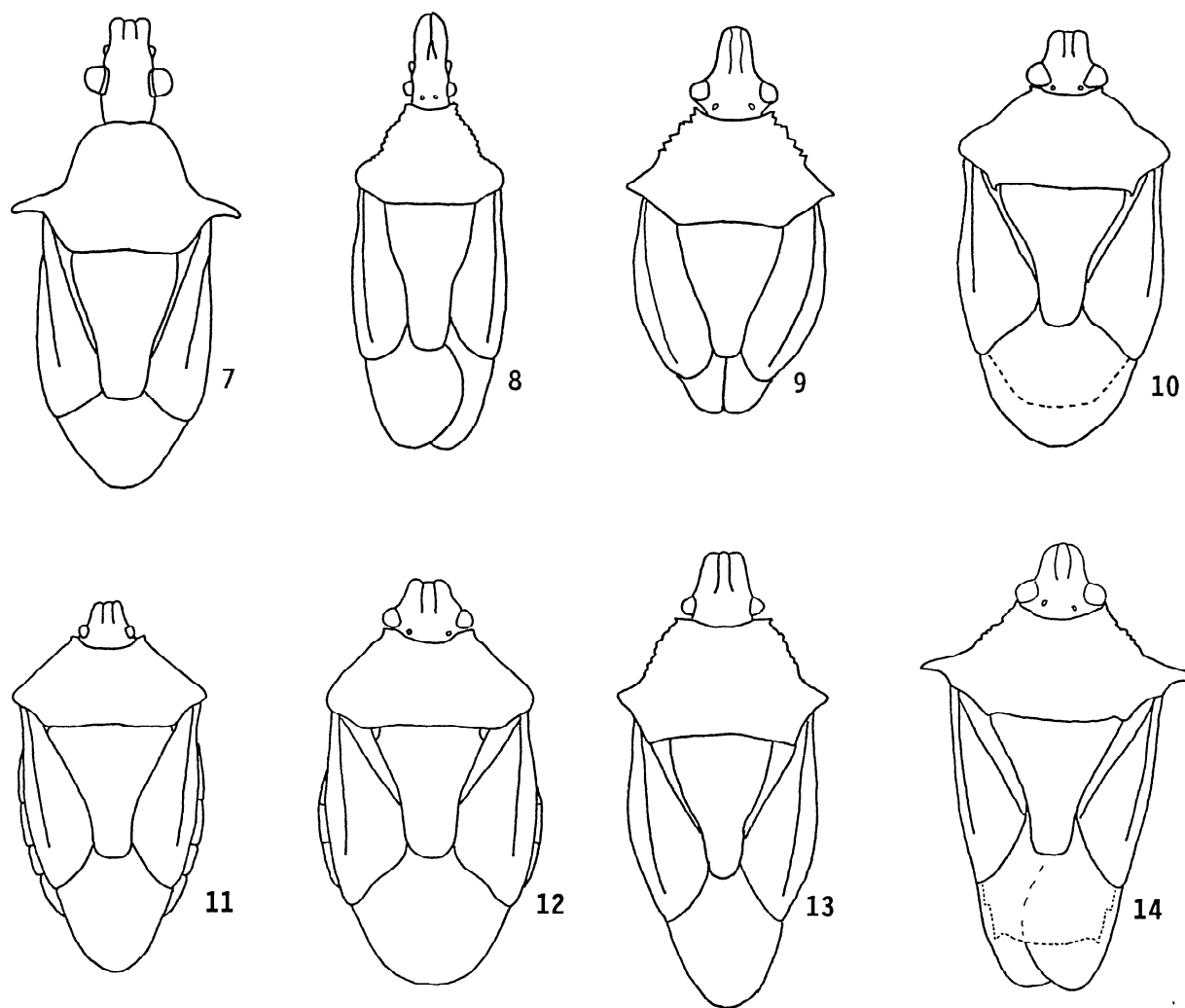
Material examined: Type? in BM(NH), see remarks above.

7. *Afrius williamsi* Miller

Afrius williamsi Miller 1952:183 [Mauritius].

Distribution: Mauritius.

References: Miller (1952) [description, figures, prey].



FIGURES 7-14. Dorsal aspect: 7. *Stilbotes*, 8. *Cecyrina*, 9. *Ponapea*, 10. *Dorycoris*, 11. *Australlojalla*, 12. *Zicrona*, 13. *Pseudanasida*, 14. *Bulbostethus*.

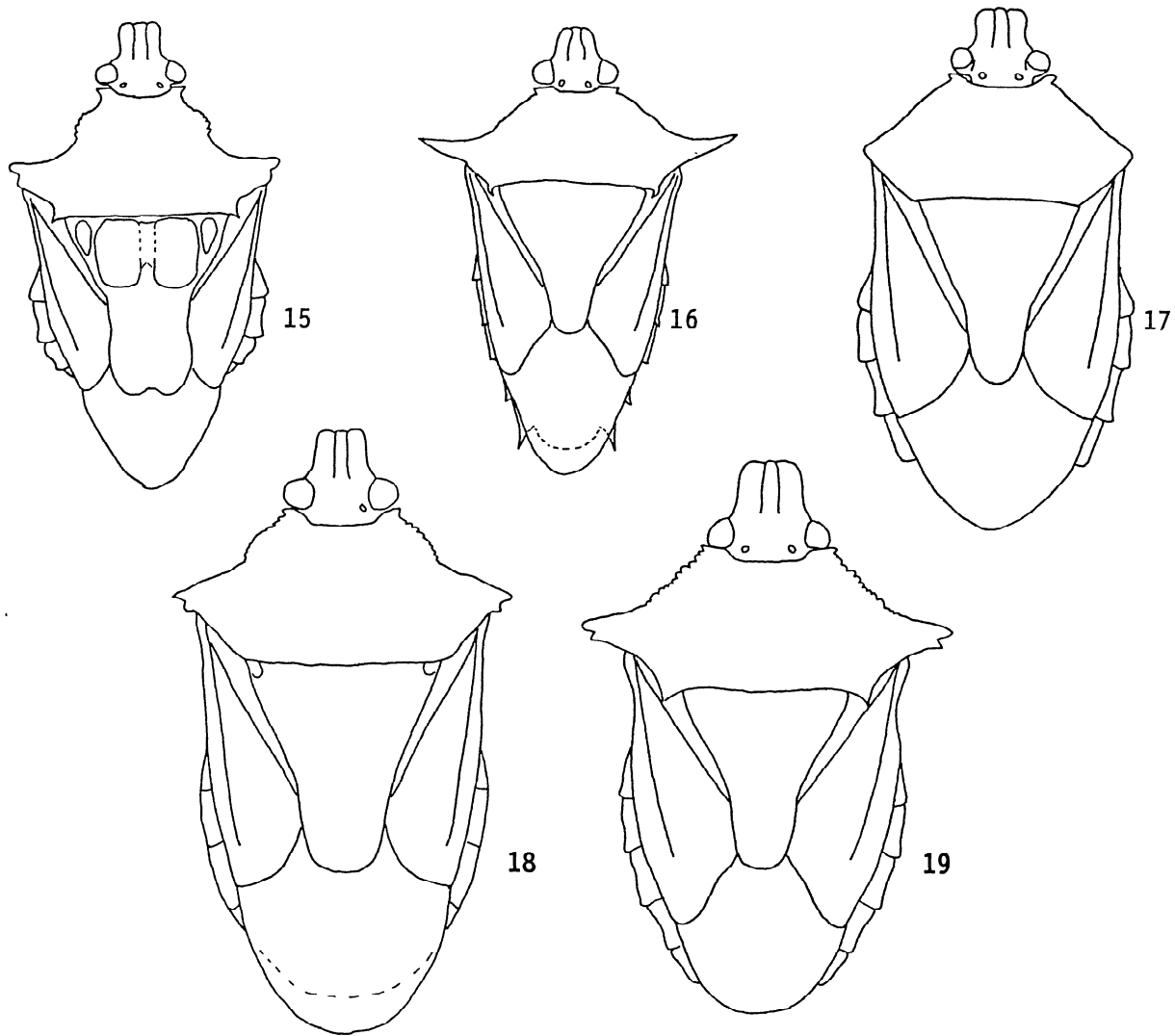
AMYOTEA Ellenreider (Figs. 45, 54)

Amyotea Ellenreider 1862:137. Type-species,
Amyotea dysteroides Ellenreider
(=*malabarica* (F.))

Diagnosis: Rostrum semi-crassate, long, surpassing metacoxae and extending past base of abdomen; segment III twice as long as IV, II as long as the last two combined. Bucculae low, becoming obsolescent posteriorly. Juga and tylus equal in length. Anterolateral pronotal margins weakly serrate, convex in dorsal outline, somewhat explanate; humeri

rounded, not produced (fig. 45). Frenal margin of scutellum longer than post-frenal portion; scutellar apex narrower than corium. Scent gland ruga long, sinuate, reaching slightly more than half way to metapleural margin, surrounded by evaporatorium (fig. 54). Metasternum flat, pentagonal. Connexival angles not produced. Base of abdomen without tubercle. Femora unarmed; protibiae not dilate. Males lack glandular patches on abdominal venter.

Remarks: Bergroth (1911) nominated *Asopus malabaricus* F. to be the type-species of the nominate genus *Asopus* Burmeister. However, this name is ineligible because it was not one of the included species when Burmeister originally erected *Asopus*.



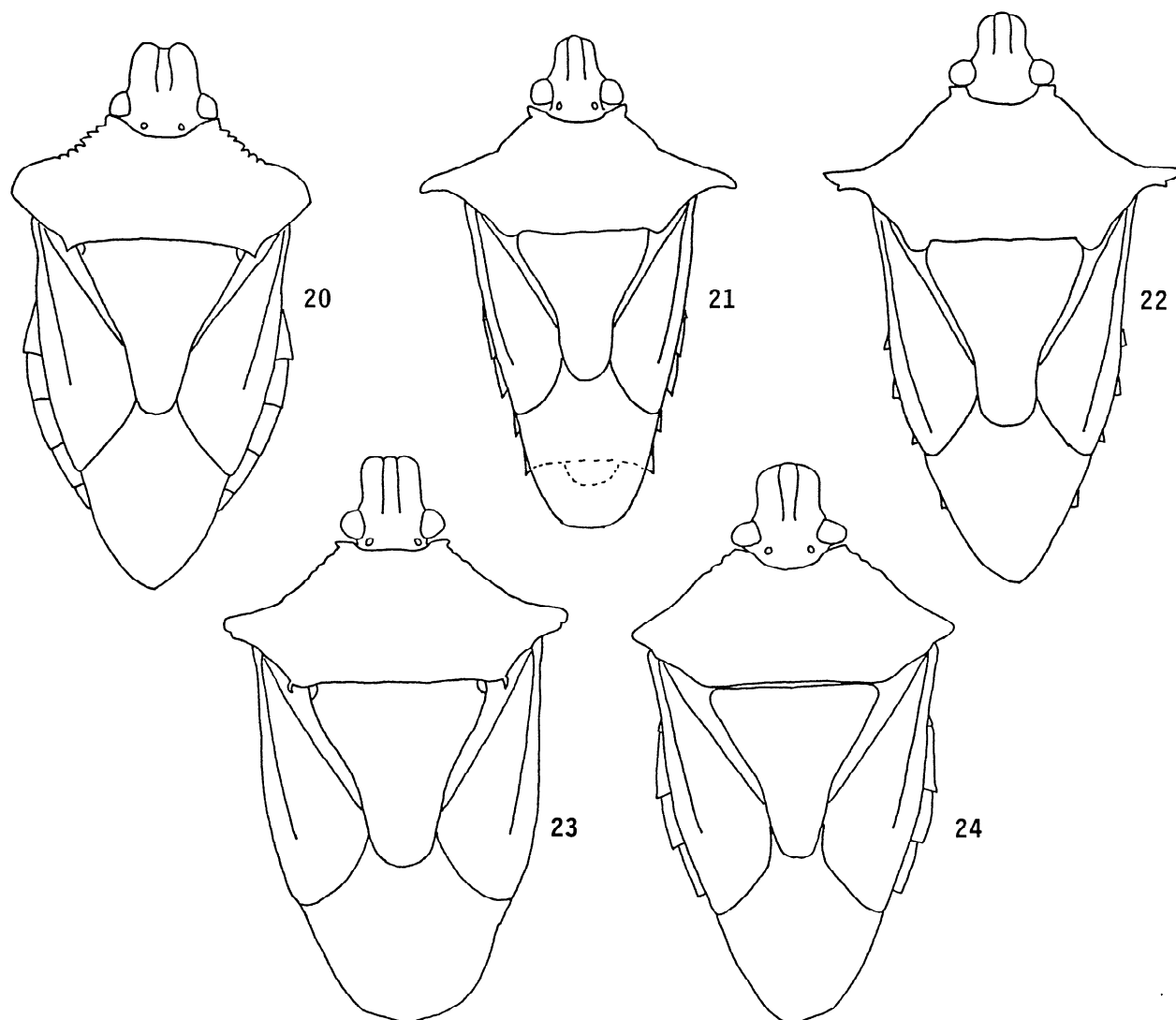
FIGURES 15-19. Dorsal aspect: 15. *Cazira*, 16. *Hoploxys*, 17. *Jalloides*, 18. *Afrius*, 19. *Picromerus*.

Thus *Amyotea* is a valid genus name, separate from *Asopus* which is a junior synonym of *Discocera* Laporte. There is no key to the species and several are of doubtful validity. I have synonymized *Asopus rufus* Azim & Shafee under *Amyotea malabaricus* (F.) based on the description, figures and characters cited by the authors as differentiating *rufus* from *malabaricus*. In this, as in many species of Asopinae, dorsal coloration varies substantially and cannot be accepted of itself as a valid criterion for erecting new taxa. Besides having placed their species under an old and invalid genus name they give no indication of being aware of the many color varieties that have been described in this species.

List of Species

1. *Amyotea erythromela* (Walker)

- Strachia erythromela* Walker 1868:339 [Kaisaa].
Strachia praecipua Walker 1868:339 [Batchian].
Strachia pyrophila Walker 1868:340 [Batchian].
Asopus carnifex Vollenhoven 1868:12 [Ternate].
Asopus erythromelas: Stål 1870:58.
Asopus praecipuus Stål 1870:58.
Asopus pyrophilus: Stål 1870:58.
Amyotea erythromelas: Schouteden 1907b:54.
Amyotea malabaricus var. *carnifex*: Schouteden 1907b:54.



FIGURES 20-24. Dorsal aspect: 20. *Arma*, 21. *Parealda*, 22. *Montrouzieriellus*, 23. *Planopsis*, 24. *Hemallia*.

Distribution: Indonesia, Australia, New Guinea, Moluccas.

References: Kirkaldy (1909a) [distribution, synonymy].

Material examined: Walker's specimen's were examined in the BM(NH).

2. *Amyotea frontalis* (Walker)

Strachia frontalis Walker 1868:339 [Batchian].
Asopus semiviolaceus Vollenhoven 1868:13 [Halmaheira].
Asopus frontalis: Lethierry & Severin 1893:220.
Amyotea frontalis: Schouteden 1907b:54.

Distribution: Molucca Islands.

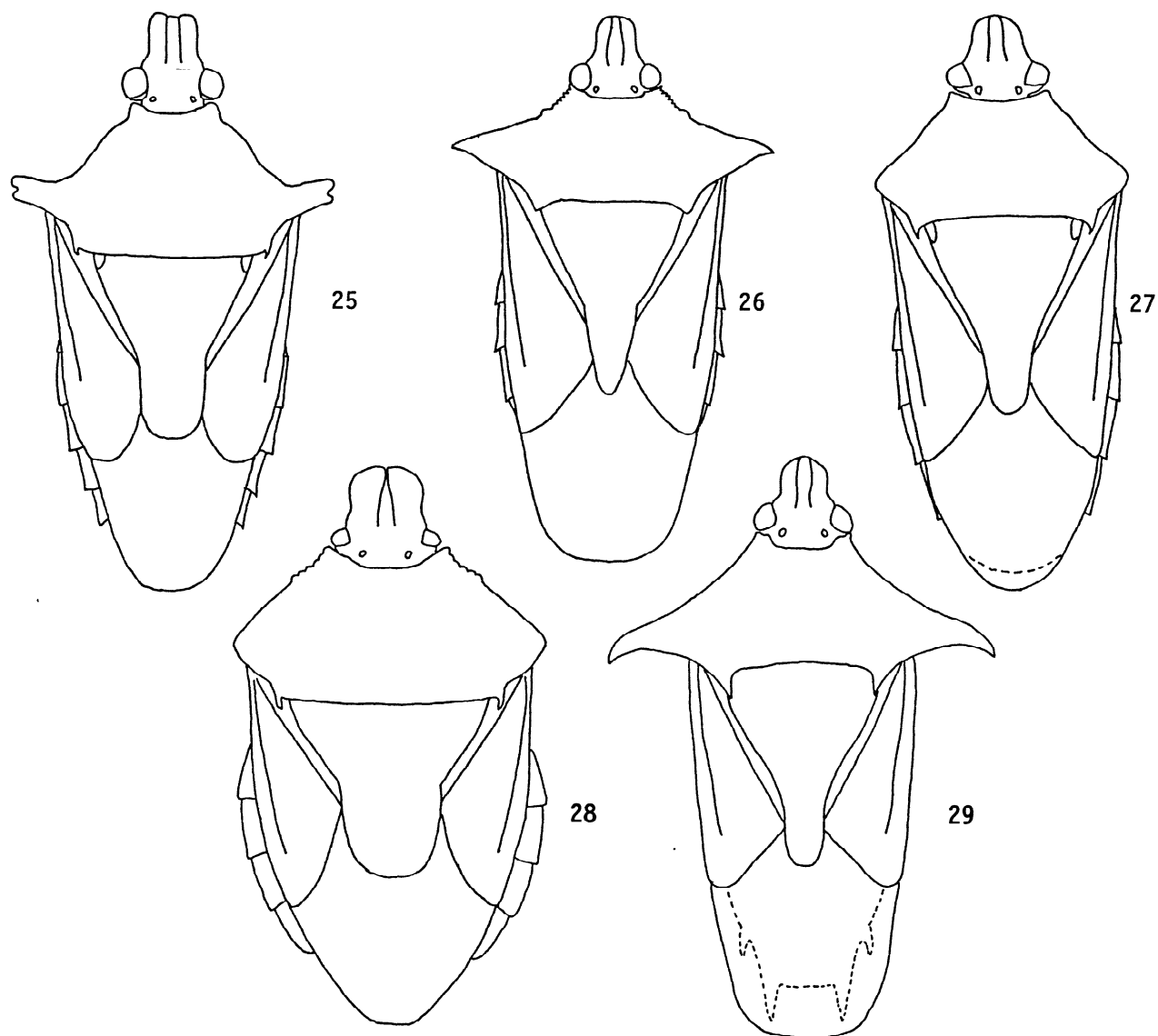
References: Kirkaldy (1909a) [synonymy, distribution].

Material Examined. Walker's type specimen was examined in the BM(NH).

3. *Amyotea glaucolimbata* (Tryon)

Strachia glaucolimbata Tryon 1892:15 [Papua].
Asopus glauco-limbatus: Lethierry & Severin 1893:220.
Amyotea glaucolimbata: Schouteden 1907b:54.

Distribution: New Guinea, Bismarck Is.



FIGURES 25-29. Dorsal aspect: 25. *Platynopus*, 26. *Oechalia*, 27. *Mecosoma*, 28. *Rhacognathus*, 29. *Ealda*.

References: Black (1968) [distribution]

4. *Amyotea hamata* (Walker)

Strachia hamata Walker 1868:342 [New Guinea].
Strachia saturata Walker 1868:342 [Ceram].
Asopus distigma Vollenhoven 1868:13 [Amboine].
Asopus hamatus: Stål 1870:57.
Amyotea hamata: Schouteden 1907b:54.

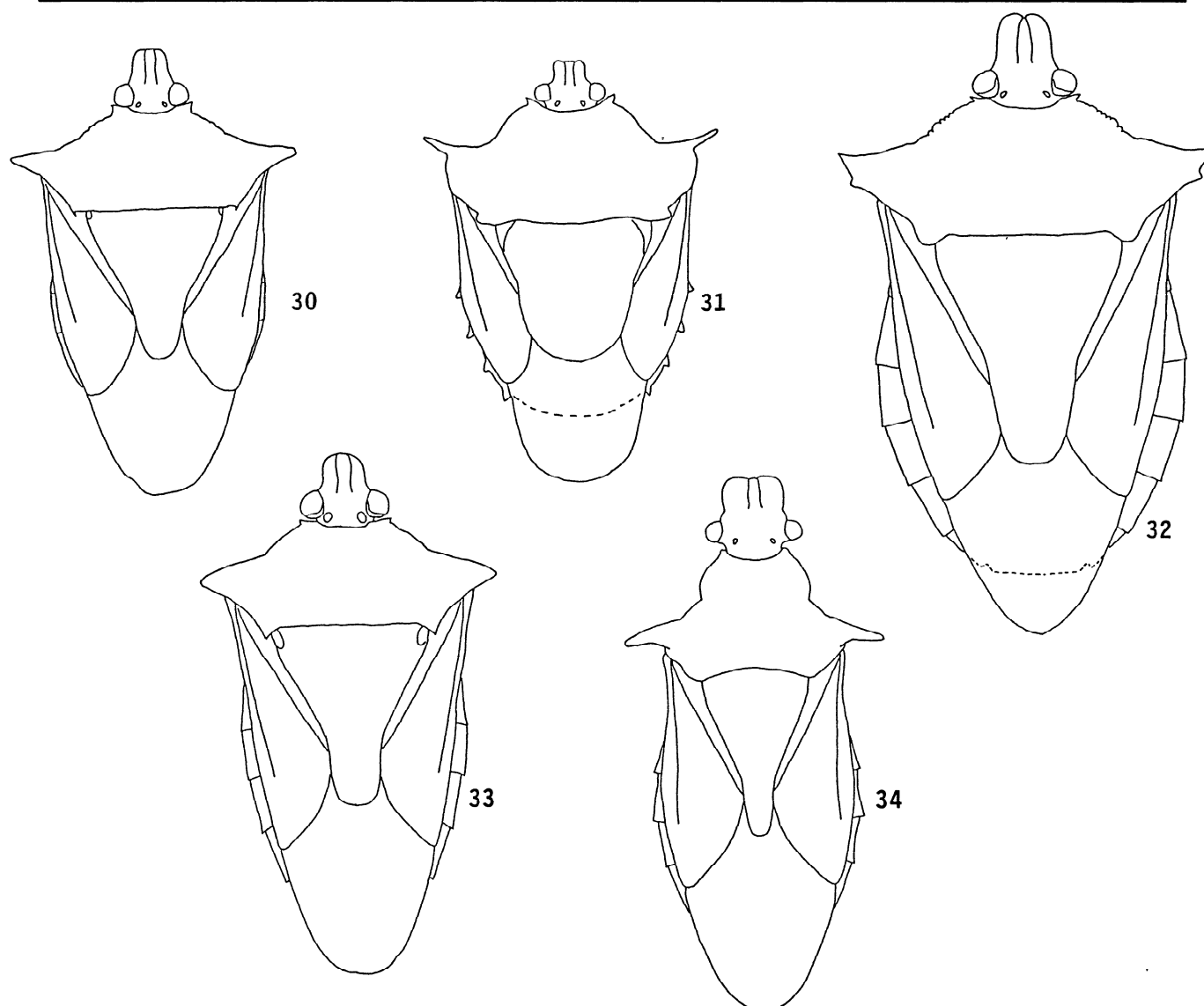
Distribution: New Guinea, Molucca Islands, Australia.

References: Kirkaldy (1909a) [distribution, synonymy].

Material examined: Walker's material was examined in the BM(NH). Also: 3 males, 5 females, Australia, New Guinea.

5. *Amyotea malabarica* (F.)

Cimex malabarica Fabricius 1775:718.
Cimex mactans Fabricius 1781:366.
Lygaeus malabaricus: Fabricius 1794:151.
Lygaeus mactans: Fabricius 1794:161.
Cimex oculatus Fabricius 1798:535 [homonym].
Lygaeus argus Fabricius 1803:217. [new name for *oculatus*]
Asopus argus: Burmeister 1834:293.
Pentatoma mactans: Westwood 1842:25.



FIGURES 30-34. Dorsal aspect: 30. *Canthecona*, 31. *Blachia*, 32. *Glypsus*, 33. *Macrorhaphis*, 34. *Leptolobus*.

Asopus mactans: Dallas 1851:107.

Amyotea dystercoides Ellenreider 1862:137.

Amyotea nigripes Ellenreider 1862:138 [Lahat].

Asopus nigripes: Vollenhoven 1868:12.

Asopus malabaricus: Stål 1870:56.

Asopus malabarica var. *rubrocincta* Breddin 1899:166.

Amyotea malabarica var. *rubrocincta*: Schouteden 1907b:54.

Amyotea malabarica var. *nigripes*: Hsiao et al. 1977:88.

Asopus rufus Azim & Shafee 1982:361 [India]. [NEW SYNONYMY]

Distribution: Bangladesh, Borneo, Burma, Celebes, China, India, Indonesia, Japan, Java, New Guinea, Phillipines, Sumatra, Sri Lanka, Taiwan.

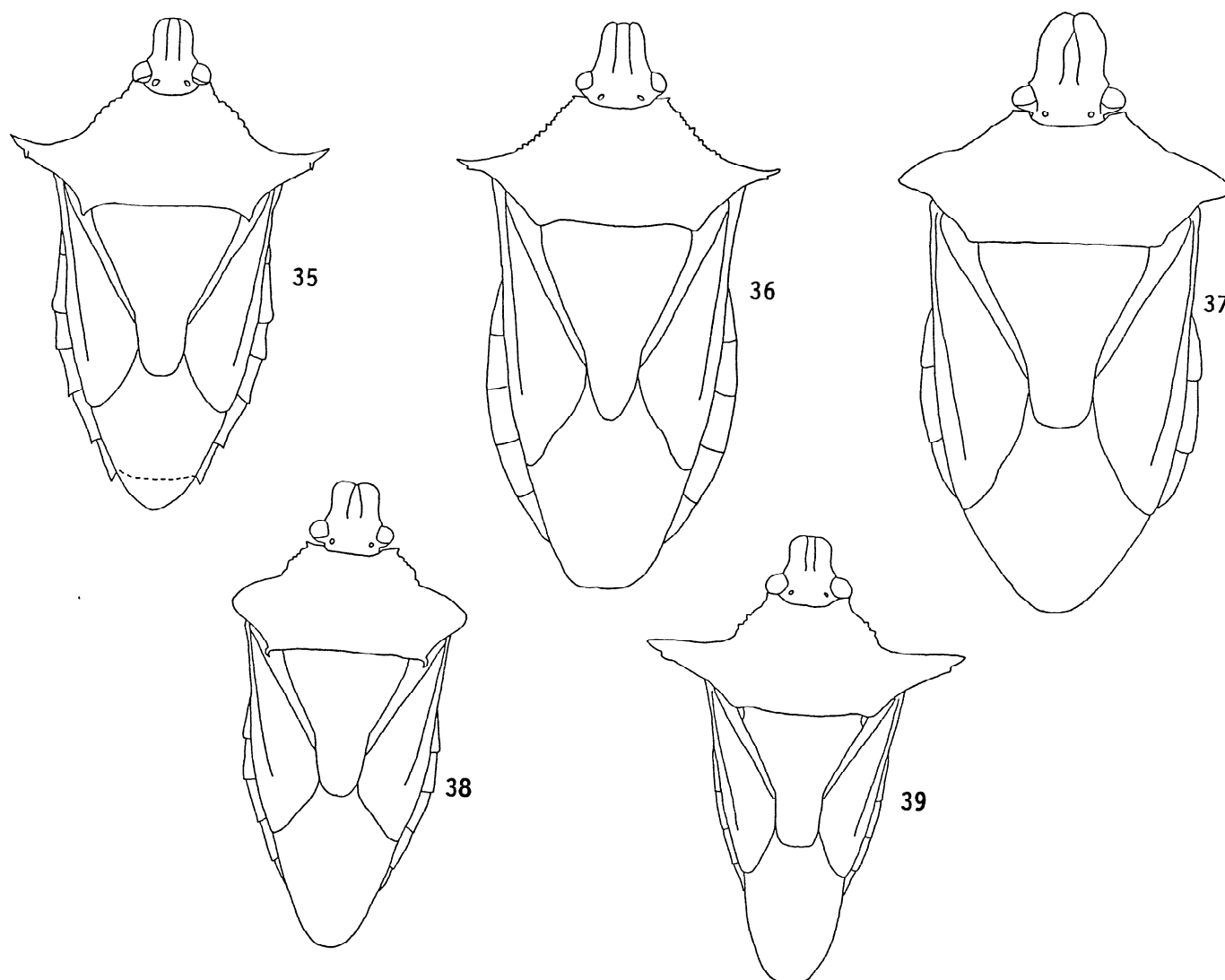
References: Kirby (1891) [variation]; Distant (1902) [characters, figures]; Kirkaldy (1909a) [food plants! distribution]; Esaki 1929 [characters, figure]; Chatterjee (1934) [prey]; Yang (1962) [figure]; Singh et al. (1973) [prey]; Ahmad et al. (1974) [figure]; Hsiao et al. (1977) [characters, photos]; Azim & Shafee (1982) [original description].

Material examined: Celebes (1), Phillipines (2), Sumatra (1), Mira (1).

6. *Amyotea micans* (Distant)

Asopus micans Distant 1888:476.

Amyotea micans: Schouteden 1907b:54.



FIGURES 35-39. Dorsal aspect: 35. *Eocanthaecona*, 36. *Andrallus*, 37. *Dinorhynchus*, 38. *Pinthaeus*, 39. *Cantheconidea*.

Distribution: New Guinea.

References: Schouteden (1907b) [listed].

Material examined: Distant's type specimen was examined in BM(NH).

7. *Amyotea reciproca* (Walker)

Strachia reciproca Walker 1868:340. [New Guinea].

Strachia megaspilus Walker 1868:341. [Mysol].

Asopus bernsteinii Vollenhoven 1868:14 [New Guinea].

Asopus reciproca: Stål 1870:57.

Amyotea reciproca: Schouteden 1907b:54.

Distribution: New Guinea, Molucca Islands.

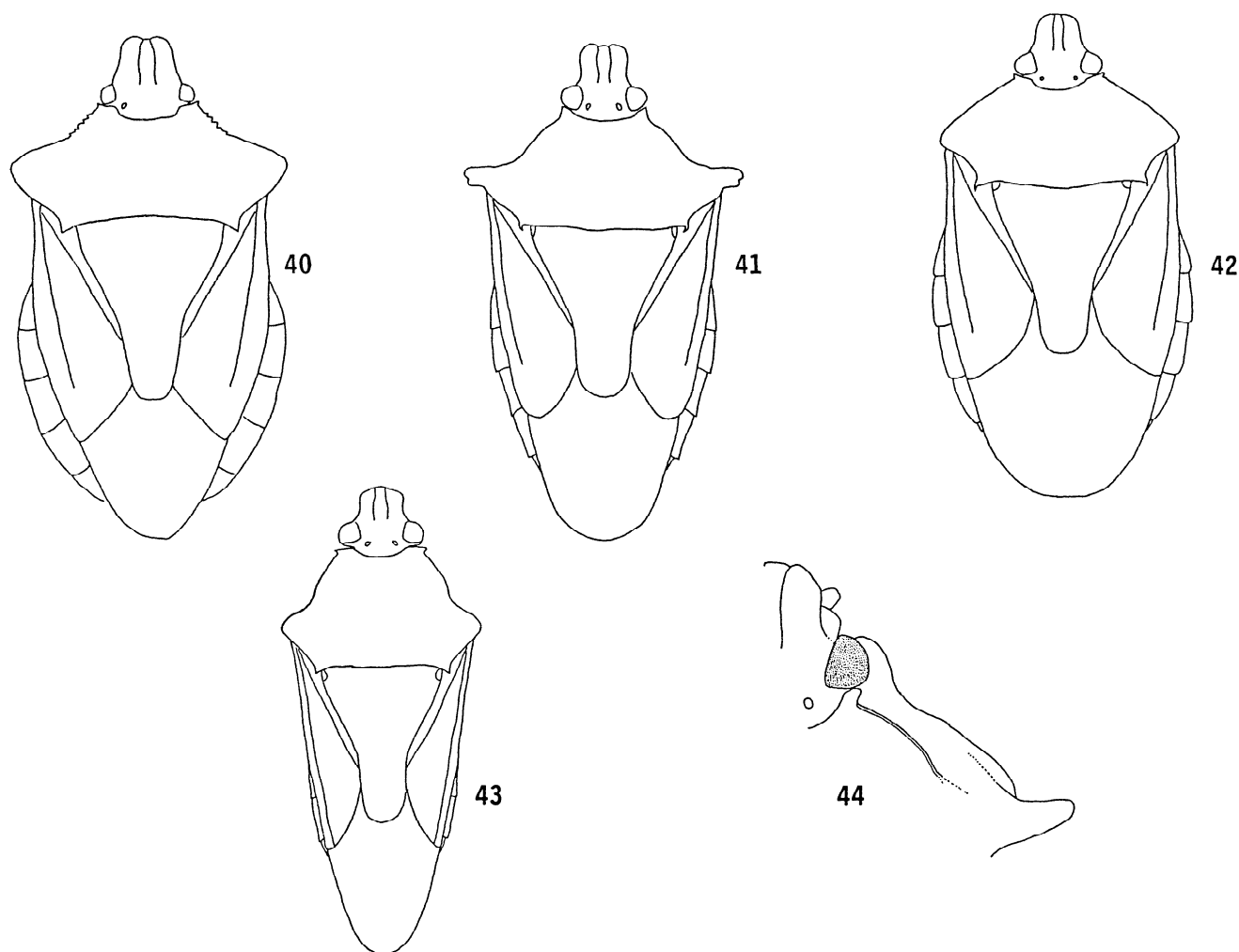
References: Schouteden (1907b) [listed].

Material examined: Walker's material was examined in the BM(NH).

ANASIDA Karsch (Figs. 46, 67)

Anasida Karsch 1892:481. Type species: *Anasida tenebrio* Karsch

Diagnosis: Rostrum crassate, short, reaching only to mesocoxae; segment II as long as or longer than last two segments combined, segment IV longer than III. Bucculae prominent, curved. Tylus and juga equal in length. Antennal segments compressed. Anterolateral pronotal margin sinuate in dorsal out-



FIGURES 40-44. Dorsal aspect: 40. *Troilus*, 41. *Platynopiellus*, 42. *Cermatulus*, 43. *Damarius*, 44. *Platynopiellus*, pronotal margin.

line, smooth or crenulate; humeral angle not produced; each humerus with a submarginal, dorsal crest (fig. 46). Frenal margin of scutellum longer than post-frenal portion of scutellum; scutellar apex narrower than corium. Scent gland orifice attended by long, curved sulcus, extending about two-thirds distance to metapleural margin; evaporatorium obsolescent (fig. 67). Metasternum not elevate. Angles of connexival segments not produced. Base of abdomen prominent, but not tuberculate. Profemora unarmed; protibiae not dilate. Males lacking abdominal glands.

Remarks: This is a distinctive genus of five nominal species of uncertain validity. Distant (1910b) gives distinguishing characters for some of the species. *Anasida schoutedeni* Distant is a new name proposed by Distant (1910a) for the species represented by Schouteden's (1907b) figure of *Anasida tenebrio*. Ac-

cording to the rules of nomenclature (ICZN 1985) a name proposed before 1931 whose description consists of reference to a published illustration must be considered available under Article 12(b)(7).

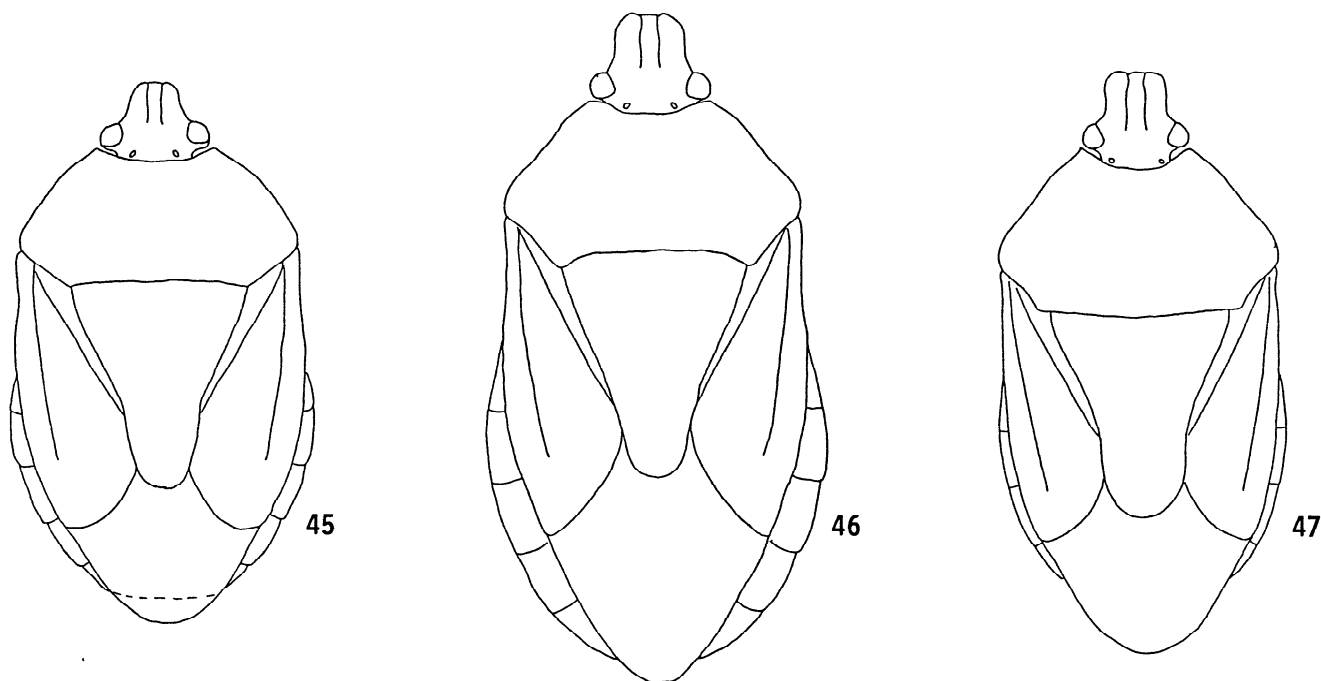
Anasida ikrami Ahmad & Kamaluddin (1983) belongs in the genus *Pseudanasida* and I here formally transfer it to that taxon.

List of Species

1. *Anasida funebris* Distant

Anasida funebris Distant 1900:59 [Natal].

Distribution: South Africa.



FIGURES 45-47. Dorsal aspect: 45. *Amyotea*, 46. *Anasida*, 47. *Jalla*.

References: Distant (1910a) [compared to *tenebrio* and *schoutedeni*].

Material examined: Distant's male type specimen was examined in BM(NH). Also: South Africa (1 female).

2. *Anasida orientalis* Distant

Anasida orientalis Distant 1910b:195 [India].

Distribution: India, Pakistan.

References: Distant (1910b) [description]; Ahmad et al. (1974) [figure].

Material examined: Distant's male Holotype in BM[NH] was examined.

3. *Anasida schoutedeni* Distant

Anasida schoutedeni Distant 1910a:99 [Congo].

Distribution: Zaire.

References: Schouteden (1907b) [figure]; Distant (1910a) [name proposed].

4. *Anasida tenebrio* Karsch

Anasida tenebrio Karsch 1892:481 [Angola]

Distribution: Angola, Zaire, Cameroon, Tchad, Ivory Coast.

References: Distant (1910a), compared to *funebis*.

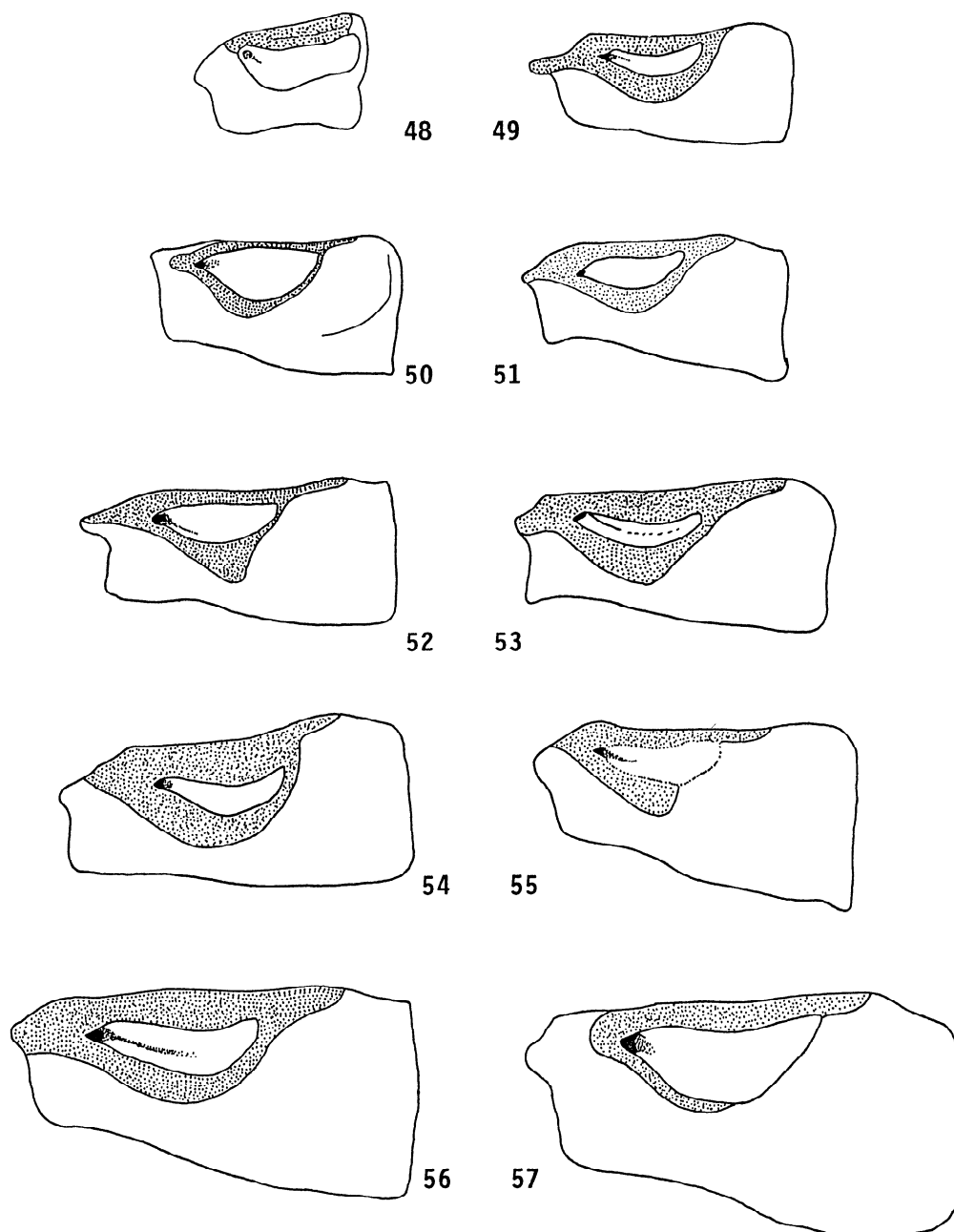
Material examined: 2 males, 1 female, Cameroon, Tchad.

Andrallus Bergroth (Figs. 36, 62)

Audineta Ellenrieder 1862:136. Type, *aculeata* (= *spinidens* F.) [Homonym].

Andrallus Bergroth 1905:370 [new name].

Diagnosis: Rostrum crassate, attaining metacoxae, segment II the longest, III the shortest but almost equal to IV, III and IV combined longer than II; bucculae prominent. Jugal and tylus subequal in length. Anterolateral prothoracic margins thick, rugulose. Posterior angles of pronotum without tooth or hook. Humeral angles produced into a bidentate, spinose projection (fig. 36). Frenal margin of scutellum longer than the apical part. Profemora with small or obsolescent anteapical spine. Protibia not dilate. Base of abdomen without tubercle, though



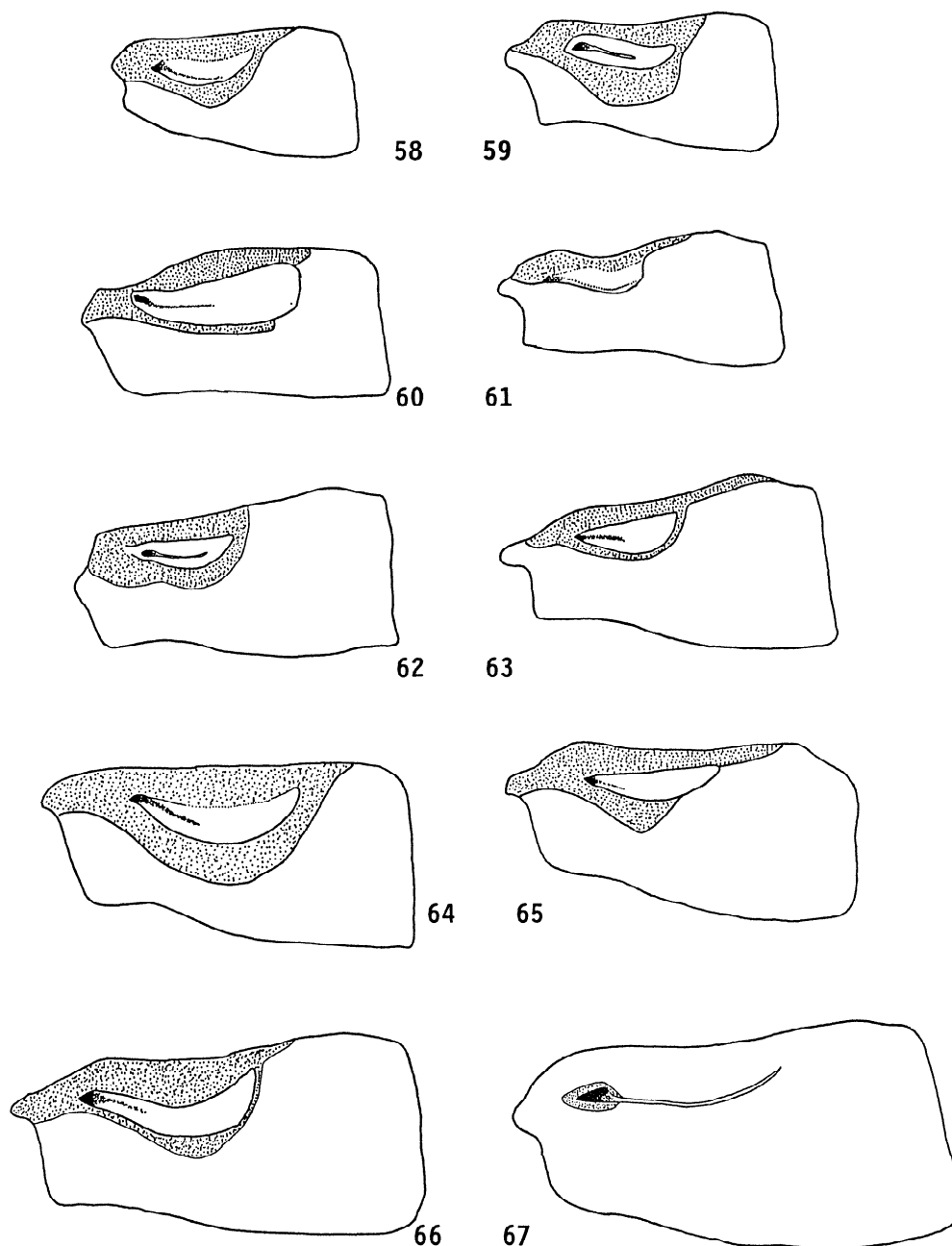
FIGURES 48-57. Metapleural scent gland apparatus: 48. *Stilbotes*, 49. *Troilus*, 50. *Jalloides*, 51. *Cazira*, 52. *Bulbostethus*, 53. *Montrouzieriellus*, 54. *Amyotea*, 55. *Damarius*, 56. *Canthecona*, 57. *Afrius*.

somewhat prominent at the middle. Scent gland auricle reaching 4/10 of distance to lateral margin of metapleuron, evaporatorium discontinuous, reduced to a narrow strip behind auricle (fig. 62). Males with a pair of glandular pubescent patches on the abdominal venter.

List of Species

1. *Andrallus spinidens* (F.)

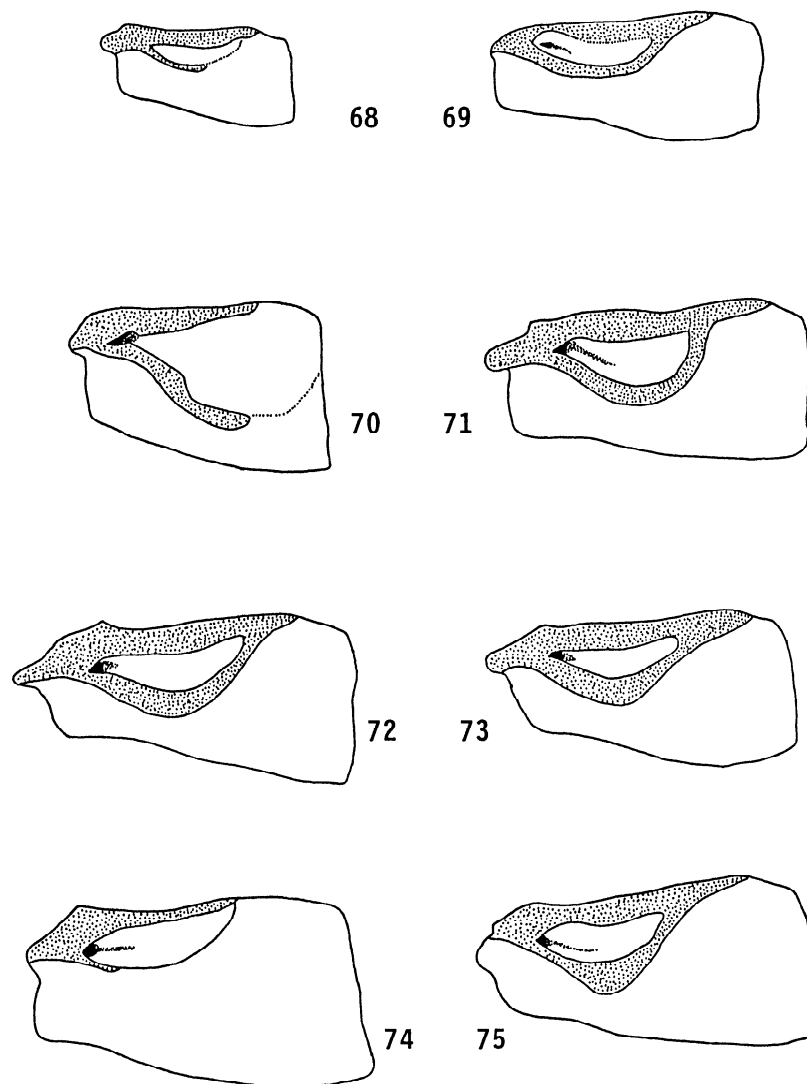
Cimex spinidens Fabricius 1787:285 [Tranquebar].
Asopus geometricus Burmeister 1835:380.
Pentatoma aliena Westwood 1837:40 [Nova Hollandia].



Figures 58-67. Metapleural scent gland apparatus: 58. *Cantheconidea*, 59. *Arma*, 60. *Blachia*, 61. *Hemallia*, 62. *Andrallus*, 63. *Cermatulus*, 64. *Dinorhynchus*, 65. *Pinthaeus*, 66. *Glypsyus*, 67. *Anasida*.

Arma geometrica: Dallas 1849:187.
Picromerus spinidens: Dallas 1851:95.
Acanthidium cinctum Montrouzier 1858:252.
Audinetia aculeata Ellenreider 1862:137 [Sumatra].
Cimex (Audinetia) spinidens: Stål 1867:496.
Arma spinidens: Vollenhoven 1868:10.
Audinetia spinidens: Distant 1902:253.
Andrallus spinidens: Bergroth 1905:370.
Apateticus ludovicianus Stoner 1917:462 [Louisiana].

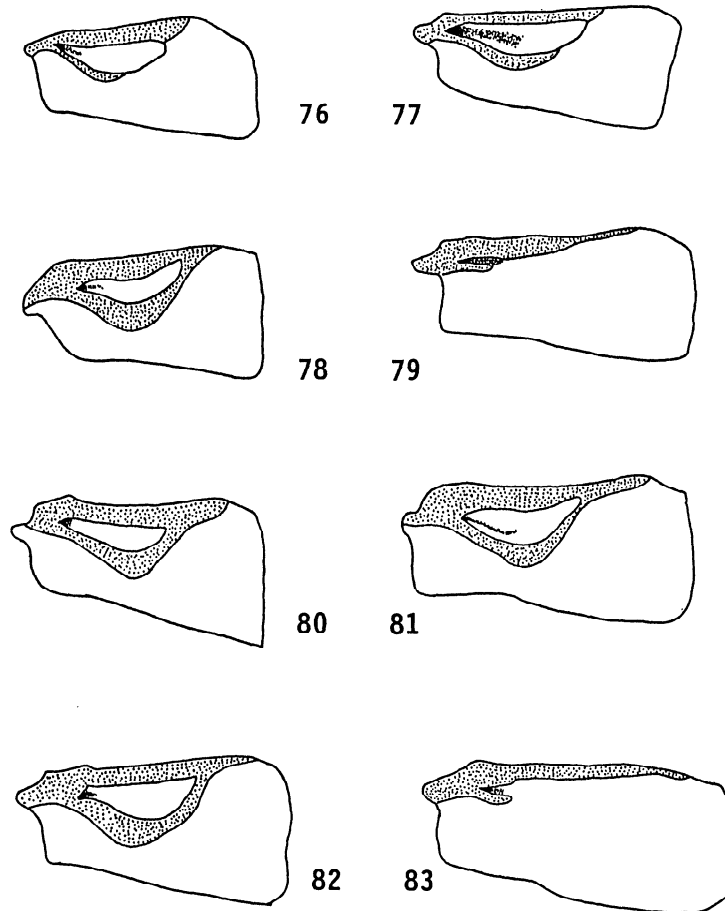
Distribution: China, Taiwan, Japan, Phillipines, Sumatra, Java, Indonesia, Vietnam, Borneo, New Guinea, Bangladesh, India, Fiji, Tahiti, Russia, Azerbaijan, Turkey, Iran, Syria, Ethiopia, Equatorial Guinea, Malawi, South Africa, Mozambique, Sudan, Zaire, Madagascar, Malaysia, Australia, North America,.



FIGURES 68-75. Metapleural scent gland apparatus: 68. *Zicrona*, 69. *Ealda*, 70. *Leptolobus*, 71. *Picromerus*, 72. *Platynopiellus*, 73. *Planopsis*, 74. *Jalla*, 75. *Eocanthecona*.

References: Distant (1902) [characters, figure]; Cachan (1952) [characters]; Esaki (1952) [characters, figure]; Yang (1962) [figure]; Miyamoto (1965a) [figure]; McDonald (1966) [genitalia]; Ahmad et al. (1974) [figure]; Linnavouri (1975) [listed]; Hsiao et al. (1977) [characters, photo]; Manley (1982) [life history]; Zhang (1985) [characters, figure]; Chopra & Sucheta (1986) [taxonomy].

Material examined: Botswana (1), Malaysia (1), Uganda (1), Okinawa (1), India (7), Java (4), Borneo (3), Vietnam (1).



FIGURES 76-83. 76. *Dorycoris*, 77. *Hoploxys*, 78. *Parealda*, 79. *Oechalia*, 80. *Mecosoma*, 81. *Macrorhaphis*, 82. *Platynopus*, 83. *Rhacognathus*.

Arma Hahn (Figs. 20, 59)

Arma Hahn 1832:91. Type species: *Cimex custos* F. (designated by Schouteden 1907); *Cimex lurida* F. (invalid designation by Kirkaldy 1909a).

Auriga Kirkaldy 1909a:15. Type, *Cimex custos* F. (unnecessary substitution).

Harma Marshall 1868:282 (unnecessary emendation).

Diagnosis: Rostrum crassate, reaching metacoxae; segment III longer than IV, combined about equal to II. Bucculae inconspicuously elevate. Juga somewhat longer than tylus but not convergent. Anterolateral pronotal margins serrulate, sinuate in dorsal view; humeri prominent, angular (fig. 20). Frenal margin longer than post-frenal portion of scutellum; scutellar apex narrower than corium. Connexival angles not

produced. Scent gland ruga sinuate, long, extending slightly more than half way to metapleural margin (fig. 59). Base of abdomen prominent, rarely with obtuse, diminutive tubercle; metasternum with low mesial carina. Femora unarmed; tibiae not dilate. Males lack abdominal glands.

Remarks: *Arma* was ostensibly revised by Ahmad & Onder (1990a). However, the authors were evidently unaware of the existence of species in the genus other than *A. custos* (F.) and *A. insperata* Horvath. Although they augmented the genus by the description of two new species, the characteristics by which they distinguished these forms were not specific in character. For example, their new species *A. neocustos* was distinguished from *A. custos* by antennal segment II being "usually" slightly less than two times the length of III versus subequal or slightly longer than twice the length of III. On the other hand their figures of the

genitalia show the two forms to be indistinguishable. In my experience slight differences in the proportions of the antennal segments do not reliably separate the species of *Arma*, nor the species of any other asopine genus. I consider Ahmad & Onder's species to be synonyms of the common, widespread species *A. custos*.

List of Species

1. *Arma chinensis* Fallou

Arma chinensis Fallou 1881:340.
Arma discors Jakovlev 1902a:64 [Mongolia].
Auriga discors: Kirkaldy 1909a:15.
Auriga chinensis: Kirkaldy 1909a:15.
Auriga peipingensis Yang 1933:21 [Peiping]

Distribution: China, Korea, Mongolia.

References: Josifov & Kerzhner (1978) [distribution, characters, figure]; Yang (1933) [description], Yang (1934a) [characterized]; Zhang (1985) [characters, figure].

Material examined: China (3), Taiwan (1).

2. *Arma custos* (F.)

Cimex custos Fabricius 1794:94.
Pentatoma custos: Latreille 1804:188.
Arma custos: Hahn 1832:95.
Asopus custos: Burmeister 1835:379.
Stiretrus custos: Blanchard 1840:153.
Asopus (Arma) custos: Flor 1860:94.
Auriga custos: Kirkaldy 1909a:15.
Arma custos f. *scutellaris* Stichel 1961:656 [unavailable name]
Arma neocustos Ahmad & Onder 1990a:8 [Turkey]. [NEW SYNONYMY]
Arma neoinsperata Ahmad & Onder 1990a:9 [Turkey]. [NEW SYNONYMY]

Distribution: France, Italy, Denmark, Sweden, Russia, China, Japan, Korea, Mongolia, Austria, Czechoslovakia, Bosnia, Belgium, Netherlands, Hungary, Portugal, Spain, Switzerland, Romania, Bulgaria, Germany, Siberia, Turkey, "North Africa".

References: Kirkaldy (1909a) [host plants!, distribution]. Yang (1934) [characterized, figured]; Michalk (1938) [biology]; Villiers (1945) [characters, figure]; Hoffmann (1948) [diet]; Dupuis (1949) [distribution, prey, life cycle]; Vidal (1949) [characters, key]; Esaki

& Ishihara (1951) [synonymy and distribution]; Esaki (1952) [characters, figure]; Dupuis (1952) [dorso-abdominal glands]; Dupuis (1959) [male parandria]; Puchkova (1961) [eggs figured]; Yang (1962) [figure]; Miyamoto (1965a) [figure]; Wagner (1966) [characters, figure]; Seidenstucker (1975) [key, genitalia figured]; Hsiao et al. (1977) [keyed, characters, photo]; Josifov & Kerzhner (1978) [figure]; Tamanini (1981) [prey]; Tamanini (1988) [keyed, figure]; Ahmad & Onder (1990a) [taxonomy, figures].

Material examined: Czechoslovakia (3), Germany (2), France (1), Hungary (3), Spain (1), Japan (3), China (12).

3. *Arma ferruginea* (Hsiao & Zheng)

Martinia ferruginea Hsiao & Zheng 1977:86 [China].
Arma ferruginea: Zheng 1980:322.

Distribution: China.

References: Hsiao et al. (1977) [description, figures, photo]; Zheng (1980) [generic placement].

4. *Arma insperata* Horváth

Arma insperata Horváth 1899:445.
Auriga insperata: Kirkaldy 1909a:15.

Distribution: Bulgaria, Greece, Turkey, Romania, Hungary.

References: Vidal (1949) [characters, key]; Seidenstucker (1975) [key, genitalia figured, prey]; Gollner-Scheiding & Arnold (1988) [distribution and collection note]; Ahmad & Onder (1990) [taxonomy, figures].

5. *Arma koreana* Josifov & Kerzhner

Arma koreana Josifov & Kerzhner 1978:181 [Korea].

Distribution: Korea, China.

References: Josifov & Kerzhner (1978) [description, characters].

Material examined: Korea (1).

6. *Arma maculata* Zheng

Arma maculata Zheng 1980:321 [Yunnan].

Distribution: China.

References: Zheng (1980) [description, genitalia figured].

7. *Arma tubercula* Yang

Auriga custos var. *tubercula* Yang 1934a:115 [Kouy-Tcheou].

Auriga tubercula: Josifov & Kerzhner 1978:182.

Distribution: Vietnam, China.

References: Josifov & Kerzhner (1978) [status, characters, distribution]

Material examined: China (1).

8. *Arma velata* Walker

Arma velata Walker 1868:532. [Hindustan].

Distribution: India.

References: Distant (1900) [status, types].

Australojalla Thomas, NEW GENUS (Fig. 11)

Type species: *Jalloides versicolor* Distant.

Diagnosis: Rostrum crassate; segment III longer than II. Tylus and juga subequal in length. Anterolateral pronotal margin without a distinct bead. Humeral angles not produced (Fig. 11). Frenum longer than post-frenal portion of scutellum; apex narrower than corium. Metasternal margins carinate forming sulcus receiving rostrum. Scent gland ruga very short, not reaching half-way to metapleural margin. Profemora with anteapical spine; protibiae not dilate. Base of abdomen with short tubercle. Males unknown.

Remarks: This species differs in significant characteristics from the other two Australian species of *Jalloides*. It has a small tubercle at the base of the abdomen, lacking in the other species; the scent gland ruga is much shorter; the proportions of the rostral segments are very different (third segment longest vs. the second); and the metasternum is modified for reception of the rostrum. Unfortunately,

specimens seem quite rare. I have seen only the female type.

List of Species:

1. *Australojalla versicolor* (Distant)

NEW COMBINATION

Jalloides versicolor Distant 1911:350 [Queensland].

Distribution: Australia.

References: Distant (1911) [description].

Material examined: Holotype female BM(NH).

Blachia Walker (Figs. 31, 60)

Blachia Walker 1867:117. Type, *ducalis* Walker.
Sesha Distant 1887:343. Type, *manifesta* Distant (= *ducalis*).

Diagnosis: Rostrum crassate, attaining mesocoxae; segment II longest, III very short. Bucculae angulately produced. Juga slightly longer than tylus. Anterolateral pronotal margin narrowly beaded, reflexed; humeriproduced in narrow, terete spines (fig. 31). Post-frenal portion of scutellum longer than frenal margin; base of scutellum tumid but without gibbosities; scutellar apex wider than corium. Scent gland orifice with long, spatulate, elevated ruga, extending more than two-thirds distance to metapleural margin; evaporatorium reduced to narrow strips anterior and posterior to ruga (fig. 60). Metasternum subelevated; mesosternum with elevated mesial carina. Base of abdomen with tubercle directed in apposition to metasternum. Connexival angles tuberculate. Profemora with anteapical spine; protibiae foliate. Males with pair of pilose, glandular patches on abdominal venter.

1. *Blachia ducalis* Walker

Blachia ducalis Walker 1867:117 [Siam].
Cazira coccinelloides Vollenhoven 1868:4.
Sesha manifesta Distant 1887:343, pl. 12, fig 2.

Distribution: Thailand, India, China, Indonesia, Burma.

References: Hsiao et al. (1977) [keys, characters, figure, photo].

Material examined: The type series, one male and three females, were examined in the BM[NH]. Also, from India (1 female).

Bulbostethus Ruckes (Figs. 14, 52)

Bulbostethus Ruckes 1960:285. Type, *Asopus chrysopterus* Herrich-Schaeffer.

Diagnosis: Rostrum crassate; segment II and III subequal, IV about seven-tenths of III; bucculae inconspicuously elevated. Juga and tylus equal in length. Anterolateral pronotal margins crenulate, calloused; straight or slightly concave in dorsal view; humeri produced, apex conical (fig. 14). Frenal margin slightly longer than post-frenal portion of scutellum; scutellar apex narrower than a corium. Angle of connexival segment VII acuminately produced. Scent gland ruga flat, spatulate, extending about half way to metapleural margin; evaporatorium narrowly surrounding ruga (fig. 52). Mesosternum with low, flat, mesial carina; metasternum bulbous. Base of abdomen with stout spine reaching mesocoxae. Femora unarmed; protibia terete. Males with pair of pilose glandular patches on abdominal venter.

List of Species

1. *Bulbostethus chrysopterus* (Herrich-Schaeffer)

Asopus chrysopterus Herrich-Schaeffer 1844:114. [Guam]

Canthecona chrysoptera: Lethierry & Severin 1893:213.

Cantheconidea chrysoptera: Schouteden 1907b:44.

Bulbostethus chrysopterus: Ruckes 1960:285.

Distribution: Mariana Is. (Guam).

References: Bergroth (1915) [taxonomy], Ruckes (1960) [description], Ruckes (1963) [characters, synonymy, distribution].

2. *Bulbostethus transversalis* Ruckes

Bulbostethus transversalis Ruckes 1963:329 [Mariana Is.]

Distribution: Mariana Is. (Tinian, Saipan).

References: Ruckes (1963) [description, figures].

Material examined: Holotype male in AMNH. Also: Tinian, Mariana Is. (one male determined by Ruckes).

Canthecona Amyot & Serville (Fig. 30, 56)

Canthecona Amyot & Serville 1843:81. Type, *Pentatoma discolor* Palisot de Beauvoir.

Diagnosis: Rostrum crassate; segment II longest, III longer than IV. Bucculae prominent, evenly elevate. Tylus and juga of equal length. Anterolateral pronotal margins crenulate; straight in dorsal view; humeri long, slender, spinose (fig. 30). Frenal margin longer than post-frenal part of scutellum; scutellar apex narrower than corium. Apex of last connexival segment produced acuminate. Scent gland ruga long, reaching more than half way to metapleural margin (fig. 56). Mesosternum with low, flat, mesial carina. Metasternum bulbous, elevated. Base of abdomen with short spine directed forward in apposition to metasternum. Profemora with subapical spine; protibia prismatic, not dilate. Males with pair of pilose, glandular patches on abdominal venter.

Remarks: A monotypic genus. The single species is tan with a brown transhumeral vitta on the pronotum and brown pronotal and abdominal margins. The humeri are prolonged, spinose laterally. Length 10-12 mm.

List of Species

1. *Canthecona discolor* (Palisot de Beauvois)

Pentatoma discolor Palisot de Beauvois 1811:112, [Guinea].

Canthecona discolor: Amyot & Serville 1843:81.

Cimex (*Canthecona*) *discolor*: Stål 1867:496.

Afrius discolor glypsoides Linnavouri 1975:124. [NEW SYNONYMY].

Canthecona discolor glypsoides Linnavouri 1982:164.

Distribution: Sudan, Guinea, Togo, Zaire, Cameroon, Nigeria, Ghana, Liberia, Angola.

References: Linnavouri (1975) [subspecies description, figure]; Linnavouri (1982) [subspecies, distribution].

Material examined: Holotype of subspecies *glypsoides* Linnavouri from Sudan in collection of AMNH. Also, North Africa (1), Cameroon (4), Zaire (2), Angola (1).

Cantheconidea Schouteden (Figs. 39, 58)

Cantheconidea Schouteden 1907b:44. Type species:
Canthecona javana Dallas.

Diagnosis: Rostrum crassate; segment II longest, III equal to IV; bucculae brief, elevated anteriorly. Tylus and juga of equal length. Anterolateral pronotal margins crenulate or denticulate; humeri prominent, if prolonged, the apex bifid (Fig. 39). Frenal margin longer than post-frenal part of scutellum, apex narrower than corium. Scent gland rugaspatulate, flattened, curved, extending slightly more than halfway to metapleural margin (fig. 58). Metasternum bicarinate, mesially sulcate, margins embracing rostrum in repose. Mesosternum with low, obtuse carina. Base of abdomen with short, forwardly directed tubercle. Apex of last connexival segment produced acuminate. Profemora with subapical spine; protibiae prismatic, metatibiae terete. Males without glandular patches of short setae on abdominal venter.

Remarks: The modification of the metasternum to embrace the rostrum in repose is diagnostic for the genus although this condition is also found in *Ealda* and *Parealda*.

List of Species

1. *Cantheconidea acuta* (Vollenhoven).

Canthecona acuta Vollenhoven 1868:9 [Timor].
Cantheconidea acuta: Schouteden 1907b:45.

Distribution: Indonesia.

References: Kirkaldy (1909a) [distribution].

Material examined: 1 female, Indonesia. Determined specimens in BMNH

2. *Cantheconidea cyanacantha* (Stål)

Canthecona cyanacantha Stål 1870:42 [Fiji]
Cantheconidea cyanacantha: Schouteden 1907b:45.

Distribution: Fiji, Samoa.

References: China 1930 (distribution).

Material examined: determined specimens in BMNH, also Fiji (1 male).

3. *Cantheconidea gaugleri* Schneider

Cantheconidea gaugleri Schneider 1940:206
[Sumatra].

Distribution: Sumatra.

References: Schneider (1940) [description, figures, life cycle, immatures, prey].

4. *Cantheconidea humeralis* Distant

Canthecona humeralis Distant 1908:452
[Tenasserim]
Cantheconidae [sic] *humeralis*: Kirkaldy 1909a:366.
Cantheconidea humeralis: Hsiao et al. 1977:84.

Distribution: India, Burma, China, Thailand.

References: Hsiao et al. (1977) [keyed, figures, photo].

Material examined: Type specimens in BMNH. Also, Thailand (1).

5. *Cantheconidea javana* (Dallas)

Glypsus javanus Dallas 1851:94 [Java].
Canthecona javana: Vollenhoven 1868:9.
Canthecona cognata Distant 1882:157 [Sumatra].
Canthecona insularis Kirby 1891:79.
Cantheconidea javana: Schouteden 1907b:45.

Distribution: Java, India, Sri Lanka, Sumatra, Celebes.

References: Kirby (1891) [description, figure]; Kirkaldy (1900) [prey]; Distant (1902) [synonymy].

Material examined: Type specimens in BMNH. Also 1 male, Muro.

6. *Cantheconidea variabilis* (Vollenhoven)

Canthecona variabilis Vollenhoven 1868:8. [Timor].
Cantheconidea variabilis: Schouteden 1907b:46.

Distribution: Indonesia.

References: Kirkaldy (1909a) [listed].

Material examined: determined specimens in BMNH

Cazira Amyot & Serville (Figs. 15, 51)

Cazira Amyot & Serville 1843:78. Type species, *Cazira verrucosa* Amyot & Serville [not Westwood] (=chiroptera Herrich-Schaeffer), designated by Kirkaldy (1903: 230).

Cazira, subgenus *Teratocazira* Breddin 1903:34. Type species, *Teratocazira horvathi* Breddin.

Cazira, subgenus *Metacazira* Schouteden 1907b:22. Type species, *Pentatoma verrucosa* Westwood.

Paracazira Schouteden 1907b:10. Type species, *Breddiniella insignis* Schouteden.

Breddiniella Schouteden 1907b:44. Type species, *Breddiniella insignis* Schouteden.

Acicazira Hsiao & Zheng 1977:80. Type species, *Acicazira gibbosa* Hsiao & Zheng. (Synonymy by Zheng & Liu 1987b).

Diagnosis: Rostrum crassate; segment II longest, III and IV subequal, II as long as III and IV combined; bucculae prominent, closed behind. Jugal and tylus equal in length. Eyes proximal to anterior pronotum. Frenal margin a little shorter than post-frenal portion of scutellum; base of scutellum with large, tubercular gibbosity; apex narrower or as wide as corium. Connexival angles produced as spines or tubercles (fig. 15). Scent gland ruga long, extending more than half way to metapleural margin; evaporatorium narrowly surrounding ruga (fig. 51). Base of abdomen with a short spine or forwardly directed projection. At least pro-femora with one or two antepical spines; protibiae strongly foliate. Males with pair of pilose glandular patches on abdominal venter.

Remarks: The generic characters given for the various synonyms of *Cazira* by Schouteden (1907b) do not hold. Some species lack the femoral spine and in some the male glandular patches are so inconspicuous as to be undetectable. The genus *Acicazira* was founded for the presence of a single

gibbosity on the scutellar base but a similar condition is approached in some other species. This name was synonymized with *Teratocazira* by Zheng & Liu (1987b). These names even as subgenera should be suspended until the genus is revised.

List of Species

1. *Cazira bergrothi* Breddin

Cazira bergrothi Breddin 1903:33 [Tonkin].
Cazira (Metacazira) bergrothi: Schouteden 1907b:23.

Distribution: Vietnam.

References: Gaedicke (1971) [type deposition].

2. *Cazira breddini* Schouteden

Cazira breddini Schouteden 1907a:41 [Bhutan].
Cazira (Metacazira) breddini: 1907b:23.

Distribution: Bhutan, China, India.

References: Schouteden (1907a) [description]; Yang (1934a) [keyed, characterized, figured]; Hsiao et al. (1977) [keyed, photo].

Material examined: determined specimens in BM(NH).

3. *Cazira chiroptera* (Herrich-Schaeffer)

Asopus chiropterus Herrich-Schaeffer 1840:78, fig. 523.
Cazira chiroptera: Dallas 1851:82.
Cazira (Cazira) chiroptera: Schouteden 1907b:22.

Distribution: Indonesia, Phillipines, Borneo, Sumatra, Java.

References: Black (1968) [distribution].

Material examined: Sumatra (3), Phillipines (3).

4. *Cazira concinna* Hsiao & Zheng

Cazira concinna Hsiao & Zheng 1977:81 [Hunan].

Distribution: China.

References: Hsiao et al. (1977) [description, key, photo].

5. *Cazira emeia* Zhang & Lin

Cazira emeia Zhang & Lin 1982:57 [Sichuan].

Distribution: China.

References: Zhang & Lin (1982) [original description, figures].

6. *Cazira flava* Yang

Cazira flava Yang 1934a:98 [Guizhou].

Distribution: China.

References: Yang 1934a [description, keyed, figured]; Hsiao et al. (1977) [keyed].

7. *Cazira frivaldskyi* Horváth

Cazira frivaldskyi Horváth 1889:35 [Nepal].

Cazira bhoutanica Schouteden 1907a:39 [Bhoutan].

Cazira (Metacazira) frivaldskyi: Schouteden 1907b:23.

Distribution: Nepal, Bhutan, China, India.

References: Distant (1902) [listed]; Schouteden (1907a) [description]; Horváth (1909) [synonymy]; Yang (1934b) [characterized, keyed, figured]; Hsiao et al. (1977) [keyed, photo].

Material examined: Determined specimens in BM(NH), Also India (1 male), China (2).

8. *Cazira fruhstorferi* Breddin

Cazira fruhstorferi Breddin 1901:59 [Celebes].

Cazira (Metacazira) fruhstorferi: Schouteden 1907b:23.

Distribution: Celebes.

References: Kirkaldy (1909a) [listed]; Gaedicke (1971) [types].

9. *Cazira horvathi* Breddin

Cazira horvathi Breddin 1903:34 [Tonkin].

Acicazira gibbosa Hsiao & Zheng 1977:297 [China].

Cazira (Teratocazira) gibbosa: Zheng & Liu 1987b:286.

Distribution: China, Vietnam.

References: Hsiao et al. (1977) [description, figures, photo]; Zheng (1980) [genitalia figured]. Zheng & Liu (1987b) [synonymy].

Material examined: China (1 male).

10. *Cazira inerma* Yang

Cazira inerma Yang 1934a:99 [Kouy-Tcheou].

Distribution: China.

References: Yang (1934a) [description, keyed, figured]; Hsiao et al. (1977) [keyed, photo].

11. *Cazira insignis* (Schouteden)

Breddiniella insignis Schouteden 1907a:45.

Distribution: Bhutan, India.

References: Schouteden (1907b) [figure].

Material examined: 1 male, India.

12. *Cazira internexa* Walker

Cazira internexa Walker 1867:118 [Cambodia].

Cazira (Metacazira) internexa: Schouteden 1907b:23.

Distribution: Cambodia, India.

References: Kirkaldy (1909a) [listed].

Material Examined: Type specimen in BM(NH).

13. *Cazira kirkaldyi* Breddin

Cazira kirkaldyi Breddin 1903:34 [Sumatra].

Cazira (Metacazira) kirkaldyi: Schouteden 1907b:23.

Distribution: Sumatra.

References: Gaedicke (1971) [type depository].

14. *Cazira membranica* Zhang & Lin

Cazira membranica Zhang & Lin 1982:59 [Hunan].

Distribution: China.

References: Zhang & Lin (1982) [original description, figures].

15. *Cazira montandoni* Breddin

Cazira montandoni Breddin 1903:34 [Tonkin].
Cazira (Metacazira) montandoni: Schouteden 1907b:23.

Distribution: Vietnam, China.

References: Hsiao et al. (1977) [Key]; Gaedicke (1971) [types].

16. *Cazira reuteri* Breddin

Cazira reuteri Breddin 1903:33 [Tonkin].
Cazira (Metacazira) reuteri: Schouteden 1907b:23.

Distribution: Vietnam.

References: Kirkaldy (1909a) [listed].

17. *Cazira schwarzi* Abbasi & Rishi

Cazira schwarzi Abbasi & Rishi 1974:41.

Distribution: Pakistan.

References: Abbasi & Rishi (1974) [description]; Ahmad et al. (1974) [listed].

18. *Cazira sichuana* Zhang & Lin

Cazira sichuana Zhang & Lin 1986:92 [Sichuan].

Distribution: China

References: Zhang & Lin (1986) [original description].

19. *Cazira similis* Distant

Cazira similis Distant 1902:245 [Assam].
Cazira (Metacazira) similis: Schouteden 1907b:23.

Distribution: India.

References: Distant (1902) [description].

Material examined: Type specimen in BM(NH), also India (1 male).

20. *Cazira thibetensis* Schouteden

Cazira thibetensis Schouteden 1907a:42 [Tibet].
Cazira (Metacazira) thibetensis: Schouteden 1907b:23.

Distribution: Tibet.

References: Yang (1934a) [keyed, characterized].

21. *Cazira ulcerata* (Burmeister)

Asopus ulceratus Burmeister 1835:380.
Cazira strumosa Stål 1870:39 [Java].
Cazira ulcerata: Atkinson 1887:173.
Cazira (Metacazira) ulcerata: Kirkaldy 1909a:28.

Distribution: India, Java, China, Thailand, Sumatra.

References: Kirkaldy (1909a) [distribution, synonymy].

Material examined: Determined specimens in BM(NH), also India (1).

22. *Cazira vegeta* Kirkaldy

Asopus ulceratus Herrich-Schaeffer 1839:452 [Coromandel][homonym].
Cazira ulcerata: Dallas 1851:82.
Cazira (Metacazira) ulcerata: Schouteden 1907b:23.
Cazira (Metacazira) vegeta: Kirkaldy 1909a:29 [new name].

Distribution: Japan, China, Vietnam, Thailand, India.

References: Yang (1934a) [keyed, characterized], Kirkaldy (1909a) [homonymy]; Kirkaldy (1910) [immatures], Hsiao et al. (1977) [key].

Material examined: 1 male, India.

23. *Cazira verrucosa* (Westwood)

Pentatoma verrucosa Westwood 1834:445 [Java].
Asopus verrucifer Burmeister 1835:380.
Cazira verrucosa: Dallas 1851:82.
Cazira (Metacazira) verrucosa: Schouteden 1907b:23.

Distribution: China, Taiwan, Burma, Vietnam, India, Bangladesh, Japan, Thailand, Cambodia, Java, Phillipines.

References: Distant (1902) [characters, figures]; Esaki (1926) [prey, distribution]; Yang (1934a) [characters, keyed, figured]; Hsiao et al. (1977) [keyed, figures, photo]; Ahmad et al. (1974) [figure].

Material examined: Taiwan (4), India (3), Thailand (3), Japan (1), China (1).

24. *Cazira yunnanica* (Zhang & Lin)

Breddiniella yunnanica Zhang & Lin 1982:57 [Yunnan].

Distribution: China.

References: Zhang & Lin (1982) [original description, figure].

CECYRINA Walker (Fig. 8)

Cecyrina Walker 1867:118. Type-species: *Cecyrina platyrhinoides* Walker

Diagnosis: Rostrum crassate, segments II, III and IV subequal in length. Head longer than pronotum; juga very long, convergent and touching; antennal segment IV dilated; eyes separate from anterior angles of pronotum. Anterolateral pronotal margin obtuse, lacking marginal bead; humeri weakly produced (fig. 8). All femora with an anteapical spine; protibia dilate. Frenal margin of scutellum longer than post-frenal portion. Metasternum elevate; base of abdomen with short tubercle in apposition to metasternum. Scent gland ruga short, not attaining half distance to metapleural margin. Males lack pilose abdominal glands.

1. *Cecyrina platyrhinoides* Walker

Cecyrina platyrhinoides Walker 1867:119 [Assam].

Distribution: India, China, Bhutan.

References: Distant (1902) [characters, figures]; Miller (1971) [figure]; Hsiao et al. (1977) [keys, characters, figure, photo]; Zheng (1980) [genitalia figured].

Material Examined: Type specimen in BM(NH).

CERMATULUS Dallas (Figs. 42, 63)

Cermatulus Dallas 1851:106. Type-species: *Aelia nasalis* Westwood.

Diagnosis: Rostrum crassate, reaching metacoxae; segment II longest, III equal to IV or slightly longer; bucculae prominent. Juga and tylus of equal length. Anterolateral pronotal margins reflexed, weakly sinuate to subrectilinear in dorsal outline; humeri not produced (fig. 42). Frenal margin longer than post-frenal portion of scutellum. Connexival angles not produced. Scent gland ruga flat, broad, spatulate, extending slightly less than half way to metapleural margin; evaporatorium greatly reduced (fig. 63). Mesosternum with low, flat, mesial carina. Base of abdomen with short, compressed, forwardly directed protuberance. Profemora unarmed; protibiae prismatic. Males without abdominal glands.

Remarks: *Cermatulus pulcher* Tryon was transferred to *Catecanthus* by Gross (1975). I consider *turbotti* to be a valid species rather than a subspecies of *nasalis*. When *turbotti* was described as a species by Woodward, and later when he reduced it to a subspecies, no reference was made to the male genitalia, which in fact are quite distinct.

List of Species

1. *Cermatulus nasalis* (Westwood)

Aelia nasalis Westwood 1837:32 [Nova Hollandia].

Asopus nummularis Erichson 1842:276

Cermatulus nasalis: Dallas 1851:106.

Rhaphigaster pentatomoides Walker 1867:370 [Australia].

Asopus binotatus Walker 1867:144. [Brazil in error].

Cermatulus nasalis rufusensis Woodward 1953b:41 [Tasmania].

Cermatulus nasalis nasalis: Gross 1975:228.

Distribution: Australia, Tasmania.

References: Woodward (1950) [characters, figure]; Woodward (1953a,b) [descriptions, distribution, synonymy]. Ramsay (1963) [prey]; Gross (1975) [characters, synonymy, figure]; Edwards & Suckling

(1980) [prey, ecology]; Awan (1988) [behavior, development].

Material examined: Australia (20), Tasmania (1).

2. *Cermatulus turbotti* Woodward

Cermatulus turbotti Woodward 1950:24 [Three Kings Islands].

Cermatulus nasalis turbotti Woodward 1953a:317.

Cermatulus nasalis hudsoni Woodward 1953a:317.

Distribution: New Zealand.

References: Woodward (1950) [description, figure]; Woodward (1953a) [synonymy].

Material examined: New Zealand (8).

Damarius Schouteden
(Figs. 43, 55)

Damarius Schouteden 1907:49. Type species: *Cimex splendidulus* F.

Diagnosis: Form elongate. Rostrum crassate, attaining metacoxae; segments II, III and IV subequal; bucculae prominent anteriorly. Jugal and tylus of equal length. Pronotum about as long as wide; anterolateral pronotal margins strongly sinuate with marginal bead; humeri obtusely prominent (fig. 43). Frenum longer than post-frenal part of scutellum; scutellar apex narrower than corium. Scent gland ruga effaced laterally, not surrounded by evaporatorium (fig. 55). Mesosternum with low, flat carina. Base of abdomen with long compressed spine reaching mesocoxae. Connexival angles acuminate. Profemora armate; protibia modestly dilate. Males lack abdominal glands.

Remarks: *Damarius bicolor* appears to be a color variety of *splendidulus*. I have examined specimens that are all blue, blue with a red head or a harlequin pattern of blue and red. Distant's types are blue with a red head and legs.

List of Species

1. *Damarius splendidulus* (Fabricius)

Cimex splendidulus Fabricius 1803:163.

Oplomus elongatus Dallas 1852:6 [Brazil in error].

Platynopus innocuus Stål 1865b:71 [Guinea].

Platynopus splendidulus: Stål 1868:16.

Platynopus metallicus Fallou 1891:5 [Cafretrie].

Damarius splendidulus: Schouteden 1907b:48.

Damarius bicolor Distant 1912:89 [Uganda].

Platynopus splendidulus: Linnavouri 1975:125.

Distribution: Zaire, Guinea, Sudan, Uganda, Sierra Leone, Ghana, Ethiopia, Benin, Ivory Coast, Nigeria, Cameroon, South Africa.

References: Kirkaldy (1909a) [distribution]; Schouteden 1907b [figure]; Schouteden (1909) [color variation]; Distant (1912) [description]; Villiers (1952) [characters, distribution, figure]; Linnavouri (1982) [habitat, distribution].

Material examined: Sierra Leone (2), Ethiopia (1), Uganda (4), Zaire (1), Ghana (5). Distant's holotype female and two paratype females, in BM(NH) from Uganda were examined.

Dinorhynchus Jakovlev
(Figs. 37, 64)

Dinorhynchus Jakovlev 1876: 107. Type species: *Dinorhynchus dybowskyi* Jakovlev.

Neoglypsus Distant 1881: 27. Type species: *Neoglypsus viridicatus* Distant (= *dybowskyi* Jakovlev).

Diagnosis: Form elongate. Rostrum crassate, attaining base of abdomen; segment II longest, III shortest; bucculae prominent, projecting away from rostrum. Jugal much longer than tylus and contiguous anteriorly. Anterolateral pronotal margins crenulate, sinuate in dorsal view; humeri angulately prolonged (fig. 37). Frenum longer than post-frenal part of scutellum; scutellar apex narrower than corium. Scent gland ruga flat, spatulate, curved, extending more than half way to metapleural margin (fig. 64). Base of abdomen with cylindrical tubercle, obtuse at apex, protruding between metacoxae. Connexival angles not produced. Profemora unarmed; protibia not dilate. Males lack setose abdominal glands.

Remarks: The two species are easily separated. *Dinorhynchus dybowskyi* is green with acute humeri, *opulentus* is tan with obtuse humeri.

List of Species

1. *Dinorhynchus dybowskyi* Jakovlev

Dinorhynchus dybowskyi Jakovlev 1876:107 [Askold Is.].

Neoglypsus viridicatus Distant 1881:27.

Distribution: Russia, Japan, Siberia, China, Korea.

References: Okamoto (1942) [biology, figures]; Esaki (1952) [characters, figure]; Yang (1962) [key]; Miyamoto (1962) [figure]; Hsiao et al. (1977) [characters, photo].

Material examined: Japan (3); holotype female of *Neoglypsus viridicatus* was examined in BM(NH).

2. *Dinorhynchus opulentus* (Distant)

Neoglypsus opulentus Distant 1890:159 [Hubei].

Dinorhynchus opulentus: Kirkaldy 1909a:26.

Distribution: China.

References: Yang (1934a) [characterized].

Material examined: Holotype female of *Neoglypsus opulentus* was examined in BM(NH).

DORYCORIS Mayr (Figs. 10, 76)

Dorycoris Mayr 1864:906. Type species, *Pentatoma pavonina* Westwood

Claudia Stål 1864:74. Type species, *Pentatoma pavonina* Westwood

Diagnosis: Rostrum crassate, reaching mesocoxae; segment III and IV subequal in length, combined about equal to length of II; bucculae prominent. Jugal and tylus of equal length. Pronotum tumid; anterolateral pronotal margin sinuate in dorsal view; marginal bead weak anteriorly, obsolescent laterally; humeri not produced (fig. 10). Frenal margin of scutellum longer than post-frenal portion; scutellar apex narrower than corium. Connexival angles not produced. Base of abdomen with forwardly directed, compressed spine which reaches to mesocoxae. Scent gland ruga extending

half way to metapleural margin, not surrounded by evaporatorium (fig. 76). Mesosternum with low, flat, carina. Profemora unarmed; protibiae not dilate. Males with ventral abdominal glands. Dorsal color metallic blue or coppery green.

List of Species

1. *Dorycoris pavoninus* (Westwood)

Pentatoma pavonina Westwood 1837:39 [Ethiopia].

Pentatoma bronzea Westwood 1837:40 [Sierra Leone].

Pentatoma miniatus Westwood 1837:43 [Sierra Leone].

Asopus fuscus Germar 1837:187 [Terra Capensis].

Asopus annulipes Germar 1837:187 [Africa meridionalis]

Zicrona pavonina: Dallas 1851:108.

Zicrona annulipes: Signoret 1861:922.

Dorycoris pavoninus: Mayr 1864:906.

Claudia pavonina: Stål 1864:75.

Claudia nudiventris Stål 1864:75 [Sierra Leone].

Rhaphigaster perornatus Walker 1868:567.

Dorycoris nudiventris: Stål 1870:36.

Dorycoris fuscus: Stål 1870:36.

Dorycoris bronzeus: Stål 1870:36.

Dorycoris rutherfordi Distant 1892:187 [Transvaal].

Dorycoris pavoninus var. *miniatus*: Schouteden 1905:135, Pl.3.

Dorycoris pavoninus var. *rutherfordi*: Schouteden 1907b:58.

Dorycoris pavoninus var. *nudiventris*: Schouteden 1907b:58.

Dorycoris pavoninus var. *pavoninus*: Schouteden 1907b:58.

Distribution: Zaire, Gabon, Ghana, Cameroon, Botswana, Madagascar, Benin, Ivory Coast, Rwanda, Sierra Leone, Guinea, Sudan, Tanzania, Nigeria, South Africa, Nigeria.

References: Schouteden (1909) [varieties]; Cachan (1952) [characters]; Leston (1952b) [distribution]; Gillon (1972) [characters, figure]; Linnavouri (1975) [distribution]; Linnavouri (1982) [figure, habitat, distribution, subspecies].

Material examined: Zaire (5), Gabon (21), Ghana (2), Cameroon (9), Botswana (6), Tanzania (1), Benin (1), Kenya (1), Togo (2), Madagascar (1), South Africa (1), Nigeria (7).

Ealda Walker (Figs. 29, 69)

Ealda Walker 1867:409. Type species: *Ealda minax* Walker.

Diagnosis: Rostrum crassate, attaining mesocoxae; segment II longest, shorter than III & IV combined. Bucculae elevated, prominent anteriorly, obsolescent posteriorly. Juga and tylus of equal length. Anterolateral pronotal margins obtuse, smooth, lacking bead; humeri produced spinose and curved rearward; posterior angles strongly lobate (fig. 29). Frenum longer than post-frenal part of scutellum; scutellar apex narrower than corium. Scent gland ruga flat, spatulate, curving, extending half way to metapleural margin; narrowly surrounded by evaporatorium (fig. 69). Metasternum and mesosternum laterally bicarinate, carinae embracing rostrum. Base of abdomen with short, pinched tubercle received by emargination of metasternum. Connexival angles produced, each successively more produced than preceding until the fifth and sixth decidedly spinose. Femora unarmed; protibia terete.

Remarks: Distant (1900a) considers this genus to be near *Hoploxys* Dallas. Since male specimens are unknown the presence of pilose abdominal glands is likewise unknown.

1. *Ealda minax* Walker

Ealda minax Walker 1867:409 [New Caledonia].

Distribution: New Caledonia.

References: Distant (1900a) [characters]; Distant (1920) [distribution].

Material examined: Syntypes, 2 females, were examined in BM(NH). Also, New Caledonia (1).

Eocanthecona Bergroth (Figs. 35, 75)

Eocanthecona Bergroth 1915:484. Type species: *Cimex furcellata* Wolff

Diagnosis: Rostrum crassate, segment IV equal to III; bucculae elevated, prominent but

brief, occupying only anterior half of head. Juga and tylus of equal length. Anterolateral pronotal margins crenulate or denticulate; humeri prominent, if prolonged then bispinose at apex. Frenum longer than post-frenal part of scutellum; scutellar apex narrower than corium (fig. 35). Metasternum prominent, subelevated; margins not or feebly carinate. Scent gland peritreme flat, broad, spatulate, extending half way to metapleural margin; surrounded by evaporatorium (fig. 75). Base of abdomen with short spine protruding over metasternum. Angle of last abdominal segment produced acuminate. Profemora armate; protibia dilate or not. Setose glandular patches present on abdominal venter of males.

Remarks: It is generally overlooked that Bergroth (1915) erected this genus for those species having a non-specialized metasternum. At the time he erected the genus he mentioned only *furcellata* Wolff and *eburnea* Distant as specifically belonging to the genus but stated that it was equivalent to Schouteden's section B of *Cantheconidea*. I have been able to examine a majority of the species in order to confirm their correct generic placement. Others, especially the more recently described species, I have placed based on their descriptions.

List of Species

1. *Eocanthecona binotata* (Distant) [NEW COMBINATION]

Canthecona binotata Distant 1879:47 [Assam].
Cantheconidea binotata: Schouteden 1907b:45.

Distribution: India, China

References: Distant (1902) [characters]; Hsiao et al. (1977) [keyed, figures, photo]; Ahmad & Rana (1988) [keyed].

Material examined: Determined specimens in BM(NH).

2. *Eocanthecona concinna* (Walker)

Canthecona concinna Walker 1867:131 [Hong Kong].
Cantheconidea concinna: Kirkaldy 1910:104.
Eocanthecona concinna: Miyamoto 1965b: 229.

Distribution: China, Taiwan.

References: Yang (1934a) [characters, figure], Kirkaldy (1910) [characters]; Hsiao et al. (1977) [keyed, figures, photo].

Material examined: Determined specimens in British Museum. Also, China (3).

3. *Eocanthecona eburnea* Bergroth

Eocanthecona eburnea Bergroth 1915:485 [Luzon].

Distribution: Phillipines.

References: Bergroth (1915) [description].

4. *Eocanthecona formosa* (Horváth)

Cantheconidea formosa Horváth 1911:432 [Formosa].

Canthecona furcellata var. *formosana*: Shiraki 1913:210.

Cantheconidea formosana Sonan 1927:42 [Formosa].
NEW SYNONYMY

Eocanthecona formosa: Hoffman 1948:12.

Distribution: Taiwan

References: Esaki (1926) [synonymy, distribution]; Sonan (1927) [description as new species]; Hoffman (1948) [characters, nomenclature].

5. *Eocanthecona furcellata* (Wolff)

Cimex furcellatus Wolff 1801:176 [India Orientalis].
Arma armigera Herrich-Schaeffer 1844:113 [Bengal].

Canthecona furcellata: Dallas 1851:91.

Cantheconidea furcellata: Schouteden 1907b:45.

Eocanthecona furcellata: Bergroth 1915:484.

Distribution: Phillipines, India, Sri Lanka, Burma, Java, Molucca Is., Caroline Is. (Palau), Bangladesh, Taiwan, China, Japan, Thailand.

References: Distant (1902) [characters, figures]; Horvath (1911) [description]; Bergroth (1915) [taxonomy]; Esaki (1926) [taxonomy, distribution]; Sonan (1927) [characters, distribution, prey]; Chatterjee (1934) [prey, life history]; Hoffmann (1948) [prey, distribution]; Ruckes (1963) [characters, distribution]; Sen et al. (1971) [biology, life cycle]; Ahmad et al. (1974) [biology, figure]; Chu & Chu (1975) [prey, fecundity]; Hsiao et al. (1977) [keyed, figures, photo]; Chandra (1980) [prey,

photo]; Mittal & Leelamma (1981) [chromosomes]; Zhang (1985) [characters, figure]; Ahmad & Rana (1988) [characters, keyed, figure]; Yasuda & Wakamura (1992) [rearing]; Senrayan & Ananthakrishnan (1991) [prey, reproduction].

Material examined: Determined specimens in BM(NH) and USNM. Also: India (11), Thailand (6), Taiwan (5), Phillipines (1).

6. *Eocanthecona japonicola* (Esaki & Ishihara) [NEW COMBINATION]

Asopus hirayamae Suzuki 1915:17 [nomen nudum].
Cantheconidea japonicola Esaki & Ishihara 1950:54 [Honshu].

Distribution: Japan.

References: Esaki & Ishihara (1950) [description, keys, figure]; Esaki (1952) [characters, figure].

7. *Eocanthecona kyushuensis* (Esaki & Ishihara)

Cantheconidea kyushuensis Esaki & Ishihara 1950:57 [Kyushu].

Eocanthecona kyushuensis: Miyamoto 1962:80.

Distribution: Japan.

References: Esaki & Ishihara (1950) [description, keys, figure]; Miyamoto (1965) [nomenclature, figure].

8. *Eocanthecona latipes* (Stål) [NEW COMBINATION]

Canthecona latipes Stål 1871:619 [Phillipines].

Cantheconidea latipes: Kirkaldy 1909a:13.

Distribution: Phillipines.

Material examined: Determined specimens in BM(NH)

9. *Eocanthecona mitis* (Vollenhoven) [NEW COMBINATION]

Canthecona mitis Vollenhoven 1868:7 [Amboine].

Platynopus mitis: Walker 1868:529.

Canthecona mitis: Stål 1870:229.

Cantheconidea mitis: Kirkaldy 1909a:13.

Distribution: Indonesia.

10. *Eocanthecona neotibialis* (Ahmad & Rana) [NEW COMBINATION]

Canthecona neotibialis Ahmad & Rana 1988:75 [Abbotabad].

Distribution: Pakistan.

References: Ahmad & Rana (1988) [original description, key, figures].

11. *Eocanthecona ornatula* (Distant) [NEW COMBINATION]

Canthecona ornatula Distant 1908:451 [Darjeeling].
Cantheconidae [sic] *ornatula*: Kirkaldy 1909a:366.

Distribution: India, Burma.

References: Distant (1908) [original description]; Ahmad & Rana (1988) [keyed].

Material examined: Type specimens in BM(NH).

12. *Eocanthecona parva* (Distant) [NEW COMBINATION]

Canthecona parva Distant 1902:250. [Mysore].
Cantheconidea parva: Schouteden 1907b:46.

Distribution: Burma, India, Taiwan.

References: Distant (1908) [original description], Hsiao et al. (1977) [figure]; Ahmad & Rana (1988) [characters, keyed, prey].

Material examined: India, Taiwan.

13. *Eocanthecona plebeja* (Vollenhoven) [NEW COMBINATION]

Canthecona plebeja Vollenhoven 1868:7 [Ternate].
Cantheconidea plebeja: Kirkaldy 1909a:13.

Distribution: Molucca Islands.

14. *Eocanthecona populusi* (Ahmad & Rana) [NEW COMBINATION].

Canthecona populusi Ahmad & Rana 1988: 80 [Punjab].

Distribution: Pakistan.

References: Ahmad & Rana (1988) [original description, key, figures].

15. *Eocanthecona robusta* (Distant) [NEW COMBINATION]

Picromerus robustus Distant 1879:48 [Assam].
Canthecona robusta: Distant 1902:250.
Cantheconidea robusta: Kirkaldy 1909a:13.

Distribution: India, New Guinea, Phillipines, Sri Lanka, China, Sumatra, Java, Australia.

References: Black (1968) [distribution]; Ahmad & Rana (1988) [keyed].

Material examined: Determined specimens in BM(NH). Also: India (1), Australia (1), Sri Lanka (2), Java (1).

16. *Eocanthecona rufescens* (Vollenhoven) [NEW COMBINATION]

Canthecona rufescens Vollenhoven 1868:6 [Java].
Cantheconidea rufescens: Kirkaldy 1909a:13.
Canthecona rufescens var. *similis* Jensen-Haarup 1931:324.

Distribution: Borneo, Java, Sumatra.

References: Jensen-Haarup (1931) [new variety].

Material examined: Determined specimens in BM(NH). Also: Sumatra (7), Java (3).

17. *Eocanthecona shikokuensis* (Esaki & Ishihara) [NEW COMBINATION]

Cantheconidea shikokuensis Esaki & Ishihara 1950:55 [Shikoku].

Distribution: Japan.

References: Esaki & Ishihara (1950) [description, keys, figure].

18. *Eocanthecona thomsoni* (Distant) [NEW COMBINATION]

Cantheconidea thomsoni Distant 1911:351 [N.E.China].

Distribution: China.

References: Distant (1911) [description]; Yang (1934a) [characters]; Hsiao et al. (1977) [keyed, figures, photo].

Material examined: Determined specimens in BM(NH). Also: China (1).

19. *Eocanthecona tibialis* (Distant) [NEW COMBINATION]

Canthecona tibialis Distant 1879:46 [Assam]
Cantheconidea tibialis: Kirkaldy 1909a:13.

Distribution: India, Burma.

References: Distant (1902) [characters]; Ahmad & Rana (1988) [keyed].

Material examined: Determined specimens in BMNH. Also, India (1 male).

20. *Eocanthecona vollenhoveni* (Breddin) [NEW COMBINATION]

Canthecona vollenhoveni Breddin 1902:95. [Java]
Cantheconidea vollenhoveni: Kirkaldy 1909a:13.

Distribution: Java, Indonesia.

References: Gaeckicke (1971) [types].

Material examined: specimens in BMNH

Friarius Schouteden

Friarius Schouteden 1907:42. Type species:
Canthecona alluaudi Schouteden

Diagnosis: Rostrum crassate, attaining base of abdomen; segment II longest, III and IV subequal. Bucculae prominent. Jugal and tylus equal in length. Anterolateral pronotal margins denticu-

late; humeri acutely produced. Frenum longer than post-frenal portion of scutellum; apex narrower than corium. Lateral extension of scent gland peritreme short, not reaching half-way to metapleural margin. Base of abdomen lacking spine or tubercle. Connexival angles produced as short, conical tubercles. Profemora with anteapical spine; protibia not dilate. Males lack setose abdominal patches.

1. *Friarius alluaudi* (Schouteden)

Canthecona alluaudi Schouteden 1905:143 [Ethiopia].

Friarius alluaudi: Schouteden 1907b:42.

Distribution: Ethiopia, Madagascar.

References: Cachan (1952) [characters, keyed].

Material examined: One determined specimen in BM(NH).

Glypsus Dallas (Figs. 6, 32, 66)

Glypsus Dallas 1851:93. Type species: *Asopus vigil* Germar (see remarks below) not *Glypsus bouvieri* Schouteden (new name for *G. vigil* Germar sensu Dallas) invalid designation by Schouteden (1907b); not *Edessa moesta* Germar, invalid designation by Kirkaldy (1909a).

Paraglypsus Schouteden 1907b:31 (Subgenus). Type species: *Edessa moesta* Germar (=conspicuous (Westwood)) designation by Kirkaldy (1909a).

Epiglypsus Schouteden 1907b:31 (Subgenus). Type species: *Glypsus truculentus* Walker 1868:132 by monotypy.

Cataglypsus Kirkaldy 1909a:27 (Subgenus). Type species: *Glypsus bouvieri* Schouteden.

Diagnosis: Rostrum crassate, segment II longest, III and IV subequal in length, combined longer than II; bucculae prominent and closed behind. Jugal sometimes convergent anteriorly. Anterolateral pronotal margins denticulate or crenulate. Frenum longer than postfrenal part of scutellum; apex narrower than corium (fig. 32). Orificial peritreme of scent gland elongate, curving, flat, spatulate, extending half-way to metapleural margin (fig. 66). Margins of metasternum sometimes carinate, receiving apex of rostrum. Profemora with anteapical spine; protibia variable; not, slightly or strongly dilate.

Basal abdominal tubercle is bifid or sulcate (fig. 6). Males lack setose abdominal glands.

Remarks: Schouteden and Kirkaldy generated considerable confusion by their invalid designations of type-species. *Glypsus* was founded by Dallas (1851) to include five species: *vigil* Germar, *moestus* Germar, *conspicuus* Westwood, *javanus* Dallas, and *luridus* Dallas, without designating any as type. Schouteden (1907b) determined that the species listed by Dallas (1851) as "*vigil* ? Germar" pertained to a species described by him as *bouvieri* and therefore designated it as type-species, with the statement "Type du genre. - *Glypsus Bouvieri* Schouteden (*vigil* Dallas, nec Germar)." Under the rules of nomenclature (ICZN Article 69a) a designated type-species must be one of the originally included nominal species. Thus, *bouvieri* cannot be the type. Kirkaldy's (1909a) subsequent designation of *Edessa moesta* Germar as type-species was also invalid, even though it was a species originally included by Dallas, because it was not included in Schouteden's concept of the nominal subgenus when he established subgenera of *Glypsus*. Actually, Distant (1902) had already designated *Asopus vigil* Germar as the type of the genus. Also, since *vigil* is the only species included by name in both the original founding of *Glypsus* Dallas and the subgenus *Glypsus* sensu Schouteden, it would become type as the only available name under ICZN Articles 68b and 69a.

The fact that these subgeneric distinctions should be disregarded as unsupportable on morphological criteria does not relieve subsequent revisers from adherence to this regulation. Thus, Kirkaldy's subgeneric rearrangement is invalid while Schouteden's subgeneric arrangement is relevant only for the purposes of nomenclature.

List of Species

1. *Glypsus abdominalis* Cachan

Glypsus (Glypsus) abdominalis Cachan 1952:300 [Madagascar].

Distribution: Madagascar.

References: Cachan (1952) [description, figures].

2. *Glypsus bouvieri* Schouteden

Glypsus bouvieri Schouteden 1904:140 [Belgian Congo].

Glypsus (Glypsus) bouvieri: Schouteden 1907b:31.

Glypsus (Cataglypsus) bouvieri Kirkaldy 1909a:27.

Distribution: Benin, Kenya, Angola, Nigeria, Ivory Coast, Ghana, Zaire, Tanzania, Ethiopia.

References: Linnavouri (1982) [distribution].

Material examined: Angola (2), Nigeria (1), Ghana (3).

3. *Glypsus carinulatus* Bergroth

Glypsus carinulatus Bergroth 1904:32 [Sudan].

Glypsus (Glypsus) carinulatus: Schouteden 1907:31.

Glypsus (Cataglypsus) carinulatus: Kirkaldy 1909a:27.

Distribution: Sudan, Zaire, Nigeria, Guinea, Ivory Coast.

References: Gillon (1972) [characters, immatures, figure]; Linnavouri (1975) [lectotype designated].

Material examined: Zaire (1).

4. *Glypsus conspicuus* (Westwood)

Aelia conspicua Westwood 1837:33 [Africa interior].

Edessa moesta Germar 1837:161.

Asopus moestus: Herrich-Schaeffer 1844:113, fig. 778.

Glypsus conspicuus: Dallas 1851:93.

Glypsus moestus: Dallas 1851:93.

Glypsus pictiventris Stål 1853:213 [Africa meridionalis].

Glypsus conspicuus var. *moestus*: Schouteden 1905:206.

Glypsus (Paraglypsus) conspicuus: Schouteden 1907b:31.

Glypsus (Glypsus) conspicuus: Kirkaldy 1909a:27.

Distribution: South Africa, Sudan, Tchad, Botswana, Angola, Guinea Bissau, Ivory Coast, Kenya, Malawi, Mozambique, Namibia, Tanzania, Zaire, Zimbabwe.

References: Mossop (1927) [biology, figure]; Leston (1952) [status of variety *moesta*]; Le Pelley (1959)

[prey]; Gillon (1972) [characters, figure]; Linnavouri (1975) [characters, distribution].

Material examined: The syntype series of *Edessa moesta* Germar, consisting of three females located in the Humboldt University Museum (Berlin) were examined. Also: determined specimens in BM(NH), Zimbabwe (14), South Africa (4), Botswana (1), Angola (1), Zaire (3), Mozambique (1), Nigeria (1).

5. *Glypsus erubescens* Distant

Glypsus erubescens Distant 1890b:55 [Belgian Congo].

Glypsus (Paraglypsus) erubescens: Schouteden 1907b:31.

Glypsus (Glypsus) erubescens: Kirkaldy 1909a:27.

Distribution: Sudan, Niger, Nigeria, Tchad, Zaire, Ivory Coast.

References: Linnavouri (1975) [characters, lectotype designated]; Linnavouri (1982) [distribution].

Material examined: Type specimens in BM(NH). Also, Nigeria (1), Zaire (1).

6. *Glypsus fuscispinus* Stål

Glypsus fuscispinus Stål 1870:47 [India! laps. cal.].

Glypsus (Glypsus) fuscispinus: Schouteden 1907b:31.

Glypsus (Cataglypsus) fuscispinus: Kirkaldy 1909a:27.

Distribution: South Africa, Ethiopia?, Tanzania.

References: Distant (1902) [characters]; Schouteden (1912) [type, distribution]; Schouteden (1957) [distribution].

7. *Glypsus kuhlgatzi* Schouteden

Glypsus kuhlgatzi Schouteden 1904:141. [Belgian Congo].

Glypsus (Glypsus) kuhlgatzi: Schouteden 1907b:31.

Glypsus (Cataglypsus) kuhlgatzi: Kirkaldy 1909a:27.

Distribution: Ghana, Kenya, Sudan, Nigeria, Angola, Togo, Tanzania, Ethiopia, Zaire.

References: Linnavouri (1975) [listed].

Material examined: Determined specimens in BM[NH]. Also, Ghana (2), Nigeria (1), Togo (1), Angola (1).

8. *Glypsus luridus* Dallas

Glypsus luridus Dallas 1851:93 [Korea].

Distribution: Korea! probably in error.

References: Kirkaldy 1909a [status uncertain].

Material examined: I was unable to locate the type at the BM(NH).

9. *Glypsus nigripes* Horváth

Glypsus (Epiglypsus) nigripes Horváth 1911:433 [Madagascar].

Glypsus (Epiglypsus) nigripes: Cachan 1952:302.

Distribution: Madagascar.

References: Cachan (1952) [status questioned].

10. *Glypsus sparsus* (Westwood)

Aelia sparsa Westwood 1837:33 [Sierra Leone].

Aelia assimilis Westwood 1837:33 [Sierra Leone].

Glypsus sparsus Distant 1900b:817.

Glypsus (Paraglypsus) sparsus: Schouteden 1907b:31.

Glypsus (Glypsus) sparsus: Kirkaldy 1909a:27.

Distribution: Sierra Leone.

11. *Glypsus truculentus* Walker

Glypsus truculentus Walker 1868:132 [Madagascar].

Glypsus (Epiglypsus) truculentus: Schouteden 1907b:31.

Distribution: Madagascar.

References: Cachan (1952) [characters, figures].

12. *Glypsus vigil* (Germar)

Asopus vigil Germar 1837:185 [So. Africa].

Glypsus vigil?: Dallas 1851:93 [=bouvieri Schouteden].

Glypsus (Glypsus) vigil: Schouteden 1907b:31.

Glypsus (Cataglypsus) vigil: Kirkaldy 1909a:27.

Distribution: South Africa, Zaire, Nigeria.

References: Le Pelley (1959) [prey]; Medler (1980) [distribution].

Material examined: Determined specimens in BM(NH).

Hemallia Bergroth (Figs. 24, 61)

Allia Schouteden 1907b:32. Type species: *Canthecona signitenens* Schouteden.

Hemallia Bergroth 1908:131. Replacement name.

Diagnosis: Rostrum crassate, segment II longest, III slightly longer or equal to IV, attaining metacoxae in repose. Tylus and juga of equal length, bucculae prominent anteriorly, obsolescent behind. Anterolateral pronotal margins obtuse, crenulate in anterior half, concavely sinuate in dorsal view; humeri produced, acuminate (fig. 24). Posterior angles of pronotum angularly lobate. Frenum longer than post-frenal part of scutellum; scutellar apex narrower than corium. Scent gland orifice continuous with short, curved sulcus not reaching half way to metapleural margin (fig. 61). Metasternum not elevated. Base of abdomen with stout tubercle that protrudes between metacoxae. Profemora with subapical spine; protibia subprismatic. Connexival segment VI not produced. Males lack abdominal glands.

1. *Hemallia signitenens* (Schouteden)

Canthecona signitenens Schouteden 1905:276 [Madagascar].

Allia signitenens: Schouteden 1907b:52.

Hemallia signitenens: Bergroth 1908:131.

Distribution: Madagascar, Mauritius.

References: Bergroth (1908) [homonymy, replacement name]; Cachan (1952) [characters].

Material examined: Madagascar (1), Mauritius (1).

Hoploxys Dallas (Figs. 16, 77)

Hoploxys Dallas 1851: 103. Type species: *Hoploxys coeruleus* Dallas 1851.

Diagnosis: Rostrum crassate, reaching metacoxae in repose; segment II longest, III and IV subequal, combined longer than II. Buccula prominent, lower posteriorly; juga and tylus of equal length. Anterolateral pronotum obtuse, marginal bead effaced; humeri elongately produced into long, acute spine (fig. 16). Frenal margin of scutellum longer than post-frenal portion; apex narrower than corium. Lateral extension of scent gland peritreme reaching slightly more than half way to metapleural margin; evaporatorium reduced, not surrounding peritreme (fig. 77). Mesosternum with low, obtuse carina. Connexival apices spinulate, last segment with long spine. Base of abdomen with long compressed spine which protrudes between mesocoxae. Profemora unarmed; protibiae subterete. Males with pilose glandular patches on abdominal venter.

1. *Hoploxys coeruleus* Dallas

Hoploxys coeruleus Dallas 1851:103 [Congo].

Distribution: Sudan, Gabon, Cameroon, Zaire, Rwanda.

References: Villiers (1952) [characters, figure, distribution]; Linnavouri (1975) [Listed]; Linnavouri (1982) [habitat, distribution].

Material examined: Zaire (2), Gabon (2), Cameroon (4).

Jalla Hahn (Figs. 47, 74)

Jalla Hahn 1832:100. Type species: *Cimex dumosus* L.

Diagnosis: Rostrum crassate, segment II longest, III shortest, II shorter than II & IV combined; buccula prominent. Juga and tylus equal. Anterolateral pronotal margins thick, calloused, humeri not produced (fig. 47). Frenal portion of scutellum longer than post-frenal portion; apex narrower than corium. Scent gland orifices situated somewhat laterad of coxae (rather than between them); peritreme extending laterally about two-thirds distance to metapleuron, its apex effaced; evaporatorium reduced, not surrounding peritreme (fig. 74). Profemora with antepical tubercle; protibia prismatic. Base of abdomen without tubercle.

Remarks: The species of this genus can be separated by the following key.

1. Connexivum alternately marked
..... *subdilatata* Reuter
Connexivum unicolorous 2
2. Dorsal surface uniformly dark
..... *subcalcarata* Jakovlev
Base of scutellum with pale spot at each angle and
pale longitudinal stripe on midline of pronotum
and scutellum *dumosa* (L.)

List of Species

1. *Jalla dumosa* (Linnaeus)

- Cimex dumosus* Linnaeus 1758:445.
Pentatoma dumosa: Tigny 1802:296.
Jalla dumosa: Hahn 1832:101.
Asopus dumosus: Burmeister 1835:378.
Stiretrus dumosus: Blanchard 1840:153.
Jalla nigriventris Fieber 1861:347.
Jalla dumosa var. *nigriventris*: Puton 1869:8.
Jalla anthracina Jakovlev 1885:162 [Hyeres, France].
Jalla subdilata var. *vidua* Horváth: 1917:

Distribution: Afghanistan, Algeria, Austria, Azerbaijan, Belgium, Bulgaria, China, Czechoslovakia, Denmark, England, France, Finland, Germany, Greece, Hungary, Iran, Italy, Morocco, Netherlands, Palestine, Poland, Portugal, Romania, Russia, Siberia, Spain, Sweden, Switzerland, Syria, Tunisia, Turkey, Yugoslavia.

References: Butler (1923) [Biology]; Yang (1934a) [characterized, figured]; Hoffman (1948) [nymphs]; Vidal (1949) [characters, figure]; Puchkova (1961) [eggs figured]; Servadei (1967) [distribution]; Hsiao et al. (1977) [keyed, photo]; Dupuis (1949) [host plants, prey, life cycle]; Mayne (1965) [distribution, habitat]; Zhang (1985) [characters, figure]; Tamanini (1988) [keyed, figure]; Gollner-Scheiding & Arnold (1988) [distribution].

Material examined: Determined specimens in BM(NH). Also: Moravia (1), Germany (1), Afghanistan (1), Spain (1), Hungary (2).

2. *Jalla subcalcarata* Jakovlev

- Jalla subcalcarata* Jakovlev 1885:163 [Songaria, Kazakhstan].

Distribution: China, Mongolia, Soviet Union, Turkey.

References: Schouteden (1907b) [figure]; Yang (1934a) [characters]; Hsiao et al. (1977) [keyed, photo].

Material examined: Determined specimens in BM(NH).

3. *Jalla subdilatata* Reuter

- Jalla subdilatata* Reuter 1900:238 [Algeria].

Distribution: Algeria

References: Vidal (1949) [characters, figure]; Lindberg (1951) [types].

Material Examined: Determined specimens in BM(NH).

JALLOIDES Schouteden (Figs. 17, 50)

- Jalloides* Schouteden 1907b:41. Type species: *Jalla rubricosa* Stål

Diagnosis: Rostrum crassate, attaining metasternum in repose; segment II longest, IV much longer than III. Buccula prominent; juga equal in length to tylus. Anterolateral pronotum with or without a marginal bead. Frenum longer than post-frenal part of scutellum; apex narrower than corium (fig. 17). Metasternum not prominent. Peritreme of scent gland orifice extending laterally slightly more than half-way to metapleural margin; surrounded by evaporatorium (fig. 50). Profemora with anteapical spine; protibia prismatic, metatibia sulcate. Base of abdomen prominent but without tubercle. Males lack setose glandular patches on abdominal venter.

Remarks: The two species of this genus both occur in Australia and can be separated by the following key.

1. Anterolateral pronotal margin beaded; dorsal color solid red *opulentus* Distant.
- Anterolateral pronotal margin without a distinct bead; with three black spots on pronotum *rubricosus* Stål.

List of Species

1. *Jalloides opulentus* Distant

Jalloides opulentus Distant 1911:349 [Queensland].

Distribution: Australia.

References: Distant (1911) [description].

Material examined: Holotype in BM(NH) was examined. Also, Australia (1).

2. *Jalloides rubricosa* (Stål)

Jalla rubricosa Stål 1870:34 [Australia].
Jalloides rubricosa: Schouteden 1907b:41.

Distribution: Australia.

References: Gross (1975) [figure, characters].

Material examined: Determined specimens in BM(NH).

Leptolobus Signoret (Figs. 34, 70)

Leptolobus Signoret 1855:63. Type species: *Leptolobus murrayi* Signoret.
Moyara Distant 1898:314. Type species: *Moyara insignis* Distant.
Leptolobus subgenus *Moyara*: Schouteden 1907b:17.

Diagnosis: Rostrum crassate, segment II longest, III shortest; bucculae prominent and closed behind. Juga dilate and reflexed, head not as long as pronotum; eyes separate from anterior border of pronotum. Pronotum with a strong, medial constriction, thorax anterior to constriction globose; anterolateral border with thin marginal bead; humeri elongate, spinose (fig. 34). Post-frenal portion of scutellum shorter than frenal border; apex narrowed. Scent gland orifice opens on to a smooth area with an elongate ruga on its posterior margin; evaporatorium divided into a v-shaped configuration (fig. 70). Mesosternum with low, flat carina. Metasternum weakly elevated, lateral margins thinly carinate. Profemora with anteapical spine; protibiae prismatic. Base of abdomen with inconspicuous, low, broad tubercle. Males with pair of glandular setose patches on abdominal venter.

Remarks: The subgeneric distinctions recognized by Schouteden (1907) can be disregarded. The character separating *Moyara* from *Leptolobus*, the degree of jugal dilation and the extent of pronotal constriction is slight and only in *L. insignis* is the difference detectable at all.

List of Species

1. *Leptolobus eburneatus* Karsch

Leptolobus eburneatus Karsch 1892:482 [Cameroon].
Leptolobus eburneatus var. *thoracicus* Schouteden 1902:237.
Leptolobus eburneatus var. *decipiens* Schouteden 1905:169.
Leptolobus (Leptolobus) eburneatus: Schouteden 1907b:17.
Leptolobus (Leptolobus) thoracicus: Schouteden 1907b:17.
Leptolobus eburneatus var. *thoracicus*: Kirkaldy 1909a:29.
Leptolobus thoracicus: Schouteden 1910:404.
Leptolobus thoracicus var. *dispar*: Schouteden 1929:63 [Congo].

Distribution: Cameroon, Guinea, Kenya, Zaire.

References: Kirkaldy (1909a) [synonymy]; Schouteden (1929) [variety]; Villiers (1952) [characters of *decipiens*, *thoracicus*]; Miller (1956) [figure].

Material examined: Determined specimens in BM(NH). Also: Cameroon (15).

2. *Leptolobus insignis* (Distant)

Moyara insignis Distant 1898:314 [Zomba].
Leptolobus insignis: Schouteden 1905:172.
Leptolobus (Moyara) insignis: Schouteden 1907b:17.

Distribution: Malawi.

References: Schouteden (1905) [figure].

Material examined: Type specimen in BM(NH).

3. *Leptolobus karschi* Schumacher

Leptolobus karschi Schumacher 1912:22 [Cameroon].

Distribution: Cameroon, Central African Republic.

References: Schumacher (1912) [description].

4. *Leptolobus martini* (Schouteden).

Moyara martini Schouteden 1904:138 [Uganda].
Leptolobus martini: Schouteden 1905:171.
Leptolobus (Moyara) martini: Schouteden 1907b:18.
Leptolobus (Leptolobus) martini: Kirkaldy 1909a:29

Distribution: Cameroon, Uganda.

References: Kirkaldy (1909a) [subgeneric placement].

Material examined: Determined specimens in BM(NH). Also: Uganda (1), Cameroon (4).

5. *Leptolobus murrayi* Signoret

Leptolobus murrayi Signoret 1855:63 [Guinea].
Leptolobus (Leptolobus) murrayi: Schouteden 1907b:18.

Distribution: Cameroon, Ivory Coast, Guinea, Liberia, Nigeria, Sierra Leone.

References: Leston (1952b) [listed]; Villiers (1952) [Characters, figure]; Linnavouri (1982) [distribution].

Material examined: Determined specimens in BM(NH). Also: Cameroon (7).

6. *Leptolobus zanzibaricus* Bolivar

Leptolobus zanzibaricus Bolivar 1879:136 [Zanzibar].
Leptolobus (Moyara) zanzibaricus: Schouteden 1905:173, fig. 47.

Distribution: Somalia, Tanzania.

References: Schouteden (1907b) [figure].

Macrorhaphis Dallas (Figs. 33, 81)

Macrorhaphis Dallas 1851:87. Type species: *Asopus leprosus* Germar.
Megarhaphis White 1878:463. Type species: *Megarhaphis wollastoni* White.
Macrorhaphis subgenus *Megarhaphis*: Schouteden 1907b:39.

Diagnosis: Rostrum crassate; segment II longest, III shortest; buccula closed behind. Jugal and tylus subequal in length. Anterolateral pronotal margin obtuse, rugulose anteriorly, concave in dorsal view. Humeri prominent, angularly produced. Posterior angles of pronotum with minute hook or small tooth (fig. 33). Frenum longer than post-frenal part of scutellum; apex narrower than corium. Scent gland sulcus reaching half-way to metapleural margin, apex effaced, not surrounded by evaporatorium (fig. 81). Mesosternum bifurcate posteriorly. Basal abdominal spine long, compressed, surpassing mesocoxae. Connexival angles acutely produced into minute spines. Profemora with anteapical spine; protibia not or weakly dilate.

Key to Subgenera

1. Males with setose patches on abdominal venter; ocelli rounded, small, distance from eye to ocelli twice ocellar diameter. Protibiae prismatic
..... *Macrorhaphis*
- Males lack setose patches on abdominal venter; ocelli large, elliptical, distance from eye to ocellus equal to ocellar diameter; protibiae with carinate ectodorsal margin *Megarhaphis*

List of Species

Subgenus *Macrorhaphis* Dallas

1. *Macrorhaphis dallasi* Schouteden

Macrorhaphis dallasi Schouteden 1905:181 [Madagascar].
Macrorhaphis dallasi var. *signata* Schouteden 1905:182.
Macrorhaphis (Megarhaphis) dallasi: Schouteden 1907b:39.
Macrorhaphis (Macrorhaphis) dallasi: Schmitz 1976:371.

Distribution: Madagascar, Tanzania, Uganda.

References: Cachan (1952): [characters, key, figure].

Material examined: Determined specimen (male) in BM(NH). Also, Uganda (1), Tanzania (1).

2. *Macrorhaphis leprosa* (Germar)

Asopus leprosus Germar 1837:186 [South Africa].

Asopus tristis Herrich-Schaeffer 1844:120 [Transvaal].
Macrorhaphis leprosa: Dallas 1851:87.
Macrorhaphis tristis: Stål 1865:65.
Macrorhaphis (Macrorhaphis) leprosa: Schouteden 1907b:39.

Distribution: South Africa, Zaire.

References: Schmitz (1976) [characters].

Material examined: Determined specimens in BM(NH).

Subgenus *Megarhaphis* Buchanan-White

3. *Macrorhaphis acuta* Dallas

Macrorhaphis acuta Dallas 1851:88.
Macrorhaphis spurcata Walker 1868:531 [Natal].
Macrorhaphis infuscata Walker 1868:531 [Whydah].
Mecosoma spinosum Horváth 1892:258 [Quilimane].
Macrorhaphis acuta var. *infuscata*: Schouteden 1905:531.
Macrorhaphis (Megarhaphis) acuta: Schouteden 1907b:39.

Distribution: Angola, Benin, Botswana, Canary Is., Cape Verde Is., Ethiopia, Ghana, Guinea, Guinea Bissau, Ivory Coast, Kenya, Malawi, Madagascar, Mozambique, Niger, Nigeria, Sudan, South Africa, Tanzania, Zaire, Zimbabwe.

References: Cachan (1952) [characters, key, figures]; Le Pelley (1959) [prey]; Abasa & Mathenge (1974) [prey, biology]; Linnavouri (1975) [listed]; Schmitz (1976) [characters, key, figures]; Linnavouri (1982) [habitat, distribution].

Material examined: Madagascar (1), Kenya (7), Malawi (2), Botswana (2), Ghana (4), Mozambique (1), Zimbabwe (45), Angola (5), Ethiopia (1), Tanzania (1).

4. *Macrorhaphis wollastoni* White

Megarhaphis wollastoni White 1878:463 [St. Helena].
Macrorrhaphis wollastoni: Bergroth 1893:124.
Macrorhaphis (Megarhaphis) wollastoni: Schouteden 1907b:39.

Distribution: St. Helena Is.

References: Schmitz (1976) [key, characters, figures].

Material examined: Type specimens in BM(NH).

Martinina Schouteden

Martinina Schouteden 1907a:49. Type species: *Martinina inexpectata* Schouteden. Homonym.
Martinina Schouteden 1907a:76. New name.
Incitatus Distant 1908:453. Type species: *Incitatus primus* Distant. [NEW SYNONYMY]

Diagnosis: Rostrum crassate, attaining metacoxae; segment III longest, IV shortest or III and IV subequal. Buccula elevated and united behind. Jugal longer than tylus but not convergent in front. Anterolateral pronotal margins denticulate; humeri thickly produced. Frenal portion of scutellum longer than post-frenal part; apex narrower than corium. Scent gland ruga reaching about half way to metapleural margin or slightly longer. Prosternum weakly carinate anteriorly; mesosternum with weak carina which is broader posteriorly; metasternum elevated and weakly concave. Base of abdomen with small spinose tubercle directed in apposition to metasternum. Profemora unarmed; protibiae prismatic. Males without setose abdominal glands.

Remarks: Both Distant and Schouteden described their respective new species as monotypic genera, each probably unaware of the others almost simultaneous work. Their descriptions do indicate differences in the length of the scent gland ruga and relative lengths of the last two rostral segments. *Martinina ferruginea* Hsiao & Zheng was transferred to *Armaby* Zheng (1980).

List of Species

1. *Martinina inexpectata* Schouteden

Martinina inexpectata Schouteden 1907a:49 [Tibet].
Martinina inexpectata Schouteden 1907a:76.

Distribution: China.

References: Schouteden (1907b) [figure]; Yang (1934) [characterized]; Hsiao et al. (1977) [keyed].

2. *Martinina prima* (Distant) [NEW COMBINATION]

Incitatus primus Distant 1908:453 [India].

Distribution: India.

References: Distant (1908) [original description, figure].

Material examined: Holotype, female (BM[NH]).

Mecosoma Dallas (Figs. 27, 80)

Mecosoma Dallas 1851: 77. Type species: *Asopus mentor* Germar.

Diagnosis: Rostrum crassate, reaching metacoxae in repose; segment II longest, I, III & IV subequal in length; bucculae united and moderately prominent posteriorly. Juga and tylus of equal length. Anterolateral pronotal margins narrowly calloused, sinuate in dorsal view; humeri obtuse, only slightly prominent (fig. 27). Scutellar frenalum longer than post-frenal portion; apex narrower than corium. Scent gland ruga flat, spatulate, extending slightly more than half way to metapleural margin (fig. 80). Base of abdomen with long compressed spine, clearly surpassing mesocoxae; abdominal apices spinulate. Profemora unarmed; protibia prismatic. Males with ventral abdominal glands.

List of Species

1. *Mecosoma coquerelii* Signoret

Mecosoma coquerelii Signoret 1861:922 [Madagascar].

Distribution: Madagascar.

References: Cachan (1952) [characters].

2. *Mecosoma floridum* Distant.

Mecosoma florida Distant 1890b:54 [Congo].
Mecosoma floridum Schouteden 1907b:63.

Distribution: Ivory Coast, Kenya, Mali, Zaire, Zimbabwe.

Material examined: Kenya (1), Zimbabwe (1).

3. *Mecosoma mentor* Germar

Asopus mentor Germar 1837:186. [So. Africa].

Rhaphigaster mentor: Herrich-Schaeffer 1846:713

Mecosoma mentor: Dallas 1851:77.

Mecosoma Marshallii: Distant 1898:308
[Mashonaland].

Mecosoma thoracata Distant 1901:61
[Mashonaland].

Distribution: Botswana, Mozambique, Nigeria, Saudi Arabia, Somalia, South Africa, Sudan, Zimbabwe.

References: Leston (1952a) [listed]; Linnavouri (1975) [listed], Linnavouri (1982) [distribution].

Material examined: Botswana (1).

Montrouzieriellus Kirkaldy (Figs. 22, 53)

Heteropus Spinola 1837:337 (homonym). Type species: *Heteropus lefeburei* Spinola.

Acanthomera Montrouzier 1864:225 (homonym). Type species: *Pentatoma melacanthum* Boisduval (= *Pentatoma falleni* Guérin-Méneville).

Montrouzieriellus Kirkaldy 1908:124 (replacement name).

Diagnosis: Rostrum crassate. Juga and tylus of equal length, not convergent. Anterolateral pronotal margins smooth, lacking a marginal bead. Humeri strongly produced (fig. 22). Frenal portion of scutellum longer than post-frenal portion; apex narrower than corium. Base of abdomen with short, forwardly directed, compressed spine. Apices of abdominal segment VII produced into short spine. Metasternum elevated with carinate margins, these carinae often pronounced. Scent gland ruga curved, attaining half the distance to metapleural margin, surrounded by evaporatorium (fig. 53). Profemora with subapical spine. Protibiae terete or subprismatic; metatibiae terete. Males with pair of setose glandular patches on abdominal venter.

List of Species

1. *Montrouzieriellus borneensis* (Distant)

Platynopus borneensis Distant 1900c:696 [Borneo].
Platynopus (Acanthomera) borneensis: Schouteden 1907b:48.
Platynopus (Montrouzierellus) borneensis: Kirkaldy 1909a:11.

Distribution: Borneo.

2. *Montrouzieriellus falleni* (Guérin-Méneville)

Pentatoma falleni Guérin-Méneville 1831: Pl. 11, fig. 7.
Pentatoma melacanthum Boisdoval 1835:628.
Pentatoma fallenii Guérin-Méneville 1838:165.
Heteropus melacanthum: Montrouzier 1861:61.
Acanthomera melacantha: Montrouzier 1864:226
Platynopus melacanthus: Mayr 1866:32.
Platynopus tenellus Walker 1867:127 [New Guinea].
Canthecona apicalis Vollenhoven 1868:6.
Canthecona biguttata Vollenhoven 1868:8.
Platynopus apicalis: Walker 1868:529.
Platynopus (Acanthomera) melacanthus: Schouteden 1907b:48.
Platynopus (Montrouzieriellus) melacanthus: Kirkaldy 1909a:11.

Distribution: Admiralty Is., Austral Is., Caroline Is., Bismarck Is., Fiji, Gilbert Is., Marshall Is., Moluccas, New Caledonia, New Guinea, New Hebrides, Samoa, Solomon Is., Tahiti.

References: China (1930) [distribution, biology]; Dupuis (1952) [nomenclature]; Ruckes (1963) [characters, distribution]; Black (1968) [distribution].

Material examined: Admiralty Is. (1), New Guinea (6).

3. *Montrouzieriellus inermis* (Schouteden)

Platynopus inermis Schouteden 1907a:51 [New guinea].
Platynopus (Acanthomera) inermis: Schouteden 1907b:48.
Platynopus (Montrouzierellus) inermis Kirkaldy 1909a:11.

Distribution: New Guinea.

References: Schouteden (1907b) [figure].

Material examined: New Guinea (1).

4. *Montrouzieriellus laetus* (Walker)

Platynopus laetus Walker 1867:127 [New Guinea].
Platynopus dotatus Walker 1867:128 [Celebes].
Platynopus semiscitus Walker 1867:129 [Gilolo].
Canthecona decorata Vollenhoven 1868:9 [Halmaheira].
Platynopus decoratus: Stål 1870:40.
Platynopus (Acanthomera) laetus: Schouteden 1907b:48.
Platynopus (Montrouzierellus) laetus: Kirkaldy 1909a:11.

Distribution: Celebes, Malaysia, Molucas, New Guinea.

References: Distant (1900c) [synonymy]; Black (1968) [distribution].

Material examined: New Guinea (1).

5. *Montrouzieriellus lefebvrei* (Spinola)

Heteropus lefebvrei Spinola 1837:337 [Java].
Platynopus lefebvrei: Stål 1870:41.
Platynopus (Acanthomera) lefebvrei: Schouteden 1907b:48.
Platynopus (Montrouzierellus) lefebvrei: Kirkaldy 1909a:11.

Distribution: Java.

6. *Montrouzieriellus minor* (Ellenreider)

Platynopus minor Ellenreider 1862:135 [Dutch indies]
Platynopus (Acanthomera) minor: Schouteden 1907b:48.
Platynopus (Montrouzierellus) minor: Kirkaldy 1909a:12.

Distribution: Sumatra.

7. *Montrouzieriellus purparascens* (Walker)

Platynopus purparascens Walker 1868:530 [Ceram].
Platynopus (Acanthomera) purparascens: Schouteden 1907b:48
Platynopus (Montrouzierellus) purparascens: Kirkaldy 1909a:12.

Distribution: Mollucas.

8. *Montrouzieriellus turneri* (Distant) NEW COMBINATION

Platynopus turneri Distant 1911:351 [Queensland].

Distribution: Australia.

References: Distant (1911) [description].

Material examined: Queensland (1).

Oechalia Stål (Figs. 26, 79)

Oechalia Stål 1862:93. Type species: *Arma schellenbergi* Guérin-Méneville (= *Pentatoma consocialis* Boisduval).

Oechalia subgenus *Hawaiiicola* Kirkaldy 1909b:83. Type species: *Asopus griseus* Burmeister.

Diagnosis: Rostrum crassate, extending only to mesocoxae; segment II longest, I, III and IV subequal; bucculae diminutive, obsolescent behind. Tylus and juga equal in length, apices of juga convergent, constricting apex of tylus. Anterolateral pronotal margins rugulose; humeri angulate, produced; posterior angles lobate (fig. 26). Frenal margin of scutellum longer than post-frenal portion; apex narrowed, much narrower than corium. Pro- and mesosternum concavely depressed; metasternum weakly angularly produced. Anteroventral propleural carina terminating medially in short lobe just anterior to procoxae. Scent gland orifice slit-like, lacking auricle, ruga or sulcus (fig. 79). Abdominal spine robust, long, extending to mesocoxae. Lateral apices of abdominal segments, including VII, minutely acute. Protibiae prismatic; profemora unarmed. Males lack setose abdominal patches.

Remarks: I do not find sufficient grounds for maintaining a separate subgenus for *O. schellenbergi* and consider *Hawaiiicola* Kirkaldy to be a junior synonym of *Oechalia* Stål. The geographic distribution is interesting. *Oechalia schellenbergi* is common throughout the south Pacific including Australia, but not found in the Hawaiian Islands. The other 13 species are found only in the Hawaiian Islands. In fact, it is the only pentatomid genus native to Hawaii.

List of Species

1. *Oechalia acuta* Usinger

Oechalia (Hawaiiicola) acuta Usinger 1941:82 [Hawaii].

Distribution: Hawaiian Is.

References: Usinger (1941) [revision]; Zimmerman (1948) [figure].

Material examined: Female, no data (1).

2. *Oechalia bryani* Usinger

Oechalia (Hawaiiicola) bryani Usinger 1941:81 [Hawaii].

Distribution: Hawaiian Is.

References: Usinger (1941) [revision]; Zimmerman (1948) [figure].

Material examined: Male, no data (1).

3. *Oechalia ferruginea* Usinger

Oechalia (Hawaiiicola) ferruginea Usinger 1941:85 [Hawaii].

Distribution: Hawaiian Is.

References: Usinger (1941) [revision]; Zimmerman (1948) [figure].

4. *Oechalia grisea* (Burmeister)

Asopus griseus Burmeister 1834:293 [Oahu].

Arma grisea Dallas 1851:97.

Oechalia grisea: Stål 1862:93.

Oechalia (Hawaiiicola) grisea: Kirkaldy 1909b:82.

Distribution: Hawaiian Is.

References: Kirkaldy (1909b) [taxonomy, figures]; Schumacher (1917) [eggs]; Swezey (1936) [immatures, prey, figures]; Usinger (1941) [revision]; Heizer (1951) [cytology].

Material examined: Kauai (1)

5. *Oechalia hirtipes* Van Duzee

Oechalia hirtipes Van Duzee 1936:221 [Kilauea].

Distribution: Hawaiian Is.

References: Van Duzee (1936) [description]; Zimmerman (1948) [figure].

Material examined: Paratypes: Kauai & Hawaii (2)

6. *Oechalia kaonohi* Kirkaldy

Oechalia (Hawaiiicola) kaonohi Kirkaldy 1909b:83 [Hawaii].

Distribution: Hawaiian Is.

References: Kirkaldy (1909b) [description, figure]; Swezey (1936) [biology, figure]; Usinger (1941) [revision].

Material examined: Kauai (21), Oahu (3), Maui (1)

7. *Oechalia pacifica* Stål

Arma pacifica Stål 1859:221 [Oahu].

Oechalia pacifica: Stål 1870:59.

Oechalia grisea var. *pacifica*: Kirkaldy 1909b:83.

Oechalia (Hawaiiicola) pacifica: Usinger 1941:86.

Distribution: Hawaiian Is.

References: Kirkaldy (1909b) [synonymy]; Van Duzee (1936) [characters, taxonomy]; Usinger (1941) [revision]; Zimmerman (1948) [figure]; Heizer (1950) [cytology]; Nuamah (1982) [cytology].

Material examined: Maui (5), Kauai (1)

8. *Oechalia patruelis* (Stål)

Arma patruelis Stål 1859:220 [Oahu].

Oechalia patruelis Stål 1862:93.

Oechalia (Hawaiiicola) patruelis: Usinger 1941:62.

Distribution: Hawaiian Is.

References: Van Duzee (1936) [synonymy]; Usinger (1941) [revision]; Zimmerman (1948) [fig-

ure]; Heizer (1950) [cytology]; Nuamah (1982) [cytology].

Material examined: Hawaii (12), Mauna (1), Kauai (3), Oahu (1)

9. *Oechalia schellenbergi* (Guérin-Méneville)

Pentatoma schellenbergi Guérin-Méneville 1831:pl.11, fig. 9.

Pentatoma consociata Boisduval 1835:630.

Pentatoma schellenbergii Guérin-Méneville 1838:166.

Arma schellenbergii: Dallas 1851:98.

Oechalia schellenbergii: Stål 1862:93.

Rhaphigaster perfectus Walker 1867:371.

Oechalia consociata: Stål 1870:59.

Oechalia (Oechalia) consociata: Kirkaldy 1909b:25.

Distribution: Australia, New Zealand, Tasmania, Wake Is. Gilbert Is., Marshall Is., Bora bora, Fiji, Tahiti, Phillipines.

References: Kirkaldy (1909b) [key, prey]; Usinger (1941) [revision]; Woodward (1956) [synonymy]; Ruckes (1963) [characters, distribution]; Gross (1975) [characters, figure, prey]; Edwards & Suckling (1980) [prey, development, fecundity]; Awan (1988) [behavior, development]; Awan et al. (1989) [prey location].

Material examined: Australia (34), New Zealand (2), Marshall Is. (7), Polynesia (8), Christmas Is. (7), Wake Is. (2), Marquesas (3)

10. *Oechalia similis* Usinger

Oechalia (Hawaiiicola) similis Usinger 1941:88 [Maui].

Distribution: Hawaiian Is.

References: Usinger (1941) [revision]; Zimmerman (1948) [figure].

11. *Oechalia sinuata* Usinger

Oechalia (Hawaiiicola) sinuata Usinger 1942:217 [Oahu].

Distribution: Hawaiian Is.

References: Zimmerman (1948) [keyed].

12. *Oechalia suehiroae* Usinger

Oechalia (Hawaiiicola) suehiroae Usinger 1941:89 [Maui].

Distribution: Hawaiian Is.

References: Usinger (1941) [revision]; Zimmerman (1948) [figure].

13. *Oechalia swezeyi* Usinger

Oechalia (Hawaiiicola) swezeyi Usinger 1941:90 [Oahu].

Distribution: Hawaiian Is.

References: Usinger (1941) [revision]; Zimmerman (1948) [figure].

14. *Oechalia virescens* Usinger

Oechalia (Hawaiiicola) virescens Usinger 1941:77 [Kauai].

Distribution: Hawaiian Is.

References: Usinger (1941) [revision]; Zimmerman (1948) [figure].

Material examined: Oahu (1).

15. *Oechalia virgula* Van Duzee

Oechalia virgula Van Duzee 1936:220 [Hawaii].
Oechalia (Hawaiiicola) virgula: Usinger 1941:72.

Distribution: Hawaiian Is.

References: Van Duzee (1936) [description]; Usinger (1941) [revision]; Zimmerman (1948) [figure].

Material examined: Paratypes, Hawaii (3), Maui (1); Also, Hawaii (1)

Parealda Schouteden (Figs. 21, 78)

Parealda Schouteden 1907b:47. Type species:
Parealda bouvieri Schouteden

Diagnosis: Rostrum crassate, attaining metacoxae; segment III slightly longer than II, almost twice length of IV; bucculae attenuated. Jugal and tylus of equal length. Antennifers with a swollen angular tooth ventrally. Anterolateral pronotal margin narrowly calloused, crenulate on anterior half; margin obsolescent on posterior half; humeri spinose, directed slightly rearwards (fig. 21). Frenal portion of scutellum longer than post-frenal portion; scutellar apex narrower than corium. Meso- and metasternum bicarinate, prolonged behind and in front between coxae, embracing rostrum in repose. Scent gland ruga flat, spatulate, curved, extending slightly more than half way to metapleural margin; evaporatorium completely surrounds ruga (fig. 78). Base of abdomen with spine directed in apposition to sulcus in posterior metasternum. Connexival angles not produced except segment VI spinose. Profemora unarmed; protibia terete. Males without setose abdominal glands.

1. *Parealda bouvieri* Schouteden

Parealda bouvieri Schouteden 1907b:48 [Mariana Is.].

Distribution: Mariana Is. (Saipan, Guam, Rota).

References: Ruckes (1963) [characters, distribution, synonymy].

Material examined: Saipan (determined by H. Ruckes), Guam (1).

Perillus Stål

Perillus Stål 1862:88. Type species: *Asopus confluens* Herrich-Schaeffer, designation by Schouteden (1907b).

Mineus Stål 1867:498. Type species: *Podisus strigipes* Herrich-Schaeffer by monotypy.

Perilloides Schouteden 1907b:37. Type species: *Cimex bioculatus* F.

Gordoneri Distant 1887:343. Type species: *Oplomus lineatus* Walker (=confluens Herrich-Schaeffer).

Diagnosis: Rostrum crassate, attaining mesocoxae; segment II longest, III shortest, III and IV combined longer than or equal to II; bucculae closed behind. Jugal and tylus subequal in length. Anterolateral pronotal margin obtuse, rectilinear in dorsal view; humeri not produced. Frenal margin of scutellum slightly longer than postfrenal part; scutellar apex about as wide as corium. Scent gland ruga flat extending about half way to metapleural margin; evaporatorium completely surrounding ruga. Base of abdomen with short, stout forwardly directed tubercle. Profemora armed with preapical tubercle; protibiae prismatic. Males with pair of glandular patches of silky hairs on abdominal venter.

Remarks: *Perillus* is a New World genus. *Gordonierius* Distant (1900), based on *Oplonus lineatus* Walker, with a supposed provenance of Abyssinia (Ethiopia) is in fact a specimen of *Perillus confluens* Stål, a species common in Mexico (Thomas 1992). One species has been introduced into Asia for biological control.

1. *Perillus bioculatus* (F.)

Cimex bioculatus Fabricius 1775:715 [America Bo-realis].

Pentatoma clanda Say 1825:312 [Missouri].

Perillus claudus (sic): Uhler 1876:281

Oplonus virgatus Stål 1862:89 (Mexico).

Zirona (sic) *claudus*: Rathvon 1869:549.

Perillus bioculatus: Stål 1872:129

Perillus virgatus: Distant 1880:34.

Mineus bioculatus: Uhler 1886:4.

Perilloides bioculatus: Schouteden 1907b:37.

Perillus bioculatus var. *claudus*: Caesar 1912:33.

Perillus bioculatus: Knight 1952:229.

Distribution: Czechoslovakia, France, Germany, Russia, Yugoslavia, [Introduced].

References: Knight (1924) [color pattern, prey]; Knight (1952) [revision]; Franz & Szmidt (1960) [biocontrol]; Shagov (1968) [thermal biology]; Jasie (1975) [life cycle, prey]; Shagov (1977) [temperature preferences]; Nuamah (1982) [cytology]; Volkovitch et al. (1991) [development, diapause].

Material examined: United States.

Picromerus Amyot & Serville (Figs. 19, 71)

Picromerus Amyot & Serville 1843:84. Type species; *Cimex bidens* L., designated by Kirkaldy (1903:230).

Cimex subgenus *Picromerus*: Stål 1867:497.

Cimex: Kirkaldy 1909a:4.

Diagnosis: Rostrum crassate, attaining metacoxae; segment II longest, III and IV subequal and in combination longer than II; bucculae prominent, united behind. Jugal and tylus subequal in length. Anterolateral pronotal margin thick, crenulate to rugulose; humeral angles strongly spinose, usually with subapical denticle posteriorly (fig. 19). Frenal margin of scutellum longer than postfrenal part; scutellar apex narrower than corium. Scent gland ruga flat, spatulate, extending half way to metapleural margin and usually completely surrounded by evaporatorium (fig. 71). Base of abdomen with weak tubercle or prominence, not protruding between metacoxae. Profemur with anteapical spine; protibiae prismatic. Males without glandular, setose patches on abdominal venter.

List of Species

1. *Picromerus bidens* (L.)

Cimex bidens Linnaeus 1758:443.

Cimex bilobus Schrank 1781:268 [Austria].

Pentatoma bidens: Latreille 1804:188.

Arma bidens: Hahn 1832:92.

Asopus bidens: Burmeister 1835:379.

Jalla bidens: Spinola 1837:335.

Stiretrus bidens: Blanchard 1840:153.

Picromerus bidens: Amyot & Serville 1843:84

Picromerus fuscoannulatus Stål 1858:176 [Siberia].

Asopus (*Picromerus*) *bidens*: Flor 1860:92.

Cimex fusco-annulatus Stål 1870:46.

Picromerus longicollis Jakovlev 1902b:335 [Vladivostok].

Picromerus bidens subsp. *fuscoannulatus*: Kerzhner 1964:187.

Distribution: Afghanistan, Albania, Algeria, Austria, Azerbaijan, Belgium, Canada, China, Czechoslovakia, Denmark, England, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, Korea, Mongolia, Netherlands, Poland, Portugal, Russia, Siberia, Spain, Sweden, Switzerland, Turkey, United States, Yugoslavia.

References: Villiers (1945) [characters, figure]; Mayne & Breny (1947) [eggs, ecology]; Vidal (1949) [Key, characters]; Dupuis (1949) [life cycle, immatures, characters, key]; Dupuis (1952) [dorso-abdominal glands]; Leston (1955) [life cycle]; Groves (1956) [behavior, immatures]; Scudder (1959) [female genitalia]; Dupuis (1959) [male parandria]; Puchkova (1961) [eggs figured]; Massee (1962) [habitat, prey]; Kerzhner (1964) [synonymy]; Puchkova (1961) [eggs]; Mayne (1965) [prey, figure]; Wagner (1966) [key, characters, figure]; Josifov & Kerzhner (1978) [keys, figure]; Nuamah (1982) [cytology]; Javahery (1986) [biology]; Tamanini (1988) [key, figure]; Lariviere & Larochelle (1989) [distribution, bionomics]; Ahmad & Onder (1990b) [figure, key].

Material examined: Canada (2), Germany (2), Italy (2), Spain (1), Belgium (1), Hungary (1), Switzerland (2), France (3), Austria (1), Soviet Union (1).

2. *Picromerus brachypterus* Ahmad & Onder

Picromerus brachypterus Ahmad & Onder 1990b:77 [Turkey].

Distribution: Turkey.

References: Ahmad & Onder (1990b) [description, key, figure].

3. *Picromerus conformis* (Herrich-Schaeffer)

Asopus conformis Herrich-Schaeffer 1841:72 [Turkey].

Canthecona conformis: Baerensprung 1860:5.

Picromerus conformis: Mulsant 1866:343.

Cimex conformis Stål 1870:46.

Distribution: Albania, Azerbaijan, Bulgaria, Czechoslovakia, Finland, Hungary, Italy, Turkey, Switzerland, Russia, Yugoslavia.

References: Vidal (1949) [key, characters]; Wagner (1966) [key]; Josifov (1970) [habitat, distribution]; Gollner-Scheiding & Arnold (1988) [distribution]; Ahmad & Onder (1990b) [key, figure].

Material examined: Hungary (1).

4. *Picromerus fasciaticeps* Zheng & Liu

Picromerus fasciaticeps Zheng & Liu 1987a:181 [Yunnan].

Distribution: China.

References: Zheng & Liu 1987a [original description].

5. *Picromerus griseus* (Dallas)

Canthecona grisea Dallas 1851:92 [Provenance unknown].

Picromerus obtusus Walker 1867:133 [Hindustan].

Picromerus nigrivitta Walker 1867:133 [Silhet].

Picromerus sundanus Breddin 1902:96 [Java].

Picromerus griseus: Schouteden 1907b:25.

Cimex obtusus: Kirkaldy 1909a:5.

Cimex sundanus: Kirkaldy 1909a:5.

Distribution: Bangladesh, Burma, China, India, Indonesia, Java, Pakistan.

References: Distant (1902) [characters, figures]; Yang (1934) [keyed, characterized]; Yang (1962) [figure]; Rishi & Abbasi (1973) [characters, figure]; Hsiao et al. (1977) [keyed, figures, photo]; Zhang (1985) [characters, eggs, figure].

Material examined: Indonesia (5), Java (2).

6. *Picromerus lewisi* Scott

Picromerus lewisi Scott 1874:293 [Japan].

Picromerus angusticeps Jakovlev 1880:212 [Amur].

Picromerus vicinus Signoret 1880:34. [Peking].

Picromerus similis Distant 1883:421 [Japan].

Cimex angusticeps: Kirkaldy 1909a:4.

Cimex lewisi: Kirkaldy 1909a:5.

Cimex similis: Kirkaldy 1909a:5.

Cimex vicinus: Kirkaldy 1909a:5.

Distribution: China, Japan, Korea, Siberia.

References: Yang (1934) [keyed, characterized]; Esaki (1952) [characters, figure]; Miyamoto (1965) [figure]; Hsiao et al. (1977) [keyed, figures, photo]; Josifov & Kerzhner (1978) [key, figure]; Zhang (1985) [characters, figure].

Material examined: Japan (5), China (7), Korea (1).

7. *Picromerus nigridentis* (F.)

Cimex nigridentis Fabricius 1803:156.
Arma nigridentis: Spinola 1837:337.
Asopus nigridentis: Costa 1847:397.
Stiretrus maculicornis Mulsant 1852:76.
Picromerus nigridentis: Mulsant 1866:341.
Cimex (Picromerus) nigridentis: Stål 1868:16.

Distribution: Albania, Algeria, Austria, Crete, France, Italy, Morocco, Portugal, Spain, Turkey, Yugoslavia.

References: Villiers (1945) [characters, figure]; Vidal (1949) [key, characters]; Dupuis (1949) [host plants!, distribution, key]; Wagner (1966) [key]; Servadei (1967) [distribution]; Josifov (1970) [distribution]; Tamanini (1981) [figure]; Nuamah (1982) [cytology]; Ahmad & Onder (1990b) [key, characters].

Material examined: France (2).

8. *Picromerus orientalis* Rishi & Abbasi

Picromerus orientalis Rishi & Abbasi 1973:193 [Pakistan].

Distribution: Pakistan.

References: Rishi & Abbasi (1973) [original description].

9. *Picromerus pseudobidens* Ahmad & Onder

Picromerus pseudobidens Ahmad & Onder 1990b:81 [Turkey].

Distribution: Turkey.

References: Ahmad & Onder (1990b) [original description, figures].

10. *Picromerus viridipunctatus* Yang

Picromerus viridipunctatus Yang 1934:104.

Distribution: China.

References: Yang (1934) [description, keyed, figured]; Yang (1962) [figure]; Hsiao et al. (1977) [keyed, figures, photo].

Material examined: China (5).

Pinthaeus Stål (Figs. 38, 65)

Cimex subgenus *Pinthaeus* Stål 1867:497. Type species: *Cimex sanguinipes* F.

Diagnosis: Rostrum crassate; segment II longest, III and IV subequal; bucculae prominently elevate, brief, terminating abruptly. Juga longer than, and convergent in front of, tylus. Anterolateral pronotal margins calloused, sinuate, crenulate; humeri prominent but not strongly produced (fig. 38). Frenum longer than post-frenal portion of scutellum; apex narrower than corium. Scent gland ruga flat, narrow, slightly curved, its apex effaced, attaining slightly more than half-way to metapleural margin, not completely surrounded by evaporatorium (fig. 65). Prosternum with flat mesial carina. Metasternum somewhat elevated. Base of abdomen with short tubercle directed anteriorly in apposition to metasternum. Connexival angles obtuse. Profemora with anteapical spine; ectal margin of superior surface of protibia strongly carinate. Males lack setose abdominal patches.

List of Species

1. *Pinthaeus humeralis* Horváth

Pinthaeus humeralis Horváth 1911:432 [China].

Distribution: China.

References: Horváth (1911) [description, figure]; Yang (1934) [characterized, figure]; Hsiao et al. (1977) [figure, key].

Material examined: China (4).

2. *Pinthaeus sanguinipes* (Fabricius)

Cimex sanguinipes Fabricius 1781:344. [Europe].
Pentatoma sanguinipes: Latreille 1804:188.
Asopus sanguinipes: Herrich-Schaeffer 1839:101.
Asopus Genei Costa 1841:299. [Sicily].
Platynopus sanguinipes: Fieber 1861:348.
Platynopus genei: Garbiglietta 1869:48.
Pinthaeus sanguinipes: Stål 1870:46.

Distribution: Austria, Belgium, China, Czechoslovakia, Denmark, France, Germany, Greece, Hungary, Italy, Japan, Korea, Netherlands, Poland, Portugal, Russia, Siberia, Spain, Switzerland, Syria, Turkey, Yugoslavia.

References: Villiers (1945) [characters, figure]; Vidal (1949) [characters]; Dupuis (1949) [key, life cycle, prey, host plants, figure]; Esaki (1952) [characters, figure]; Miyamoto (1965) [figure]; Wagner (1966) [characters, figure]; Servadei (1967) [distribution]; Hsiao et al. (1977) [key, figure].

Material examined: Yugoslavia (1), Japan (3), China (2).

Planopsis Schouteden (Figs. 23, 73)

Planopsis Schouteden 1907b:49. Type species:
Platynopus silvaticus Distant.

Diagnosis: Rostrum crassate, attaining base of abdomen; segment II longest, III and IV subequal; tylus and juga of equal length. Anterolateral pronotal margin narrowly calloused, sinuately concave in dorsal view. Humeri angularly produced, apices obtuse (fig. 23). Frenal portion of scutellum longer than post-frenal part; apex narrower than corium. Scent gland ruga flat, narrow, spatulate; narrowly surrounded by evaporatorium (fig. 73). Mesosternum with flat mesial carina. Metasternum subelevated. Base of abdomen with compressed tubercle directed in apposition to metasternum. Connexival apices obtuse, not produced. Profemora armate with preapical spine; ectal margin of superior face of protibiae weakly carinate. Males lack pilose abdominal glands.

1. *Planopsis silvatica* (Distant)

Platynopus silvatica Distant 1890c:475.
Canthecona distanti Schouteden 1905:141.
Canthecona silvatica: Schouteden 1905:145.
Planopsis silvatica: Schouteden 1907b:49.

Distribution: Cameroon, Gabon, Ivory Coast, Zaire.

References: Schouteden (1907b) [description, figure]; Villiers (1952) [characters, figure].

Material examined: Zaire (1), Cameroon (1).

Platynopiellus NEW GENUS (Figs. 41, 44, 72)

Platynopiellus Type Species: *Pentatoma 17-maculata*
Palisot de Beauvois (= *septendecimaculata*).

Diagnosis: Rostrum crassate. Tylus and juga of equal length, not convergent. Anterolateral pronotum sinuate to subrectilinear with a narrowly carinate marginal bead or obtuse carina attended by a contiguous row of punctures. Humeri produced or not. Frenal portion of scutellum longer than post-frenal portion; apex narrower than corium (fig. 41). Scent gland ruga flat, curved, attaining slightly more than half distance to metapleural margin; surrounded by evaporatorium (fig. 72). Base of abdomen with a stout, forwardly directed spine projecting between the metacoxae, sometimes reaching the mesocoxae. Apices of abdominal segment VII produced as short spine. Profemora with anteapical spine; protibia foliate or with a carinate margin on planar surface; metatibia sulcate or prismatic. Males with pair of pilose glandular patches on abdominal venter.

Remarks: This genus contains those African representatives of the old genus *Platynopus*. The genera differ in the structure of the thorax. In *Platynopiellus* the thorax is dorso-ventrally compressed, such that there is always an anterolateral margin, although it may lack more than a vestige of a marginal bead, separating the dorsal and ventral aspects (fig. 44). In the true *Platynopus*, species restricted to the orient, the thorax is dorso-ventrally robust, not compressed, and there is no marginal delineation between the dorsum and venter.

List of Species

1. *Platynopiellus delevalli* (Schouteden)

Platynopus delevalli Schouteden 1910:403 [Mayumbe].

Distribution: Zaire.

References: Schouteden (1910) [description].

2. *Platynopiellus dispar* (Schouteden)

Platynopus dispar Schouteden 1916:280 [Congo].
Platynopus dispar var. *trisinata* Schouteden 1964:206.

Distribution: Cameroon, Ivory Coast, Zaire.

References: Schouteden (1964) [characters, distribution]; Linnavouri (1982) [distribution].

Material examined: Cameroon (1).

3. *Platynopiellus fallax* (Schouteden)

Platynopus fallax Schouteden 1904:139 [Uganda].
Platynopus (Acanthomera) fallax: Schouteden 1907b:48.
Platynopus (Montrouzierellus) fallax: Kirkaldy 1909a:11.

Distribution: Cameroon, Uganda, Ivory Coast.

References: Gillon (1972) [collection record].

Material examined: Cameroon (20).

4. *Platynopiellus horvathi* (Schouteden)

Platynopus Horvathi Schouteden 1904:139 [Kiboshoh].
Platynopus (Acanthomera) Horvathi: Schouteden 1907b:48.
Platynopus (Montrouzierellus) horvathi: Kirkaldy 1909a:11.

Distribution: Cameroon, Liberia, Zaire.

References: Villiers (1952) [distribution]; Linnavouri (1982) [distribution].

5. *Platynopiellus reichii* (Signoret)

Platynopus Reichii Signoret 1858:276 [Ethiopia].
Platynopus (Acanthomera) Reichii: Schouteden 1907b:48.
Platynopus (Montrouzierellus) reichii: Kirkaldy 1909a:12.

Distribution: Cameroon, Ethiopia, Ghana, Guinea, Ivory Coast, Nigeria, Togo.

References: Schouteden (1964) [distribution]; Linnavouri (1982) [habitat, distribution].

Material examined: Ghana (1), Cameroon (1).

6. *Platynopiellus scutellatus* (Distant)

Platynopus scutellatus Distant 1900a:57 [Bopoto].

Distribution: Zaire.

References: Schouteden (1909) [taxonomic status].

7. *Platynopiellus septendecimaculatus* (Beauvois)

Cimex rostratus Drury 1782:59 [Africa] [Homonym].
Cimex calens Fabricius 1803:163. [Homonym].
Pentatoma 17-maculata Palisot de Beauvois 1811:112 [Africa]
Asopus calens: Herrich-Schaeffer 1844:117.
Platynopus rostratus: Dallas 1851:87.
Platynopus badius Walker 1867:125 [Old Calabar].
Platynopus trijunctus Walker 1867:125 [West Africa].
Platynopus optabilis Walker 1867:126 [West Africa].
Platynopus rostratus var. *trijunctus*: Distant 1900a:56
Platynopus rostratus var. *optabilis*: Distant 1900a:56.
Platynopus parvus Distant 1900a:56 [Sierra Leone].
Platynopus (Acanthomera) rostratus: Schouteden 1907b:48.
Platynopus (Montrouzierellus) 17-maculatus: Kirkaldy 1909a:12.
Platynopus 17-punctata (sic) Schouteden 1943:325.
Platynopus parvulus (sic): Leston 1952b:894.

Distribution: Cameroon, Ghana, Ivory Coast, Kenya, Nigeria, Sierra Leone, Sudan, Uganda, Zaire.

References: Schouteden (1911) [synonymy]; Distant (1900a) [synonymy]; Villiers (1952) [characters of *rostratus*, figure]; Linnavouri (1975) [distribution]; Linnavouri (1982) [habitat].

Material examined: Ghana (3), Zaire (6), Cameroon (140), Kenya (1), Uganda (1).

8. *Platynopiellus thomsonii* (Signoret)

Platynopus Thomsonii Signoret 1858:277 [West Africa].
Platynopus (Acanthomera) thomsonii: Schouteden 1907b:48.
Platynopus (Montrouzierellus) thomsonii: Kirkaldy 1909a:12.

Distribution: Cameroon, Ghana, Guinea, Ivory Coast, Nigeria, Zaire.

References: Villiers (1952) [characters, distribution]; Medler (1980) [distribution]; Linnavouri (1982) [distribution].

Material examined: Cameroon (6), Nigeria (1), Ghana (2).

***Platynopus* Amyot & Serville**
(Figs. 25, 82)

Platynopus Amyot & Serville 1843: Pl.3, fig 9. Type species: *Platynopus varius* Amyot & Serville (= *melanoleucus* Westwood), designated by Kirkaldy (1903:230).

Diagnosis: Rostrum crassate; segment II longest, III and IV subequal. Jugal and tylus subequal in length. Anterolateral pronotal margins obtuse. Frenum longer than post-frenal part of scutellum (fig. 25). Scent gland ruga long, reaching more than half-way to metapleural margin (fig. 82). Mesosternum with a weakly elevated carina; metasternum subelevated, sometimes with lateral margins carinate. Base of abdomen with short tubercle apposing metasternum. Apex of last connexival segment produced acuminate or tuberculate. Profemora with anteapical spine; protibia dilated foliate. Males with pilose abdominal glands.

List of Species

1. *Platynopus calliger* Horváth

Platynopus calliger Horváth 1911: 430 [Talaud Is.]

Distribution: Indonesia.

References: Horváth (1911) [description].

2. *Platynopus carbonarius* Horváth

Platynopus carbonarius Horváth 1911: 431 [Java]

Distribution: Java.

References: Horváth (1911) [description].

3. *Platynopus dalpadoides* (Vollenhoven)

Gynenica dalpadoides Vollenhoven 1867:178. [Mollucas].
Platynopus tagalicus Stål 1870:39 [Phillipines].
Platynopus (Platynopus) dalpadoides: Schouteden 1907b:47.

Distribution: Phillipines, Indonesia.

References: Schouteden (1908) [synonymy]; Leston (1953b) [nomenclature].

Material examined: Phillipines (1).

4. *Platynopus indicus* Chaterjee

Platynopus indicus Chaterjee 1934:24 [India].

Reference: Chaterjee (1934) [description, figure].

Distribution: India.

5. *Platynopus melanoleucus* (Westwood)

Aelia melanoleuca Westwood 1837:33 [Java].
Platynopus varius Amyot & Serville 1843:79, Pl.3, fig. 9.
Platynopus melanoleucus Dallas 1851:87.
Platynopus polygraphus Walker 1867:126 [Ceram].
Platynopus (Platynopus) melanoleucus: Schouteden 1907b:47.

Distribution: Celebes, Java, Moluccas, Phillipines, Sumatra, Taiwan.

References: Kirkaldy (1903) [nomenclature]; Schouteden (1907b) [figure].

Material examined: Bouro ? (1), Indonesia (14), Phillipines (7), Taiwan (1), Samar Is. (1).

***Ponapea* Ruckes 1963**
(Fig. 9)

Ponapea Ruckes 1963:326. Type species: *Ponapea arachnoides* Ruckes 1963.

Diagnosis: Rostrum subcrassate, extending to third abdominal segment; segment II longest, but shorter than III and IV combined, III and IV subequal; jugal and tylus of equal length. Anterolateral margins prominently serrate; humeri angular and modestly produced but not spinose (fig. 9). Frenal margin of scutellum twice as long as post-frenal portion; apex narrower than a corium. Hemelytral membrane reduced in proportion to corium. Mesosternum shallowly, longitudinally sulcate; metasternum hexagonal, weakly concave. Scent gland ruga flat, elevated, not extending half

way to pleural margin; not surrounded by evaporatorium. Base of abdomen with minute tubercle. Connexival apices subnodular. Profemora with minute anteapical tubercle; meso- and metafemora with low anteapical nodes. Tibiae prismatic. Males with setose glandular patches on each side of abdomen.

Remarks: The one species is small (ca. 8 mm length), with long spindly legs.

1. *Ponapea arachnoides* Ruckes

Ponapea arachnoides Ruckes 1963:326 [Ponape]

Distribution: Caroline Is.

References: Ruckes (1963) [description, figure].

Material examined: Holotype in AMNH.

Pseudanasida Schouteden (Fig. 13)

Pseudanasida Schouteden 1907a:38. Type species: *fallax* Schouteden.

Diagnosis: Rostrum crassate; segment IV much longer than III, segment II subequal to III and IV combined. Tylus and juga of equal length. Eyes situated proximal to anterior angle of pronotum. Anterolateral margin crenulate, sinuate in dorsal view; humeri angular, prominent. Frenal portion of scutellum longer than post-frenal portion; apex narrower than corium (fig. 13). Scent gland ruga narrow, strongly curved, elongate, reaching more than half way to metapleural margin. Base of abdominal venter prominent but without a distinct tubercle. Connexival angles obtuse. Profemora with anteapical spine; protibia prismatic. Males lack pilose abdominal glands.

Remarks: The fundamental difference between *Pseudanasida* and *Anasida* is the armate profemora of the former. Based on this characteristic the species *Anasida ikrami* Ahmad & Kamaluddin belongs in *Pseudanasida*. Ahmad & Kamaluddin compared their new species with *P. fallax* and found only slight differences in the proportions of the rostral segments. It is not clear why they elected to place their new species in *Anasida* rather than *Pseudanasida*.

List of Species

1. *Pseudanasida fallax* Schouteden

Pseudanasida fallax Schouteden 1907a:38 [Trichinopoli].

Distribution: India.

References: Schouteden (1907b) [figure]; Distant (1908) [description, figure]; Ahmad & Kamaluddin (1983) [characters].

2. *Pseudanasida ikrami* (Ahmad & Kamaluddin) [New Combination].

Anasida ikrami Ahmad & Kamaluddin 1983:75 [Kodagehalli].

Distribution: Pakistan.

References: Ahmad & Kamaluddin (1983) [original description, figure].

Rhacognathus Fieber (Figs. 28, 83)

Rhacognathus Fieber 1860:81. Type species: *Cimex punctatus* L.

Diagnosis: Rostrum crassate, short, extending only to mesocoxae; segment II longest, subequal to III and IV combined, segment III and IV subequal or IV shorter; bucculae strongly elevated. Juga longer than tylus converging and contiguous anteriorly. Anterolateral pronotal margin rugulose to crenulate; subrectilinear to concave in dorsal view; humeri not or weakly produced (fig. 28). Frenal margin of scutellum slightly longer than post-frenal portion; apex about as wide as corium. Mesosternum with low, obtuse, mesial carina. Metasternum hexagonal, not elevated. Scent gland orifice not attended by ruga; evaporatorium obsolescent (fig. 83). Base of abdomen without tubercle; connexival angles obtuse. Profemora unarmed; protibiae prismatic, ectal margin of superior surface weakly carinate. Males lack setose abdominal glands.

Remarks: *Rhacognathus* is a holarctic genus having one North American species. Josifov & Kerzhner (1978) provide a key to the Eurasian species. Evidently unknown to them, Hsiao et al. (1977) published

a description of an additional species, *R. corniger* from China. I suspect that *R. corniger* and *R. lamellifer* Josifov & Kerzhner are synonymous. Both authors cite the robust humeri as the primary character separating it from the other known species.

List of Species

1. *Rhacognathus callosus* Horváth

Rhacognathus callosus Horváth 1903:408 [Siberia].

Distribution: Mongolia, Siberia.

References: Josifov & Kerzhner (1978) [key].

2. *Rhacognathus corniger* Hsiao & Zheng

Rhacognathus corniger Hsiao & Zheng 1977:88 [China].

Distribution: China.

References: Hsiao et al. (1977) [description, figures, photo].

3. *Rhacognathus lamellifer* Josifov & Kerzhner

Rhacognathus lamellifer Josifov & Kerzhner 1978:184 [Korea].

Distribution: Korea.

References: Josifov & Kerzhner [description, figure].

4. *Rhacognathus punctatus* (L.)

Cimex punctatus Linnaeus 1758:444 [Europe].
Cimex variegatus Gooze 1778:235 [Homonym].
Cimex annularis Geoffrey 1785:215.
Eysarcoris punctatus Hahn 1834:69.
Pentatoma punctatum: Herrich-Schaeffer 1835:56.
Asopus punctatus: Burmeister 1835:378.
Cimex punctatus: Zetterstedt 1838:260.
Stiretrus punctatus: Blanchard 1840:153.
Arma punctatum: Kolenati 1846:40.
Zicrona punctata: Sahlberg 1848:19.
Asopus (Zicrona) punctatus: Flor 1860:91.
Rhacognathus punctatus: Fieber 1861:347.
Rhacognathus distinctus Schouteden 1907a:36 [Mongolia].
Eysarcoris punctatus: China 1943:287.

Distribution: Afghanistan, Albania, Austria, Belgium, Bulgaria, China, Czechoslovakia, Denmark, England, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, Korea, Mongolia, Netherlands, Russia, Siberia, Spain, Sweden, Yugoslavia.

References: Schouteden (1907b) [figure]; Yang (1934) [characters]; Larsen (1942) [biology, figure]; Villiers (1945) [characters, figure]; Hoffmann (1948) [prey]; Vidal (1949) [characters]; Dupuis (1949) [distribution, key, prey, host plants]; Masee (1962) [hibernation]; Kerzhner (1964) [synonymy]; Mayne (1965) [biology, figure]; Wagner (1966) [characters, figure]; Josifov (1970) [habitat, distribution]; Hsiao et al. (1977) [keyed, characters, figures, photo]; Josifov & Kerzhner (1978) [key, figure].

Material examined: Germany (1), Hungary (2), China (2).

Stilbotes Stål (Figs. 7, 48)

Stilbotes Stål 1871:620. Type species: *semperi* Stål.

Diagnosis: Rostrum semicrassate, extending to metasternum; segment II subequal to III and IV combined, III and IV subequal; bucculae prominent though very brief, confined to head anterior to antennifers. Juga longer than tylus. Head cylindrical, elongate; eyes pedunculate, distantly separated from pronotum. Pronotum subcylindrical with medial transverse constriction; anterolaterally obtuse, with weak vestige of marginal carina; humeral angles elongated as terete spines (fig. 7). Base of scutellum gibbous with two subconical tubercles; frenal margin longer than post-frenal portion; apex narrower than corium. Posterior margin of hemelytral corium rectilinear. Mesosternum with low, obtuse, longitudinal carina. Metasternum hexagonal, not elevate, impressed laterally. Orificial peritreme of scent gland forming elongate, subrectangular, convex plate, extending to metapleural margin. Evaporatorium restricted to narrow strip along anterior margin of peritreme (fig. 48). Base of abdomen unarmed. Connexival margins subcalloused, sutural apices inconspicuous. All femora with node-like anteapical swelling. Ectal margin of superior surface of protibia with arcuate carina; meso- and metatibiae prismatic. Males with setose glandular patch on each side of abdomen.

1. *Stilbotes semperi* Stål

Stilbotes semperi Stål 1871:620 [Phillipines].

Distribution: Phillipines.

References: Schouteden (1907b) [figure].

Material examined: Phillipines (1).

Troilus Stål (Figs. 40, 49)

Podisus subgenus *Troilus* Stål 1867:498. Type species, *Cimex luridus* F.

Diagnosis: Rostrum crassate, attaining base of abdomen; segment II longest, III longer than IV. Bucculae very short, confined to anterior part of head. Juga distinctly longer than tylus, but not convergent. Anterolateral pronotal margins denticulate anteriorly, explanate posteriorly; humeri prominent, obtuse (fig. 40). Frenum shorter than post-frenal part of scutellum; apex narrower than corium. Scent gland ruga reaching slightly more than half way to metapleural margin (fig. 49). Base of abdomen with short cylindrical spine. Connexival angles not produced. Profemora unarmed, protibia prismatic. Males without pilose abdominal glands.

List of Species

1. *Troilus luridus* (F.)

Cimex luridus Fabricius 1775:701 [Europe].
Cimex serrulatus Müller 1776:105.
Cimex dentatus Schrank 1781:268.
Cimex beryllinus Gmelin 1788:2148.
Cimex elector Fabricius 1794:98.
Pentatoma lurida: Latreille 1804:188.
Arma lurida: Hahn 1832:97.
Asopus luridus: Burmeister 1835:379.
Pentatoma sublurida: Westwood 1837:41.
Asopus (Podisus) luridus: Flor 1860:95.
Podisus luridus: Mulsant & Rey 1866:347.
Podisus (Troilus) luridus: Stål 1868:17.
Troilus luridus var. *angusta* Reuter 1881:156.
Podisus luridus var. *angustus*: Schouteden 1907b:68.
Arma luridus var. *angustus*: Kirkaldy 1909a:23.
Arma elector: Nuamah 1982:20.

Distribution: Austria, Belgium, Burma, China, Czechoslovakia, Denmark, England, Finland, France,

Germany, Greece, Hungary, India, Indonesia, Ireland, Italy, Java, Korea, Netherlands, Norway, Poland, Russia, Siberia, Sweden, Switzerland.

References: Distant (1902) [characters, figures]; Yang (1934) [characters, figure]; Brohmer (1944) [figure]; Villiers (1945) [characters, figure]; Dupuis (1949) [life cycle, prey, host plants]; Vidal (1949) [characters]; Dupuis (1959) [male parandria]; Puchkova (1961) [eggs figured]; Mayne (1965) [habitat, prey, figure]; Wagner (1966) [characters, figure]; Hsiao et al. (1977) [characters, photo]; Tamanini (1988) [keyed, figure].

Material examined: Germany (7), Belgium (2) Java (1).

2. *Troilus testaceus* Zheng & Liu

Troilus testaceus Zheng & Liu 1987a:182, fig. 2. [Yunnan].

Distribution: China.

References: Zheng & Liu 1987a [original description].

Zicrona Amyot & Serville (Figs. 12, 68)

Zicrona Amyot & Serville 1843:86. Type species: *Cimex caerulea* L., designated by Kirkaldy (1903:230).

Diagnosis: Rostrum subcrassate, extending to metacoxae; segment II longest, III and IV subequal, II shorter than III and IV combined; bucculae brief, modestly elevate, continuous behind rostrum. Juga and tylus of equal length. Anterolateral pronotal margins obtuse, weakly sinuate in dorsal view; humeri not prominent (fig. 12). Frenal margin of scutellum about as long as post-frenal portion; apex narrower than corium. Metasternum not elevate. Anterior and posterior margins of orificial peritreme of metapleural scent gland diverging and evanescent; lateral margin of peritreme obsolescent. Evaporatorium represented by narrow strips attending anterior and posterior margins of orificial peritreme (fig. 68). Base of abdomen unarmed. Connexival angles not produced. Seventh abdominal tergite produced, lobate posteriorly, projecting beyond genitalia. Profemora unarmed; tibiae terete. Males lack pilose abdominal glands.

List of Species

1. *Zicrona caerulea* (L.)

Cimex caeruleus Linnaeus 1758:445 [Europe].
Pentatoma caeruleum: Tigny 1802:299.
Asopus caeruleus: Burmeister 1835:378.
Pentatoma concinna Westwood 1837:39 [China].
Pentatoma violacea Westwood 1837:39 [Bengal].
Stiretrus caeruleus: Blanchard 1840:154.
Zicrona caerulea: Amyot & Serville 1843:86.
Zicrona illustris Amyot & Serville 1843:87.
Zicrona cuprea: Dallas 1851:108 [Hudson's Bay].

Distribution: Afghanistan, Algeria, Austria, Azerbaijan, Belgium, England, Finland, Egypt, Czechoslovakia, Italy, France, Germany, Greece, Ireland, Netherlands, Syria, Israel, Russia, China, Mongolia, Pakistan, Morocco, Japan, Korea, Taiwan, Malaysia, Sweden, Switzerland, Turkey, Spain, Portugal, Pakistan, Vietnam, Burma, India, Java, Sumatra, Borneo, Iran, Bulgaria, Yugoslavia, North America.

References: Distant (1902) [figures, characters]; Kirkaldy (1903) [nomenclature]; Schumacher (1917) [eggs]; Baker (1931) [male genitalia]; Yang (1934) [characters]; Villiers (1945) [prey, figure]; Vidal (1949) [characters]; Dupuis (1949) [prey, host plants, life cycle]; Kobayashi (1951) [eggs, immatures, figure]; Esaki & Ishihara (1951) [distribution]; Dupuis (1952) [dorso-abdominal glands]; Esaki (1952) [characters, figure]; Gomez-Menor (1956) [figure, prey]; Dupuis (1959) [male parandria]; Puchkova (1961) [eggs figured]; Yang (1962) [figure]; Massee (1962) [hibernation]; Miyamoto (1965) [figure]; Mayne (1965) [prey, habitat]; McDonald (1966) [genitalia]; Ahmad et al. (1974) [biology, figure]; Hsiao et al. (1977) [characters, photo]; Larochelle (1979) [biology]; Zhang (1985) [characters, figure]. Tamanini (1988) [keyed, figure].

Material examined: Italy (2), Hungary (1), Russia (1), Austria (1), France (3), Iran (3), India (1), Pakistan (1), China (11), Korea (2), Okinawa (1), Japan (4), Borneo (1), Malaysia (1), Indonesia (3).

2. *Zicrona hisarensis* Chopra & Sucheta

Zicrona hisarensis Chopra & Sucheta 1984:40 [Hisar].

Distribution: India.

References: Chopra & Sucheta (1984) [description, figures].

Literature Cited

- Abasa, R.O. & W.M. Mathenge. 1974. Laboratory studies of the biology and food requirements of *Macrorhaphis acuta* [Hemiptera: Pentatomidae]. Entomophaga 19: 213-218.
- Abbasi, Q.A. & Z. Rishi. 1974. Eine neue paläarktische Wanzen-Art der Gattung *Cazira* aus Pakistan (Heteroptera: Pentatomidae). Entomol. Zeit. 84: 41-44.
- Ahmad, I., Q.A. Abbasi & A.A. Khan. 1974. Generic and supergeneric keys with reference to a checklist of Pentatomid fauna of Pakistan (Heteroptera: Pentatomoidea) with notes on their distribution and food plants. Suppl. Entomol. Soc. Karachi. No. 1. 103 pp.
- Ahmad, I. & S. Kamaluddin. 1983. A new species of *Anasida* Karsch (Pentatomidae: Pentatominae: Asopini) with the first record of the genus from Pakistan. Pakistan J. Zool. 15:75-78.
- Ahmad, I. & F. Onder. 1990a. Revision of the genus *Arma* Hahn (Hemiptera: Pentatomidae: Pentatominae: Asopini) with description of two new species from Turkey. Türk. Entomol. Derg. 14: 3-12.
- Ahmad, I. & F. Onder. 1990b. A revision of the genus *Picromerus* Amyot and Serville (Hemiptera: Pentatomidae: Pentatominae: Asopini) from western Palaearctic with description of two new species from Turkey. Türk. Entomol. Derg. 14: 75-84.
- Ahmad, I. & N.A. Rana. 1988. A revision of the genus *Canthecona* Amyot & Serville (Hemiptera: Pentatomidae: Pentatominae: Asopini) from Indo-Pakistan subcontinent with description of two new species from Pakistan. Türkiye Bitki Koruma Derg 12: 75-84.
- Amyot, C.J. & J.G. Serville. 1843. Histoire Naturelle des Insectes, Hémiptères. Paris.

- Atkinson, E.T.** 1887. Notes on Indian Rhynchota, Heteroptera No. 2. J. Asiatic Soc. Bengal 56: 145-205.
- Awan, M.S.** 1988. Development and mating behaviour of *Oechalia shellenbergii* (Guérin-Méneville) and *Cermatulus nasalis* (Westwood) (Hemiptera: Pentatomidae).
- Awan, M.S., L.T. Wilson & M.P. Hoffman.** 1989. Prey location by *Oechalia schellenbergii*. Entomol. Exp. Appl. 51:225-231.
- Azim, M.N. & S.A. Shafee.** 1982. A new species of the genus *Asopus* (Heteroptera: Pentatomidae). J. Bombay Nat. Hist. Soc. 79: 361-363.
- Baerensprung, F.** 1860. Hemiptera Heteroptera Europaea. Systematicae disposita. Berl. Entomol. Zeit. 4: 1-25.
- Bergroth, E.** 1893. Notes hémiptérologiques. Rev. d'Entomol. 12: 153-155.
- Bergroth, E.** 1903. Rhynchota Aethiopica III. Ann. Soc. Entomol. Belg. 47: 288-297.
- Bergroth, E.** 1904. Eine neue art dergattung *Glypsus* Dall. (Hemiptera-Heteroptera, Pentatomidae). Rev. Russe d'Entomol. 4: 32-33.
- Bergroth, E.** 1905. Rhynchota Aethiopica IV. Ann. Soc. Entomol. Belg. 49: 368-378.
- Bergroth, E.** 1906. Systematische und synonymische Bemerkungen über Hemipteren. Wien. Entomol. Zeit. 25: 1-12.
- Bergroth, E.** 1908. Enumeratio Pentatomidarum post catalogum bruxellensem descriptarum. Mem. Soc. Entomol. Belg. 15: 131-200.
- Bergroth, E.** 1911. Zur kenntniss der neotropischen Arminen (Hem. Het.). Wiener Entomol. Zeit. 30: 117-130.
- Bergroth, E.** 1915. New oriental Pentatomidae. Ann. Mag. Nat. Hist. 8(15):481-493.
- Black, G.M.** 1968. Pentatomidae (Hemiptera, Heteroptera) collected by the Noona Dan Expedition in the Phillipine, Bismarck and Solomon Islands. Entomol. Medd. 36:560-576.
- Blanchard, E.** 1840. Histoire naturelle des insectes. Orthoptères, Neuroptères, Hémiptères, Hyménoptères, Lépidoptères et Diptères. P. Dumenil, Paris.
- Boisduval, J.B.A.** 1835. Faune entomologique de l'océan Pacifique avec l'illustration des insectes nouveaux pendant le voyage. Voyage de découvertes d l'Astrolabe exécuté par ordre du Roi, pendant les années 1826-1827-1828-1829 sous le commandement de M.J. Dumont D'Urville, vol. 2. J. Tastu, Paris.
- Bolivar, J.** 1879. Hemipteros nuevos del museo de Madrid. Ann. Soc. Español Hist. Nat. 8: 133-146.
- Bredden, G.** 1899. Hemiptera Insulae Lombok in Museo Hamburgensi asservata adjectis specilibus nonnullis, quas continet collectio auctoris. Jahrbuch Hamburgischen Wissenschaftlichen Anstalten 16: 155-194.
- Bredden, G.** 1901. Die Hemipteren von Celebes, ein beitrage zur Faunistik der Insel. Abh. Naturforsch. Ges. Halle 24: 1-213.
- Bredden, G.** 1902. Beitrage zur Kenntniss der malayischen und indischen Pentatomiden. Wien. Entomol. Zeit. 21: 94-101.
- Bredden, G.** 1903. Neue Hemipterarten aus südost Asien. Soc. Entomol. (Zurich) 18: 33-35.
- Brohmer, P.** 1944. Fauna von Deutschland, ein bestimmungsbuch unserer heimischen Tierwelt. Quelle & Meyer. Leipzig.
- Burmeister, H.C.** 1834. Memoire sur la division des punaises térrèstres (Geocores) considérés surtout relativement a la structure des antennes. Silbermann Rev. Entomol. 2: 5-26.
- Burmeister, H.C.** 1835. Handbuch der Entomologie, vol. 2. Schabelkerfe, Rhyngota. Berlin.
- Butler, E.A.** 1923. A Biology of the British Hemiptera. H. & G. Witherby, London.
- Cachan, P.** 1952. Les Pentatomidae de Madagascar (Hemipteres Heteropteres) Mem. Inst. Sci. Madagascar Ser. E 1(2):231-462.

- Caesar, L.** 1912. Insects of the season in Ontario. 42nd Annu. Rpt. Entomol. Soc. Ontario. Pp. 28-36.
- Chandra, D.** 1980. A Pentatomid, *Cantheconidea furcellata* Wolff, as a predator of *Spodoptera litura* Fabricius in Delhi. Bull. Entomol. Soc. India 20: 158-159.
- Chatterjee, N.C.** 1934. Entomological Investigations on the spike disease of Sandal (24) Pentatomidae (Hemipt.). Ind. For. Rec. 20:1-31.
- China, W.E.** 1930. Insects of Samoa, Part II, Hemiptera. Fasc. 3, Heteroptera. Pp 81-162. British Museum Natural History, London.
- China, W.E.** 1943. The generic names of British insects, no. 8. Hemiptera-Heteroptera. Pp. 217-325.
- Chopra, N.P. & Sucheta.** 1984. A new species of the genus *Zicrona* Amyot & Serville (Pentatomidae: Hemiptera). Bull. Entomol. 25:38-41.
- Chopra, N.P. & Sucheta.** 1986. Taxonomic studies on the genus *Andrallus* Bergroth (Hemiptera: Pentatomidae: Asopinae). Bull. Entomol. 27: 37-40.
- Chu, Y. & C. Chu.** 1975. Feeding habits of *Eocanthecona furcellata* (Wolff). Plant Prot. Bull. Taiwan 17: 133-141. [in Chinese]
- Costa, A.** 1841. Mémoire pour servir à l'histoire naturelle des Hémiptères Hétéroptères des deux Siciles. Ann. Soc. Entomol. France 10: 279-308.
- Costa, A.** 1847. Cimicum Regni Neapolitani, Centuria Secunda. Decas sexta, septima, octava, nona et decima. Pt. III. pp. 365-405. Naples.
- Dallas, W.S.** 1849. Notice of some hemipterous insects from Bhoutan (East Indies) with descriptions of new species. Trans. Entomol. Soc. Lond. 5: 186-194.
- Dallas, W.S.** 1851. List of Specimens of Hemipterous Insects in the Collection of the British Museum, Pt. 1. Taylor & Francis, London.
- Dallas, W.S.** 1852. Descriptions of some new species of hemipterous insects belonging to the tribe Scutata. Trans. Royal Entomol. Soc. Lond. 2: 6-17.
- Distant, W.L.** 1879. Hemiptera from the North-Eastern frontier of India. Ann. & Mag. Nat. Hist. (5)3: 44-53.
- Distant, W.L.** 1880-1893. Insecta, Rhynchota, Hemiptera-Heteroptera. in Godman, F.D. & O. Salvin [eds.] Biologia Centrali-Americana. London.
- Distant, W.L.** 1881. Notes on a small collection of Rhynchota from Tokei, Japan. Ann. & Mag. Nat. Hist. (5)8: 27-29.
- Distant, W.L.** 1882. Contributions to a knowledge of a rhynchotal fauna of Sumatra. Entomol. Mon. Mag. 19: 156-160.
- Distant, W.L.** 1883. First report on the Rhynchota collected in Japan by Mr. George Lewis. Trans. Entomol. Soc. Lond. 1883: 413-443.
- Distant, W.L.** 1887. Contributions to a knowledge of Oriental Rhynchota, 1. Fam. Pentatomidae. Trans. Entomol. Soc. Lond. 1887(3): 341-359.
- Distant, W.L.** 1888. An enumeration of the Rhynchota received from Baron von Muller and collected by Mr. Sayer in New Guinea during Mr. Cuthbertson's expedition. Trans. Entomol. Soc. Lond. 1888: 475-489.
- Distant, W.L.** 1890a. Descriptions of some new species of Chinese Rhynchota. Entomol. (Lond.) 23: 159-160.
- Distant, W.L.** 1890b. Ethiopian Rhynchota in the collection of the Brussels Museum. Ann. Soc. Entomol. Belg. Bruxelles 34 C.R. (4)5: 51-61.
- Distant, W.L.** 1890c. Report on a collection of Rhynchota made at Yambuya on the River Aruwimi, by Mr. W. Bonny of the Emin Pasha Relief Expedition under Mr. H.M. Stanley. Proc. Zool. Soc. Lond. 1890: 473-479.
- Distant, W.L.** 1892. A naturalist in the Transvaal. R.H. Porter, London.

- Distant, W.L.** 1898. Rhynchota from the Transvaal, Mashonaland, and British Nyasaland. *Ann. & Mag. Nat. Hist.* (7)2: 294-316.
- Distant, W.L.** 1900a. Rhynchotal Notes - V. Heteroptera: Asopinae and Tessaratominae. *Ann. & Mag. Natur. Hist.* 7:55-64.
- Distant, W.L.** 1900b. Revision of the Rhynchota belonging to the family Pentatomidae in the Hope collection at Oxford. *Proc. Zool. Soc. Lond.* 1900: 807-825.
- Distant, W.L.** 1900c. Contributions to a knowledge of Rhynchota. *Trans. Roy. Entomol. Soc. Lond.* 1900: 687-696.
- Distant, W.L.** 1901. On a few undescribed Rhynchota. *Fam. Pentatomidae. Ann. & Mag. Nat. Hist.* (7)8: 60-62.
- Distant, W.L.** 1902. The Fauna of British India including Ceylon and Burma. Rhynchota Vol. I. (Heteroptera). Taylor & Francis, London.
- Distant, W.L.** 1908. The Fauna of British India including Ceylon and Burma. Rhynchota Vol. II. (Heteroptera). Taylor & Francis, London.
- Distant, W.L.** 1910a. Rhynchotal Notes - LI. African Pentatomidae. *Ann. & Mag. Natur. Hist.* (8)6:77-99.
- Distant, W.L.** 1910b. The Fauna of British India including Ceylon and Burma. Rhynchota Vol. V. (Heteroptera). Taylor & Francis, London.
- Distant, W.L.** 1911. Rhynchotal Notes - LIV. Pentatomids from various regions. *Ann. Mag. Nat. Hist.* (8)7:338-354.
- Distant, W.L.** 1912. Descriptions of Ethiopian Rhynchota (Heteroptera). *Ann. & Mag. Nat. Hist.* (8)10: 87-90.
- Distant, W.L.** 1913. Percy Sladen Trust Expedition to the Seychelle Islands. No. IX. - Rhynchota. Part I: Suborder Heteroptera. *Trans. Linn. Soc. Lond. (Ser. 2, Zool.)* 16(2): 139-191.
- Distant, W.L.** 1920. Rhynchota from New Caledonia. *Ann. & Mag. Nat. Hist.* (9)6: 143-164.
- Dupuis, C.** 1949. Les Asopinae de la faune française. [Hemiptera, Pentatomidae]. Essai sommaire de synthèse morphologique, systématique et biologique. *Rev. Fr. Entomol.* 16:233-250.
- Dupuis, C.** 1952. Notes, remarques et observations diverses sur les Hémiptères. *Bull. Soc. Natural. Paris.* 7:1-4.
- Dupuis, C.** 1953. Priorité de quelques noms d'Hétéroptères de Guérin Ménéville (1831). *Bull. Soc. Zool. France* 77:447-454.
- Dupuis, C.** 1959. Notes, remarques et observations diverses sur les Hémiptères, Quatrième Série: Notes IX-XII. *Cahiers Natural. Bull.* 15: 45-52.
- Drury, D.** 1782. Illustrations of natural history, wherein are exhibited upwards of two hundred and forty figures of exotic insects, etc. B. White, London.
- Edwards, P.B. & D.M. Suckling.** 1980. *Cermatulus nasalis* and *Oechalia schellebergii* (Hemiptera: Pentatomidae) as predators of Eucalyptus tortoise beetle larvae, *Paropsis charybdis* (Coleoptera: Chrysomelidae), in New Zealand. *N.Z. Entomol.* 7: 158-164.
- Ellenreider, C.A.M.** 1862. Eerste bidrage tot de kennis der hemipteren van den Indischen archipel. *Nat. Tijds. Nederlandsche Indië* 24: 130-174.
- Erichson, W.F.** 1842. Beitrag zur Fauna von Vandiemensland mit besonderer Rücksicht auf die geographische Verbreitung der Insekten. *Ark. f. Naturg.* 8: 83-287
- Esaki, T.** 1926. Verzeichniss der Hemiptera-Heteroptera der Insel Formosa. *Ann. Mus. Natl. Hungarici* 24: 136-189.
- Esaki, T.** 1929. Notulae Cimicium Japonicorum I. *Kontyu* 3: 71-75.
- Esaki, T.** 1952. Heteroptera. Pp 179-270 in: *Iconographia Insectorum Japonicorum. Ed. 2. Hokuryukan Ltd., Tokyo.* 1738 pp.

- Esaki, T. & T. Ishihara.** 1950. Some new species of Pentatomidae from Japan (Hemiptera). Trans. Shikoku Entomol. Soc. 1:54-58.
- Esaki, T. & T. Ishihara.** 1951. Hemiptera of Shanshi, North China II. Pentatomoidea. Mushi 22:29-49.
- Fabricius, J.C.** 1775. Systema entomologiae sistens insectorum classes, ordines, genera, species, adjectis synonymis, locis, descriptionibus, observationibus. Flensburg.
- Fabricius, J.C.** 1781. Species insectorum exhibentes eorum differentias specificas, synonyma auctorum, loca natalia, metamorphosin adjectis observationibus, descriptionibus. Hamburg.
- Fabricius, J.C.** 1787. Mantissa insectorum sistens eorum species nuper detectas adjectis characteribus genericis, differentiis specificis, emendationibus, observationibus. Copenhagen.
- Fabricius, J.C.** 1794. Entomologia systematica emendata et aucta, secundum classes, ordines, genera, species, adjectis synonymis, locis, observationibus. Copenhagen.
- Fabricius, J.C.** 1798. Entomologia systematica emendata Supplementum. Copenhagen.
- Fabricius, J.C.** 1803. Systema rhyngotorum secundum ordines, genera, species adjectis synonymis, locis, observationibus, descriptionibus. Brunswick.
- Fallou, G.** 1881. Hémiptères nouveaux de l'Chine. Le Naturaliste. 1881: 340-341.
- Fallou, G.** 1888. Hémiptères nouveaux recueilles a Minas Gerais. Le Naturaliste Ser. 2, 9: 36.
- Fallou, G.** 1891. Diagnoses d'Hémiptères nouveaux. Rev d'Entomol. Fr. 10: 5-10.
- Fieber, F.X.** 1860-1861. Die europaeischen Hemiptera. Halbfluegler (Rhynchota Heteroptera). Gerold's Sohn, Vienna. [Pp. 1-108 (1860); 109-444 (1861)].
- Flor, G.** 1860. Die Rhynchoten Livlands in systematischer Folge beschrieben. Arch. Naturk. Livlands, Ehstlands, und Kurlands (2)3: 1-825.
- Franz, J. & A. Szmidt** 1960. Beobachtungen beim zuchten von *Perillus bioculatus* (Fabr.) (Heteroptera, Pentatomidae), einem aus Nordamerika importierten rauber des kartoffelkafers. Entomophaga 5:87-110.
- Gaedicke, H.** 1971. Katalog der in den Sammlungen des ehemaligen Deutschen Entomologischen Institutes aufbewahrten Typen-V. Beitr. Entomol. 21: 79-159.
- Gapud, V.** 1975. A generic revision of the subfamily Asopinae, with consideration of its phylogenetic position in the family Pentatomidae and superfamily Pentatomoidea (Hemiptera-Heteroptera). Ph.D. Dissertation. Univ. Kansas.
- Gapud, V.** 1991. A generic revision of the subfamily Asopinae, with consideration of its phylogenetic position in the family Pentatomidae and superfamily Pentatomoidea (Hemiptera-Heteroptera) Pts. 1 & II. Phillip. Entomol. 8: 865-961.
- Garbiglietti, M.D.** 1869. Catalogus methodicus et synonymicus. Hemipterorum Heteropterorum (Rhyngotha Fabr.) Italiae indigenarum. Boll. Soc. Entomol. Ital. 1: 41-52, 105-124, 181-198, 271-281.
- Geoffrey, E.L.** 1785. [New Species] in A.F. Fourcroy. Entomologia Parisiensis, vol. 1. Paris.
- Germar, E.F.** 1837. Hemiptera Heteroptera promontorii Bonae Spei nondum descripta, quae collegit C.F. Drège. Silbermans Rev. Entomol. 5: 121-192.
- Gillon, D.** 1972. Les Hémiptères Pentatomides d'une savane préforestière de Côte d'Ivoire. Ann. Univ. Abidjan (Serie E) 5: 265-371.
- Gmelin, J.F.** 1788 (1790). Caroli a Linné Systema Naturae [13th ed], vol. 1, Pt. 4., Lipsiae.
- Goeze, J.A.E.** 1778. Entomologische Beyträge zu des Ritter Linné zwölften Ausgabe des Natursystems, vol. 2. Leipzig.
- Gollner-Scheiding, U. & K. Arnold.** 1988. Sammelausbeute von Heteropteren aus dem

- sudwestlichen Bulgarien (Insecta). Faun. Abhandl. 15:137-154.
- Gomez-Menor, J.** 1956. Las Tribus de Hemipteros de España. Trab. Inst. Esp. Entomol. Madrid. 147 pp.
- Groves, E.W.** 1956. Gregarious behavior in the larvae of *Picromerus bidens* (L.) (Hem., Pentatomidae). Entomol. Mon. Mag. 92:65-66.
- Gross, G.F.** 1975. Plant-feeding and other bugs (Hemiptera) of South Australia, Heteroptera-Part 1. Govt. Print. South Australia, 250 pp.
- Guérin-Ménéville, F.E.** 1831 (1838). Insects in Duperry's Voyage autour du monde sur la Coquille, Vol. II. Zoologia. Pt. 2. Hemiptera. Paris.
- Hahn, C.W.** 1832. Die Wanzenartigen Insecten, vol. 2. C.H. Zeh'schen Buchhandlung, Nuremberg.
- Heizer, P.** 1950. The chromosome cytology of two species of the Pacific genus *Oechalia* (Pentatomidae, Hemiptera-Heteroptera), *Oechalia patruelis* Stal, and *Oechalia pacifica* Stal. J. Morphol. 87: 179-226.
- Heizer, P.** 1951. The chromosome cytology of an Oahu species of the Pacific genus *Oechalia*. J. Morphol. 88: 185-198.
- Henry, T.H. & R.C. Froeschner.** 1988. Catalog of the Heteroptera or true bugs of Canada and the continental United States. Brill, Leiden.
- Herrich-Schaeffer, G.A.** 1835. Synopsis Generum Hemipterorum. Pp. 35-115 in Nomenclator Entomologicus. Verzeichniss der Europäischen Insecten, vol. 1. Regensburg.
- Herrich-Schaeffer, G.A.** 1839. Die Wanzenartigen Insecten, vol. 5. pp. 1-60. C.H. Zeh'schen Buchhandlung, Nuremberg.
- Herrich-Schaeffer, G.A.** 1840. Die Wanzenartigen Insecten, vol. 5. pp. 61-108. C.H. Zeh'schen Buchhandlung, Nuremberg.
- Herrich-Schaeffer, G.A.** 1841. Die Wanzenartigen Insecten, vol. 6. pp. 37-72. C.H. Zeh'schen Buchhandlung, Nuremberg.
- Herrich-Schaeffer, G.A.** 1844. Die Wanzenartigen Insecten, vol. 7. pp. 41-134. C.H. Zeh'schen Buchhandlung, Nuremberg.
- Herrich-Schaeffer, G.A.** 1846. Die Wanzenartigen Insecten, vol. 8. pp. 49-100. C.H. Zeh'schen Buchhandlung, Nuremberg.
- Hoffmann, W.F.** 1948. First supplement to Catalogue of Scutelleroidea. Lingnan Sci. J. 22: 1-41.
- Horváth, G.** 1889. Analecta cognita ionem Heteropterium Himalayensium. Termész. Füzetek. 12: 29-40.
- Horváth, G.** 1892. Hemiptera nova africana. Termész. Füzetek. 15: 254-267.
- Horváth, G.** 1899. Heteroptera Nova Europae Regionumque Confinium in Musaeo Nationali Hungarico Asservata. Termész. Füzetek 22: 444-451.
- Horváth, G.** 1903. Pentatomidae novae extraeuropae. Ann. Mus. Nat. Hung. 1:400-412.
- Horváth, G.** 1909. Annotaciones synonymicae de Hemipteris nonnullis extra europais. Ann. Musei Nationali Hungarici 7: 631-632.
- Horváth, G.** 1911. Miscellanea Hemipterologica VI-VII. Ann. Mus. Nationali Hungarici 9: 423-435.
- Horváth, G.** 1917. Heteroptera palaeartica novae vel minus cognita. Ann. Mus. Nat. Hungarici 15: 365-381.
- Hsiao, T., S. Ren, L. Cheng, H. Jing, H. Zou, & S. Liu.** 1977. A handbook for the determination of the chinese Hemiptera-Heteroptera, I. Academia Sinica, Beijing.
- ICZN (International Commission on Zoological Nomenclature)** 1985. International Code of Zoological nomenclature, 3rd ed. Univ. Calif. Press, Berkeley. (in French and English).

- Jakovlev, B.E.** 1876. New bugs, Hemiptera Heteroptera, of the Russian fauna. Bull. Soc. Nat. Moscow 50-51: 85-124. [in Russian].
- Jakovlev, B.E.** 1880. Bugs (Hemiptera Heteroptera) of the fauna of Russia and neighboring countries. I. Trudy Russ. Entomol. Obshch. 11: 200-220. [in Russian & German].
- Jakovlev, B.E.** 1885. New species of the genus *Jalla* Hahn. Bull. Soc. Nat. Moscow 59-60: 161-166. [in Russian & German].
- Jakovlev, B.E.** 1902a. Hémiptères-Hétéroptères nouveaux de la faune paléarctique. II. Rev. Russe Entomol. 2: 63-70.
- Jakovlev, B.E.** 1902b. Hémiptères-Hétéroptères nouveaux de la faune paléarctique. III. Rev. Russe Entomol. 2: 335-340.
- Jasic, J.** 1975. On the life cycle of *Perillus bioculatus* (Heteroptera, Pentatomidae) in Slovakia. Acta Entomol. Bohemoslov. 72:383-390.
- Javahery, M.** 1986. Biology and ecology of *Picromerus bidens* (Hemiptera: Pentatomidae) in south-eastern Canada. Entomol. News 97:87-98.
- Jensen-Haarup, A.C.** 1931. Hemipterological notes and descriptions VI. Entomol. Meddel. Copenhagen 17: 319-336.
- Josifov, M.** 1970. Ergebnisse der Albanien-Expedition 1961 des Deutschen Entomologischen Institutes. Beitr. Entomol. 20: 825-956.
- Josifov, M. & I.M. Kerzhner.** 1978. Heteroptera aus Korea. II. Teil (Aradidae, Berytidae, Lygaeidae, Pyrrhocoridae, Rhopalidae, Alydidae, Coreidae, Urostylidae, Acanthosomatidae, Scutelleridae, Pentatomidae, Cydnidae, Plataspidae). Polska Akad. Nauk (Fragmenta Faunistica) 23:137-196.
- Karsch, F.** 1892. Einige neue Wanzen der aethiopischen Region. Berlin. Entomol. Zeit. 37: 481-486.
- Kerzhner, I.M.** 1964. On the synonymy of shield bugs (Heteroptera, Pentatomoidea) in the fauna of the USSR and neighboring countries. Entomol. Rev. (Russ.) 43:185-188.
- Kirby, W.F.** 1891. Catalogue of the described Hemiptera Heteroptera and Homoptera of Ceylon, based on the collection formed (chiefly at Pundaloya) by Mr. E. Ernest Green. J. Linn. Soc. London (Zool.) 24: 72-176.
- Kirkaldy, G.W.** 1903. On the nomenclature of the genera of the Rhynchota; Heteroptera and Auchenorrhynchos Homoptera. Entomologist 36: 230-233.
- Kirkaldy, G.W.** 1908. Bibliographical and nomenclatorial notes on the Hemiptera, No. 8. Entomologist 41: 123-124.
- Kirkaldy, G.W.** 1909a. Catalogue of the Hemiptera (Heteroptera) Vol. 1. Cimicidae. F.L. Dames, Berlin.
- Kirkaldy, G.W.** 1909b. Notes on the Hemipterous genus *Oechalia*. Proc. Hawaiian Entomol. Soc. 2:82-84.
- Kirkaldy, G.W.** 1910. A list of the Hemiptera of oriental China. Ann. Soc. Entomol. Belg. 54:103-112.
- Knight, H.H.** 1924. On the nature of the color patterns in Heteroptera with data on the effects produced by temperature and humidity. Ann. Entomol. Soc. Amer. 17:258-273.
- Knight, H.H.** 1952. Review of the genus *Perillus* with description of a new species (Hemiptera, Pentatomidae). Ann. Entomol. Soc. Am. 45: 229-232.
- Kobayashi, T.** 1951. The developmental stages of four species of the Japanese Pentatomidae (Hemiptera). Trans. Shikoku Entomol. Soc. 2: 7-16.
- Kolenati, F.A.** 1846. Meletemata entomologica Fasc. IV. Hemiptera Caucasi Pentatomidae Monographice dispositae. Imperialis Acad. Scientiarum, Petropoli.
- Kolenati, F.A.** 1856. Meletemata entomologica Hemipterorum Heteropterum Caucasi. Harpagocorisiae, monographice dispositae. Bull. Soc. Nat. Moscow 29:419-502.
- Lariviere, M.C. & A. Larochelle.** 1989. *Picromerus bidens* (Heteroptera: Pentatomidae)

- in North America, with a world review of distribution and bionomics. *Ent. News* 100:133-146.
- Larsen, O.** 1942. Zur biologie von *Rhacognathus punctatus* L. Kungl. Fysiograf. Sällskap. Lund Forhandling. 11:175-188.
- Latrielle, P.A.** 1804. Histoire des Corises. Vol. 12 *In Histoire Naturelle, générale et particulière des Crustacés et des Insectes.* Paris.
- Le Pelley, R.H.** 1959. Agricultural Insects of East Africa. East African High Commission. Nairobi, Kenya. 296 pp.
- Leston, D.** 1952a. Notes on the Ethiopian Pentatomoidea (Hemiptera).-V. On the specimens collected by Mr. A.L. Capener, mainly in Natal. *Ann. & Mag. Nat. Hist. Ser. 12*, 5:512-520.
- Leston, D.** 1952b. Notes on the Ethiopian Pentatomoidea (Hemiptera).-VI. Some insects in the Hope Department, Oxford. *Ann. & Mag. Nat. Hist. Ser. 12*, 5:893-904.
- Leston, D.** 1953a. Notes on the Ethiopian Pentatomoidea (Hem.) XII. On some specimens from southern Rhodesia, with an investigation of certain features in the morphology of *Afrius figuratus* (Germar) and remarks upon the male genitalia in Amyotinae. *Occ. Pap. Natl. Mus. So. Rhodesia* 19:678-686.
- Leston, D.** 1953b. Notes on the Ethiopian Pentatomoidea (Hem.) VII. A Review of *Gynenica* Dallas 1851. *Rev. Zool. Bot. Afr.* 48: 179-195.
- Leston, D.** 1955. The life-cycle of *Picromerus bidens* (L.) (Hem., Pentatomidae) in Britain. *Entomol. Mon. Mag.* 91: 109.
- Lethierry, L. & G. Severin.** 1893. Catalogue Général des Hémiptères, Pentatomidae. Musée Royal d'Histoire Naturelle de Belgique. Bruxelles.
- Lindberg, H.** 1951. Verzeichnis der typen in O.M. Reuters paläarktischer Heteropteren-sammlung. *Commentat. Biol.* 12: 1-34.
- Linnaeus, C.v.** 1758. *Systema naturae per regna tria naturae secundum classes, ordines, genera, species cum characteribus, differentiis, synonymis, locis*, vol. 1. (10th ed.). Stockholm.
- Linnavouri, R.** 1975. Hemiptera of the Sudan, with remarks on some species of the adjacent countries, 5. Pentatomidae. *Bol. Soc. Port. Cienc. Nat.* 15:5-127.
- Linnavouri, R.** 1982. Pentatomidae and Acanthosomidae (Heteroptera) of Nigeria and the Ivory Coast, with remarks on species of the adjacent countries in West and Central Africa. *Acta Zool. Fenn.* 163: 1-176.
- Manley, G.V.** 1982. Biology and life history of the rice field predator *Andrallus spinidens* F. (Hemiptera: Pentatomidae). *Entomol. News* 93: 15-20.
- Marshall, T.A.** 1868. A few more words on bad spelling. *Entomol. Mon. Mag.* 4: 280-282.
- Massee, A.M.** 1962. The Hemiptera-Heteroptera of Kent II. *Proc. S. Lond. Entomol. Nat. Hist. Soc.* 1962: 123-183.
- Mayne, R.** 1965. Les Hémiptères de la Réserve domaniale du Westhoek Pentatomoidea. *Bestuur Waters Bossen* 1: 1-47.
- Mayne, R. & R. Breny.** 1947. Contribution à l'étude des circonstances climatiques influençant le pouvoir d'éclosion des oeufs de *Picromerus bidens* L. *Parasitica* 3: 133-141.
- Mayr, G.L.** 1864. Diagnosen neuer Hemipteren Verk. *Zool.-Bot. Ges. Wien.* 14: 903-914.
- Mayr, G.L.** 1866 (1868). Hemiptera in Reise der Österreichischen Fregate Novara um die Erde in den Jahren 1857, 1858, 1859. *Zool. Teil* (Vienna) 2, Abt. 1: 1-204.
- McDonald, F.J.D.** 1966. The genitalia of North American Pentatomoidea (Hemiptera: Heteroptera). *Quaest. Entomol.* 2: 7-150.
- Medler, J.T.** 1980. Insects of Nigeria - Checklist and Bibliography. *Mem. Am. Entomol. Inst.* No. 30. Ann Arbor, MI.

- Michalk, O.** 1938. Die wanzen (Hemiptera Heteroptera) der Leipziger tieflandsbucht und der angrenzenden Gebiete. Sitz. Ber. Naturforsch. Gesellsch. Leipzig 1938:15-188.
- Miller, N.C.E.** 1952. A new species of *Afrius* (Hem., Pentatomidae) predacious on *Schematiza cordiae* Barb., in Mauritius. Bull. Entomol. Res. 42:183-184.
- Miller, N.C.E.** 1971. The Biology of the Heteroptera. 2nd Ed. Classey, Hampton.
- Mittal, O.P. & J. Leelamma.** 1981. Chromosome number and sex-mechanism in twenty-eight species of Indian pentatomoid bugs. Chromosome Info. Serv. 30: 6-7.
- Miyamoto, S.** 1965a. Iconographia Insectorum Japonicorum Colore Naturali Edit. Vol. 3. Hokuryukan, Tokyo. 358 pp.
- Miyamoto, S.** 1965b. Heteropterous insects of Formosa collected by Dr. Shirozu and others, 1961. Spec. Bull. Lep. Soc. Japan 1: 227-238.
- Montrouzier, P.** 1858. Description de quelques Hémiptères de la Nouvelle Calédonie. Ann. Soc. Linn. Lyon 5: 243-260.
- Montrouzier, P.** 1861. Essai sur la Faune Entomologique de la Nouvelle-Calédonie (Balade) et des Îles des Pins, Art, Lifu, etc. Ann. Soc. Entomol. Fr. Ser. 4. 1: 59-74.
- Montrouzier, P.** 1864. Essai sur la Faune Entomologique de Kanala (Nouvelle Calédonie). Ann. Soc. Linn. Lyon 11: 46-257.
- Mossop, M.C.** 1927. Insect enemies of the Eucalyptus snout-beetle. Farm. So. Africa 1(11): 430-431.
- Müller, O.F.** 1776. Zoologiae Danicae prodromus, seu animalium Danicae et Norwegiae indigenarum characteres, nomina, et synonyma imprimis popularium. Hafniae.
- Mulsant, E.** 1852. Description de quelques Hémiptères Hétéroptères nouveaux ou peu connus. Ann. Soc. Linn. Lyon 1850-1852: 76-141.
- Mulsant, E.** 1866. Histoire Naturelle des punaises de France, 2. Pentatomides Savy & Deyrolle, Paris.
- Nuamah, K.A.** 1982. Karyotypes of some Ghanaian shield-bugs and the higher systematics of the Pentatomoidea (Hemiptera: Heteroptera). Insect Sci. Applic. 3:9-28.
- Okamoto, K.** 1942. On the breeding and observations of *Dinorhynchus dybowkyi*. Entomol. World 10: 247-258. [in Japanese].
- Palisot de Beauvois, A.M.** 1805-1821. Insectes recueillis en Afrique et en Amérique, dans les royaumes d'Oware et de Benin, à Saint Dominique et dans les États Unis pendant les années 1781-1797. Paris.
- Puchkova, L.V.** 1961. The eggs of the Hemiptera-Heteroptera: VI - Pentatomoidea, 2. Pentatomidae and Plataspidae. Entomol. Rev. (Russ.) 40: 63-69.
- Puton, A.** 1869. Catalogue des Hémiptères Hétéroptères d'Europe. Deyrolle, Paris.
- Ramsay, G.W.** 1963. Predacious shield-bugs (Heteroptera: Pentatomidae) in New Zealand. N.Z. Entomol. 3: 3-7.
- Rathvon, S.S.** 1869. Entomology. pp. 548-552. in J.I. Mombert. An authentic history of Lancaster County in the state of Pennsylvania. J.E. Barr, Lancaster PA.
- Reuter, O.M.** 1881. Analecta Hemipterologica. Zur Artenkenntniss, Synonymie und Geographischen Verbreitung der palaearktischen Heteropteren. Berl. Entomol. Zeit. 25: 155-196.
- Reuter, O.M.** 1900. Heteroptera palaearctica nova et minus cognita. Öfvers. Finska Vet. Soc. Förh. 42: 209-239.
- Rishi, Z. & Q.A. Abbasi.** 1973. A new species of *Picromerus* Amyot and Serville, 1843 (Heteroptera: Pentatomidae: Asopini) from Pakistan. Pakistan J. Zool. 5:193-195.
- Ruckes, H.** 1960. *Bulbostethus chrysopterus* (Herrich-Schaeffer), an old bug with a new

- name (Heteroptera: Pentatomidae). Proc. Hawaiian Entomol. Soc. 42:285-288.
- Ruckes, H.** 1963. Heteroptera: Pentatomoidea. Insects of Micronesia 7:307-356.
- Sahlberg, R.F.** 1848. Monographia Geocorisarum Fenniae. Frenkelliana, Helsingforsiae.
- Say, T.** 1825. Descriptions of new hemipterous insects collected in the expedition to the Rocky Mountains, performed by order of Mr. Calhoun, Secretary of War, under command of Major Long. J. Acad. Nat. Sci. Phila. 4: 7-345.
- Schaefer, C., W.R. Dolling & S. Tachikawa.** 1988. The shieldbug genus *Parastrachia* and its position within the Pentatomoidea (Insecta: Hemiptera). Zool. J. Linn. Soc. 93:283-311.
- Schmitz, G.** 1976. La faune terrestre de l'île de Sainte Helene, Insectes, Heteroptera, 4. Fam. Pentatomidae. Ann. Mus. Rep. Afric. Cent. (Ser. 8). 215:367-391.
- Schneider, F.** 1940. Schadinsekten und ihre bekämpfung in ostindischen gambirkulturen. Mitteil. Schweizer. Entomol. Ges. 18:77-208.
- Schouteden, H.** 1902. Pentatomidae et Reduviidae novae Africanae. Wien. Entomol. Zeit. 21: 233-243.
- Schouteden, H.** 1904. Rhynchota Aethiopica I. Scutellerinae et Graphosomatinae. Faune entomologique de l'Afrique tropicale. Ann. Mus. Congo. Belg. (Zool.) Ser. 3, I (1): 1-131.
- Schouteden, H.** 1905. Rhynchota Aethiopica II. Arminae et Tessaratominae. Faune entomologique de l'Afrique tropicale. Ann. Mus. Congo Belg. (Zool.) Ser. 3, I (1): 133-277.
- Schouteden, H.** 1907a. Descriptions d'asopiens nouveaux. Ann. Soc. Entomol. Belg. 51:36-51.
- Schouteden, H.** 1907b. Heteroptera, Fam. Pentatomidae, Subfam. Asopinae (Amyroteinae). Genera Insectorum Fasc. 52. 87 pp.
- Schouteden, H.** 1908. Notes on the Pentatomidae described by Dr. Snellen van Vollenhoven. Notes Leyden Mus. 30: 33-46.
- Schouteden, H.** 1909. Catalogues Raisonnees de la Faune Entomologique du Congo. Hémiptères. Ann. Mus. Congo Belg. Zool. (Ser. 3), 1: 1-85.
- Schouteden, H.** 1910. Note sur quelques hemipteres du Mayumbe (Bas-Congo). Ann. Soc. Entomol. Belg. 54: 403-407.
- Schouteden, H.** 1911. Cimicidae et Coreidae recueillis dans les districts du Kasai et du Kwango par MM. Carlier, Koller et Luja. Rev. Zool. Afric. 1: 179-189.
- Schouteden, H.** 1912. Cimicidae, Coreidae, Reduviidae de la region du Zoutpansberg (Transvaal). Rev. Zool. Afr. 2(1): 101-114.
- Schouteden, H.** 1916. Pentatomides nouveaux du Congo. Rev. Zool. Afr. Bruxelles 4:280-284.
- Schouteden, H.** 1929. Hemiptera. -1. Coptosomatides et Pentatomides. Voyage au Congo de S.A.R. le Prince Leopold de Belgique (1925). Rev. Zool. Bot. Afr. 17: 57-65.
- Schouteden, H.** 1943. Heteropteres recoltés par le Dr. Zumpt dans les environs du Mont Cameroun, Pt. 1. Rev. Zool. Bot. Afr. 37: 323-330.
- Schouteden, H.** 1957. Contributions a l'etude de la faune entomologique du Ruanda-Urundi (Mission P. Basilewsky 1953). CSSVI. Heteroptera, Plataspidae, Acanthosomidae, Pentatomidae et Coreidae. Ann. Mus. Congo. Tervuren. Zool. 58: 269-310.
- Schouteden, H.** 1964. Pentatomides de la Cote d'Ivoire. -III. Rev. Zool. Bot. Afr. 70:188-208.
- Schrank, F.P.** 1781. Kritische Revision des österreichischen Insectenverzeichnisses. Füessly Neues Mag. Liebh. Entomol. 1: 135-168, 263-306.
- Schumacher, F.** 1910. Beitrage zur Kenntnis der Biologie der Asopiden. Z. Wiss. Insektenbiol. 6(11): 376-383.
- Schumacher, F.** 1912. *Leptolobus karschi* n. sp. (Hem. Het. Pent. Asop.). Entomol. Rundschau 29: 22.

- Schumacher, F.** 1917. Eisprenger bei Wanzen aus der Gruppe der Pentatomoidea (Hemiptera-Heteroptera). S.B. Ges. Naturf. Fr. 1917: 438-444.
- Scott, J.** 1874. On a collection of Hemiptera Heteroptera from Japan. Descriptions of various new genera and species. Ann. & Mag. Nat. Hist. Ser. 4. 14: 289-304, 360-365, 426-452.
- Scudder, G.G.E.** 1959. The female genitalia of the Heteroptera: morphology and bearing on classification. Trans. Royal Entom. Soc. London. 111: 405-467.
- Seidenstucker, G.** 1975. Über anatolische schildwanzen (Heteroptera, Pentatomidae). Reichenbachia 15: 261-268.
- Sen, S.K., M.S. Jolly & T.R. Jammy.** 1971. Biology and life cycle of *Canthecona furcellata* Wolff (Hem. Pentatomidae), predator of Tasar Silkworm *Antheraea mylitta* Drury. Indian J. Sericulture 10:53-56.
- Senrayan, R. & T.N. Ananthakrishnan.** 1991. Influence of prey species and age of prey on the reproductive performance of a predatory stink bug *Eocanthecona furcellata* Wolff. Heteroptera, Asopinae. J. Biol. Control 5: 8-13.
- Servadei, A.** 1967. Rhynchota (Heteroptera, Homoptera Auchenorrhyncha). Catalogo topografico e sinonimico. 851 pp. Fauna D'Italia, Bologna.
- Shagov, E.M.** 1968. The influence of temperature on the predatory bug *Perillus bioculatus* [Fabr.] (Heteroptera, Pentatomidae) Zool. Zh. 47: 563-570.
- Shagov, E.M.** 1977. Temperature preferences of the bug *Perillus* - predator of the Colorado Potato beetle. Ekologiya 1: 97-99.
- Shiraki, T.** 1913. Report on the injurious insects of Formosa. Extra-Rpt. Agric. Expt. Sta. Formosa. No. 8. Taihoku, Formosa.
- Signoret, V.** 1855. Description d'une espèce nouvelle faisant genre dans l'ordre des Hémiptères-Hétéroptères famille des Azopides. Ann. Soc. Entomol. France (Ser. 3) 3:61-64.
- Signoret, V.** 1858. Hémiptères du Gabon. in, J. Thomson. Archives Entomologiques ou recueil contenant des illustrations d'Insectes nouveaux ou rares, vol 2. Paris.
- Signoret, V.** 1861. Faune des Hémiptères de Madagascar. Pt. 2. Hétéroptères. Ann. Soc. Entomol. Fr. 8: 917-972.
- Signoret, V.** 1880. *Picromerus vicinus* Sign. Pp. xxxiv-xxxv in C.E. Leprieur. Séance du 14 Janvier 1880. Ann. Soc. Entomol. France (Ser. 5) 10(2): i-xxxv.
- Singh, Z., C.E. White & W.H. Luckman.** 1973. Notes on *Amyotea malabarica*, a predator of *Nezara viridula* in India. J. Econ. Entomol. 66: 551-552.
- Sonan, J.** 1927. Insect pests of the tea-plant in Formosa, part II. Rep. Dept. Agric. Res. Inst. Formosa Taihoku 29: 1-132.
- Spinola, M.** 1837. Essai sur les genres d'insects appartenants a l'ordre des Hemipteres, Lin. ou Rhynchotes, Fab., et a la section des Heteropteres, Dufour. Y. Graviers, Geneva.
- Stål, C.** 1853. Nya Hemiptera från Cafferlandet. Öfvers. Kongl. Svensk. Vetensk.-Akad. Forhandl. 10: 209-227.
- Stål, C.** 1858. Beitrag zur Hemipteren-Fauna Sibiriens und des Russichen Nord-Amerika. Stett. Entomol. Zeit. 19: 175-198.
- Stål, C.** 1859. Hemiptera: Species nova descripsit. Kongl. Svensk. Freg. Eugenies Resa Omkr. Jord. 3: 219-298.
- Stål, C.** 1862. Hemiptera Mexicana enumeravit speciesque novas descripsit. Stett. Entomol. Zeit. 23: 81-113.
- Stål, C.** 1864. Hemiptera Africana, vol. 1. Stockholm
- Stål, C.** 1865. Hemiptera Africana. vol. 2. Stockholm.
- Stål, C.** 1867. Bidrag till hemipterernas systematik. Öfvers. Kongl. Svensk. Vetensk.-Akad. Forhandl. 24: 491-560.

- Stål, C.** 1868. Hemiptera Fabriciana. Fabricianska Hemipterater efter de i Köpenhaven och Kiel Förvarade Typexemplaren granskade och beskrifne. KonglSvensk. Vetensk.-Akad. Forhandl. 7(11): 1-148.
- Stål, C.** 1870. Enumeratio Hemipterorum 1. Kongl. Svensk. Vetensk.-Akad. Handl. 9: 1-232.
- Stål, C.** 1871. Hemiptera insularum Philippinarum. Bidrag till Philippinska öarnes Hemipter-fauna. Öfvers. Kongl. Sven. Vetensk.-Akad. Forhandl. 27: 607-776.
- Stål, C.** 1872. Enumeratio Hemipterorum 2. Kongl. Svensk. Vetensk.-Akad. Handl. 10: 1-159.
- Stichel, W.** 1961. Illustrierte Bestimmungstabellen der Wanzen. II. Europe. Hemiptera-Heteroptera Europae 4: 575-579. Edit. Hermsdorf, Berlin.
- Stoner, D.** 1917. A new species of *Apateticus* from Louisiana (Hem. Het.). Entomol. News 28: 462-463.
- Suzuki, 1915.** List of prepared specimens in Hanazono Entomological Laboratory. Kyoto, Japan.
- Swezey, O.H.** 1936. Biological control of the sugar cane leafhopper in Hawaii. Bull. Exp. Sta. Hawaiian Sugar Planters Assn. Entomol. Ser. 21:55-101.
- Tamanini, L.** 1981. Gli eterotteri della basilicata e della calabria (Italia meridionale) (Hemiptera Heteroptera). Mem. Mus. Civ. Storia Nat. Verona 2nd ser. 3:1-64.
- Tamanini, L.** 1988. Tabelle per la determinazione del piu comuni eterotteri Italiani (Heteroptera). Mem. Soc. Entomol. Ital. 67:359-471.
- Thomas, D.B.** 1992. Taxonomic synopsis of the Asopine Pentatomidae (Heteroptera) of the Western Hemisphere. Thomas Say Found. Monogr. 16. Entomol. Soc. Amer. Lanham, MD.
- Tigny, F.M.G.** 1802. Histoire naturelle des Insects, composé d'apres Reaumur, Geoffroy, De Geer, Roesel, Linné, Fabricius, etc., et redigée suivant la méthode d'Olivier, avec des notes, plusieurs observations nouvelles et des figures dessinées d'après nature. Paris.
- Tryon, H.** 1892. Zoology of British New Guinea, Pt. II. Hemiptera. Ann. Queensland Mus. 2: 15-16.
- Uhler, P.R.** 1876. List of Hemiptera of the region west of the Mississippi River, including those collected during the Hayden explorations of 1873. Bull. Geol. & Geogr. Surv. Terr. 1: 267-361.
- Uhler, P.R.** 1886. Check-list of the Hemiptera Heteroptera of North America. Brooklyn Entomol. Soc. New York, NY.
- Usinger, R.L.** 1941. The genus *Oechalia* (Pentatomidae, Hemiptera). Proc. Hawaiian Entomol. Soc. 11:59-93.
- Usinger, R.L.** 1942. A new species of *Oechalia* from Oahu. Proc. Hawaiian Entomol. Soc. 11: 217-218.
- Van Duzee, E.P.** 1936. A report on some Heteroptera from the Hawaiian Islands, with descriptions of new species. Proc. Hawaiian Entomol. Soc. 9:219-229.
- Vidal, J.** 1949. Hémiptères de l'Afrique du nord et des pays circum-méditerranéens. Mem. Soc. Sci. Nat. Maroc 48:1-238.
- Villiers, A.** 1945. Atlas des Hémiptères de France. I. Hétéroptères, Gymnocérates. Ed. N. Boubée & Co., Paris. 83 pp.
- Villiers, A.** 1952. Hémiptères de l'Afrique Noire (Punaises et Cigales). Inst. Fran. d'Afr. Noire 9: 1-253.
- Volkovitch, T.A., L.I. Kolechnichenko & A.K. Saulich.** 1991. The role of thermal rhythms in the development of *Perillus bioculatus* (Hemiptera, Pentatomidae). Entomol. Rev. 70: 68-80.
- Vollenhoven, S.S. van.** 1867. Diagnosen van einige nieuwe soorten van Hemiptera-Heteroptera. Versl. Meded. K. Akad. Wet. Naturk. Amsterdam (Ser. 2) 2:175-188.
- Vollenhoven, S.S. van.** 1868. Eassai d'une entomologique de l'archipel Indo-Nederlandis Famille des Pentatomides, vol 3. 1-49.

- Walker, F.** 1867-68. Catalogue of Specimens of Heteropterous-Hemiptera in the British Museum, 3 vols. British Museum [Natural History], London.
- Wagner, E.W.** 1966. Wanzen oder Heteropteren, I. Pentatomorpha. Die Tierwelt Deutschlands No. 54. 235 pp. G. Fischer Verlag, Jena, Germany.
- Westwood, J.O.** 1834. Insectorum archnoidumque novorum. Zool. J. Lond. 5: 440-453.
- Westwood, J.O.** 1837. A catalogue of Hemiptera in the collection of Rev. F. W. Hope, M.A., with short latin diagnoses of the new species. J. Bridgewater, London.
- Westwood, J.O.** 1842. A catalogue of Hemiptera in the collection of Rev. F. W. Hope, M.A., with short latin diagnoses of the new species. Pt. 2. J. Bridgewater, London.
- White, F.B.** 1878. Contributions to a knowledge of the hemipterous fauna of St. Helena and speculations on its origin. Proc. Zool. Soc. Lond. 1878: 444-447.
- Wolff, J.F.** 1801. Icones Cimicum Descriptionibus Illustratae, Pt. 2. J.J. Palm, Erlangen.
- Woodward, T.E.** 1950. A new species of *Cermatulus* Dallas from the Three Kings Islands, New Zealand (Heteroptera: Pentatomidae). Rec. Auckland Inst. Mus. 4:24-30.
- Woodward, T.E.** 1953a. The Heteroptera of New Zealand. Pt. 1. Trans. Roy. Soc. New Zealand 80:299-321.
- Woodward, T.E.** 1953b. A new subspecies of *Cermatulus nasalis* (Westwood) (Hemiptera-Heteroptera: Pentatomidae). Proc. Linn. Soc. New South Wales 78:41-42.
- Woodward, T.E.** 1956. The Heteroptera of New Zealand Part II - The Enicocephalida with a supplement to part I (Cydnidae and Pentatomidae). Trans. Royal Soc. New Zealand 84:391-430.
- Yang, W.I.** 1933. Notes on some species of Pentatomidae from N. China. Bull. Fan Mem. Inst. Biol. 4: 9-46.
- Yang, W.I.** 1934a. Notes on the Chinese Asopinae. Sinensia 5:92-121.
- Yang, W.I.** 1934b. Pentatomidae of Kiangsi, China. Bull. Fan Mem. Inst. Biol. 5:1-136.
- Yang, W.I.** 1935. Descriptions of a new family and three new genera of heteropterous insects. Ann. & Mag. Nat. Hist. (10)16: 476-482.
- Yang, W.I.** 1962. Economic insect fauna of China: Fasc. 2. Hemiptera, Pentatomidae. Academia Sinica, Science Press. Beijing.
- Yasuda, T. & S. Wakamura.** 1992. Rearing of the predatory stinkbug, *Eocanthecona furcellata* (Wolff) (Heteroptera, Pentatomidae), on frozen larvae of *Spodoptera litura* (Lepidoptera, Noctuidae). Appl. Entomol. & Zool. 27: 303-305.
- Zetterstedt, J.W.** 1838. Insecta Lapponica descripta. Lipsiae.
- Zhang, S.** 1985. Economic insect fauna of China. Fasc. 31 Hemiptera. Science Press, Beijing. 242 pp.
- Zhang, S. & Y. Lin.** 1982. Three new species of Asopinae from China (Heteroptera: Pentatomidae). Entomotaxonomia 4: 57-60.
- Zhang, S. & Y. Lin.** 1986. A new species of *Cazira* from China (Hemiptera: Pentatomidae). Acta Zootaxonomica Sinensis 11: 92-93.
- Zheng, L.** 1980. Materials of Chinese Asopinae (Heteroptera: Pentatomidae). Entomotaxonomia 2: 321-324. [in Chinese with English summary].
- Zheng, L. & G. Liu.** 1987a. New genus and new species of Pentatomidae from Yunnan, China (Insecta, Hemiptera). Acta Zootaxonomica Sinensis 12: 180-191.
- Zheng, L. & G. Liu.** 1987b. New genera, new species of Chinese Pentatomidae and a new Chinese record of Scutelleridae (Heteroptera). Acta Zootaxonomica Sinensis 12: 286-296.
- Zimmerman, E.C.** 1948. Insects of Hawaii, vol. 3, Heteroptera. Univ. Hawaii Press, Honolulu.