

SYNOPSIS OF PENTATOMID BUGS OF THE SUBFAMILIES MEGARIDINAE AND CANOPINAE

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INTRODUCTION—ACKNOWLEDGMENTS

Manuscript covering most of the species included in the present report was completed in July, 1926. It was based primarily on material contained in the National Collection (of which W. L. McAtee is acting custodian of Hemiptera), supplemented by loans from the Carnegie Museum in Pittsburgh (through Hugo Kahl), American Museum of Natural History (through H. G. Barber), the Museum National d'Histoire Naturelle de Paris (through Dr. E. L. Bouvier and E. Seguy), and the Deutsches Entomologisches Institut (through Dr. Walther Horn). In the spring of 1927 the United States Bureau of Entomology made it possible for W. L. McAtee to visit various European museums where type and other material could be consulted. Museums from which material is cited in the present synopsis, together with the name of the officer in charge of Hemiptera or more inclusive groups, are: Magyar Nemzeti Museum, Budapest (Dr. G. Horvath); Zoologisches Museum, Johann Kasimir Universität, Lwow (Dr. Jan Hirschler); Museum für Naturkunde, Berlin (Dr. W. Ramme); Zoologisches Museum, Christian Albrecht's Universität, Kiel (Dr. A. Schröder); Universitetets Zoologiske Museum, Copenhagen (Dr. W. Lundbeck); Naturhistoriska Riksmuseet, Stockholm (Dr. B. Y. Sjöstedt); Museum Zoologici Universitatis, Helsingfors (Dr. Richard Frey); and the British Museum of Natural History, London (W. E. China). We gratefully acknowledge these loans, and assistance from the officials listed, and wish to record our appreciation of favors in connection with the work received also from J. Ujhelyi, of Budapest; Dr. K. L. Henriksen, of Copenhagen; and Dr. Hakan Lindberg, of Helsingfors. The museums listed here are referred to in the text merely as "Paris Mus.," "Lwow Mus.," and the like, rather than by their full designations.

LIMITS OF GROUP

As to the insects treated we may remark that the Heteroptera can logically be grouped into a limited number of comprehensive assemblages. These are often called superfamilies, but in our opinion family rank in most cases is sufficient. Adverting to Pentatomidae in particular we believe that since the principal subdivisions of this group differ from each other for the most part by relative characters or merely by different combinations of similar characters, they are preferably treated as subfamilies.

We have found only one character that holds throughout the vast assemblage of Pentatomids, namely, the presence on the sternites near the spiracles, of sensory hairs which are not closer to the median line on the first and second visible sternites than on the others. (Figs. 3, 23, 24.) These hairs are normally 2 in number on each side while in most of the other families possessing them they are normally 3 in number.¹ In Pentatomidae the spiracles are almost always on the ventral surface and equally or almost equally distant from the sensory hairs on all sternites, the only known exceptions occurring in the genus *Corimelaena* in which there are some species that have the spiracles of the posterior segments situated in the margins of the sternites. In all Pentatomidae known to us, with the exception of the Urolabidinae and the genus *Amnestus*, there is a group of four or more short, usually stout, and curved spines or bristles, frequently set in a notch, at varying distances from the apex, on the anteroventral surface of the fore tibia. These bristles we have not found in any other family we have examined. The number of antennal and tarsal segments are not constant enough to be available for recognition of the group Pentatomidae in the broad sense.

The assemblage of Pentatomidae treated in this paper are distinguished from the remainder of the family by the fore wings being about twice as long as the abdomen and having thinned areas (almost fractures) adapting them for folding. These characters may not have phylogenetic significance, but they serve for recognition of two interesting and little understood subfamilies of New World heteroptera, and of one from the Old World with which they might be confused. These insects, for the most part, are relatively broad in proportion to their length (figs. 1-3), a character which, with the complete covering of the abdomen by the scutellum and the usually inflated shape of the latter (figs. 13-17), gives them a semi-globose appearance. This is especially true of the nymphs of Canopinae and Megaridinae, while those of the Coptosomatinae (some of

¹ For fuller discussion and illustration of the "trichobothria" see Tullgren, A., Ent. Tidskr., vol. 39, 1918, pp. 113-133, 11 figs., and Malloch, J. R., Bull. Brooklyn Ent. Soc., vol. 16, 1921, pp. 54-56, 16 figs.

the imagines of which are rather depressed) are relatively flattened. The nymphs of all have 2-segmented tarsi.

The coptosomatine nymphs agree with those of Pentatominae in having all of the sutures between segments of the dorsum of the abdomen well marked, and in having three about equally separated pairs of dorsal ostioles. They are thus more closely linked with the Pentatominae in the nymphal than in the adult state, and all things considered must yield the palm for specialization to Canopinae and Megaridinae which are as strongly distinguished in the immature, as in the adult stages. The nymphs of these latter two subfamilies are as much as, or even more, inflated than the adults, and are heavily chitinized and highly polished dorsally.

In nymphs of Canopinae there are three pairs of ostioles, the anterior pair being about twice as far apart as the other two pairs (fig. 25), and the sutures of the abdomen basad of those bearing the ostiolar openings are extremely difficult to distinguish. A striking character of these nymphs is the distinct central division of the basal two exposed sternites. We figure (figs. 24-25) both the ventral and dorsal aspects to show the anatomical features.

In nymphs of Megaridinae the segmentation of the dorsum of the abdomen is still more obscured, being visible with any distinctness only on a small definitely marked-off section of extreme apex of abdomen. Material is too scanty to permit of clearing a specimen to reveal ostiolar characters. The basal segments of the venter are undivided.

SYSTEMATIC TREATMENT

KEY TO IMAGINES OF THE THREE SUBFAMILIES

1. Thinning of fore wing extending from radial side, the costa produced far beyond base of membrane, there thickened and broadened (though the apex is acute), and serving as a support to the numerous longitudinal veins, most of which are directed obliquely across membrane from costal to radial side, and the bases of which are connected by a long curved vein (fig. 18); almost the entire sternal surface opaque; anterior and interior margins of propleura not elevated; first sternite in some cases broadly exposed laterally and evanescent medianly, in others entirely concealed; sutures between abdominal segments in some cases traceable, in others not, to margins of venter; antenna obviously 5-segmented, short segment between first and third antennal segments easily distinguishable; tarsi with 2 segments; sensory hairs longitudinally arranged. *Coptosomatinae*.
- Thinning of fore wing extending from costal side (figs. 6, 20), the costa not produced, truncate apically, the fewer veins of membrane, the bases of which are not connected by a curved vein, arising from the radial region of corium and curving toward costal margin; notable portions, or all, of sternal surface not opaque; anterior and interior margins of propleura elevated, forming a deep sulcus (fig. 2); antenna 5-segmented, the short segment between first and third segments more difficult to see than in *Coptosomatinae*, it being necessary to clear the antenna in some cases to reveal it. -----2

2. Thinned area at about middle of costa, which is there slightly angulate-emarginate, membrane with a slightly thickened band proceeding from radial portion of corium and nearly paralleling radial margin, and with few or no strong veins (fig. 6); metapleural ostiole like a puncture, and difficult to see, with no opaque area adjacent; first sternite well exposed for its entire width (except in *M. majuscula*), half as wide as second, sutures between sternites terminating laterally at about level of spiracles (fig. 3); antenna apparently 4-segmented, ring segment indistinguishable without clearing; tarsi with 2 segments; sensory hairs transversely arranged -----Megaridinae.

Thinned area at end of costa; radial apex of corium rather heavily chitinized and somewhat produced, serving as a base for several strong veins, the course of which is as shown in Figure 20; metapleural ostiole prominent, with more or less extensive opaque area adjacent; first sternite briefly exposed, evanescent both medially and laterally; sutures between sternites not extending laterad to level of spiracles (fig. 23); antenna obviously 5-segmented; ring segment of antenna distinguishable without clearing; tarsi with 3 segments; sensory hairs longitudinally arranged.—Canopinae.

Subfamily MEGARIDINAE

There is only one genus known, namely:

Genus MEGARIS Stål

Cyrtaspis STÄL, C., Bidrag till Rio Janeiro-traktens Hemipter-Fauna, Svenska Vet.-Akad. Handl., vol. 2, No. 7, 1860, p. 9 [Monobasic, genotype, *C. nigritula* n. sp. Brazil].

Megaridinae STÄL, C., Svenska Vet.-Akad. Handl., vol. 3, No. 6, 1862, p. 57.

"The name *Cyrtaspis* has previously been used for another genus," is Stål's remark. The genus in question is one of Orthoptera described by Fischer in 1853.

Besides the characters mentioned in the key to subfamilies, common characters of the species of Megaridinae before us are: punctures of pleural surfaces ringlike² giving a somewhat dull appearance to these surfaces, though of an entirely different type from that of the opaque, corrugated, and apparently less heavily chitinized areas surrounding the ostioles in the other subfamilies here treated, and in many other Pentatomids; anterior margin of the head, and anterior and lateral margins of pronotum, carinate and slightly reflexed; the apex of head usually is more or less emarginate (figs. 8, 9, 12, 15); the costa has a prominent rounded margin, and the corium bears a single central longitudinal series of large punctures; the pronotum is emarginate near the posterior lateral angle for reception of base of fore wing, and has a prominent polished convexity

² This appearance is due to greater prominence of the central papilla of each puncture which reaches the same elevation as the remainder of the surface and is flattened above; in the other groups the papilla is lower and does not destroy the pitlike appearance of the puncture.

above the insertion of wing. The males have the eyes and ocelli larger, and the hairs on antennae much longer than do the females.

Megaridinae are scarce, at least in collections, and we have not had sufficient material to permit dissection to work out the structural basis of classification as thoroughly as we should like. Besides the characters mentioned in the key to genera, we have noticed interesting differences in puncturing of the propleurum, which are noted in the descriptions, but we can scarcely say at present what taxonomic value these may have. In several of the species the anterior outer angle of mesopleurum is impunctate and in all there is an oblique impunctate stripe running from same angle of metapleurum to a short distance from posterior outer angle, which is associated with a more or less evident impressed line.

KEY TO THE SPECIES

1. Larger species 4.5 mm. in length and 3.75 mm. in width; antenna chiefly black, apical segment whitish; practically the entire surface of pronotum and scutellum with large, rather widely spaced punctures; clavus with some distinct punctures; ventral abdominal sutures impunctate; shape of head as in Figure 5; each prosternal carina almost straight, not very noticeably angulate near middle, the two forming a V (fig. 3).

majuscula, new species.

Smaller species, not exceeding 2.5 mm. in length; antenna otherwise colored; clavus wrinkled or granulate, rarely punctate; ventral abdominal sutures punctate; prosternal carinae angulate near middle, their anterior sections widely divergent.....2

2. Vertex, pronotum, and disk of scutellum entirely impunctate, the scutellum distinctly punctate on sides; long hairs of male antenna scarcely as long as the segment bearing them; meso- and meta-sterna impunctate, anterior lateral angles of mesopleurum impunctate and striate.....*laevicollis* Stål.
Pronotum with distinct punctures on some part of its surface.....3

3. Pronotum and scutellum each with a large bright red discal spot, that on scutellum sometimes longitudinally divided by a black line; shape of head, as in Figures 12, 15; some of the hairs on antenna of male nearly as long as the segments bearing them (fig. 4); meso- and meta-sterna coarsely striato-punctate; mesopleurum punctate almost to lateral edge.

trinotata Distant.

Pronotum and scutellum unicolorous, castaneous to black.....4

4. Pronotum and scutellum punctate almost throughout.....5
Pronotum not so uniformly, and scutellum less decidedly punctate.....7

5. Pronotum distinctly more than half as long as wide; outline of insect as seen from above and the side as in Figures 1 and 13; length 1.5 mm.

longula, new species.

Form less elongate (in fact, almost hemispherical); length 2 mm. or more...6

6. Scutellum quite, and pronotum less, conspicuously wrinkled, with rows of punctures between the wrinkles.....*nigritula* Stål.

Dorsum punctate but not wrinkled.....*punctulata* Horvath.

7. Pronotum without group of punctures on that part just behind head and no transverse series on disk.....8

Pronotum with punctures on that part just behind head, and a more or less pronounced band of punctures across disk.....9

8. Scutellum without punctures along or paralleling anterior margin.
hemisphaerica, new species.
 Scutellum with punctures along anterior margin except at middle.
peruviana Horvath.
9. Scutellum lacking a transverse impressed line paralleling anterior margin at any part.....10
 Scutellum with a distinct transverse impressed and punctate line close to and paralleling anterior margin centrally, diverging from it laterally, or with a shallower punctate line parallel to it and not diverging laterally.
10. Front margin of vertex rounded; scutellum with anterior disk nearly free from punctures; dull black; length 2 mm.....*stälîi*, new species.
 Front margin of vertex distinctly emarginate; scutellum with an isolated, narrow, transverse band of punctures near anterior margin; shining fusco-castaneous; length 1.5 mm.....*atrata* Stäl.
11. Band of punctures across disk of pronotum consisting of only a single row in middle, the impression shallow; outline from side as in Figure 16; apical and subapical segments of antenna terete *semiamicta*, new species.
 Band of punctures across disk of pronotum consisting of about 4 rows at middle; apical and subapical segments of antenna distinctly fusiform; thicker than fore tibia; lateral outline as in Figure 14.....12
12. Longer segments of antenna nearly as long as fore tibia, with long hairs, unicolorous (fig. 11).....*constricta*, new species.
 Longer segments of antenna distinctly shorter than fore tibia, with short hairs, bicolorous (fig. 7).....*antennata*, new species.

MEGARIS MAJUSCULA, new species.

Nearly twice the dimensions of the largest of the other species of the subfamily before us and greatly exceeding them in bulk. Black, extreme apex of second segment, short ring segment between the second and third long ones, base and apex of subapical, and all of apical segment of antenna whitish; tarsi and apices of tibiae brownish. Head shaped as in Figure 5, with impressed lines near margins, and marking off tylus, almost impunctate; two long segments of antenna of about equal length, apical segment shorter, more fusiform. Pronotum with large punctures, more numerous near antero-lateral margins, less numerous in an arcuate area somewhat behind head, and also posteriorly near the humeral angles. Scutellum with large punctures, almost evenly, but rather sparsely, distributed over its whole surface; an irregular transverse impression across base of scutellum about the length of head from anterior margin. Ventral aspect as in Figure 3. Propleura punctate about like meso- and meta-pleura; prosternal sulcus with ring punctures like the pleural surfaces, the anterior ones in transverse furrows, meso- and metasterna granulose, with similar punctures. Beak reaching to or beyond hind coxae. Length 4.5 mm.; width 3.75 mm.

Holotype.—Female, Novaliches, Guantanamo, Cuba, December 16, 1916, C. T. Ramsden (Amer. Mus.).

MEGARIS LAEVICOLLIS Stål

Megarís laevicollis STÅL, C., Hemiptera Mexicana, Ent. Zeit. (Stettin), vol. 23, 1862, p. 84 [Rio de Janeiro].

The color varies from castaneous to black; the fore wing (fig. 6) has the corium hyaline discally, brownish near the heavily chitinized base, and reddish apically; the membrane is fumose, with a crinkled dusky band paralleling radial margin; hind wing as in Figure 10. Antenna testaceous; tibiae and tarsi pale brownish. Head seen from above as in Figure 8. Scutellum somewhat impressed near antero-lateral angles; punctures most numerous and deepest near these angles, thence they become shallower and sparser, the anterior disk being quite impunctate. Exposed corium with a prominent medial longitudinal carina. Propleurum with a few coarse punctures in a series across middle and in a group at each end of this series, otherwise impunctate in contrast to the uniformly punctate meso- and meta-pleura. Length 2 mm.; width 2 mm.

Holotype.—Male, Rio de Janeiro, F. Sahlberg (Stockholm Mus.); other specimens; Esperitu Santo, Staudinger, 1898 (Budapest Mus.); New Friburg, February, 1884, Caraca, Second Semester, 1884; Rio de Janeiro, 1883, all in Brazil, collected by P. Germain (Paris Mus.); San Bernardino, Paraguay, K. Fiebrig (U.S.N.M.). The last specimen bears the following freely translated note: "14 Nov. In a cluster of leaves, together with a cassid and some * * * which were lost."

MEGARIS TRINOTATA Distant

Cyrtaspis trinotata DISTANT, W. L., Biologia Centrali-Americana. Insecta. Rhynchota. Hemiptera-Heteroptera, vol. 1, p. 309, August, 1889. [Panama; Volcan de Chiriqui.]

Brownish black, with red spots as described in key; beak, antennae, and legs, testaceous. Head seen from above as in Figures 12 (male), 15 (female), with sparse, shallow punctures; second and third antennal segments of male as in Figure 4. Pronotum with more numerous and deeper punctures, rather evenly distributed, except for a discal spot, anterior areas in the position occupied in many Heteroptera by callosities, and rather prominent swellings near posterior angles, which are smooth; a slightly impressed punctate line extends entirely across hind margin of pronotum. Scutellum copiously and rather deeply punctate, except on discal color spot, with a distinct transverse impression paralleling front margin. Propleurum less copiously punctate, especially anteriorly, than meso- and meta-pleura; prosternal sulcus with a few punctures. Length, 2 mm.; width, 2 mm.

Holotype.—Volcan de Chiriqui, Panama, Champion; other specimens: Motzorongo, Vera Cruz, Flohr (British Mus.); Porto Bello,

Panama, March 6, 10, 1911, E. A. Schwarz; March 17, 1912, A. Busck (U.S.N.M.)

MEGARIS LONGULA, new species

Dark castaneous, legs and antennae a little paler. Dorsal and lateral outlines as in Figures 1 and 13. Front margin of vertex slightly emarginate medially and slightly concave laterally. Head impunctate, but remainder of upper surface provided with numerous shallow and almost evenly distributed punctures. Scutellum distinctly constricted all the way across near anterior margin. Propleurum punctate uniformly with remainder of pleural surface. Length, 1.5 mm.; width, 1 mm.

Holotype.—Male, Santarem, Brazil (Carnegie Mus.).

MEGARIS NIGRITULA Stål

Cyrtaspis nigrifula, STÅL, C., (In part) Bidrag till Rio Janeiro-traktens Hemipter-Fauna, vol. 1, 1860, p. 9 [Brazil].

There are two specimens in the type material, which, although male and female and possibly of the same species, must in the present state of knowledge of the genus be treated as two species. The female specimen is selected as holotype, because it is labeled Rio and is therefore from the area treated in the memoir in which the original description was published, and the length (2.5 mm.) agrees better with the original statement.

Black; antennae and legs distally, paler. Front margin of vertex truncate medially, concave laterally, upper surface wrinkled and shallowly punctate except on occiput; pronotum except callosities finely and irregularly transversely wrinkled and punctate, and with fine rastration posteriorly; scutellum conspicuously wrinkled and punctate throughout peripheral areas, less markedly so on disk; clavus punctate; pleura entirely punctate, propleura less copiously so; sternites impunctate even along incisures, 6 broadly rounded anteriorly, all of the others more or less shortened medially; genital plates transverse, punctate, almost oblong in shape.

Holotype.—Female, Rio de Janeiro, January (Stockholm Mus.).

MEGARIS PUNCTULATA Horvath

Cyrtaspis punctulata HORVATH, G., Analecta ad cognitionem Cydnidarum, Ann. Mus. Nat. Hung., 1919, p. 209 [Trinidad].

Dark castaneous. Form hemispherical; front margin of vertex slightly angulate-emarginate medially, then convex on each side to eyes, disk moderately punctate; pronotum except callosities and posterior disk, and scutellum almost entirely, copiously and distinctly punctate; pleura punctate throughout, the propleura less copiously so; sternites punctate along anterior margins. Length 2 mm.

Holotype.—Sex undeterminable from the damaged specimen, Trinidad, Brancsik (Budapest Mus.).

MEGARIS HEMISPHERICA, new species

Castaneous to black, legs castaneous, antennae testaceous, corium brownish basally, reddish apically. Front margin of vertex distinctly emarginate medially, moderately convex laterally. Head practically impunctate; pronotum with only faint traces of punctures anywhere except near antero-lateral margins, where there is a group of strong punctures, and a line along posterior margin, conspicuous laterally, evanescent medianly; scutellum with a broad band of punctures near periphery, most conspicuous anteriorly, and reaching highest on sides, disk practically impunctate. Lateral aspect as in Figure 17. Segments of antenna increasing slightly in length successively, from the basal one, apical one decidedly fusiform; all with moderately long hairs. Propleurum with a row of coarse punctures across middle and scattered punctures about its inner end, otherwise impunctate; meso- and meta-pleura copiously punctate. Length 1.9 mm.; width 1.7 mm.

Holotype.—Botanical Garden, Georgetown, British Guiana, October 3, 1918, Harold Morrison (U.S.N.M.), paratypes, Caracas; Lagunaico, Venezuela, E. Simon, 1897 (Paris Mus.); Iguarassu, Brazil, 1888, G. Ramage (British Mus.).

Holotype.—Cat. No. 40536 U.S.N.M.

MEGARIS PERUVIANA Horvath

Cyrtaspis peruviana HORVATH, G., *Analecta ad cognitionem Cydnidarum*, p. 209 [Peru].

Pale castaneous. Front margin of vertex truncate medially, straight laterally, angulate-emarginate just inside each eye; pronotum with a group of punctures on each lateral area and a single row along posterior margin, impunctate elsewhere; scutellum moderately punctate throughout except on anterior disk; propleurum sparsely punctate anteriorly, remainder of surface, and that of meso- and meta-pleura thickly punctate; sternites each with a row of punctures along anterior margin. Length 1.75 mm.

Holotype.—Male, Vilcanota, Peru (Budapest Mus.); other specimens, San Esteban, March, 1888, E. Simon (Helsingfors Mus.).

MEGARIS STALII, new species

Cyrtaspis nigrifula STÄL, C., (part) *Bidrag till Rio Janeiro-traktens Hemipter-Fauna*, vol. 1, 1860, p. 9 [Brazil].

Dull black, antennae and tarsi testaceous. Front margin of vertex convex medially, and slightly concave laterally, disk shallowly punctate.

tate and wrinkled anteriorly, puncturing practically obsolete on posterior half; pronotum coarsely punctate laterally, a few smaller punctures just behind head, a band of 4-5 rows across middle, and a single line of fine punctures along posterior margin; scutellum coarsely punctured from margin to rather high up on sides, but smoother medially, and almost impunctate on anterior disk; there is no wrinkling of the upper surface as in *nigritula*; clavus impunctate; pleura coarsely punctate, the propleura only interiorly and in a narrow transverse median band, metapleura smooth near posterior angles; sternites punctate along incisures, 6 broadly rounded anteriorly, with a few transverse wrinklins. Length 1.8 mm.

Holotype.—Male, Brazil, F. Sahlberg (Stockholm Mus.); paratype, Pernambuco (Berlin Mus.).

MEGARIS ATRATULA Stål

Megarıs atratula STÄL, C., Hemiptera Mexicana, Ent. Zeit. (Stettin) vol. 23, 1862, p. 84 [Tabasco].

Fusco-castaneous, dorsum polished; antennae and tibiae paler; front margin of vertex rather deeply emarginate medially, rounded angulate each side of the emargination, then slightly concave to eyes, disk of vertex with the usual radiate wrinklins but practically impunctate; pronotum glossy, with numerous punctures laterally, a compact band of 4-5 rows just behind head, a diffuse band of 4-5 rows across middle, and a single line along hind margin; scutellum with numerous distinct punctures near antero-lateral angles, and numerous finer punctures elsewhere except on anterior disk, which is polished and crossed by a distinct band of punctures narrowed to 2 rows at middle; clavus punctate; pleura (partly hidden) apparently entirely coarsely punctate, sparsely so on propleurum; sternites feebly punctate along incisures, 6 subangulate anteriorly, all the others slightly shortened medially.

Holotype.—Female, Tabasco (Stål) (Stockholm Mus.); Belize and Rio Hondo, British Honduras, Blancaneau (British Mus.).

MEGARIS SEMIAMICTA, new species

Dark castaneous, tibiae, tarsi, and antennae, testaceous. Head impunctate, the anterior margin only slightly emarginate medially, also slightly concave laterally. Punctures of pronotum distributed in a single row around almost the entire margin; in a narrow band behind head and in another across the disk; remainder of surface of pronotum polished. Dorsal and lateral outlines as in Figures 2 and 16. Punctures of scutellum most evident on sides, nearly obsolete discally; otherwise as described in key. Propleurum almost impunctate anteriorly, increasingly punctate posteriorly until hind margin

which is almost as copiously punctate as meso- and meta-pleura. Length 1.9 mm.; width 1.8 mm.

Holotype.—Male, Cacao Trece Aguas, Guatemala, April 13, E. A. Schwarz and H. S. Barber; paratype, male, Porto Bello, Panama, March 12, 1911, E. A. Schwarz (U.S.N.M.).

Holotype and paratype.—Cat. No. 40537, U.S.N.M.

MEGARIS CONSTRICTA, new species

Color almost uniform castaneous, the legs, distally, and antennae, more testaceous. Front margin of vertex shallowly concave both medially and laterally. Punctures rather deeper than in most of the other species, and almost uniformly distributed, being obsolete only on anterior and posterior parts of disk of pronotum, and semiobsolete on a very small central portion of disk of scutellum. Some of the hairs on antennae as long as the segments (fig. 11). Lateral aspect as in figure 14. Propleurum nearly smooth anteriorly, coarsely punctate posteriorly. Length, 1.5 mm.; width, 1.2 mm.

Holotype.—Male, Livingston, Guatemala, May 6, E. A. Schwarz and H. S. Barber (U.S.N.M.).

Holotype.—Cat. No. 40538, U.S.N.M.

MEGARIS ANTENNATA, new species

Piceous; legs reddish-brown, the tarsi testaceous; antennae piceous, apices of the longer segments stramineous (fig. 7). Punctures distributed about as in *M. constricta* but less distinct; polished areas of pronotum somewhat larger. Dorsal aspect of head as in Figure 9. Puncturing of pleura as in *constricta*. Length, 1.5 mm.; width, 1.2 mm.

Holotype.—Female, Cacao, Trece Aguas, Guatemala, April 2, E. A. Schwarz and H. S. Barber (U.S.N.M.). This may be the female of the preceding species.

Holotype.—Cat. No. 40539, U.S.N.M.

Subfamily CANOPINAE

There is only one genus known, namely,

Genus CANOPUS Fabricius

Canopus FABRICIUS, J. C., Systema Rhyngotorum, 1803, p. 127 [monobasic, genotype, *C. oblectus*, new species, Middle America].

Chlaenocoris BURMEISTER, H., Handbuch der Entomologie II, Pt. 1, 1835, p. 383 [monobasic, genotype, *Tetyra impressa* Fabricius, Middle America]. Burmeister's specimens were from Brazil.

Cursula WALKER, F., Catalogue of the Specimens of Heteropterous-Hemiptera in the Collection of the British Museum, Pt. 1, 1867, p. 81 [monobasic, genotype, *C. globifera*, new species, Brazil].

The general practice, which seems almost a necessary one in entomological taxonomy, is to recognize only those genera that are based on identifiable species. Use of the generic term *Canopus* is an eclecticism possibly justified by the certainty that it does apply to the insects under consideration, even if the genotype, because a nymph, is with present knowledge, unidentifiable. If the holotype continues to exist until identification of nymphs becomes possible, then and not till then will the genus have a definite genotype. If in the end the holotype proves unidentifiable, there should be used for the genus the name *Canopus*, or a synonym, dating from the earliest publication in which a positively identifiable species is included. *Cursula* Walker also was founded on immature specimens. *Chlaenocoris* was based on an adult of a species described by Fabricius in the genus *Tetyra*.

Besides the characters mentioned in the key to subfamilies the following are common to all of the species of *Canopus* seen by the writers: Outline, as seen from above, obovate, slightly narrower posteriorly than anteriorly; dorsal outline, as seen from side, almost evenly curved; part of head in front of eyes as long as, or longer than, an eye, vertex with more or less impressed lines defining the tylus, and oblique impressions each side, but scarcely punctate; head and pronotum with slightly reflexed margins; corium carinate costally, showing one definite longitudinal vein, with a definite longitudinal series of punctures exterior, and scattered punctures interior, to it; pronotum with a median longitudinal impressed line anteriorly, and a more or less defined transverse impression, in or along which are fewer or more numerous punctures, and at each end of which is a smaller or larger group of punctures; scutellum with a row of punctures or traces thereof along basal margin, with a distinct lunate, impressed and punctate line, marking off an area near the base which is polished discally, but contains some punctures laterally, surface of scutellum behind this line more or less punctate. Color black, and in most species, perhaps in all, there are individuals with aeneous or purplish reflections.

KEY TO THE SPECIES

1. Metapleural ostiole with a broad lip; the opaque ostiolar field but little extended upon mesopleurum, attenuate laterally, ending upon suture between meta- and meso-pleura, and not extending to lateral margin; head smoother on the average than in the contrasted group; apical segment of antenna not pale at base; subcostal series of punctures on corium not in a depression, the area bearing them almost flat.....2
- Metapleural ostiole with a narrow lip; the opaque ostiolar field occupying nearly half of mesopleurum and extending to lateral margin where it has the form of a narrow strip entirely across end of mesopleurum; oblique impressed lines on head more evident on the average than in the

- contrasted group, apical segment of antenna more or less pale at base; subcostal series of punctures on corium in a rather pronounced depression, the area between them and the impressed vein markedly elevated..... 9
2. Males..... 3
Females..... 5
3. Head more pointed apically (fig. 29), the pronotum with a slight shoulder, sides posteriorly almost straight (fig. 27); hind margin of hypopygium, as seen from below, with two rather prominent posterior angulations, the section between them longer than that part of the border laterad of either angle, the distinctly emarginate median section, as seen from behind, thin and carinate (figs. 34, 35).....*germari*, new species.
Head more rounded apically (fig. 30), pronotum regularly rounded on sides or almost so, sides not straight posteriorly (fig. 28); hind margin of hypopygium, as seen from below, with two slight, rounded posterior extensions, the section between them shorter than that part of the border laterad of either angle (fig. 40)..... 4
4. Median section of hind margin of hypopygium, as seen from above, rather thick and rounded, the ventral exposure not wrinkled nor punctate (figs. 40, 41); femora unicolorous.....*fabricii*, new species.
Median section of hind margin of hypopygium thinner; ventral exposure quite conspicuously transversely striate, wrinkled posteriorly, and with a few coarse punctures each side (figs. 38, 39); femora each with a median pale annulus.....*burmeisteri*, new species.
5. Head more rounded apically, pronotum evenly rounded on lateral margin, less noticeably so in *burmeisteri*; highest point of the swollen inner margins of genital plates at apex, or at least the apical inner angles not depressed, the margins thick.....6
Head more pointed apically (fig. 29), pronotum not evenly rounded on lateral margins (fig. 27); inner apical, or posterior, angle of genital plates generally depressed so that the edge is sharp and the highest point of the swollen inner margins is before the apex.....*germari*, new species.
6. Inner swollen margins of genital plates most elevated at about the middle, constricted posteriorly, so that together (as seen from rear) they form an elliptical figure.....*fabricii*, new species.
Inner swollen margins of genital plates most elevated posteriorly.....7
7. Each genital plate forming a broadly triangular figure, with a transverse depression across base, the central angles quite prominently elevated and produced posteriorly, a conspicuous depression just laterad of same in margin (fig. 42); femora each with a distinct median pale annulus.
burmeisteri, new species.
Genital plates not triangularly produced posteriorly; femora unicolorous...8
8. Brachial field distinctly punctate; genital plates nearly flat except for moundlike swellings near the most elevated portions of inner margins, which are more abruptly elevated than in the contrasted species.
andinus Horvath.
Brachial field only obsoletely punctate; genital plates tumid anteriorly, with swollen, polished inner margins, which are most elevated, and also widest, posteriorly, so that together they form a narrowly triangular figure, the most elevated portion of which is by no means produced so far as in *burmeisteri*.....*globosus* Horvath.
9. Males10
Females12

10. Median portion of hind margin of genital plate, as seen from rear (actual dorsal view), fused almost from the extreme edge with an internal median thickening (fig. 33)-----*impressus* Fabricius.
Hind margin of genital plate, as seen from rear, forming a thin shelf, with no thickening visible at all near the edge (fig. 32)-----11
11. Fourth and fifth veins of membrane of fore wing fused for some distance near base (a character variably present in *impressus* also); hind wall of hypopygium concave inwardly-----*orbicularis* Horvath.
Fourth and fifth veins of membrane of fore wing not fused near base (fig. 20); hind wall of hypopygium distinctly convex inwardly---*caesus* Germar.
12. Genital plates angularly produced at the middle of their hind margins, the projecting portions overlying and almost entirely concealing the accessory genital plates (fig. 37)-----*impressus* Fabricius.
Genital plates not angularly produced, the accessory plates fully exposed---13
13. Inner margins of genital plates most elevated and broadest posteriorly, their posterior margins concave (fig. 36); fourth and fifth veins of membrane of fore wing fused for some distance near base (a character of variable occurrence in *impressus* also)-----*orbicularis* Horvath.
Inner margins of genital plates most elevated medianly, their posterior margins not concave (fig. 31); fourth and fifth veins of membrane not united near base-----*caesus* Germar.

CANOPUS FABRICII, new species³

With aeneous to purplish reflections; tibiae and tarsi, basal segment of antenna, ring segment (2) and apices of 3 and 4, testaceous. Head rather smooth, with only traces of oblique impressions; pronotum laevigate, indistinct punctures visible only along transverse impression. Dorsal view of head as in Figure 30; outline of margin of pronotum as in Figure 28. Dorsal and ventral views of male hypopygium, as in figures 40 and 41. Length, 5.5–6.5 mm.

Holotype.—Male, Bocas del Toro, Panama, July 4, 1908, W. Robinson; paratype, male, Turrialba, Costa Rica; paratype, male and female, San Carlos, Costa Rica, Schild and Burgdorf (U.S.N.M.); Bugaba, Volcan de Chiriqui, Panama, Champion; Chontales, Panama; Bogota, Colombia; Paramba, Ecuador, January 1896, April 1897; Cachabe, Ecuador, November 1896, February 1897, Rosenberg (British Mus.).

Holotype and paratypes.—Cat. No. 40540 U.S.N.M.

CANOPUS GLOBOSUS Horvath

Canopus globosus HORVATH, G., *Analecta ad cognitionem Cydnidarum*, 1919, p. 207 [Mapiri, Bolivia; Pachitea, Peru].

Head, pronotum, and anterior disk of scutellum, highly polished, no punctures evident; scutellum except anterior disk with scattered subobsolete punctures; specimens may be with, or without, aeneous

³ There are seven as yet unidentified names available for species of *Canopus*, six of them based on nymphs; if these ever become identifiable, the new names proposed in this paper are very likely to pass into synonymy; they are presented therefore in a provisional sense.

reflections; basal two segments of antennae testaceous. Length, 6-7 mm.

Holotype.—Female, Mapiri, Bolivia; paratype, female, Pachitea, Peru (Budapest Mus.); other specimens seen are from Turrialba, Costa Rica, Schild and Burgdorf (U.S.N.M.); Bahia, Brazil, R. Oberthur, 1901 (Paris Mus.); Chanchamayo, Peru, A. Heyne (Deutsches Entomologisches Institut); Bugaba, Panama, Champion; Costa Rica (British Mus.).

CANOPUS ANDINUS Horvath

Canopus andinus HORVATH, G., *Analecta ad cognitionem Cydnidarum*, 1919, p. 208 [Peru; Bolivia].

Head of the shorter, more rounded type; pronotum coarsely but sparsely punctate near sides, with a single row of punctures in the transverse impression; scutellum with coarse, but sparse and shallow punctures everywhere except on anterior disk; legs pale from middle of femora distally; apical four-fifths of each of last two antennal segments fuscous, remainder pale. Length 6 mm.

Holotype.—Female, Marcapata, Peru; other females labeled Bolivia and Peru (Budapest Mus.).

CANOPUS BURMEISTERI, new species

Without aeneous reflections; basal and ring segments, and apex of segment three of antenna, tarsi, tibiae, and femoral annuli, testaceous. There are more punctures in the transverse band on pronotum, and especially near lateral margins, than in the preceding two and the next succeeding species of the same group. Dorsal and ventral views of male hypopygium as in figures 38, 39. Female genitalia as in figure 42. Length 5.5-6 mm.

Holotype.—Female Tumupasa,, Bolivia, December, M. R. Lopez (U.S.N.M.); paratypes, Sao Paulo de Olivenca, Brazil, May, 1923, S. M. Klages (Carnegie Mus.); Marcapata, Peru; Bolivia, coll. Breddin (Deutsches Entomologisches Institut); Venezuela (Stettin Mus.).

Holotype.—Cat. No. 40541, U.S.N.M.

CANOPUS GERMARI, new species

Numerous specimens, some without, some with, greenish to purplish reflections; bases of femora dark, distal portions testaceous; basal and ring segments of antenna and apices of other segments, usually testaceous; both legs and antennae in some specimens more extensively pale. Margin of pronotum as in figure 27; dorsal view of head as in figure 29. Dorsal and ventral views of male hypopygium as in figures 34 and 35. Length 6-7 mm.

Holotype.—Male, Cachali, Ecuador; paratypes, Rio Dagua, Colombia, W. F. H. Rosenberg; Cano Saddle, Panama, March 9, 1923, R. C. Shannon; San Carlos, Costa Rica, Schild and Burgdorf (U.S.N.M.); Colombia (Paris Mus.); Colombia, April–June, 1908, E. Pehlke (Stettin Mus.); Bogota (Stockholm Mus.).

Holotype.—Cat. No. 40542, U.S.N.M.

CANOPUS IMPRESSUS Fabricius

Cimex impressus FABRICIUS, J. C. in Coquebert, A. J., *Illustratio iconographica Insectorum quae in Musaeis parisinis observavit et in lucem edidit Joh. Christ. Fabricius praemissis ejusdem descriptionibus; accedunt species plurimae, vel. minus aut nondum cognitae, Tabularum Decas secunda*, 1801, p. 80, pl. 18, fig. 15 [America meridionali].

T. [etyra] impressa FABRICIUS, J. C., *Systema Rhyngotorum*, 1803, pp. 141–142 [Amer. merid.].

Canopus asphaltinus HORVATH, G., *Analecta ad cognitionem Cydnidarum*, 1919, p. 207 [Amazonas].

Numerous specimens, some without, some with, aeneous to purplish reflections. Basal three segments or antenna often wholly pale, the basal $\frac{1}{2}$ – $\frac{3}{4}$ of the third segment sometimes, all of 4 but the extreme base, and the apical half or more of 5, dark. Legs chiefly testaceous. Puncturing is much as in *burmeisteri*, there being a few rows in transverse band on pronotum, noticeable groups of punctures near lateral margins, and rather more evident along margins and in ends of anterior lunate area of scutellum, than in the more laevigate species. Dorsal view of male hypopygium as in figure 33; ventral view of female genitalia as in figure 37. Length 5–6 mm.

In this and the next succeeding species the scutellum is rather rugulose posteriorly, the punctures in the furrows, a character in which they differ from all the other species treated in this paper.

There are four specimens in the Universitetets Zoologiske Museum, Copenhagen, labeled "Amer. mer. mus. Schmidt, Dom. Sehestedt," of which the first, a female, is regarded as the holotype; of the other specimens, one is a female and two are males; there are also two specimens labeled "S. America, Mus. Westermann," which are correctly placed; at Kiel (Zool. Mus. Univ.) there are two females labeled Brazil, one bearing the determination *impressus* in Fabricius' handwriting; other specimens examined are from Maroni River, French Guiana, William Schaus; Para, and Amazonas, Brazil; Cachueta Esperanza, Beni, Bolivia, March, 1922, W. M. Mann; Tumupasa, Bolivia, December, M. R. Lopez (U.S.N.M.); Santarem, Brazil, July, 1919, and undated, S. M. Klages; Mana River, French Guiana, June, 1917 (Carnegie Mus.); Cayenne, Coll. Bosc; French Guiana, R. Oberthur, 1899; Camopi, French Guiana, F. Geay, 1900; Mexico, Parzudacki, 1840 (Paris Mus.); Amazonas, type of *Canopus asphaltinus* Horvath (Budapest Mus.); Para (Berlin Mus.).

CANOPUS ORBICULARIS Horvath

Canopus orbicularis HORVATH, G., *Analecta ad cognitionem Cydnidarum*, 1919, p. 208 [Mallali, British Guiana].

Canopus hypocrita HORVATH, G., *Analecta ad cognitionem Cydnidarum*, 1919, pp. 208-209 [Pachitea, Peru].

The description of the next preceding species (*impressus*) fits the present in almost every respect; all of the tangible differences are pointed out in the key. Hind wing as in Figure 22; ventral view of male abdomen (fig. 23); dorsal view of same (fig. 26); dorsal view of male hypopygium (fig. 32); internal genitalia of male (fig. 19); ventral view of female genitalia (fig. 36).

Holotype of orbicularis.—Male, Mallali British Guiana, and *hypocrita* female, Pachitea Peru (Budapest Mus.); other material examined from Para, Brazil, May, June, July; Sao Paula de Olivencia, Brazil, April, May, 1923, S. M. Klages; Mana River, French Guiana, May, 1917 (Carnegie Mus.); Costa Rica, E. Poisson, 1899 (Paris Mus.); Para, Brazil, July; Kaieteur, British Guiana, August 4, 1911 (Amer. Mus.); Bahia, Brazil, Freir, Sieber; Central Brazil, Doctor Ehrenreich (Berlin Mus.); Brazil, Broom (Lwow Mus.).

CANOPUS CAESUS Germar

Chlaenocoris caesus GEMAR, E. F., *Zeitschr. f. Ent.*, vol. 1, pt. 1, 1839, p. 23 [Middle America].

Numerous specimens showing considerable variety of metallic reflections; tibiae and tarsi usually, and sometimes all of legs, testaceous; antennal segments 1-3 usually pale, as is also more or less basally each of 4 and 5; 3 is sometimes darkened for $\frac{1}{2}$ - $\frac{3}{4}$ its length from base, and 4 and 5 are sometimes wholly dark. Fore wing as in figure 20; female genitalia from below as in figure 31. Length, 5-6 mm.

The first specimen labeled type in the Museum für Naturkunde Berlin, and the only specimen at Lwow (Mus. Johann Kasimir Universität) agree as to species, indicating the correctness as well as the desirability of selecting the former as holotype of the species. The Berlin specimen is labeled Para, Seiber, and that at Lwow, Brazil; the Berlin series contains two of the present species and three of *orbicularis*; other material examined includes specimens from Santarem, Brazil, April, May, June, July, 1919; Nova Olinda, Rio Purus, Brazil, June, 1922, S. M. Klages; Mana River, French Guiana, June, 1917; Paracary, Amazonas, Brazil, June; Para, Brazil, June, July, August; Taperina, Brazil, December; Tonantins, Amazon River, Brazil, July, 1923, S. M. Klages (Carnegie Mus.); Mexico; Cachueta Esperanza, Beni, Bolivia, March, 1922, W. M. Mann; Para, Brazil (U.S.N.M.); Para, Brazil, June, July; Kaieteur, Brit-

ish Guiana, July 31, Aug. 3, 1911; Tukeit, British Guiana, July 21, 1911; Kangaruma, British Guiana, August 18, 1911 (Amer. Mus.); Mexico, Parzudacki, 1840; French Guiana, R. Oberthur, 1899, Les Roches de Kouron, E. Le Moul't, June, 1905; Para, Brazil, Reiche; Riviere Lunier, Guiana, F. Geay, 1889 (Paris Mus.); Coco, Ecuador, R. Heansch (Deutsches Entomologisches Institut); Para, Santarem (British Mus.).

NOTES ON PREVIOUSLY DESCRIBED SPECIES

1803. FABRICIUS, J. C. *Systema Rhyngotorum*.

Canopus obtectus, Middle America, pp. 127-128; nymphs, type seen.

Tetyra impressa, Middle America, pp. 141-142; see p. 16.

1819. LEACH, W. E., [Dr. Leach's Notice of Reptiles, Insects, etc.] in Mission from Cape Coast Castle to Ashantee, etc., by T. E. Bowdich, Appendix No. 4.

Canopus punctatus, Gaboon, p. 496. This is a Coptosomatid placed by Lethierry and Severin in the genus *Plataspis*. It is figured by George Gray in Griffith, Edward, the Animal Kingdom, vol. 15, 1832, p. 233, pl. 92, fig. 2.

1824. DALMAN, J. W., *Ephemerides entomologicae*, 1.

Canopus obtectus Fabricius, Brazil, pp. 34-36. Redescription: his specimen also was a nymph.

1832. CASTELNAU (i. e. DELAPORTE, F. R.), *Essai d'une Classification Systematique de l'Ordre des Hémiptères (Hémiptères Hétero-ptères, Latr.)*, *Magasin de Zoologie*, 2nd year, 88 pp., pls. 51-55.

Platycephala metallica, n. gen. et. sp., *Amerique du Nord* (?) pp. 73-74, assigned to genus *Canopus* on p. 85, is a Coptosomatid, and is not from North America.

Canopus coccinelloides proposed on p. 85, and figured plate 55, fig. 5, for a specimen supposedly from Brazil, also is a Coptosomatid and not from North America.

The former is placed in *Brachyplatys* and the latter in *Plataspis* by Lethierry and Severin.

1834. GUERIN, F. E., *Dictionnaire pittoresque d'Histoire naturelle I*. He is convinced that the synonymizing of *Platycephala* with *Canopus* by Castelnau is an error, and that the species figured by himself in the Atlas to vol. 1 (pl. 72, fig. 3), is not *Canopus* as there named but *Platycephala*. The specific name is *madagascariensis* and it is placed in *Plataspis* of the Coptosomatinae by Lethierry and Severin.

1834. LEFEBVRE, AL., Lettre de M. Al. Lefebvre à M. Audinet-Serville sur le *Canopus obtectus* de Fabricius, Magasin de Zoologie (Guerin), 4th year, 1834, cl. IX, pl. 126, 23 pp., 1 pl. In the set available to us this plate is in 5th year, 1835.
Canopus westermanni, p. [10], no locality, is a nymph. The purport of this paper is that *Canopus obtectus* Fabricius was founded on nymphs; there are illuminating remarks also on species placed in this genus by Leach and Castelnau; the twenty figures are very good.
1835. BURMEISTER, H. Handbuch der Entomologie, vol. 2, p. 1.
Canopus involutus, Brazil, p. 382; nymphs, type seen.
Chlaenocoris impressus Fabricius, Brazil, p. 383; a specimen so determined in Museum für Naturkunde, from Para, possibly the basis of this Burmeister record, is correctly named.
1835. HAHN, C. W., Die Wanzenartigen Insekten, vol. 3, 1835.
Chlaenocoris impressus Fabricius, Brazil, pp. 24–25, pl. 8, fig. 248.
1839. GERMAR, E. F., Zeitschrift für die Entomologie, vol. 1, p. 1.
Chlaenocoris impressus Fabricius, Brazil, p. 23; specimens under this name in Johann Kasimir Universität, Lwow are *orbicularis* Horvath.
Chlaenocoris apicalis, Brazil, p. 23; no specimens under this name either at Lwow or Berlin.
Chlaenocoris caesus, Middle America, p. 23; see p. 17.
1839. HERRICH-SCHAEFFER, G. A. W., Die Wanzenartigen Insekten, V.
Chlaenocoris impressus Fabricius, Brazil, p. 27, pl. 152, fig. 480.
Chlaenocoris caesus Germar, South America, p. 28, pl. 102, fig. 479.
Chlaenocoris apicalis Germar, Brazil, pp. 28–29.
1867. WALKER, FRANCIS, Catalogue of Heteropterous Hemiptera in the British Museum, pt. 1.
Cursula globifera, Brazil, p. 81; nymphs, type seen.
Coenina variolosa, Birmania, p. 82; cited in this group by Lethierry and Severin does not belong in this subfamily but near the genus *Eysarcoris*.
1889. DISTANT, W. L., Biologia Centrali-Americana, Insecta Rhynchota, Hemiptera-Heteroptera, I, Supplement.
Chlaenocoris caesus Germar, p. 310; the specimens so named in British Museum are *fabricii*, new species.
Chlaenocoris dissimilis, Nicaragua, Panama, p. 310, pl. 30, fig. 3; nymphs, type seen.

1889. *Chlaenocoris compressus*, Panama, p. 310, pl. 30, fig. 11; nymphs, type seen.
1893. DISTANT, W. L., *Biologia Centrali-Americana, Insecta Rhynchota, Hemiptera-Heteroptera, I, Supplement.*
Chlaenocoris arctatus, Panama, p. 454; nymphs, type seen.
1919. HORVATH, G., *Ann. Mus. Nat. Hung.*, 17.
Canopus impressus Fabricius, p. 206; the specimens under this name in Budapest Museum are *fabricii*, new species.
Canopus caesus Germar, p. 206; correct.
Canopus globosus, Bolivia, Peru, p. 207; see p. 14.
Canopus asphaltinus, Brazil, p. 207; equals *C. impressus* Fabricius.
Canopus orbicularis, British Guiana, p. 208; see p. 17.
Canopus andinus, Peru, Bolivia, p. 208; see p. 15.
Canopus hypocrita, Peru, pp. 208-209; see p. 17.

EXPLANATION OF PLATES

PLATE 1

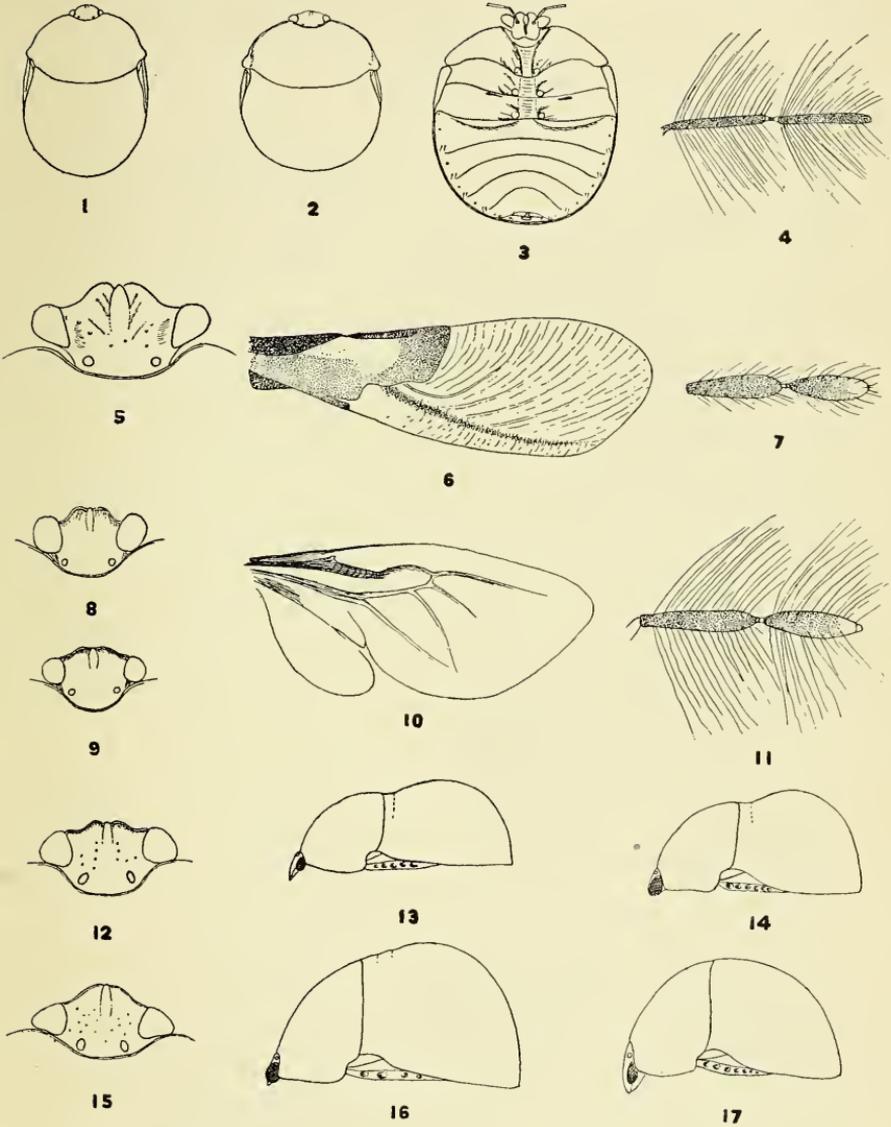
Structural details of Megaridinae

- FIG. 1. *Megaridina longula*, dorsal outline.
2. *Megaridina semiamicta* dorsal outline.
3. *Megaridina majuscula*, ventral aspect.
4. *Megaridina trinotata*, 2nd and 3rd antennal segments of male.
5. *Megaridina majuscula*, dorsal aspect of head of female.
6. *Megaridina laevicollis*, fore wing.
7. *Megaridina antennata*, 2nd and 3rd antennal segments of female.
8. *Megaridina laevicollis*, dorsal aspect of head of male.
9. *Megaridina antennata*, dorsal aspect of head of male.
10. *Megaridina laevicollis*, hind wing.
11. *Megaridina constricta*, 2nd and 3rd antennal segments of male.
12. *Megaridina trinotata*, dorsal aspect of head of male.
13. *Megaridina longula*, lateral aspect.
14. *Megaridina constricta*, lateral aspect.
15. *Megaridina trinotata*, dorsal aspect of head of female.
16. *Megaridina semiamicta*, lateral aspect.
17. *Megaridina hemisphaerica*, lateral aspect.

PLATE 2

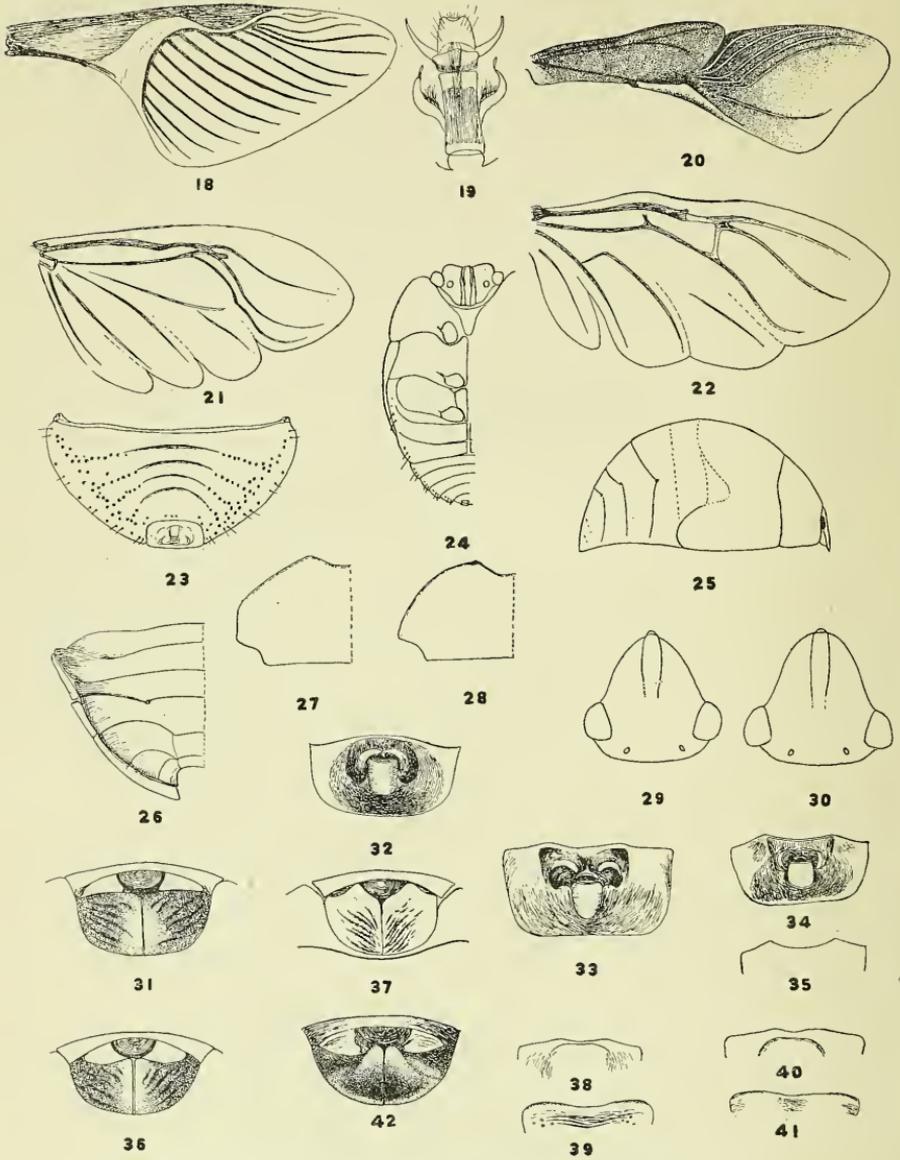
Structural Details of Canopinae and Coptosomatinae

- FIG. 18. *Brachyplatys subaeneus*, fore wing.
19. *Canopus orbicularis*, internal genitalia of male.
20. *Canopus caesus*, fore wing.
21. *Brachyplatys subaeneus*, hind wing.
22. *Canopus orbicularis*, hind wing.
23. *Canopus orbicularis*, ventral view of abdomen of male.
24. *Canopus* sp. ventral view of nymph, one side, legs omitted.
25. *Canopus* sp. lateral view of nymph, legs omitted.
26. *Canopus orbicularis*, dorsum of abdomen of male, one side.
27. *Canopus germari*, outline of pronotum, one side.
28. *Canopus fabricii*, outline of pronotum, one side.
29. *Canopus germari*, head, dorsal view.
30. *Canopus fabricii*, head, dorsal view.
31. *Canopus caesus*, female genitalia.
32. *Canopus orbicularis*, hypopygium of male from above.
33. *Canopus impressus*, hypopygium of male from above.
34. *Canopus germari*, hypopygium of male from above.
35. *Canopus germari*, hypopygium of male from below.
36. *Canopus orbicularis*, female genitalia.
37. *Canopus impressus*, female genitalia.
38. *Canopus burmeisteri*, male hypopygium from above.
39. *Canopus burmeisteri*, male hypopygium from below.
40. *Canopus fabricii*, male hypopygium from above.
41. *Canopus fabricii*, male hypopygium from below.
42. *Canopus burmeisteri*, female genitalia.



STRUCTURAL DETAILS OF MEGARIDINAE

FOR EXPLANATION OF PLATE SEE PAGE 21



STRUCTURAL DETAILS OF CANOPINÆ AND COPTOSOMATINÆ

FOR EXPLANATION OF PLATE SEE PAGE 21