EXPLANATION OF PLATE XV.

Fig. 1. Pipunculus terminalis, part of wing.
Fig. 2. Pipunculus latipennis, wing.
Fig. 3. Pipunculus latipennis, antenna.
Fig. 4. Pipunculus latipennis, ovipositor.
Fig. 5. Verrallia virginica, antenna.
Fig. 6. Pipunculus cinctus, wing.
Fig. 7. Verrallia virginica, tip of abdomen, above.
Fig. 8. Pipunculus terminalis, antenna, tip of abdomen, above.
Fig. 9. Verrallia virginica, wing.
Fig. 10. Pipunculus cinctus, antenna.

SYSTEMATIC PAPERS ON NEW ENGLAND HEMIPTERA.¹

II. SYNOPSIS OF THE PENTATOMIDÆ.²

BY H. M. PARSHLEY.

With Plate XVI.

Family PENTATOMIDÆ.

1. First segment of the rostrum largely free, relatively short and thick; bucculae small, more or less distinctly united under the rostrum posteriorly, hence converging; insertion of rostrum close to end of tylys (fig. 4)

4. ASOPINÆ.

First segment of rostrum largely embedded between the bucculae, relatively slender; bucculae large, not united posteriorly, hence more or less parallel; insertion of rostrum separated from end of tylys by a space about equal to width of basal segment (fig. 1) Pentatominae Kirk ..................................²

¹Contributions from the Entomological Laboratory of the Bowesy Institution, Harvard University, No. 98.
²I have found the following works, among others, to be of especial assistance in the study of this family:
Kirkaldy: Cat. Hem. I., 1909, and other papers.
Correction: Psyche, June, 1915, p. 93, in the description of the Pentatomidae the tarsi should be given as 2- or 3-segmented.
Banks—Pipunculidae.
2. Tarsi 2‐segmented; sternum with a distinct longitudinal keel; frena extending almost to end of scutellum.

3. ACANTHOSOMATINÆ

Tarsi 3‐segmented; sternum without keel; frena shorter.

3. Scutellum large, broad at apex, extending farther posteriorly than the corium; frena very short; sides of the pronotum with a single prominent tooth just anterior to lateral angle, the angles thus emarginate

1. GRAPHOSOMATINÆ

Scutellum smaller, more or less narrowed apically, generally shorter than the corium; frena longer; pronotum with numerous teeth or with no tooth near lateral angle.

2. PENTATOMINÆ

1. Subfamily GRAPHOSOMATINÆ.

Tribe Podopini.

Genus Podops Laporte.

Size larger, length about 6.5 mm.; 2d, 3d, and 4th segments of antennæ darker; lateral tooth of pronotum obtuse; color very dark brown. cinctipes Say.

Size smaller, length 5 mm.; 2d, 3d, and 4th segments of antennæ paler; lateral tooth of pronotum acute; color as in the preceding. parvula V. D.

2. Subfamily PENTATOMINÆ.

1. Body very flat, margins explanate; head with thin dilated margin, about as wide as base of scutellum, flat above; scutellum broad, scarcely narrowed apically (fig. 5)...

Body not extremely flat and explanate; head not very widely dilated, when nearly as wide as base of scutellum head is distinctly convex above, usually narrower than scutellum.

2. Juga with a prominent lateral tooth near apex (fig. 3); abdomen shallowly sulcate beneath; rostrum extending behind posterior coxae.

Juga without lateral tooth (fig. 6); abdomen not sulcate; rostrum shorter

3. PENTATOMINI

1. Tribe Sciocorini.

Genus Sciocoris Fallén.

Color brown, connexivum spotted; length 6.5 mm (fig. 5). microphthalmus Flor.

1. The frena are longitudinal grooves in the edges of the scutellum which receive the inner margins of the hemielytra. They end about where the clavus disappears beneath the scutellum.

2. In the latest general catalogue (Kirkaldy, 1909) the Acanthosomatinae and Graphosomatinae are given as tribes of the Pentatominæ. This matter is still open to discussion, I believe, but in the present series I plan to follow the check-list of Van Duzee, to whom I am again indebted for advance information.

3. The marginal region of the abdomen. There are very few records of the occurrence of Sciocoris in this country, and collectors should be on the watch for it.

4. The ocelli in this species are very small and unfortunately do not show in the figure.
2. Tribe Halynini.

Genus Brochymena Amyot et Serville.

1. Lateral angles of thorax distinctly produced in a short truncated dentate lobe, not rounded anteriorly; scutellum with a distinct transverse elevation at base; connexivum very wide; color indistinctly mottled grayish brown; length 14–16 mm. ........................................ arborea Say.

Lateral processes less abrupt, rounded anteriorly, finely denticulate; scutellum less strongly elevated at base. ..............................

2. Juga extending much beyond apex of tylus, contiguous anteriorly, or separated, thus forming a long narrow apical sinus; connexivum moderately wide; color as in the preceding; length 15–17 mm. ............... quadripustulata Fab.

Juga extending but little beyond apex of tylus, tips more or less convergent above, forming a short, sometimes transverse sinus; connexivum narrow; markings more contrasted; length 13–17 mm. carolinensis Westw. or annulata Fab.

3. Tribe Pentatomini.

1. Head very convex above, triangular, almost as broad as scutellum; juga distinctly longer than tylus; apex of corium broadly rounded. .......... ..............................

Head more nearly flat above, narrower; juga often not longer than tylus; apex of corium generally with a distinct, but sometimes rounded angle; if juga are longer than tylus, or apex of corium is broadly rounded, head is not more than two-thirds width of scutellum. .................................................................

2. Anterior angles of pronotum projecting distinctly forward; pronotum with three longitudinal pale stripes ........................................ 10. Aelia

Anterior angles not so projecting; pronotum with one stripe. 11. Neottiglossa

3. Base of abdomen armed below with a median spine or tubercle, directed anteriorly ................................................................. 17

Base of abdomen unarmed. .................................................................

4. Lateral margins of juga widely reflexed and greatly thickened; orifices placed a little farther outward than lateral margin of intermediate coxal cavities, not elevated; front of head almost vertical. ....................... 15. Murgantia

Lateral margins of juga not or only narrowly reflexed, not greatly thickened; orifices and head usually otherwise constructed. ....... 5

5. Scutellum broad and rounded at apex, lateral margins almost straight; head strongly bent downwards. ......................................... 12. Cosmopepla

Scutellum generally narrowed at apex, lateral margins concave (as in fig. 2); head not or slightly bent downwards. .......... 6

6. Orifices without sulcus, or with sulcus which ends abruptly .................. 7

Orifices with a gradually disappearing prolongation. .................. 14

7. Veins of membrane irregularly anastomosing or with numerous branches more or less distinct. .................................................. 8

Veins simple or slightly branched. .................................................. 10

8. Scutellum broadly rounded at apex, as long as corium; apical margin of corium rounded, apical lateral angle obtuse. .................. 8. Coenus

Scutellum narrowed at apex, shorter than corium; apical margin straight, apical lateral angle acute................................. 9
PSYCHE, 1915.

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Fig. 1. Ventral view of head of Rhytidolomia semilis.

Fig. 2. Scutellum of Thyanta. After Barber.

Fig. 3. Head of Brochymena arborea.

Fig. 4. Ventral view of head of Apateticus bracteatus.

Fig. 5. Scioecoris microphthalmus.

Fig. 6. Head of Rhytidolomia semilis.

Fig. 7. External genitalia of Cuscius variolarius ♂.

Fig. 8. External genitalia of Apateticus bracteatus ♂.

Fig. 9. External genitalia of Apateticus cunicus ♂.

Parsley—New England Hemiptera.
9. Frena extending just to middle of scutellum; bucculae increasing in height posteriorly, ending abruptly; lateral margin of pronotum not explanate; rostrum extending a little beyond intermediate coxae. 9. Hymenarcy's
Frena extending beyond middle of scutellum; bucculae decreasing in height posteriorly, elevated anteriorly into an angle; lateral margin of pronotum explanate in front; rostrum extending beyond intermediate coxae. 13. Menecles.
10. Frena extending beyond middle of scutellum 11. Frena shorter 2. Trichopeпла
12. Lateral margins of pronotum crenulate, lateral angles prominent, rounded or acuminate; head rather elongate. 7. Euschistus
Lateral margins of pronotum not crenulate, lateral angles not prominent; head shorter. 13
13. Form elongate; color olivaceous green; second and third segments of rostrum nearly equal, fourth shorter. 4. Rhytidolomia
Form broad; color clear green; second segment of rostrum longer than third, third nearly equal to fourth. 3. Chlorochroa
14. Thorax armed on each side with a long anteriorly projecting spine; first segment of rostrum shorter than bucculae; form elongated; margin of scutellum concolorous. 6. Solubea.
Thorax unarmed; first segment of rostrum longer than bucculae; form broad; scutellum outlined with white. 5. Mormidea
15. Juga not longer than tyulus 14. Thyanta
Juga longer than tyulus, almost or quite contiguous in front (somewhat as in fig. 5) 16
16. Prothorax with conspicuous white impunctate margins extending around lateral angles. 1. Peribalus
Prothorax without such margins, impunctate anteriorly only 19. Dendrocoris
17. Fifth antennal segment more than twice the length of second; apex of scutellum and anterior region of prothorax lighter; species olivaceous green in color 18. Banasa
Fifth antennal segment less than twice length of second; scutellum and prothorax concolorous; species clear green in color. 18
18. Orifices short, rather broad, not extending more than half way to lateral margins of metapleura, ending abruptly. 17. Nezara
Orifices continued in a long narrowing ruga, extending almost to posterior lateral angles of mesopleura. 16. Acrosternum

1. Genus Peribalus Mulsant et Rey.
   Holcoestethus Kirk. in part.
Color brown, tip of scutellum and margins of body more or less pale; length 7.5–9 mm. limbolarius Stal.

2. Genus Trichopeпла Stal.
Color brown with faint paler markings; connexivum spotted; body pilose; length 6.5–8 mm. semivittata Say.

_Pentatoma_ Auct. in part.
_Rhytidolomia_ Kirk, in part.

Color green, margins of body and tip of scutellum reddish yellow; length 12–14 mm. _uhleri_ Stal or _persimilis_ Horv.¹

4. Genus _Rhytidolomia_ Stal

_Pentatoma_ Auct. in part.

Larger, length 16 mm.; lateral margins of pronotum narrowly reflexed (fig. 6) color dark olive brown, the margins paler ......................... _senilis_ Say. Smaller, length 9.5–11 mm., pronotal margins not reflexed; color dark olive, with median and lateral pale stripes ......................... _saucia_ Say.

5. Genus _Mormidea_ Amyot et Serville.

Color dark brown, pronotum with two transverse pale stripes, lateral margins of scutellum and edges of connexivum pale; length 6 mm........... _lugens_ Fab.


_Oebalus_ Stal.

Color light brown, scutellum and markings of head paler; length 8–10 mm. _pugnax_ Fab.

7. Genus _Euschistus_ Dallas.

1. Pronotum with a distinct more or less impunctate raised line running transversely between the lateral angles; pronotum distinctly wider than the abdomen; juga generally somewhat longer than the tylus; color variable, generally some shade of brown throughout the genus; length about 11 mm. _ictericus_ Linn. Pronotum without such a line, proportionately narrower ......................... ²

2. Juga distinctly longer than the tylus, apex of head thus emarginate; hemielytra covering the connexivum; length 12–15 mm. _fissilis_ Uhl. or _euschiostoides_ Voll. Juga not or very slightly longer than the tylus, apex of head thus rounded or truncate ............................. ³

3. Lateral angles of the ventral abdominal segments concolorous; genital plate of the male with a dark spot (fig. 7); form somewhat narrowed posteriorly; length about 13 mm......................... _variolarius_ Pal. Beauv. Lateral angles of the ventral segments with a black dot; hemielytra generally not covering the connexivum ............................. ⁴

4. Smaller, length 8–9 mm., form rather flattened; lateral margins of pronotum pale and somewhat swollen, the closely set marginal punctures forming a distinct black band ............................. _politus_ Uhl. Larger, length 10 mm. or more; form more convex ............................. ⁵

5. Larger, length 12–15 mm; abdomen without a median ventral row of black spots _servus_ Say. Smaller, length 10–12 mm.; abdomen usually with a median ventral row of black spots more or less developed ......................... _tristigmus_ Say.

¹ These forms are considered identical by Van Duzee.
8. Genus Cœnus Dallas.
Color brown, finely dotted with black; length about 8 mm. delius Say.

Lateral margins of pronotum arcuate; larger, length 9 mm.; color dark brown nervosa Say.
Laterals margins of pronotum straight; smaller, length 7.5 mm.; color about as in preceding. *æqualis Say.¹

Color light brown with longitudinal pale stripes; length 8 mm. *americana Dallas

Color brown with rather faint pale markings; length about 5 mm. *undata Say.

Color black with red markings; length about 5 mm. *aequalis Say.¹

Color dull green; length about 16 mm. *viridula Linn.

¹ Asterisk marks species not known to occur in New England. Dagger marks species which I have not seen.
² For further details regarding these species and figures of the male genitalia, see Barber: Jour. N. Y. Ent. Soc., XIX., 1911, p. 9.
18. Genus *Banasa* Stal.

1. Posterior lateral angles of abdominal segments acuminate, projecting somewhat; color brownish; 10 mm.................. *sordida* Uhl.

   Posterior lateral angles obtuse, not very prominent.................. 2

2. Third antennal segment about twice as long as second; head broad anteriorly; margin of abdomen with conspicuous black dots at the angles of the segments; color greenish with olivaceous markings; length 7.5–11 mm........... *dimidiata* Say.

Third antennal segment but little longer than the second; head narrowed anteriorly; margin of abdomen with conspicuous black dots; ventral abdominal punctures fewer and paler; genital plate of male narrower; colors somewhat paler; length 9–11 mm.................. *calva* Say.


Color brown, with paler areas of variable extent, connexivum spotted; length 6.5–7.5 mm.................. *humeralis* Uhl.

3. Subfamily ACANTHOSOMATINÆ.

Lateral angles of pronotum emarginate; posterior lateral margins depressed; orifices abruptly curved, short.................. 1. *Elasmucha*.

Lateral angles entire; posterior lateral margins not depressed; orifices nearly straight, longer.................. 2. *Elasmostethus*

1. Genus *Elasmucha* Stal.

Color yellowish brown, mottled with reddish, variable in shade; length 7–9 mm.................. *lateralis* Say.

2. Genus *Elasmostethus* Fieber.

1. Antennæ black or dark brown; punctures of pronotum concolorous except along posterior margin; color pale yellowish with reddish markings; length 10 mm........... *atricornis* V. D.

   Antennæ pale; pronot al punctures dark........... 2

2. Larger, length 10 mm.; pronotum broader and shorter; color greenish yellow with reddish markings........... *cruciatus* Say.

   Smaller, length 8 mm.; pronotum narrower and longer; colors as in preceding ♂*cooleyi* V. D.

4. Subfamily ASOPINÆ.

   *Arminia* Bergr.

   *Cimicina* Kirk.

1. Anterior femora armed with a spine or prominent tubercle near apex......... 2

   Anterior femora unarmed........... 3

2. Scutellum large, broad, extending almost or quite to end of abdomen; frena not over one-third the length of the scutellum........... 6. *Stiretrus*

   Scutellum moderate in size, attenuated apically; frena extending to middle of scutellum........... 1. *Perillus*.

3. Base of abdomen armed below with a spine or tubercle........... 4

   Base of abdomen unarmed........... 3. *Zicrona*
4. Frena extending beyond middle of scutellum; bucculae slightly elevated, disappearing posteriorly ............................................. 5

Frena extending to middle of scutellum; bucculae distinctly elevated, not thinning out posteriorly; male with two patches of silken pubescence on the abdomen below ............................................. 2. Mineus

5. Larger, length usually over 18 mm.; tylus generally shorter than juga, apex of head thus emarginate ............................................. 4. Apateticus

Smaller, length usually less than 13 mm.; tylus as long as juga, apex of head thus truncate ............................................. 5. Podisus


_Perilloides_ Schouteden.

Anterior femora armed with a low conical tubercle; color entirely black, or black with red or yellowish markings; length 5–7 mm. .................. _exaptus_ Say.

Anterior femora armed with a more or less cylindrical blunt spine; color brown with pale yellowish markings; length 8–10 mm. .................. _circumcinctus_ Stal.

2. Genus Mineus Stal.

Color bluish black with red markings; length 8 mm. .................. _strigipes_ H. S.


Color iridescent greenish blue; length 6 mm. .................. _caerulea_ Linn.


Vaginal plate of the female genitalia triangular (fig. 8); pronotal spines shorter and less acute; anterior lateral margins of pronotum more distinctly serrulate; color brown; length 13–18 mm. .................. _bracteatus_ Fitch.

Vaginal plate quadrangular (fig. 9); pronotal spines longer and more acute; anterior lateral margins of pronotum very finely serrulate; color as in the preceding; length 16–20 mm. .................. _cynicus_ Say.

5. Genus Podisus Herrich-Scheffer.

1. Lateral angles of pronotum blunt, projecting but little; membrane without a dark longitudinal stripe; color mottled brown; length 9–11 mm. _placidus_ Uhl.

Lateral angles distinctly projecting, more or less spine-like; membrane with a dark longitudinal stripe ............................................. 2

2. Color usually reddish brown; basal spine of abdomen short, not extending between hind coxae; lateral angles of pronotum rather blunt ............................................. 3

Color grayish brown; basal spine of abdomen long, extending between hind coxae; lateral angles acute; length 10–12.5 mm. _maculiventris_ Say.

3. Smaller, length 7–8 mm.; form narrow; second antennal segment one-fourth longer than the third; color pale reddish brown .................. _modestus_ Dallas.

Larger, length 8–10 mm.; form wider; second antennal segment one-third longer than the third; color darker .................. _serieventris_ Uhl.


Color very variable, green with white or yellowish markings in New England specimens, blue and red in various combinations in forms from other regions; length about 9 mm. .................. _anchorago_ Fab.