REVISION OF BUGS OF THE FAMILY CRYPTOSTEMMATIDAE IN THE COLLECTION OF THE UNITED STATES NATIONAL MUSEUM

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The present paper is based chiefly on specimens in the collection of the United States National Museum. We have, however, had the great advantage of a loan of material, including types, from the Zoological Museum at Helsingfors, Finland; for this we are greatly indebted to Dr. Richard Frey and to Dr. E. Bergroth. H. G. Barber also has kindly loaned a considerable number of specimens of the genus *Ceratocombus*. This aid has enabled us to make the present paper practically a revision of the known American species.

We adopt the family name Cryptostemmatidae based on that of the oldest genus; this course should satisfy also adherents of the so-called type-genus method of selecting family names as *Cryptostemma* preoccupies *Dipsocoris* upon which the supposed oldest family name for the group was based. At least two other names also have been applied to the family.

Reuter used the name Ceratocombidae in his monograph of 1891 (see bibliography) and recognized two subfamilies. This latter policy we follow, though meanwhile these groups have been ranked as families by various authors, and Reuter, treating them so in 1910,[1] made the assemblage one of the primary divisions in his system of the Heteroptera.

The definition of this series which he called Trichotelocera in no way distinguishes these insects from certain Anthocoridae and Cimicidae. The more distinctive characters are not mentioned at all and the whole effort impresses us as very weak considering the high taxonomic rank given the assemblage. The Cryptostemmatinae agree in many particulars with some Anthocoridae[2] (Lyctocorinae), as in number of segments of tarsi, beak, and antennae, and in the slenderness and pilosity of the apical two segments of latter, possession of ocelli, definite chaetotaxy of head and pronotum, bristly tibiae, and

[1] Der Miriden, Acta Soc. Sci. Fenn. 37, No. 3, 1910, p. 67.

[2] This was noted by Haliday in 1855.

in having the costa thickened and provided with a fracture (forming what are called embolium and cuneus).

Upon consideration it becomes apparent, however, that having characters in common does not necessarily imply relationship. The eternal question of taxonomy arises, as to whether characters are of phyletic significance or are mere parallelisms. The antennal and chaetotactic characters so similar in Cryptostemmatids and Lyctocorids may be only parallel adaptations in groups frequenting similar environments. On the other hand, the excessive development of the coxae in Cryptostemmatids which has resulted in great diminution in size of the pleura and conceivably may have had to do with lack of metapleural ostioles, itself is an adaptive character in these jumping insects. However, when we note that the Schizopterids also have no ostioles (although their pleura are well developed) and agree with the Cryptostemmatids, not only in the more ordinary tarsal, rostral, and antennal details, but also in peculiar venational characters, we must conclude that the two groups, though distinct, yet are more closely related to each other than to the remaining known Heteroptera.

How high a rank they should be given in a general scheme of classification is a matter impossible to decide satisfactorily until the characters of all Heteroptera have been more closely scrutinized and evaluated. We content ourselves for the present, therefore, in saying that the more distinctive characters of the group are: absence of metapleural ostioles, possession of only 5 or 6 exposed ventral segments, and the characteristic texture and venation of the wings. The fore wings may be entirely coriaceous or entirely membranous but hardly ever are so differentiated in texture that a definite membrane can be recognized. The definite venation of the basal part of the fore wings, and the extension of one or two longitudinal veins entirely to the apical margin, are distinctive. The hind wings have more or less incised margins, simple longitudinal veins, and so far as observed no cross veins (figs. 5–7, 47). The less significant characters of antennae, beak, and tarsi, already mentioned, in connection with the small size of the insects, are useful for ordinary recognition of the group.

KEY TO THE SUBFAMILIES

1. Propleurum normal to reduced in size, never swollen anteriorly below eyes; coxae greatly developed, occupying pleural spaces so that only the propleurum is near normal size, metapleurum almost suppressed; anterior width of scutellum over one-half that of hind margin of pronotum; costa of fore wing with a definite fracture in macropterous forms; vein along hind margin of clavus crossing clavus obliquely some distance before apex; one or two free veins in apex of wing of macropterous forms (figs. 1–4, 8–9); head usually more porrect and less deeply set into the

thorax, than in the contrasted group, eyes projecting laterally, scarcely overlapping anterior angles of pronotum; head and tibiae usually with strong bristles; hypopygium of male with two or three pairs of distinct clasping organs (fig. 12); abdomen of female in *Ceratocombus* not depressed, the apical tergite almost vertical, with a small round opening near its lower margin which is always visible from behind; in *Cryptostemma* the abdomen of female is as in Schizopterinae—**Cryptostemmatinae.**

Propleurum in most cases much swollen and extending forward as far as or farther than anterior margin of eye (figs. 16–19); coxae usually less developed; scutellum small, its anterior width not over one-third as great as hind margin of pronotum; costa of fore wing without fracture; vein along hind margin of clavus strictly marginal, not crossing clavus before apex; three free veins in apex of wing of macropterous forms (various figures on pl. 3); head usually more transverse and more deeply set into the thorax, the eyes projecting laterally and posteriorly, overlapping anterior angles of pronotum; head and tibiae usually without strong bristles (figures on pl. 2); hypopygium of male without noticeable paired clasping organs, but with a long coiled hairspring-like attachment which lies on dorsum of abdomen and is not visible from below (figs. 83–84), the apical tergite assymmetrical and frequently furnished with processes on left side (figures on pl. 4); abdomen of female always depressed, apical sternite uncleft, anal opening at apex on dorsum.

Schizopterinae.

Subfamily CRYPTOSTEMMATINAE

A number of general characters of the subfamily are mentioned in the introduction and in the key to subfamilies and we may add that these insects are notable for their vestiture, being clothed above with a very fine pilosity, with longer hairs on wing veins and costal margin, the hairs on or near margins of thorax also are longer, certain of them sometimes being developed as bristles, the head with paired bristles, of which one between back part of eyes, and about three from lower margins of eyes to clypeus appear to be present in all the species (some have several more especially on base of beak); the antennae are long-haired throughout (fig. 10). The under surface also is copiously pilose, the sides of abdominal segments, especially posteriorly, with longer hairs, and the tibiae are bristly. The male genitalia (described in keys to subfamilies and genera) are remarkable. There is little range of color in the family and the species, whatever shade of the characteristic family coloration they exhibit, are mostly very uniformly colored throughout.

KEY TO THE GENERA

1. Fore wing with a break about middle of costa in macropterous forms which does not extend to disk, the venation as in figures 1–4; second segment of antenna three or more times as long as first (fig. 10); apical tergite of abdomen in females large, covering the apex of abdomen, with a small round anal opening above its lower margin, apical sternite large in same sex, generally occupying about half of venter, the ovipositor retractile, the sheaths with distinct teeth; genitalia of male with pairs of symmetri-

cal clasping organs, the basal pair large, emanating from lateral margins of the segment in front of base of the hypopygium proper (fig. 12).

Ceratocombus Signoret.

Fore wing with a distinct fracture about middle which extends midway across disk, the venation as in figures 8–9; second segment of antenna more than twice as long as first; apical tergite of abdomen in female not noticeably enlarged; apical sternite in same sex not nearly half the length of venter; hypopygium of male with similar claspers but apparently only on one (the left) side in the single specimen examined (fig. 14).

Cryptostemma Herrich-Schäffer.

Genus CERATOCOMBUS Signoret

Ceratocombus Signoret, V, Ann. Soc. Ent. France, ser. 2, vol. 10, 1852, p. 542, pl 16, fig 3 [Monobasic, proposed at end of description of *Astemma mulsanti*, new species, pp. 541–2, France] This species is a synonym of *Anthocoris coleoptratus* Zetterstedt, hence that species is the genotype.

Lichenobia v. Baerensprung, Berlin Ent. Zeitschr., vol. 1. 1857, pp. 165–167 [Monobasic, *L. ferruginea*, new species, genotype, Germany]. The genotype is synonymous with *Ceratocombus coleoptratus* genotype of that genus, hence the name is an exact synonym of *Ceratocombus*.

Reuter (Monograph, 1891) divides the genus *Ceratocombus* into four subgenera, as follows:

Leptonannus, new subgenus, p. 5 [Monobasic, type species *C.* (*L.*) *biguttulus*, new species, Africa, p. 5, fig. 1].

Trichotonannus, new subgenus, pp. 5–6 [Monobasic, type species *C.* (*T.*) *setulosus*, new species, Nangkovri, pp. 5–6, fig. 2].

Ceratocombus (Signoret), p. 6, type species as in generic reference.

Xylonannus, new subgenus p. 8, [included species, two: *C.* (*X.*) *corticalis* Reuter, Finland, pp. 8–9, fig. 5, and *C.* (*X.*) *boliviensis*, Bolivia, p. 9, of which the former was designated as type by Oshanin in 1912].

Poppius has added ('15, p. 77) the subgenus *Tagalonannus*, type species *C.* (*T.*) *coloratus*, new species [Philippines].

Three subgenera are represented in the American material before us, and we identify them as *Ceratocombus*, *Leptonannus*, and *Xylonannus*. We have seen both of the species, namely, *coleoptratus* Zetterstedt and *brasiliensis* Reuter, that Reuter included in the typical subgenus. *C. latipennis* Uhler and *C. minutus* Uhler have the same venation of the forewings as figured by Reuter for the type species of *Leptonannus* and belong here, we believe, although the hind wings are bilobate instead of trilobate as described and figured for the subgenotype. *Xylonannus* has a good venational distinction and we assign to this subgenus four of the species in our material. No representatives of the other subgenera have been examined. We do not overlook Reuter's proposal [3] that *Leptonannus* be given full generic rank, but we do not accept it.

[3] Hemipterologische Miscellen, Öfv. Finska Vet.-Soc. Förh., vol. 54, p. 65, 1912.

KEY TO THE SPECIES

1. Species with a broad cream-colored fascia[4] occupying basal third of forewings; remainder of dorsum brownish-black ..... fasciatus Uhler.
   Species colored otherwise 2
2. Forewing with a small closed triangular cell exterior to apex of clavus (figs. 3–4); a bristle behind eye and two on lateral margin of pronotum 3
   Forewing lacking the small closed cell (figs. 1–2); no bristle behind eye nor on lateral margin of pronotum (Subgenus *Xylonannus* Reuter) 6
3. Two veins emanating from discal cell of forewing (Subgenus *Ceratocombus* Signoret.) (fig. 4) 4
   Only one vein emanating from discal cell of forewing (Subgenus *Leptonannus* Reuter.) (fig. 3) 8
4. Forewings glassy in texture, fumose hyaline, the veins opaque, narrowly dusky margined ..... areolatus, new species.
   Forewings not glassy in texture, more opaque, yellowish brown to fuscous, paler in part of the cells 5
5. Length 1.75 mm ..... brasiliensis Reuter.
   Length 1.25 mm ..... hesperus, new species.
6. Length 2 mm. or more; discal cell of forewing nearly parallel-sided (fig. 1). ..... major, new species.
   Length less than 2 mm.; discal cell of forewing not parallel-sided (fig. 2) 7
7. First apical cell smaller than second; forewing slightly lustrous, outer third and clavus denser in texture than remainder, the wedge-shaped area between, paler ..... cuneatus, new species.
   First apical cell larger than second (fig. 2), forewing highly shining, without a percurrent wedge-shaped paler portion ..... vagans, new species.
8. Second rostral segment with at most three pairs of fine dorsal hairs which are at least as long as its diameter ..... minutus Uhler.
   Second rostral segment with six or more pairs of fine dorsal hairs which are not as long as its diameter ..... latipennis Uhler.

CERATOCOMBUS FASCIATUS Uhler

Cryptostemma fasciatum UHLER, P. R., Proc. Zool. Soc. Lond., 1894 (March 6), p. 197 [Grenada].

Dipsocoris fasciatus LETHIERRY L., and SEVERIN, G., Cat. Gen. Hemip., vol. 3, 1896, p. 232.

We have two brachypterous females of this species, one a paratype. On account of the leathery texture of the wings it is difficult to trace the venation, but there are evidently two veins emanating from the discal cell, and from the distribution of the longer hairs, a small cell at inner angle of corium is indicated. In one specimen there is a distinct bristle near anterior angle of pronotum, indicating the probability that this species belongs to the subgenus *Ceratocombus*. The broad cream-colored band across bases of fore wings readily distinguishes this from any other described species. Length, 1 mm.

One specimen from Grenada, and one from St. Vincent, H. H. Smith.

[4] We use this color character to key *C. fasciatus* because the venational characters are so difficult to make out; as we have seen them, however, they indicate that this species is referable to the typical subgenus.

CERATOCOMBUS (CERATOCOMBUS) AREOLATUS, new species

Head, pronotum, and scutellum castaneous, the fore wing with a pale streak traversing the clavus, the costa and veins dark, and areoles pale as described in key; body color beneath paler than above, legs testaceous. Venation of fore wing as in figure 4. Length, 1.75 mm.

Holotype.—Female, Cacao Trece Aguas, Guatemala, April 20, E. A. Schwarz and H. S. Barber; paratypes, both sexes, Cordoba, Vera Cruz, Mexico, May 13, 15, 1908, F. Knab. Cat. No. 27569, U.S.N.M.

CERATOCOMBUS AREOLATUS, var. ACCOLA, new variety

Differs from the foregoing, so far as we can be certain, only by more uniform coloration of the fore wings; the general body color in most specimens also is paler. Length, 1.25–1.75 mm.

Holotype.—Female, Grenada, H. H. Smith; also two males with same data. Cat. No. 27570, U.S.N.M.

CERATOCOMBUS (CERATOCOMBUS) BRASILIENSIS Reuter

Ceratocombus (*C.*) *brasiliensis* REUTER, Monograph, 1891, p. 7, fig 3 [Bahia].

We have examined a specimen from La Moka, labelled Spec. typ. No. 3429, Mus. Zool. Helsingfors by Poppius. The preceding species *areolatus*, while closely related, is easily distinguished by the characters given in the key. The West Indian records of *brasiliensis* refer to the species subsequently described under the name *major*, and the New Mexican record of the same species to *latipennis* Uhler.

CERATOCOMBUS (CERATOCOMBUS) HESPERUS, new species

Head and thorax castaneous; fore wings a little paler, shining; lower surface yellowish-brown, the apex of abdomen dusky. Other characters as noted in key. Length, 1.25 mm.

Holotype.—Female, paratype female, and a damaged specimen (female), Palm Springs, Calif., 7.2, H. G. Hubbard. All brachypterous. Cat. No. 27571, U.S.N.M.

CERATOCOMBUS (XYLONANNUS) MAJOR, new species

Varies in body color from pale to dark castaneous, the fore wings with the veins varying from fulvous to almost black and the membranous parts from yellowish fumose to dusky, in the latter case, however, a large, more translucent, spot remains at apex of corium; antennae and legs stramineous. In keeping with its size, this really robust species, for the family, has all the bristles strong and readily seen. All the specimens we have examined are macropterous and

exhibit characters that seem clearly associated with this condition, namely, pronotum being much wider behind than in front, and the apical constriction well developed so that there is a distinct collum. Eyes distinctly higher than wide, broadly emarginate behind; in all others of the genus seen the eyes are nearly round; clasper of male as in figure 13; venation of fore wing as in figure 1; hind wing as in figure 5. Length, 2–2.25 mm.

Sixteen specimens from Grenada and St. Vincent, West Indies (H. H. Smith), of which a male from the former island is selected as holotype. Cat. No. 27572, U. S. N. M.

The description of *Ceratocombus bifenestratus* Poppius[5] applies very well to the preceding species, but Poppius compares his species with *C. brasiliensis* Reuter and assigns it to *Ceratocombus* (s. s.), so we assume it has the small closed cell in corium just exterior to apex of clavus (as figured for *brasiliensis*) which is lacking in *C. major*. In *Ceratocombus* (s. s.) the species seems nearer to *brasiliensis* than to any other included in our key.

CERATOCOMBUS (XYLONANNUS) CUNEATUS, new species

General color above fuscous, lustrous in reflected light as usual in the genus, a pale spot in forewing near costal fracture; the vein which separates the two apical cells is present in each elytron, although difficult to see, and that in the left tegmen is forked. The legs are yellowish-brown and copiously bristly. Length, 1.5 mm.

Holotype.—Male, Blumenau, Santa Catharina, Brazil. (Mus. Helsingfors.)

CERATOCOMBUS (XYLONANNUS) VAGANS, new species

Color of head, pronotum, and scutellum pale chocolate brown to castaneous, of forewings uniform drab to pale brown; antennae and legs stramineous. Even in macropterous forms the apical constriction of pronotum is broadly interrupted in the middle; an impressed line parallels hind margin of pronotum and there is a pair of well separated foveae on disk just behind middle; usually a median longitudinal impressed line is visible on pronotum, and sometimes a similar but fainter canaliculation on scutellum. Claspers of male as in figures 11–12; venation of forewing as in figure 2; hind wing, figure 7. Length, 0.75–1.75 mm.

Holotype.—A macropterous male, Glen Echo, Md., sifted from fallen leaves, September 3, 1922, J. R. Malloch; allotype and numerous paratypes of both sexes, as well as nymphs with the same data; other paratypes: Glen Echo, Md., July 12, 1922, J. R. Malloch, a single female, which was captured while biting the collector; Plummer Island, Md., August 10, 1902, August 29, 1905, September 15,

[5] Öfv. Finska Vet.-Soc. Förh., vol. 52, 1909–1910, Afd. A, no. 1, pp. 1–2 [Guadeloupe].

1907, October 22, 1905, and a few other dates, E. A. Schwarz, H. S. Barber, O. Heidemann; Hyattsville, Md., September 18, 1913, Paint Branch, two miles west of Beltsville, Md., July 30, 1922; Washington, D. C., issued April 5, 15, 1913, from rotten pine wood collected at Piney Branch; Timm's Hammock, Dade County, Fla., February 24, 1919, H. S. Barber; Porto Bello, Panama, February 23, 1911, E. A. Schwarz; Paint Branch, Md., same data as above, Vienna, Va., August 17, 1922, H. G. Barber; Keene Valley, N. Y., June 29, 1917, H. Notman.

The name *Ceratocombus niger* Uhler[6] may possibly have been applied to specimens of this widely distributed species. However, the holotype of *C. niger* is lost, and the other specimen mentioned in connection with the original description as "somewhat distorted" is in too poor condition for identification. It is possible also that the name *Ceratocombus panamensis* Champion[7] applies, a matter which can not be decided definitely without study of the type of that species.

Holotype, allotype and paratype.—Cat. No. 27573, U.S.N.M.

CERATOCOMBUS (LEPTONANNUS) MINUTUS Uhler

Ceratocombus minutus UHLER, P. R., Proc. Zoöl. Soc. London, 1894 (March 6), pp. 196–197 [Grenada].

Uhler compared this species with *brasiliensis* Reuter in his original description but the species he had under that name is our *major*. His *minutus* is much more closely related to *latipennis* Uhler, and in venation, both agree well with the figure of the forewing of *Leptonannus biguttulus* Reuter, an African species. Uhler's two species are very similar in structure but may be separated by the difference in hairs on the dorsal surface of the second rostral segment as pointed out in the key. The ocelli in *minutus* are noticeably larger than in *latipennis*, and in fully winged specimens the vein emanating from apex of the discal cell of forewing is much shorter than the vein forming the upper margin of that cell while in *latipennis* it is of nearly the same length. In the original description Uhler gives the color as dull black but the numerous specimens before us from the type series are of various shades of castaneous; this would seem to indicate fading. Length, 1.5–1.75 mm.

Specimens examined: Balthazar, Grenada, St. Vincent, H. H. Smith; Cacao Trece Aguas, Guatemala, April 11, E. A. Schwarz and H. S. Barber. In connection with the original description it is stated that the specimens were collected from April to September.

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[6] Uhler, P. R., Proc. U. S. Nat. Mus., vol. 27, 1904, pp. 361–362 [Las Vegas Hot Springs, New Mexico].

[7] Biol. Centrali-Amer. Insecta. Rhynchota Heteroptera, vol. 2, p. 336, April, 1900., [Panama].

CERATOCOMBUS (LEPTONANNUS) LATIPENNIS Uhler

Ceratocombus latipennis UHLER, P. R., Proc. U. S. Nat. Mus., vol. 27, 1904, p. 362. [New Mexico].

There are before us four specimens of this species. The type male is in fair condition, lacking the antennae and some of the legs; the allotype is without head, and the wings on one side. A female from the same locality identified as *brasiliensis* Reuter by Uhler, is in fair condition, and, like the allotype, is brachypterous. The type is macropterous and has the venation of the forewing as in figure 3. In this species also fading is evident. Uhler gives the body color as black, with the hemelytra testaceous; the type now is chocolate brown, with the fore wing stramineous. Length, 1.5 mm.

Four specimens (all damaged) from Las Vegas Hot Springs, New Mexico, August 8, 13, 17, E. A. Schwarz and H. S. Barber.

Genus CRYPTOSTEMMA Herrich-Schäffer

Cryptostemma HERRICH-SCHÄFFER, G. A. W., in the continuation of Panzer, G. W. F., Faunae Insectorum Germanicae oder Deutschlands Insecten, No. 135, p. 11, 1835. [Monobasic, genotype *C. alienum*, new species, Germany.] We have been unable to verify this reference, but Dr. E. Bergroth confirms the date; Haliday thus was mistaken about the name being preoccupied by *Cryptostemma* Guerin (Arachnida) which was published in 1838.

Dipsocoris HALIDAY, A. H., Nat. Hist. Review, vol. 2, 1855, Proc. Soc. p. 61, pl. 2, fig. 3. [Monobasic, genotype, *Cryptostemma alienum* Herrich-Schäffer, Germany].

We have before us the genotype of *Cryptostemma;* the minute closed cell at the base of the discal cell of fore wing shown in our figure (9), is present in the genotype, though not indicated in Reuter's figure of that species. The beak is shorter and stouter in all the known species of this genus than it is in *Ceratocombus.*

KEY TO THE SPECIES

1. Discal and apical cells of fore wing separated by a longitudinal vein, that is, the apical cell pedunculate (fig. 8)____**pedunculatum,** new species.
   Discal and apical cells of fore wing separated by a transverse vein, that is, the apical cell sessile (fig. 9)_____ 2.
2. Second antennal segment distinctly less than twice as long as first; smaller species, 1 mm. in length_____**smithi,** new species.
   Second antennal segment fully twice as long as first; larger species, 1.25–1.5 mm. in length_____**uhleri,** new species.

CRYPTOSTEMMA PEDUNCULATUM, new species

Head and thorax glistening lutescent, antennae and legs stramineous, fore wing dusky fumose, the surface polished and the long hairs on veins glistening. Venation of fore wing as in figure 8; left claspers of male as in figure 14. Length, 1 mm.

Holotype.—Bohio, Canal Zone, Feb. 7, 1911, E. A. Schwarz. Cat. No. 27574, U.S.N.M.

CRYPTOSTEMMA SMITHI, new species

Body color rubiginous, fore wings dusky with lustrous surface and pubescence as in the other species. Length, 1 mm.

Holotype and one paratype.—Females, Grenada, H. H. Smith. Cat. No. 27575, U.S.N.M.

Named for the collector, an assiduous field entomologist who brought to light many rare and interesting insects.

CRYPTOSTEMMA UHLERI, new species

General color lustrous lutescent to testaceous, fore wings slightly fumose to dusky. Venation of fore wing as in figure 9; hind wing as in figure 6. Length, 1.25–1.5 mm.

Holotype.—Female, Cordoba, Vera Cruz, Mexico, April 11, 1908, A. Fenyes; paratype, female, St. Vincent Island. (Uhler Coll.) Named for Dr. P. R. Uhler, who did so much indispensable pioneer study of American Hemiptera. Cat. No. 27576, U.S.N.M.

Subfamily SCHIZOPTERINAE

The vestitute in this subfamily is much as in the Cryptostemmatinae except for the usual lack of distinct bristles. The genitalia have different, but no less notable characters; these are mentioned further in the keys and also are figured. Contrasting markings are more prevalent than in the other subfamily but so far as seen practically only gradations of black and white (sometimes cream) are present.

These minute insects have a wealth of structural characters and the prospects are that study of additional material will greatly increase the number of genera and species. Some of the characters do not seem to have the same significance attached to them in other families of Heteroptera. For instance ocelli may be present or absent in the same genus irrespective of whether the specimens are macropterous or not. The position of the head in most of the genera is decumbent, much as it is in Homoptera, but in one genus (*Nannocoris*) it is porrect; this is but one of the numerous intergradations between this subfamily and the Cryptostemmatinae.

KEY TO THE GENERA

1. Propleurum not conspicuously swollen anteriorly, falling considerably short of attaining anterior margin of eyes in profile (fig. 15); venation of forewing as in figure 44 ..... Ceratocomboides, new genus.
   Propleurum conspicuously swollen anteriorly, attaining or surpassing anterior margin of eyes (figs. 16–19) 2

2. Metapleurum produced in the form of a prominent sharp spike at inner posterior angle (fig. 18); first costal cell of forewing larger than second, the vein bounding apical margin of latter joining costa almost at a right angle (fig. 49)---------- **Schizoptera** Fieber.

Metapleurum may be more or less produced but never with a pronounced spike at inner posterior angle; first costal cell in wings of normal shape, equal to or smaller than second, the vein bounding apical margin of latter joining costa obliquely (figs. 52–58)---------- 3

3. Forewings but slightly or not at all convex, not entirely heavily coriaceous, normally formed, or the costal margin very conspicuously explanate (figs. 52–53, 55–56); claval suture present---------- 4

Forewings strongly convex, entirely coriaceous, with sometimes a very narrow thinner strip along inner apical margin; claval suture obsolete or almost indistinguishable; habitus beetle-like; tibiae with much stronger setulae than in contrasted group---------- 7

4. Pronotum without a transverse impressed line near anterior margin; first and second costal cells about equal in length, separated by a short straight vein at right angles to costal vein (figs. 53, 55). (See also notes on *Oncerodes* Uhler, p. 32)---------- 5

Pronotum with a very distinct transverse impressed line near anterior margin; first and second costal cells measured along costa very unequal in length (figs. 52, 56)---------- 6

5. Pronotum not at all produced backward, scutellum exposed **Corixidea** Reuter.

Pronotum angularly produced in center posteriorly so as to conceal the scutellum (fig. 20)---------- **Membracioides**, new genus.

6. Costal margin of forewing remarkably explanate, viewed from below the explanate portion is over half as wide as venter of abdomen, habitus as in figure 21; first costal cell of wing much shorter than second, separated from it by a straight vein which joins costa at a right angle (fig. 52); head depressed in front as usual in the family---------- **Tropistotrochus** Reuter.

Costal margin of fore wing more or less reflexed but not explanate; first and second costal cells of wing about equal in area but the separating vein is oblique so that the first cell is longer along hind margin of costal vein than is the second (fig. 56); head more or less conically produced (figs. 22–25)---------- **Nannocoris** Reuter.

7. Eye small to medium in size, its width distinctly less than interocular space, overlapping not more than a third of lateral pronotal margin; reflexed costa percurrent---------- 8

Eye large, as wide as interocular space, overlapping two-thirds of lateral pronotal margin; reflexed portion of costa evanescent before middle of forewing---------- 9

8. Pronotum without a transverse impressed line near anterior margin; venation obvious; eye about one half as wide as interocular space (fig. 26)---------- **Hoplonannus**, new genus.

Pronotum with a transverse impressed line near anterior margin, forewing entirely closely reticulate, venation almost obsolete; eye about one-third as wide as interocular space (fig. 27)---------- **Ptenidiophyes** Reuter.

9. Venation traceable; forewing with a depressed area bordering entire sutural margin; that is fitted for overlapping. (fig. 28) (See also notes under *Ommatides* Uhler, p. 33)---------- **Glyptocombus** Heidemann.

Forewing closely punctured throughout, venation obsolete, without depressed area along sutural margin, the latter nearly straight (fig. 30) **Hypselosoma** Reuter.

CERATOCOMBOIDES, new genus

This genus is distinctly intermediate between the Cryptostemmatinae and the bulk of the Schizopterinae. However, it is more strongly allied to the latter group by the shape of head, lack of costal fracture, and by the venation. The latter is much as in macropterous species of the genus *Schizoptera* (fig. 44), but the veins are about equally, though moderately, elevated throughout, the radius being no more conspicuously raised than the others. The pronotum has a distinct impressed line near anterior margin; the eyes are higher than long (fig. 15); and ocelli are present. The abdomen of male has 6 visible ventral segments.

Genotype.—*Ceratocomboides prima.*

CERATOCOMBOIDES PRIMA, new species

Male.—Yellowish-brown, slightly shining, the legs stramineous. Dorsum of head, pronotum, and veins of corium with pale decumbent hairs. Space between eyes at vertex about 3 times as wide as either eye; head broadly rounded in front when seen from above; ocelli rather large; head and thorax from side as in figure 15. Impressed transverse line on pronotum slightly convex posteriorly; hind margin of pronotum a little concave; apex of scutellum somewhat produced but not visibly notched; thorax more depressed than in other genera, the pleura nearly horizontal. Hypopygium with a long curled process as in *Schizoptera*, but the hypopygium is clearly visible from below; 5th sternite longer than hypopygium. Venation of forewing as in figure 44. Length, 0.75 mm.

Holotype.—Porto Bello, Panama, March 11, 1911, E. A. Schwarz. Cat. No. 27577, U.S.N.M.

Genus SCHIZOPTERA Fieber

Schizoptera Fieber, F. X., Wien. Ent. Monatschr., vol. 4, no. 9, Sept., 1860, pp. 268–269. [Monobasic, *S. cicadina*, new species, Venezuela, p. 272.]

Reuter divided the genus *Schizoptera* into three subgenera,[8] later[9] proposing generic rank for one of them, *Corixidea*. We treat all of his segregates as genera and further subdivide the genus *Schizoptera*, as thus restricted, into seven subgenera as indicated in the following key.

KEY TO THE SUBGENERA AND SPECIES

1. Pronotum without a transverse impressed line near anterior margin; suture between pronotum and propleurum running almost straight backward to hind margin, not obliquely from lower hind margin of eye to humerus, hind margin of propleurum without a short angular projection above near

[8] Monograph, 1891, pp. 17–18. [9] Hemip. Miscell., 1912, pp. 65–66.

suture (fig. 18); ocelli present; some of the lateral cephalic hairs very long. Subgenus *Orthorhagus*, new subgenus, subgenotype, *S. plana*, new species_____ _____plana, new species.

Pronotum with a distinct curved or subangular transverse impressed line near anterior margin (figs. 34, 35)_____ 2

2. Suture between pronotum and propleurum as in *Orthorhagus* (last section), but the propleurum with an angular process or projection near suture on its hind margin (fig. 16)_____ 3

Suture between pronotum and propleurum running obliquely from behind lower margin of eye to humerus, propleurum without a process on its hind margin near suture (fig. 17)_____ 10

3. Ocelli present; scutellum spatulate apically (fig. 41). Subgenus *Kophacgis*, new subgenus, subgenotype *S. cubensis*, new species_____ 9

Ocelli lacking; scutellum not spatulate apically. Subgenus *Odontorhagus*, new subgenus, subgenotype *S. bipartita*, new species_____ 4

4. Hairs on pronotum erect and quite conspicuous, especially anteriorly, equaling or exceeding in length the second antennal segment, those on veins of corium much longer than the height of the veins above field of wing; fifth abdominal segment of male as in figure 60; membrane of fore wing brown from second apical vein to costa, cream-colored from second apical vein to hind margin_____bipartita, new species.

Hairs on pronotum depressed, much shorter than second antennal segment, those on veins of corium not longer than height of veins above field of wing; membrane of fore wing not bipartite in color as above_____ 5

5. A large fusceus spot covering apical half of membrane of fore wing, its proximal outline rounded; femora darker than tibiae; fifth sternite of male as in figure 61_____repetita, new species.

Membrane of fore wing without a large fuscous apical spot; femora not darker than tibiae_____ 6

6. Space between eyes on vertex as wide as or wider than one eye_____ 7

Space between eyes on vertex not as wide as one eye_____ 8

7. Fifth sternite of male with a large thumblike process on left side at base (fig. 62)_____clodius, new species.

Fifth sternite of male without process (fig. 63)_____decius, new species.

8. Fifth sternite of male with a long sharp process at base (fig. 64) commodus, new species.

Fifth sternite of male with a short obtuse process at base (fig. 65) drusus, new species.

9. The black color of fore wing not continued along costa beyond outer transverse vein between radius and costa (fig. 45); legs entirely yellow cubensis, new species.

The black color of fore wing continued in a wedge-shaped mark along costa beyond outer transverse vein; coxae and femora largely dark brown similis, new species.

10. Ocelli absent_____ 11

Ocelli present_____ 16

11. Fore wings not highly convex, the apical part membranous; outer two veins of membrane fusing about a third of their length from apex of wing (fig. 46); metapleurum without cross ridge, fifth sternite of male as in figure 67. Subgenus *Zygophleps*, new subgenus, subgenotype, *S. unica*, new species_____ _____unica, new species.

Fore wings entirely coriaceous and highly convex, metapleurum with cross ridge (fig. 36). Subgenus *Cantharocoris*, new subgenus, subgenotype, *S. reuteri*, new species_____ 12

12. Pronotum and fore wings with dense fine erect hairs which exceed in length the second antennal segment, those on forewings on entire surface; cross ridge of metapleurum near middle ..... **reuteri**, new species.
Pronotum and fore wings with short inconspicuous hairs which are much shorter than second antennal segment, those on fore wings confined to veins; cross ridge of metapleurum near lateral margin (fig. 36) 13
13. Veins of fore wing only slightly raised, radius distinctly elevated only at base; clavus outlined by rather deep and slightly irregular impressed lines; no closed cells evident; apical sternite of female as in figure 66 **scymnus**, new species.
Veins of fore wing distinctly elevated, or at least the radius moderately or conspicuously so for its entire length 14
14. Clavus short, its sutural margin only about twice as long as scutellum; a well-marked closed cell beyond apex of clavus (fig. 50) **elmis**, new species.
Clavus long, its sutural margin more than three times as long as scutellum; closed cell either indistinct or absent 15
15. A distinct cross vein in fore wing near apex of clavus, that is closed cell indicated (fig. 51) ..... **uhleri**, new species
No cross vein in fore wing near apex of clavus ..... **reitteri** Reuter.
16. Metapleurum with a feeble, and only slightly curved cross ridge or none (fig. 37) (Subgenus *Schizoptera*, subgenotype *S. cicadina* Fieber) 17
Metapleurum with a distinctly elevated, strongly curved cross ridge, paralleled laterally and posteriorly by an impressed line (fig. 39) (Subgenus *Lophopleurum*, new subgenus, subgenotype *S. sulcata*, new species) 28
17. Metapleurum lacking cross ridge (fig. 37) 18
Metapleurum with a cross ridge (in some cases the light must be at a certain angle to reveal it), the inner portion of the sclerite sometimes elevated 23
18. Pronotum with an areolate appearance (under magnification) like pebbled leather, the areoles (more reflecting than lines between them) fully equal in diameter to third antennal segment; hairs on pronotum long and erect, at least as long as second antennal segment, the cell between costa and radius with hairs and areolation on almost its entire surface; fifth sternite of male as in figure 68 ..... **reticulata**, new species.
Pronotum not areolate as in last species 19
19. Hairs on upper part of frons and anteriorly on pronotum erect, and like those on corium about as long as second antennal segment; fifth sternite of male as in figure 69 ..... **hirta**, new species.
Hairs on upper part of frons and on pronotum more decumbent, and like those on corium much shorter than second antennal segment 20
20. Fifth sternite of male about as long as remainder of abdomen, acutely pointed posteriorly (fig. 70) ..... **caudata**, new species.
Fifth sternite of male much shorter than remainder of abdomen 21
21. Femora dark, corium entirely dark, base of membrane broadly darkened; fifth sternite of male as in figure 71 ..... **mexicana**, new species.
Femora pale, corium with pale edgings, base of membrane narrowly darkened 22
22. Eye less than half as wide as vertex; fifth sternite of male as in figure 72 **paraguayana**, new species.
Eye more than half as wide as vertex; fifth sternite of male as in figure 73 **affinis** Poppius.

23. Hairs on pronotum and corium erect and long, most of them longer than second antennal segment, the cell between radius and costa nearly all haired; fifth sternite of male with a compressed chitinized process which is directed backward (fig. 74)_____**pilosa**, new species.
Hairs on pronotum and corium much less conspicuous than in last species, decumbent, their length not equal to that of second antennal segment; fifth sternite of male not as above_____ 24
24. Coxae and femora almost entirely black; cross ridge of metapleurum nearer outer than inner margin of the sclerite_____ 25
Coxae and femora yellow_____ 26
25. Anterior cross vein almost at apex of discal cell, usually close to posterior cross vein; scutellum with two depressed shining spots: fifth sternite of male as in figure 75_____**apicalis** Reuter.
Anterior cross vein at about one-third from apex of discal cell, well separated from posterior cross vein; scutellum without depressions; fifth sternite of male as in figure 76_____**nigrita**, new species.
26. Apex of membrane of forewing with a large fuscous spot; fifth sternite of male as in figure 77_____**apicipunctata**, new species.
Apex of membrane of forewing without a fuscous spot_____ 27
27. Fifth sternite of male as in figure 78_____**vitellius**, new species.
Fifth sternite of male as in figure 79_____**licinius**, new species.
28. Fifth sternite of male with one short backwardly directed process near apex on left side (fig. 80)_____**sulcata**, new species.
Fifth sternite of male with two processes on left side_____ 29
29. Hind process on side of fifth sternite of male directed backward (fig. 81). **bispina**, new species.
Hind process on side of fifth sternite of male directed to the side (fig. 82). **tenuispina**, new species.

SCHIZOPTERA (ORTHORHAGUS) PLANA, new species

Male.—Opaque brownish black, the legs but little paler; membrane of forewing largely cream colored, narrowly blackish at base and fuscous at apex (fig. 49). Eye nearly half as wide as interocular space; two long erect fine hairs on each side of face close to eyes and anterior to ocelli, the other frontal hairs rather long, but decumbent and like those on pronotum and veins of corium, with golden reflections; pronotum slightly narrowed anteriorly, humeri convex; pleura as in figure 18; hind margin of pronotum convex each side of the middle, the sides meeting in a shallowly angulate emargination; scutellum tumid, with no evident preapical notches; metapleurum reticulate and dull except on extreme inner margin; venation of forewing as in figure 49; fifth sternite as in figure 59. Length, 1 mm.

Holotype.—Cacao Trece Aguas, Alta Vera Paz, Guatemala, April 11, E. A. Schwarz and H. S. Barber. Cat. No. 27578, U.S.N.M.

SCHIZOPTERA (ODONTORHAGUS) BIPARTITA, new species

Male.—Fuscous, paler below; legs stramineous, membrane from second vein to hind margin much paler than anterior half. Eye about as wide as interocular space. Frons, pronotum, and wing veins

with erect hairs which are much longer than usual, many of them equal to or exceeding length of second antennal segment. Transverse impressed line on pronotum deep, curved, its distance from anterior margin at middle nearly as great as length of eye as seen from above. Pronotum shallowly emarginate in front of base of scutellum, the latter with subapical notches; metapleurum of about same texture throughout, reticulate but moderately shining; fifth abdominal sternite as in figure 60.

Female.—Similar to male, but the frons is much wider than one eye (1.75:1). Length, 1–1.2 mm.

Holotype.—Male, and 2 paratype males, Livingston, Guatemala, May 12 and 11 respectively: allotype and 1 female paratype, Cacao Trece Aguas, Alta Vera Paz, Guatemala, April 4 and 21, E. A. Schwarz and H. S. Barber. Cat. No. 27579, U.S.N.M.

SCHIZOPTERA (ODONTORHAGUS) REPETITA, new species

Male.—Differs from *bipartita* in having the base of membrane of forewing pale yellow, and the apex with a large dark spot which is rounded on its proximal side, and the femora brown, or fuscous. The frons is nearly twice as wide as one eye, and the pronotum and wing veins have the hairs short and decumbent. Pronotum shallowly emarginate in front of base of scutellum, apex of latter somewhat acuminate but scarcely notched; metapleurum as in *bipartita;* head and thorax from above as in figure 34; fifth abdominal sternite is as in figure 61.

Female.—Similar to the male in color. The hairs on dorsum are as in male. Length, 1.25 mm.

Holotype.—Male, allotype, 2 other males and 1 female, Livingston, Guatemala, 3 males and 2 females, May 4, 5, 9, 11; Cacao Trece Aguas, Alta Vera Paz, Guatemala, 1 male, April 18, E. A. Schwarz and H. S. Barber; Tampico, Mexico, 2 females, December 14, E. A. Schwarz. Cat. No. 27580, U.S.N.M.

SCHIZOPTERA (ODONTORHAGUS) CLODIUS, new species

Male.—Differs from preceding species in having the entire membrane pale yellow, and the legs including the coxae stramineous. The frons is not over 1.25 as wide as one eye, and the dorsal hairs are very short and decumbent. Fifth abdominal sternite as in figure 62. Pronotum shallowly emarginate in front of base of scutellum, the latter with subapical notches; metapleurum as in preceding two species. Length, 1.25 mm.

Holotype.—Paraiso, Canal Zone, Panama, February, 1911, E. A. Schwarz. Cat. No. 27581, U.S.N.M.

SCHIZOPTERA (ODONTORHAGUS) DECIUS, new species

Male.—Similar in color and structure, including metapleural surface, pronotal emargination, and scutellar notches, to the preceding species. Differs essentially in the structure of the fifth sternite as shown in figure 63. Length, 1.25 mm.

Holotype.—Gatun, Canal Zone, Panama, April 7, 1911, E. A. Schwarz; paratype male, Cabima, Panama, May 22, 1911, A. Busck. Cat. No. 27582, U.S.N.M.

SCHIZOPTERA (ODONTORHAGUS) COMMODUS, new species

Male.—Similar to preceding two species in color and structure. The frons is a little narrower than one eye, and the fifth abdominal sternite is as shown in figure 64. Length, 1.25 mm.

Holotype.—Livingston, Guatemala, May 9, E. A. Schwarz and H. S. Barber. Cat. No. 27583, U.S.N.M.

SCHIZOPTERA (ODONTORHAGUS) DRUSUS, new species

Male.—Similar in color and structure to the preceding species. Differs in having pronotal emargination more of an angulate type formed by the junction of the slightly convex halves of the hind margin and in having the fifth sternite as in figure 65. Pleura as in figure 16. Length, 1.5 mm.

Holotype.—Cacao Trece Aguas, Alta Vera Paz, Guatemala, March 30, E. A. Schwarz and H. S. Barber. Cat. No. 27584. U.S.N.M.

SCHIZOPTERA (KOPHAEGIS) CUBENSIS, new species

Female.—Black, subopaque; anterior and lower parts of head, legs, and antennae basally, yellow, the apex of scutellum brownish or yellowish; fore wings marked as in figure 45. Ocelli quite conspicuous: distance between eyes at vertex distinctly over twice as wide as one eye. Dorsum of head, pronotum, and veins of corium with microscopic decumbent pale hairs. Suture between pronotum and propleurum as in figure 16, the angular projection on hind margin of latter distinct; pronotum rather inflated behind, distinctly elevated above scutellum and fore wings, almost transverse posteriorly, having no distinct emargination; scutellum broadly rounded, spatulate beyond subapical notches (fig. 41). Vein closing fore part of discal cell of fore wing sloped but little backward, the first transverse vein between radius and costa at or close to middle of discal cell (fig. 45). Metapleurum reticulate, moderately shining. Length, 1.5 mm.

Holotype.—Also 1 paratype, Cayamas, Cuba, May 20 and 11, respectively, E. A. Schwarz. Cat. No. 27585, U.S.N.M.

SCHIZOPTERA (KOPHAEGIS) SIMILIS, new species

Female.—Differs from the foregoing in having the pronotum less inflated, and the coxae, the greater part of femora, and bases of fore and mid tibiae dark brown, and a wedge-shaped prolongation of black along costa beyond the outer transverse vein. Length, 1.5 mm.

Holotype.—Also 1 paratype,, Cayamas, Cuba, March 5 and 6, E. A. Schwarz. Cat. No. 27586, U.S.N.M.

SCHIZOPTERA (ZYGOPHLEPS) UNICA, new species

Male.—Brownish fuscous, legs, antennae, costa, and membrane in part, yellow. Hind margin of pronotum with a broad, shallow, median, and two narrower lateral emarginations, scutellum very slightly notched subapically. The frons is about 1.75 as wide as one eye, the transverse impressed line near anterior margin of pronotum is slightly curved, the hairs on pronotum and fore wings are short and subdecumbent, and the first cross vein of fore wing is about two-fifths from apex of discal cell; apex of wing as in figure 46. Fifth abdominal sternite as in figure 67. Length, 1.25 mm.

Holotype.—Livingston, Guatemala, May 7, E. A. Schwarz and H. S. Barber. Cat. No. 27587, U.S.N.M.

SCHIZOPTERA (CANTHAROCORIS) REUTERI, new species

Female.—Reddish brown to brownish black, subopaque. Head at base of beak, the antennae chiefly, and the legs, yellowish; apex of fifth sternite and apices of wings brownish yellow. Head quite convex between eyes when seen from above, either eye about one-third as wide as space between them; ocelli absent. Hairs of head, pronotum, and fore wings denser and longer than usual in the genus, erect, practically the entire upper surface of the fore wings hairy. Propleurum projecting a little beyond anterior margins of eyes when seen from above, without a process on hind margin, the suture between propleurum and pronotum extending obliquely from lower angle of eye to humerus; metapleurum reticulate, with a low ridge across middle, the inner half more strongly shining than outer. Pronotum distinctly, though shallowly emarginate in front of scutellum, the latter depressed, acuminate, slightly notched subapically. Apical sternite a little longer than the preceding two combined. Fore wings highly convex, costa reflexed to apex, but gradually narrowed from base, a broad depression along inner margin of marginal vein of clavus, a deep linear one along the claval suture, and the principal vein of corium noticeably elevated, other venational details almost obliterated; commissure nearly straight, the hemelytra but little overlapping. Hind tibia straight, without obvious erect ventral hairs. Length, 1.25 mm.

Holotype.—Polochic River, Guatemala, May 2, H. S. Barber; three paratype females, Livingston, Guatemala, May 8, 10, E. A. Schwarz and H. S. Barber. Cat. No. 27588, U.S.N.M.

SCHIZOPTERA (CANTHAROCORIS) UHLERI, new species

Similar in color to preceding species but the base of beak and the legs are paler, and the apices of fore wings are yellowish. Habitus as in *S. reuteri* but the insect differs in being much shorter haired, in having the cross ridge of metapleurum near lateral margin, most of that sclerite being distinctly shining, and the venation of fore wing more like that of normal species of the genus, though on the declivitous apical portion the veins are almost obsolete and at the extreme apex are entirely so. Pronotum slightly emarginate medianly, the scutellum abruptly narrowed at apex but scarcely notched. Hind tibia slightly bent and with long ventral hairs. Pleura as in figures 17 and 36; base of fore wing as in figure 51. Length, 1 mm. Grenada, H. H. Smith, two females.

Holotype and paratype.—Cat. No. 27589, U.S.N.M.

Recorded as *Ptenidiophyes mirabilis* Reuter, by Uhler in his paper on the Hemiptera of Grenada.

SCHIZOPTERA (CANTHAROCORIS) REITTERI Reuter

Schizoptera (Sch[izoptera]) reitteri REUTER, O. M., Monograph, 1891, p. 22 [Brazil].

Fuscous, the margins and veins pale brownish, the antennae and legs testaceous. Form of pronotum and scutellum as in *uhleri*; metapleurum and genitalia concealed by mount. Length, 1 mm.

Specimen labeled "Spec. type No. 3924, Mus. Helsingfors." Blumenau. In original description this specimen is said to be from Brazil.

SCHIZOPTERA (CANTHAROCORIS) ELMIS, new species

General color black, antennae basally, and legs testaceous, hind margin of pronotum, commissure, and costa brownish; pubescence short; form ovate, broadest behind middle; vertex more than twice as wide as one eye; scutellum shallowly and broadly emarginate in front of scutellum, the latter with subapical notches; commissure curved behind scutellum. Base of fore wing as in figure 50. Length, 1.5 mm.

Holotype.—Caracas, June 17, 1891, Meinert. Labelled "*Sch. flavipes* f. brach. Reut. Spec. typ. No. 3997, Mus. Helsingfors." However, this specimen can not be from the type material as *flavipes* was described in 1882; furthermore, Brazil is the only locality given even in the Monograph, 1891.

SCHIZOPTERA (CANTHAROCORIS) SCYMNUS, new species

Schizoptera (*Schizoptera*) *apicalis* forma brachytera REUTER, O. M., Monograph, 1891, pp. 21–22 [Venezuela].

Female.—Form ovate, pronotum somewhat inflated posteriorly; vertex about twice as wide as one eye. General color fuscous, commissure testaceous, especially posteriorly, tibiae pale. Fifth sternite as in figure 66. Fore wing as in figure 48. Length, 1.25 mm.

Holotype.—Colonia Tovar, Venezuela, November 1, 1888, E. Simon. "Spec. typ. No. 3922, Mus. Helsingfors."

SCHIZOPTERA (SCHIZOPTERA) RETICULATA, new species

Male.—Black, membrane of fore wings fuscous, the flap sometimes whitish; antennae and legs yellow, the femora more or less tinged with brownish. Frons over three times as wide as one eye. Pronotum with a distinct impressed transverse line which is only slightly curved; hind margin very slightly emarginate, the scutellum narrowed but scarcely notched subapically. Metapleurum reticulate, the extreme inner margin and spine pale and more shining. Hairs on frons, pronotum and corium longer than second antennal segment, and erect, the disk of corium as well as the raised veins haired. Dorsum of head and the pronotum areolate (as described in key), most distinctly so on latter. Venation of fore wings normal, the veins more elevated than usual in the genus. Fifth sternite as in figure 68. Length, 1.5 mm.

Holotype.—Also three paratypes, Livingston, Guatemala, May 8, 4, and 11, respectively, E. A. Schwarz and H. S. Barber; one paratype, Tampico, Mexico, December 29, E. A. Schwarz. Cat. No. 27590, U.S.N.M.

SCHIZOPTERA (SCHIZOPTERA) HIRTA, new species

Male.—Differs in color from preceding species in having the membrane of fore wings pale yellow, with a large apical fuscous spot which is rounded on its anterior margin, and the legs yellow. The frons in male is about twice as wide as one eye, the dorsal hairs are shorter, the pronotum is not areolate; metapleurum as in last species, scarcely paler within; dorsal view of abdomen as in figure 83; and fifth sternite as figure 69. Hind margin of pronotum slightly emarginate medianly, the scutellum with small subapical notches. Metapleurum as in figure 37; hind wing as in figure 47.

Female.—Frons about three times as wide as one eye. In other respects like male. Length, 1.5–1.75 mm.

Holotype.—Male and allotype (on same mount), and 3 male paratypes. Trece Aguas, Alta Vera Paz, Guatemala, April 4, 18, March

28, 30; one male paratype, Livingston, Guatemala, May 4, E. A. Schwarz and H. S. Barber; four females from Panama also appear to belong to this species; two from Paraiso, April 30, 1911, one from Bohio, February 7, 1911, and one from Portobello, February 21, 1911, E. A. Schwarz. Cat. No. 27591, U.S.N.M.

SCHIZOPTERA (SCHIZOPTERA) CAUDATA, new species

Male.—Brownish black, hind margin of pronotum narrowly yellowish, costa, commissure, and membrane of fore wing also yellow, the latter with a large apical brownish spot, legs yellow, femora sometimes darker. Pilosity as in last two species but shorter. Frons nearly three times as wide as one eye. Dorsal hairs short and decumbent. Pronotum trisinuate posteriorly; the scutellum with small subapical notches; metapleurum reticulate, moderately shining, unicolorous. Fifth sternite longer than usual, acute and more or less curled apically (fig. 70).

Female.—Differs from the male in lacking yellow markings other than that covering most of membrane. Length, 1.5–1.75 mm.

Holotype.—Male, allotype, and one male paratype, Tampico, Mexico, December 15, 18, and 14, respectively, E. A. Schwarz. Cat. No. 27592, U.S.N.M.

SCHIZOPTERA (SCHIZOPTERA) MEXICANA, new species

Male.—Blackish fuscous; hind margin of pronotum narrowly yellowish; membrane of fore wing whitish, the dark color of corium extending rather broadly over bases of the apical veins, the apex with a large brownish spot which is rounded anteriorly; femora mostly brown, tibiae brown except apices. Distance between eyes at vertex about 2.5 as great as one eye; hairs on frons a little longer than those on pronotum and veins of corium, the latter very short. Hind margin of pronotum slightly emarginate medianly, scutellum with minute subapical notches. Corium granulose; anterior cross-vein not over one-fifth from apex of discal cell. Metapleurum uniform in color and sculpture, rather dull. Fifth sternite as in figure 71. Length, 1.5 mm.

Holotype.—Tampico, Mexico, December, E. A. Schwarz. Cat. No. 27593, U.S.N.M.

SCHIZOPTERA (SCHIZOPTERA) PARAGUAYANA, new species

Male.—Ground color more brownish than in *mexicana*, pronotum without yellow hind margin, corium with pale edgings, the dark color of corium extending posteriorly but little upon membrane, the latter without dark spot at apex; legs yellow; pubescence short and sparse. Distance between eyes at vertex about three times as wide as one eye. Pronotum slightly trisinuate posteriorly, scutellum with sub-

apical notches; metapleurum broadly pale within, reticulate, but subshining. Anterior cross vein of forewing about one-third from apex of discal cell. Fifth sternite as in figure 72. Length, 1.5 mm.

Holotype.—San Bernardino, Paraguay, K. Fiebrig. Cat. No. 27594, U.S.N.M.

SCHIZOPTERA (SCHIZOPTERA) AFFINIS Poppius

Schizoptera (s. str.) *affinis* POPPIUS, B., Öfv. Finska Vet. Soc. Förh., vol. 52, Afd. A, No. 1, 1909–10, pp. 11–12 [Venezuela].

Male.—Pubescence and general color an in *paraguayana*, the pronotum yellowish posteriorly. Distance between eyes at vertex less than twice as wide as one eye. Hind margin of pronotum, and scutellum as in *paraguayana;* metapleurum pale only along extreme inner margin, granular for the most part, dark; anterior cross vein about one-fifth from apex of discal cell. Fifth sternite as in figure 73. Length, 1.5 mm.

Caracas, Venezuela, October 6, 1891, Meinert. Part of the type material. (Mus. Helsingfors.)

SCHIZOPTERA (SCHIZOPTERA) PILOSA, new species

Male.—Fuscous, the dark color of corium extending a little over base of membrane, part of latter exterior to the apical veins yellowish, the flap whitish; legs yellow. Frons at vertex a little over twice as wide as one eye, dorsum of head, pronotum, and corium with rather dense erect hairs, most of which are longer than the second antennal segment, the hairs on costal portion of corium extending over disk, not confined to veins; inner cross vein about one-fourth from apex of discal cell. Pronotum with pronounced rounded emargination in front of scutellum, the latter with subapical notches; metapleurum reticulate, subshining, unicolorous, cross ridge about at middle. Fifth sternite as in figure 74. Length, 1.5 mm.

Holotype.—Livingston, Guatemala, May 6, E. A. Schwarz and H. S. Barber. Cat. No. 27595, U.S.N.M.

SCHIZOPTERA (SCHIZOPTERA) APICALIS Reuter

Sch. [*izoptera*] *apicalis* REUTER, O. M., Rev. D'Ent, vol. 1, 1882, pp. 163–164 [Brazil].

Male.—Color much as in next species (*nigrita*) but membrane not infuscated apically. Otherwise much like *nigrita* except as noted in key. Fifth sternite as in figure 75. Length, 1.5 mm.

Colonia Tovar, Venezuela, November 1, E. Simon. Part of the monograph material labelled "Spec. typ. No. 3591 Mus. Helsingfors."

This specimen is of the typical form of *apicalis*, although the specific name seems more applicable to what Reuter designated as var. β. With little doubt this variety is really a distinct species. On page 20 we have described what Reuter regarded as the brachypterous form of *apicalis* as a valid species (*scymnus*, new species) and since Reuter mentions that he had several specimens, it is probable that other species can be distinguished in his *apicalis* material.

SCHIZOPTERA (SCHIZOPTERA) NIGRITA, new species

Male.—Dead black, the membrane infuscated basally and apically, legs fuscous; head and pronotum with short decumbent pale hairs. Pronotum broadly but very shallowly emarginate in front of scutellum, the latter acuminate but not visibly notched apically. Metapleurum unicolorous, reticulate, the inner half more shining. Fifth sternite is as figure 76. Length, 1.5 mm.

Holotype.—Cordoba, Vera Cruz, Mexico, April 15, 1908, A. Fenyes. Cat. No. 27596, U.S.N.M.

SCHIZOPTERA (SCHIZOPTERA) APICIPUNCTATA, new species

Male.—Fuscous, legs, antennae, hind margin of pronotum, costa, commissure, base and inner angle of corium, and membrane yellowish; the membrane narrowly infuscated at base, and with a large squarish sooty spot at apex. Head, pronotum, and veins of corium with decumbent hairs of moderate length. Hind margin of pronotum distinctly emarginate in front of scutellum, slightly sinuate each side; apex of scutellum narrowed but not perceptibly notched. Fifth sternite as in figure 77. Inner two-thirds of metapleurum elevated, but only the spine and its immediate base notably polished. Length, 1.5 mm.

Holotype.—Trece Aguas, Alta Vera Paz, Guatemala, April 5, E. A. Schwarz. Cat. No. 27597, U.S.N.M.

SCHIZOPTERA (SCHIZOPTERA) LICINIUS, new species

Head, thorax, and corium pale fuscous, membrane whitish, slightly infuscate at base, and fumose on outer half; a smooth species, the only long hairs being a few on head, besides the usual vestiture of antennae. Pronotum slightly emarginate in front of scutellum, the latter scarcely notched subapically. Cross ridge of metapleurum about the middle, the inner half of the sclerite possibly more shining. Fifth sternite of male with a pronounced hook on left side as shown in figure 79. Length, 1.25 mm.

Holotype.—Male, Frijoles, Canal Zone, March 25, 1911, E. A. Schwarz. Cat. No. 27598, U.S.N.M.

SCHIZOPTERA (SCHIZOPTERA) VITELLIUS, new species

Color about as in preceding species, the membrane less infuscate; vestiture the same except that hairs on veins are a little more prominent. Pronotum a little more emarginate in front of scutellum, the latter with slight subapical notches. Cross ridge of metapleurum at about the middle (fig. 38), surface of the sclerite about equally shining throughout. Fifth sternite of male with a more complex hook than in last species (see fig. 78). Length, 1 mm.

Holotype.—Male, Livingston, Guatemala, May 10, E. A. Schwarz and H. S. Barber. Cat. No. 27599, U.S.N.M.

SCHIZOPTERA (LOPHOPLEURUM) SULCATA, new species

Male.—Brownish fuscous, pronotum unicolorous; membrane cream colored, with or without a faint darker tinge apically over tips of the veins; legs yellow. Dorsal hairs short and decumbent. Inner three-fourths of metapleurum elevated and polished, the elevated ridge paralleled within on outer and posterior sides by an impressed line (fig. 39). Pronotum slightly emarginate in front of scutellum, the latter narrowed and only slightly notched subapically (fig. 35). Fifth sternite with a more or less evident process on one side near apex (fig. 80). Length, 1.5 mm.

Holotype.—Also two paratypes, Grenada, West Indies, H. H. Smith; one male evidently the same species, Ancon, Canal Zone, May 12, 1911, at arc light, A. H. Jennings.

The Grenada specimens are from the Uhler collection and are labelled "*Schizoptera flavipes* Reuter" by Uhler. Cat. No. 27600, U.S.N.M.

SCHIZOPTERA (LOPHOPLEURUM) BISPINA, new species

Male.—Similar to *sulcata* in pilosity and color but in the type the humeral angles are slightly yellowish, and there is a narrow extension of the dark color of the corium over base of membrane. Hind margin of pronotum slightly emarginate medianly, scutellum narrowed and only slightly notched apically. Metapleurum about the same as in *sulcata*. The principal differences in the shape of the fifth sternite as shown in figure 81. Length, 1.25 mm.

Holotype.—Cacao Trece Aguas, Alta Vera Paz, Guatemala, 1906, E. A. Schwarz and H. S. Barber.

A specimen from Tampico, Mexico, December 15, collected by E. A. Schwarz, has the lateral spines on fifth sternite much shorter but is apparently the same species. Cat. No. 27601, U. S. N.M.

SCHIZOPTERA (LOPHOPLEURUM) TENUISPINA, new species

Male.—Pale fuscous, legs, antennae basally, costa, commissure, base of corium, and disk of membrane yellowish; hairs short, pale,

sericeous. Pronotum shallowly emarginate in front of scutellum, the latter slightly notched apically. Metapleurum much as in preceding two species from which this form, however, differs strikingly in the armature of the fifth sternite (fig. 82). Length, 1.25 mm.

Holotype.—Gatun, Canal Zone, April 7, 1911, E. A. Schwarz. Cat. No. 27602. U. S. N. M.

Genus CORIXIDEA Reuter

Corixidea REUTER, O. M., Monograph, 1891, pp. 17–18, fig. 14 [monobasic, genotype, *Schizoptera lunigera* Reuter, Brazil].

This genus (originally established by Reuter as a subgenus) differs from *Schizoptera* in the venation of fore wing as described in the key, and illustrated in figure 53, and the costa is merely rounded elevated, not explanate. The inner posterior angle of metapleurum is produced as a rounded lobe, not as a sharp spike, and the suture between propleurum and pronotum runs nearly straight back behind eye (fig. 19). Scutellum with the disk somewhat depressed and the margins slightly elevated, the apex narrowed. There is no impressed transverse line near anterior margin of pronotum in any of the species we have seen. The ocelli are minute.

KEY TO THE SPECIES

1. Veins of the clavus greatly thickened, appearing as rounded ridges between which there is a deep depression about equal in width to either ridge; these thickened veins with conspicuously long hairs____**crassa**, new species.
   Veins of the clavus neither thickened nor long haired_____ 2.
2. Distance between eyes across back of head about twice the width of one of them; no conspicuous pale marking on fore wings——**major**, new species.
   Distance between eyes across back of head more than twice the width of one of them; a conspicuous thickly crescent-shaped pale marking on fore wings, the horns of the crescent near humeral angles_____**lunigera** Reuter.

CORIXIDEA CRASSA, new species

Male.—Pronotum fuscous, head and posterior half of fore wings yellowish brown; fore wing with a whitish mark covering disk of clavus and the area between radial vein and clavus from base to apex of latter; antennae and legs yellowish. Frons at vertex fully three times as wide as one eye, with small symetrically arranged pale areas; basal two antennal segments subequal in length. Pronotum nearly twice as wide as long in center, hind margin regularly convex. Veins of clavus much elevated and thickened, rounded above, the space between them hardly widened apically and not greater than width of either vein. Hypopygium longer than preceding sternite. Length, 1.25 mm.

Holotype.—Also one paratype, Ancon, Canal Zone, May 12, 1911, at arc light, A. H. Jennings. Cat. No. 27603, U. S. N. M.

CORIXIDEA MAJOR, new species

Male.—General color blackish, the heavily chitinized portions of upper surface with copious bluish-gray pubescence, that on head notably longer than in *lunigera* (no bare spots on head), more hyaline portions of forewing bluish cinereous; legs brownish testaceous. Head and pronotum from side as in figure 19; fore wing as in figure 53. Length, 1.25 mm.

Holotype.—Clarksville, Tenn., at light, August, 1915, G. A. Runner. S. E. Crumb No. 137. Mr. Crumb informs us that two specimens were collected, one on August 13 and the other on August 23. Apparently one has been lost. Cat. No. 27604, U.S.N.M.

CORIXIDEA LUNIGERA Reuter

Sch. [*izoptera*] (*Corixidea*) *lunigera* REUTER, O. M., Monograph, 1891, pp. 24–25 [Brazil].

A specimen from Caracas, Venezuela, June 17, 1891, Meinert, determined as *lunigera* by Poppius we provisionally accept as representing that species. Considering the diversity of these little insects and the distance this specimen was taken from the type locality of *lunigera* it may well be a distinct species. Moreover, the specimen is in rather poor condition, especially as regards coloration. Evidently, however, it had a broad lunate pale marking over base of forewings as described for *lunigera* by Reuter. Blackish, a broad lunate cream-colored fascia on fore wings extending in middle from apex of scutellum to tip of clavus, anterior lateral prolongations reaching bases of fore wings near humeral angles; membrane whitish to fumose; legs and antennae testaceous. Pilosity pale, short, and depressed; a few pairs of longer hairs on lower part of face. Dorsum of abdomen as in figure 84. Length, 1.25 mm.

Other specimens of both sexes with the following data are assigned to this species. Trinidad Rio, Panama, June 9, 1912, A. Busck; Ancon, Canal Zone, at arc light, May 12, 1911, A. H. Jennings; Cacao Trece Aguas, Guatemala, July 13, E. A. Schwarz and H. S. Barber.

There are some differences in this series with respect to the small bare spots on head, but we find no other differential characters correlated with them. It may well be that there are distinct species in the *lunigera* group but we are unable to define any at present. Van Duzee has described *Schizoptera* (*Corixidea*) *doddsi*,[10] but the characters assigned do not separate it from *lunigera*. This has resulted chiefly from defects in Reuter's figure, which is very poor.

[10] Proc. Pacific Coast Ent. Soc., vol. 2, pp. 33–34, Jan., 1924 [Mexico].

MEMBRACIOIDES, new genus

Pronotum produced posteriorly in a median lobe which extends to middle of clavus thus entirely concealing the scutellum (fig. 20); the sides of the process are decidedly concave, and the apex moderately pointed; there is a distinct median impressed line from anterior margin of pronotum nearly to apex of the posterior prolongation. Suture between propleurum and pronotum running straight back behind eye; inner posterior angle of metapleurum produced as a rounded lobe; venation as in *Corixidea* (fig. 55). Apex of male abdomen from below as in figure 85.

Genotype.—*Membracioides parallela*, new species.

MEMBRACIOIDES PARALLELA, new species

Male.—Blackish, with a broad lunate cream-colored fascia over bases of forewings as in some species of *Corixidea;* a narrow band of same color (somewhat obscured medianly) across base of membranes, remainder of membranes fumose; legs chiefly testaceous. Pilosity of moderate length (longest on head), pale, decumbent. Symmetrically arranged denuded spots on head as in some *Corixidea* species; interocular width twice that of one eye. Male hypopygium from below as in figure 85. Length, 1.25 mm.

Holotype.—Cordoba, Vera Cruz, Mexico, April 27, 1908, A. Fenyes. Cat. No. 27605, U.S.N.M.

Genus TROPISTOTROCHUS Reuter

Tropistotrochus REUTER, O. M., Monograph, 1891, pp. 15–16, fig. 9 [Monobasic, genotype *T. ampliatipennis*, new species, Brazil].

Costal margin of forewing remarkably explanate, the expanded portion when seen from below projecting beyond abdomen about as far as width of latter; venation highly characteristic (fig. 52). Head bluntly rounded both laterally and longitudinally; eyes small, nearly circular, ocelli relatively large, contiguous with upper anterior borders of eyes. There is a well developed pronotal collum depressed below disk, sides of pronotum constricted about middle; scutellum acuminate, elevated apically. Metapleurum truncate posteriorly. General habitus as in figure 21.

TROPISTOTROCHUS AMPLIATIPENNIS Reuter

Tropistotrochus ampliatipennis REUTER, O. M., Monograph, 1891, pp. 15–16, fig. 9 [Brazil].

Head and thorax brownish yellow, the legs and forewings paler; veins of latter and upper surface of thorax and head with moderately long pale hairs. The unique specimen is glued to a card so that the

sex is not to be made out; the abdomen has four short and one (apical) long sternites. Length, 1 mm.

"Brazil, Blumenau, D. Reitter."

Genus NANNOCORIS Reuter

Nannocoris Reuter, O. M., Monograph, 1891, p. 18, fig. 13. [Included species: *Sch.* [*izoptera*] *nebulifera*, new species, Bolivia, p. 23; and *Sch. tuberculifera*, pp. 23–24, fig. 13, Venezuela, of which the former was selected as genotype by Kirkaldy, '06, p. 148].

Remarkably distinguished in its subfamily by the shape of the head; instead of being short, broadly rounded, and bent downwardly and posteriorly as usual, the head in *Nannocoris* is conspicuously porrect, conical (figs. 22–25), with the beak arising from the anterior extremity; the beak is longer than in the other genera, reaching the hind coxae, the underside of head is grooved (fig. 33) and the sterna obviously troughlike for its reception. Pronotum with distinct collum. Pubescence short and decumbent, a little longer on anterior part of head. Other characters as noted in key. Venation illustrated in figure 56.

KEY TO THE SPECIES

1. Dorsum of head with a distinct elongate median tubercle (figs. 22–23) tuberculifera Reuter.
   Dorsum of head without tubercle 2
2. Vertex with a distinct median pit ..... cavifrons, new species.
   Vertex without concavity 3
3. Head about four times as long as eye (fig. 24–25) ..... nasua, new species.
   Head not more than three times as long as eye 4
4. Pronotum wholly dark; length of insect 1.25 mm ..... schwarzi, new species.
   Pronotum pale margined posteriorly; length 1 mm. flavomarginata, new species.

NANNOCORIS TUBERCULIFERA Reuter

Sch. [*izoptera*] (*Nannocoris*) *tuberculifera* Reuter, O. M., Monograph, 1891, pp. 23–24 [Venezuela].

Fuscous (orginally described as black), membrane, apex of head, top of tubercle, antennae, and legs pale yellow. The head is about two and one-half times as long as eye, somewhat abruptly narrowed in front of eyes and provided with an elongate median tubercle which is highest posteriorly (figs. 22–23). Venation of fore wing as in figure 56. Length, 1.25 mm.

Holotype.—Colonia Tovar, Venezuela, 1.11.88, E. Simon. (Mus. Helsingfors).

NANNOCORIS CAVIFRONS, new species

Male.—Opaque brownish black, paler below; antennae, tibiae, and tarsi yellowish; a narrow pale yellow curved fascia across bases of membranes. Head from above almost equilaterally triangular, rather

abruptly narrowed in front of eyes and projecting beyond eye about 1.5 as far as length of eye; frontal depression oval. Venation of fore wing similar to that of *N. tuberculifera* (fig. 56) but the inner cross vein with its inner extremity nearer to middle of the cell and more pronouncedly curved. Fifth sternite without a process on hind margin, slightly swollen on left side; hypopygium with ventral surface almost as long as fifth sternite. Length, 1.1 mm.

Holotype.—Cacao Trece Augas, Guatemala, April 25, E. A. Schwarz and H. S. Barber. Cat. No. 27606, U.S.N.M.

NANNOCORIS NASUA, new species

Female.—Head tawny yellow, darker on vertex; thorax, corium, and abdomen blackish-brown; membrane broadly pale basally, blackish apically; beak, legs, and antennae yellow. Head regularly narrowed as seen from above, but contracted and upturned apically as seen from side, snoutlike (figs. 24–25); scutellum as in figure 42; fifth sternite as long as preceding three combined. Length, 1.5 mm.

Holotype.—Cacao Trece Aguas, Guatemala, April 19, E. A. Schwarz and H. S. Barber paratype same date except that date is April 18. Cat. No. 27607, U.S.N.M.

Schizoptera capitata Uhler is closely related to the above species according to sketches and notes kindly supplied by W. E. China of the British Museum. However, the head does not appear so narrowed anteriorly as viewed either from above or the side, and Mr. China reports that ocelli can not be made out.

NANNOCORIS SCHWARZI, new species

Male.—Blackish-brown, the head in front of eyes, antennae, legs, and venter pale yellow, the costa whitish, and the membrane yellowish-hyaline. Head abruptly narrowed in front of eyes (fig. 32); fifth sternite emarginate medianly and on both sides, but more so on the right, hypopygium only narrowly exposed; cross-vein between anterior and intermediate costal cells very oblique but nearly straight. Length, 1.5 mm.

Holotype.—Porto Bello, Panama, March 12, 1911, E. A. Schwarz. Cat. No. 27608, U.S.N.M.

NANNOCORIS FLAVOMARGINATA, new species

Female.—Brownish-black, head in front of eyes, and legs testaceous, hind margin of pronotum, costa, and membrane except a large rounded dusky apical spot yellowish. Head regularly narrowed from eyes to apex, the latter rather pointed. Head from below as in figure 19. Venation about as illustrated for *tuberculifera*. Length, 1 mm.

Holotype.—Paraiso, Canal Zone, April 11, 1911, E. A. Schwarz. Cat. No. 27609, U.S.N.M.

HOPLONANNUS, new genus

In addition to the characters mentioned in the key, it should be stated that the head is well rounded both laterally and longitudinally; ocelli are lacking; pronotum lacks collum, is depressed, and the hind margin is distinctly concave (fig. 26); scutellum small, slightly swollen apically; fore wings with the veins traceable, their inner margins overlapping a little; propleurum much enlarged, extensively hollowed out for reception of the large fore coxae; head closely applied to these enlarged sclerites, the beak emerging distinctly between the coxae.

Genotype.—Hoplonannus brunnea, new species.

HOPLONANNUS BRUNNEA, new species

Female.—Opaque brown, apices of fore wings, antennae, and legs yellow. Dorsal aspect of head and pronotum as in figure 26, upper surface granular, with short decumbent pale hairs, those on front of head longer. Eye longer than high and not so high as propleurum below it. Scutellum shining and depressed at base. Length, 1 mm.

Holotype.—Cacao Trece Aguas, Guatemala, April 26, E. A. Schwarz and H. S. Barber. Cat. No. 27610, U.S.N.M.

Genus PTENIDIOPHYES Reuter

Ptenidiophyes REUTER, O. M., Monograph 1891, p. 25, fig. 15. [Monobasic, genotype *P. mirabilis*, new species, Brazil, p. 26.]

In addition to the characters mentioned in the key we would state that the head is well rounded both laterally and longitudinally; the pronotum is depressed, its hind margin almost straight across; the scutellum moderately elevated throughout. Reuter's figure of the genotype shows two complete longitudinal lines on each fore wing which give the impression of veins, but the specimen has only the very slightest indication of one vein near the base; the costa is uniformly explanate throughout. The entire surface of the fore wings is covered with rather large punctures which are separated by about their own width. Ocelli lacking; the eyes do not extend backward along the sides of pronotum beyond the impressed line. General habitus as in figure 27.

PTENIDIOPHYES MIRABILIS Reuter

Ptenidiophyes mirabilis REUTER, O. M., Monograph, 1891, pp. 25–26, fig. 15 [Brazil].

General color opaque brown, darker anteriorly; legs, antennae, and costal margins stramineous. General habitus as in figure 27; dorsal surface with short, subdecumbent, pale hairs.

Holotype.—"Brazil, Blumenau, D. Reitter" (Mus. Helsingfors). The type is glued to a card so closely that genital and other ventral characters can not be seen. The specimens recorded from Grenada under this name by Uhler belong to the genus *Schizoptera* and are described under the specific name *uhleri* in this paper, page 19.

Genus GLYPTOCOMBUS Heidemann [11]

Glyptocombus saltator, HEIDEMANN, OTTO, Proc. Ent. Soc. Wash., vol. 7, No. 4, pp. 192–194, fig. 21A, March 9, 1906 [Maryland].

Front nearly vertical, moderately convex between eyes; Ocelli minute, more removed (thrice their diameter) from eyes than in the other genera; pronotum with a distinct collum, and two large lateral callosities just behind it; scutellum depressed basally, elevated and rounded apically; ventral view of head as in figure 43; fore wings each with a depressed area along commissure so that they may overlap either way (fig. 28); venation as in figure 57; male with five distinct ventral segments, the apical one not so long as in the female; hypopygium reflexed on abdomen beneath the very convex forewings (fig. 29).

GLYPTOCOMBUS SALTATOR Heidemann

Glyptocombus saltator, HEIDEMANN, OTTO, Proc. Ent. Soc. Wash., vol. 7, No. 4, pp. 192–194, fig. 21A, March 9, 1906 [Maryland].

Hypselosoma saltator HORVATH, G., Ann. Mus. Nat. Hung., vol. 6, 1908, p. 565.

Black, with the legs, beak, and basal segments of antennae dusky yellow; entire dorsal surface with short, decumbent pale hairs; fore wings coarsely punctured between the veins. Dorsal and lateral views as in figures 28 and 29. Length, 1.2–1.5 mm.

Holotype.—Plummer Island, Md., October 4, 1905, D. H. Clemons; paratype same data, E. A. Schwarz; other specimens, same locality, September 29, 1905, D. H. Clemons; October 14, 1906, C. H. T. Townsend; District of Columbia, January or June, 1879, Theo. Pergande.

Genus HYPSELOSOMA Reuter

Hypselosoma REUTER, O. M., Monograph, 1891, pp. 26–27, fig. 16 [Monobasic, genotype *H. oculata*, new species, New Caledonia].

Characters as mentioned in key; much like *Glyptocombus* in general appearance, but lacking ocelli, and prontal callosities; and with the scutellum more pointed. Dorsal view as in figure 30.

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[11] See remarks under *Ommatides* Uhler, p. 33.

HYPSELOSOMA BOOPS, new species

Female.—Opaque black, legs and antennae tawny yellow, base of beak and knee joints brown; black portions with gray pruinescence, the venter with some gray hairs also; a seta near inner margin of eye, and several about base of beak; punctures in an area along commissure, beginning about a third from base of fore wings and running to apex, broadening posteriorly, coarser than elsewhere; length 1.2 mm. (fig. 30).

Holotype.—Spirit Valley, Nanking, Kiangsu Province, China, October 24, 1919, H. F. Loomis. Cat. No. 27611, U.S.N.M.

NOTES ON UHLER'S GENERA IN THE BRITISH MUSEUM

W. E. China has very kindly sent us notes and sketches relative to two genera of Uhler the only known specimens of which are in the British Museum. We are thus enabled to give some points that may aid in identification of these forms. To further assist toward this end we quote the original descriptions.

Genus ONCERODES Uhler

Oncerodes UHLER, P. R., Proc. Zool. Soc. Lond., pp. 159–160, Feb. 20, 1894 [Monobasic, genotype *O. robusta*, new species St. Vincent].

The original description is as follows:

ONCERODES, gen. nov.

Coleopterine, and resembling an *Issus* in form; the hemelytra particularly wide and subglobose, blunt at the anterior end. Head nearly vertical, short and broad, moderately convex before the line of the eyes, transversely impressed between them; the cheeks separated by deep vertical lines, the tylus nearly linear; rostrum very short and thick, tapering at tip fitting very compactly into the sternum, reaching to tip of anterior coxae; antennae with the two basal joints thick, the second joint a little shorter and not so thick as the first, the remaining joints threadlike, finely pubescent. Pronotum transverse, nearly crescent shaped, moderately arched, having the anterior angles rounded off to fit the curve of the eyes. Scutellum acutely triangular, much longer than wide. Hemelytra but little longer than wide, suborbicular, narrower at base, corresponding to the width of the pronotum; the veins coarse and [p. 159] prominent, longitudinal, the two middle ones connected on the disk and sending back a branch parallel to the others, all of which continue out to the tip; suture of the clavus deeply defined, the clavus wide and nearly triangular. Legs stout, placed close together.

ONCERODES ROBUSTA, sp. nov.

Short, thick, very convex, opaque bluish-black, with a velvety aspect above. Base of the hemelytra, including the scutellum, clavus, and a spot expanded on the costal margin, bright yellow. Head transversely rugulose, the front piceous, with the throat and antennae dull honey-yellow; the rostrum a little darker. Legs thick and short, honey-yellow. Venter dull black, rufo-piceous on the genital pieces.

Length to tip of hemelytra, 1¼ mm.; width of pronotum, ½ mm.; width of hemelytra, ¾ mm.

A single specimen was found on the leeward side of the island.

In respect to form of body and longitudinal direction of veins on the hemelytra this insect bears some relation to *Hypselosoma*, Reuter; but in all other respects it seems sufficiently different to constitute a separate genus [p. 160].

It is evident that *Oncerodes* is closely related to *Corixidea*, but the forewing is more coriaceous, the venation slightly different, the ocelli are indistinguishable in the type, and the scutellum is smaller than in *Corixidea*. It is possible that a brachypterous specimen of *Corixidea* might present some of the peculiarities of *Oncerodes*, but meantime it appears advisable to regard the latter as distinct pending the acquisition of more material. In none of the specimens of *Corixidea* examined by us is there any indication of an abbreviation of the fore wings. Head and thorax from above as in figure 40; fore wing as in figure 54. Redrawn from sketches by W. E. China.

Genus OMMATIDES Uhler

Ommatides UHLER, P. R. Proc. Zool. Soc. Lond., p. 159, Feb. 20, 1894 [Monobasic, genotype *O. insignis*, new species, St. Vincent.]

The original description:

OMMATIDES, gen. nov.

Coleopterine, closely resembling a short thick *Geocoris*. Eyes very large, oval, projecting diagonally against the anterior corner of the pronotum; front of the head short, bluntly tumid, with the face vertical, protracted downward, and having long lobate cheeks which converge over the base of the rostrum; antennæ filiform beyond the second joint, the basal joint shorter than and a little thicker than the second; rostrum thick at base, short, tapering, quite slender toward the tip, reaching almost to the middle coxae. Pronotum very short, almost annular, with the sides rounded off anteriorly to admit the form of the eyes, the posterior margin almost straight. The two forward pairs of legs placed near together; the anterior tibiae greatly thickened at tip and armed with long spines. Scutellum very short, transverse, triangular. Hemelytra high convex, extending amply over the abdomen and much longer than it; the costal border moderately curved, with the middle areole moderately wide, and the thick cubital vein running back parallel with the next inner vein all the way to tip of membrane, and with the two exterior transverse veins as in *Schizoptera*.

OMMATIDES INSIGNIS, sp. nov.

Ovate, blunt, and wide in front; orange, with the pronotum, scutellum, and a broad band behind the scutellum, covering the membrane, blue-black. The head reddish brown above, yellow below the origin of the tylus, obsoletely scabrous, very minutely pubescent. Legs polished, stout, bright yellow, remotely hairy. Pronotum moderately arched, opaque, a little scabrous. Hemelytra thick, opaque, velvety; the membrane but little thinner than the

corium, with the inner margin straight, not overlapping at tip, the apex a little tapering and rounded at tip.

Length to tip of membrane 1 millim.; width of pronotum ⅝ millim.

A single specimen of this peculiar little insect was taken, but no record is given concerning the place where it was found. [p. 159.]

This genus appears to be very close to *Glyptocombus* Heidemann. Without a careful comparison of specimens we do not care to commit ourselves further but there is a striking similarity in the general habitus and in the venation of the fore wings of these two genera. The head and thorax from above are shown in figure 31, and the fore wing in figure 58. Redrawn from sketches by W. E. China.

OTHER AMERICAN SPECIES NOT SEEN

Name	Type locality	Further reference in this paper
		Page
Ceratocombus (*Ceratocombus*) *bifenestratus* Poppius	Guadeloupe	7,35
Ceratocombus (*Xylonannus*) *bolivicnsis* Reuter	Bolivia	4,36
Ceratocombus panamensis Champion	Panama	8,34
Schizoptera (*Schizoptera*) *cicadina* Fieber	Venezuela	12,14,35
Schizoptera (*Schizoptera*) *flavipes* Reuter	Brazil	19,21
Schizoptera elegans Poppius	Guadeloupe	35
Schizoptera scutellata Uhler	St. Vincent	37
Corixidea doddsi Van Duzee	Mexico	26,34
Nannocoris nebulifera Reuter	Bolivia	28,36
Nannocoris capitata Uhler	St. Vincent	29,37

BIBLIOGRAPHY

We have intended to include here all papers relating to the Crypostemmatid fauna of the Americas, and also all containing descriptions of new genera and subgenera from any part of the world.

v. Baerensprung.

Myrmedobia und Lichenobia, zwei neue einheimische Rhynchoten-Gattungen, Berliner Ent. Zeitschr., vol. 1, 1857, pp. 161–168.

Lichenobia, new genus (pp. 165–167) [Monobasic, genotype *L. ferruginea*, new species, Berlin (p. 167)]. A synonym of *Ceratocombus* Signoret.

Bergroth, E.

Zwei neue paläarktische Hemipteren, nebst synonymischen Mitteilungen, Wien. Ent. Zeit., vol. 33, 1914, pp. 177–184.

Cryptostemmatidae proposed (p. 184) since *Crypostemma* Herrich-Schäffer, 1835, is not preoccupied as alleged by *Crypostemma* Guerin (Arachnida), 1838.

Champion, G. C.

Biologia Centrali-Americana. Insecta Rhynchota. Hemiptera-Heteroptera, pt. 2, p. 336, April, 1900.

Ceratocombus panamensis, new species described.

Distant, W. L.

The Fauna of British India, including Ceylon and Burma. Rhynchota, vol. 2 (Heteroptera), 1904.

Crescentius, new genus (p. 408) [Monobasic, genotype, *C. principatus*, new species, Burma (p. 409)].

DISTANT, W. L.—Continued.

No. IX.—Rhynchota. Pt. 1: Suborder Heteroptera. in the Percy Sladen Trust Expedition to the Indian Ocean in 1905, vol. 5, Trans. Linn. Soc. London, ser. 2, vol. 16, Zoology 1913–1914, pp. 139–191, pls. 11–13.

Seychellesanus, new genus [genotype *S. typicus*, new species, Seychelles] (pp. 171–172); *Ogeria*, new genus [genotype *O. insularis*, new species, Seychelles] (p. 173). The former a Cryptostemmatid, the latter a Schizopterid.

FIEBER, F. X.

Exegesen in Hemipteren, Wiener Ent. Monats., vol. 4, No. 9, Sept., 1860, pp. 258–272, pl. 6,

Pachycoleus, new genus (p. 268, fig. *u*) [Monobasic, genotype, *P. waltli*, new species, Bavaria (p. 272)]; *Schizoptera*, new genus (pp. 268–269, fig. *w*) [Monobasic, genotype, *S. cicadina*, new species, Venezuela (p. 272)]. Defines the family Ceratocombidae (p. 267), and gives keys to the four genera then known (pp. 267–269).

HORVATH, G.

Hémiptères nouveaux de Japon, Ann. Mus. Nat. Hung., vol. 3, 1905, pp. 413–423, 2 figs.

Hypsclosoma matsumurae, new species (p. 417).

Remarques sur quelques Hémiptères de l'Amerique du Nord, Ann. Mus. Nat. Hung., vol. 6, 1908, p. 565.

Places *Glyptocombus saltator* Heidemann in the genus *Hypsclosoma*.

KIRKALDY, G. W.

List of the genera of the pagiopodous Hemiptera-Heteroptera with their type species, from 1758 to 1904 and also of the aquatic and semiaquatic Trochalopoda, Trans. Amer. Ent. Soc., vol. 32, No. 2, 1906.

Ceratocombidae (pp. 147–148). Designates *nebulifera* as type of *Nannocoris* Reuter (p. 148).

LETHIERRY, L., and SEVERIN, G.

Catalogue général des Hémiptères, vol. 3, 1896, pp. 231–234.

Catalogue of the known forms: Ceratocombidae with 3 genera and 13 species (pp. 231–232), and Schizopteridae with 6 genera and 14 species (pp. 233–234).

OSHANIN, B.

Katalog der paläarktichen Hemipteren (Heteroptera, Homoptera-Auchenorhyncha und Psylloideae). 1912.

Ceratocombus corticalis Reuter selected as type of subgenus *Xylonannus* Reuter (p. 85).

POPPIUS, B.

Neue Ceratocombiden, Ofv. Finska Vet.-Soc. Förh., vol. 52, 1909–1910, Afd. A, No. 1, 14 pp., 2 figs.

Ceratocombus bifenestratus, new species, Guadeloupe, West Indies (pp. 1–2); *Teratoneura*, new genus (pp. 7–8), [Monobasic, genotype *T. marginicollis*, new species, Africa (p. 8), fig. forewing]; *Issidomimus*, new genus (pp. 9–10), [Monobasic, genotype, *I. signatus*, new species, New Guinea (p. 10)]; *Schizoptera affinis*, new species, Venezuela (pp. 11–12); *Schizoptera elegans*, new species, Guadeloupe (pp. 12–13). Also various new species from the old world; the new genera are Cryptostemmatinae.

POPPIUS, B.—Continued.

Zur Kenntnis der Miriden, Isometopiden, Anthocoriden, Nabiden und Schizopteriden Ceylons, Ent. Tidskrift, vol. 34, 1913, pp. 239–260.

Schizopterops, new genus (pp. 258–259) [Monobasic, genotype *S. pusillus*, new species, India (pp. 259–260)]; Schizopterinae; *Teratocombus*, new name proposed for his *Teratoneura* preoccupied, Cryptostemmatinae.

H. Sauter's Formosa-Ausbeute: Nabidae, Anthocoridae, Termatophylidae, Miridae, Isometopidae und Ceratocombidae (Hemiptera), Arch. f. Naturges., vol. 80, 1914, Abt. A, 8, 80 pp.

Tagalonannus, new subgenus of *Ceratocombus* (p. 77) [Monobasic, genotype, *C. coloratus*, new species, Philippines (p. 78)].

REUTER, O. M.

Sur le genre Schizoptera Fieb., Rev. d'Ent., 1882, pp. 162–164.

Includes: *Schizoptera cicadina* Fieb. (pp. 162–163); *Schizoptera flavipes*, new species (p. 163); *Schizoptera apicalis*, new species (pp. 163–4); and *Schizoptera lunigera*, new species (p. 164), all from Brazil.

Monographia Ceratocombidarum Orbis Terrestris, Acta Soc. Sci. Fennicae, vol. 19, no. 6, 1891, 27 pp. 1 pl.

Ceratocombus Signoret (pp. 4–9) is divided into four subgenera, namely: *Leptonannus*, *Trichotonannus*, *Ceratocombus*, and *Xylonannus*, of which all but the typical subgenus are originally described. Four new species are described of which *C.* (*C.*) *brasiliensis*, Bahia, and *C.* (*X.*) *boliviensis*, Bolivia, are from the new world. *Pachycoleus* Fieber (pp. 9–11) and *Cryptostemma* Herrich-Schäffer (pp. 11–14) have no American representatives. *Tropistotrochus ampliatipennis*, new genus and species (pp. 15–16), are described from Brazil. *Schizoptera* Fieber (pp. 16–25) is divided into three subgenera, *Schizoptera*, *Nannocoris*, and *Corixidea*, of which the latter two are new. The following three new species from the Americas are originally described: *S.* (*S.*) *reitteri*, Brazil; *S.* (*N.*) *nebulifera*, Bolivia; and *S.* (*N.*) *tuberculifera*, Venezuela. *Ptenidiophyes mirabilis*, new genus and species (pp. 25–26), is described from Brazil.

Hemipterologische Miscellen, Öfv. Finska Vet.-Soc. Förh., vol. 54, 1911–1912, Afd. A, No. 7.

Proposes that two of his subgenera of *Ceratocombus*, namely, *Leptonannus* and *Trichotonannus*, be recognized as valid genera. Leaves *Xylonannus* in *Ceratocombus*, which is redefined (p. 65). Also proposes generic rank for *Corixidea* treated in his monograph as a subgenus of *Schizoptera* (pp. 65–66). Denies the identity of *Glyptocombus* Heidemann with *Hypsclosoma* Reuter as claimed by Horvath (p. 66).

SIGNORET, V.

Notice sur quelques Hémiptères nouveaux ou peu connus, Ann. Soc. Ent. France, ser. 2, vol. 10, 1852, pp. 539–544.

Astemma mulsanti, new species, France (pp. 541–542), for which he proposes the new generic name *Ceratocombus* (p. 542).

UHLER, P. R.

A list of the Hemiptera-Heteroptera of the Families Anthocoridae and Ceratocombidae collected by Mr. H. H. Smith in the Island of St. Vincent; with Descriptions of New Genera and Species, Proc. Zool. Soc. Lond., pp. 156–160, February 20, 1894.

UHLER, P. R.—Continued.

Records 8 species from the Island. Describes as new *Schizoptera scutellata*, new species (pp. 157–158) ; *S. capitata*, new species (p. 158) ; *Ommatides insignis*, new genus and species (p. 159) ; and *Oncerodes robusta*, new genus and species (pp. 159–160).

On the Hemiptera-Heteroptera of the Island of Grenada, Proc. Zool. Soc. London, 1894 (March 6), pp. 167–224.

The "*Ceratocombus braziliensis* Reuter" (p. 196), is described as a new species *C. major* in the present paper, p. 6; *C. minutus*, new species, is described (pp. 196–197) ; *Cryptostemma fasciatum*, new species (p. 197), which really is a *Ceratocombus* (see p. 5 of present paper). The "*Schizoptera flavipes* Reuter" (pp. 197–198) we describe as new (see p. 24) and the "*Ptenidiophyes mirabilis* Reuter" also is a *Schizoptera* we name *uhleri* (see p. 19).

List of Hemiptera-Heteroptera of Las Vegas Hot Springs, New Mexico, collected by Messrs. E. A. Schwarz and Herbert S. Barber, Proc. U. S. Nat. Mus., vol. 27, 1904, pp. 349–364.

Ceratocombus niger and *C. latipennis*, new species described (pp. 361–362).

The "*C. braziliensis Reuter*" recorded (p. 361), is a female of *C. latipennis*.

VAN DUZEE, E. P.

Catalogue of the Hemiptera of America north of Mexico, excepting the Aphididae, Coccidae, and Aleurodidae, Univ. Calif. Publ. Ent., vol. 2, Nov. 30, 1917.

List of the recorded nearctic species (4 in number) (pp. 421–422).

A new Ceratocombid from Mexico. Proc. Pacific Coast Ent. Soc., vol. 2, pp. 33–34, 1. fig., Jan. 31, 1924.

Schizoptera doddsi, new species, Sinaloa.

EXPLANATION OF PLATES

PLATE 1

FIG. 1. *Ceratocombus major*, fore wing.
2. *Ceratocombus vagans*, fore wing.
3. *Ceratocombus latipennis*, fore wing.
4. *Ceratocombus areolatus*, fore wing.
5. *Ceratocombus major*, hind wing.
6. *Cryptostemma uhleri*, hind wing.
7. *Ceratocombus vagans*, hind wing.
8. *Cryptostemma pedunculata*, fore wing.
9. *Cryptostemma uhleri*, fore wing.
10. *Ceratocombus vagans*, head from above.
11. *Ceratocombus vagans*, apex of male abdomen from below.
12. *Ceratocombus vagans*, apex of male abdomen from above.
13. *Ceratocombus major*, left hypopygial clasper of male.
14. *Cryptostemma pedunculatum*, left claspers of male.

Plate 2

Fig. 15. *Ceratocomboides prima*, head and prothorax from side.
16. *Schizoptera* (*Odontorhagus*) *drusus*, head and prothorax from side.
17. *Schizoptera* (*Cantharocoris*) *uhleri*, head and prothorax from side.
18. *Schizoptera* (*Orthorhagus*) *plana*, head and prothorax from side.
19. *Corixidea major*, head and prothorax from side.
20. *Membracioides parallela*, head and thorax from side.
21. *Tropistotrochus ampliatipennis*, dorsal view.
22. *Nannocoris tuberculifera*, head from above.
23. *Nannocoris tuberculifera*, head from side.
24. *Nannocoris nasua*, head from above.
25. *Nannocoris nasua*, head from side.
26. *Hoplonannus brunnea*, head and thorax from above.
27. *Ptenidiophyes mirabilis*, dorsal view (sculpture omitted).
28. *Glyptocombus saltator*, dorsal view.
29. *Glyptocombus saltator*, side view, left forewing removed.
30. *Hypselosoma boops*, dorsal view.
31. *Ommatides insignis*, head and thorax from above.
32. *Nannocoris schwarzi*, head from above.
33. *Nannocoris flavomarginata*, head from below.
34. *Schizoptera* (*Odontorhagus*) *repetita*, head and thorax from above.
35. *Schizoptera* (*Lophopleurum*) *sulcata*, head and thorax from above.
36. *Schizoptera* (*Cantharocoris*) *uhleri*, metapleurum.
37. *Schizoptera* (*Schizoptera*) *hirta*, metapleurum.
38. *Schizoptera* (*Schizoptera*) *vitellius*, metapleurum.
39. *Schizoptera* (*Lophopleurum*) *sulcata*, metapleurum.
40. *Oncerodes robusta*, head and thorax from above.
41. *Schizoptera* (*Kophaegis*) *cubensis*, scutellum.
42. *Nannocoris nasua*, scutellum.
43. *Glyptocombus saltator*, head from below.

Plate 3

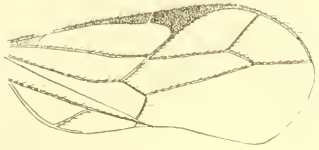
Fig. 44. *Ceratocomboides prima*, fore wing.
45. *Schizoptera* (*Kophaegis*) *cubensis*, fore wing.
46. *Schizoptera* (*Zygophleps*) *unica*, tip of fore wing.
47. *Schizoptera* (*Schizoptera*) *hirta*, hind wing.
48. *Schizoptera* (*Cantharocoris*) *scymnus*, fore wing.
49. *Schizoptera* (*Orthorhagus*) *plana*, fore wing.
50. *Schizoptera* (*Cantharocoris*) *elmis*, base of fore wing.
51. *Schizoptera* (*Cantharocoris*) *uhleri*, base of fore wing.
52. *Tropistotrochus ampliatipennis*, fore wing.
53. *Corixidea major*, fore wing.
54. *Oncerodes robusta*, fore wing.
55. *Membracioides parallela*, fore wing.
56. *Nannocoris tuberculifera*, fore wing.
57. *Glyptocombus saltator*, fore wing.
58. *Ommatides insignis*, fore wing.

PLATE 4

FIG. 59. *Schizoptera* (*Orthorhagus*) *plana*, 5th sternite of male.
60. *Schizoptera* (*Odontorhagus*) *bipartita*, 5th sternite of male.
61. *Schizoptera* (*Odontorhagus*) *repetita*, 5th sternite of male.
62. *Schizoptera* (*Odontorhagus*) *clodius*, 5th sternite of male.
63. *Schizoptera* (*Odontorhagus*) *decius*, 5th sternite of male.
64. *Schizoptera* (*Odontorhagus*) *commodus*, 5th sternite of male.
65. *Schizoptera* (*Odontorhagus*) *drusus*, 5th sternite of male.
66. *Schizoptera* (*Cantharocoris*) *scymnus*, 5th sternite of female.
67. *Schizoptera* (*Zygophleps*) *unica*, 5th sternite of male.
68. *Schizoptera* (*Schizoptera*) *reticulata*, 5th sternite of male.
69. *Schizoptera* (*Schizoptera*) *hirta*, 5th sternite of male.
70. *Schizoptera* (*Schizoptera*) *caudata*, 5th sternite of male.
71. *Schizoptera* (*Schizoptera*) *mexicana*, 5th sternite of male.
72. *Schizoptera* (*Schizoptera*) *paraguayana*, 5th sternite of male.
73. *Schizoptera* (*Schizoptera*) *affinis*, 5th sternite of male.
74. *Schizoptera* (*Schizoptera*) *pilosa*, 5th sternite of male.
75. *Schizoptera* (*Schizoptera*) *apicalis*, 5th sternite of male.
76. *Schizoptera* (*Schizoptera*) *nigrita*, 5th sternite of male.
77. *Schizoptera* (*Schizoptera*) *apicipunctata*, 5th sternite of male.
78. *Schizoptera* (*Schizoptera*) *vitellius*, 5th sternite of male.
79. *Schizoptera* (*Schizoptera*) *licinius*, 5th sternite of male.
80. *Schizoptera* (*Lophopleurum*) *sulcata*, 5th sternite of male.
81. *Schizoptera* (*Lophopleurum*) *bispina*, 5th sternite of male.
82. *Schizoptera* (*Lophopleurum*) *tenuispina*, 5th sternite of male.
83. *Schizoptera* (*Schizoptera*) *hirta*, dorsal view of abdomen of male.
84. *Corixidea lunigera*, dorsal view of abdomen of male.
85. *Membracioides parallela*, ventral view apex of abdomen of male.

INDEX

Page numbers in boldface type indicate the principal account of the group concerned. Generic names in parentheses are those of combinations not valid in the sense of this paper.



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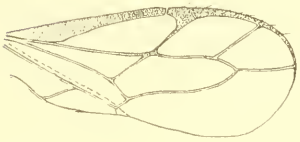

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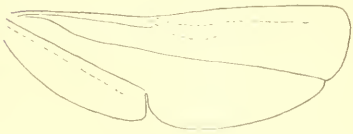

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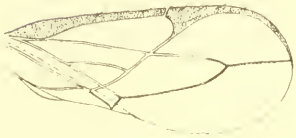

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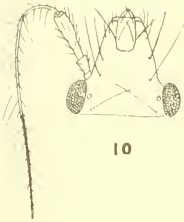

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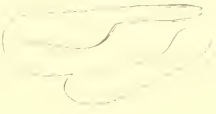

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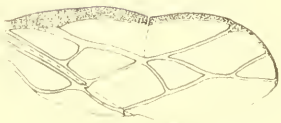

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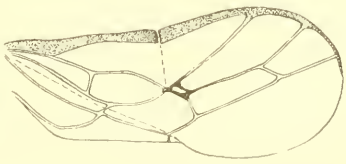

9

STRUCTURAL CHARACTERS OF CRYPTOSTEMMATINAE

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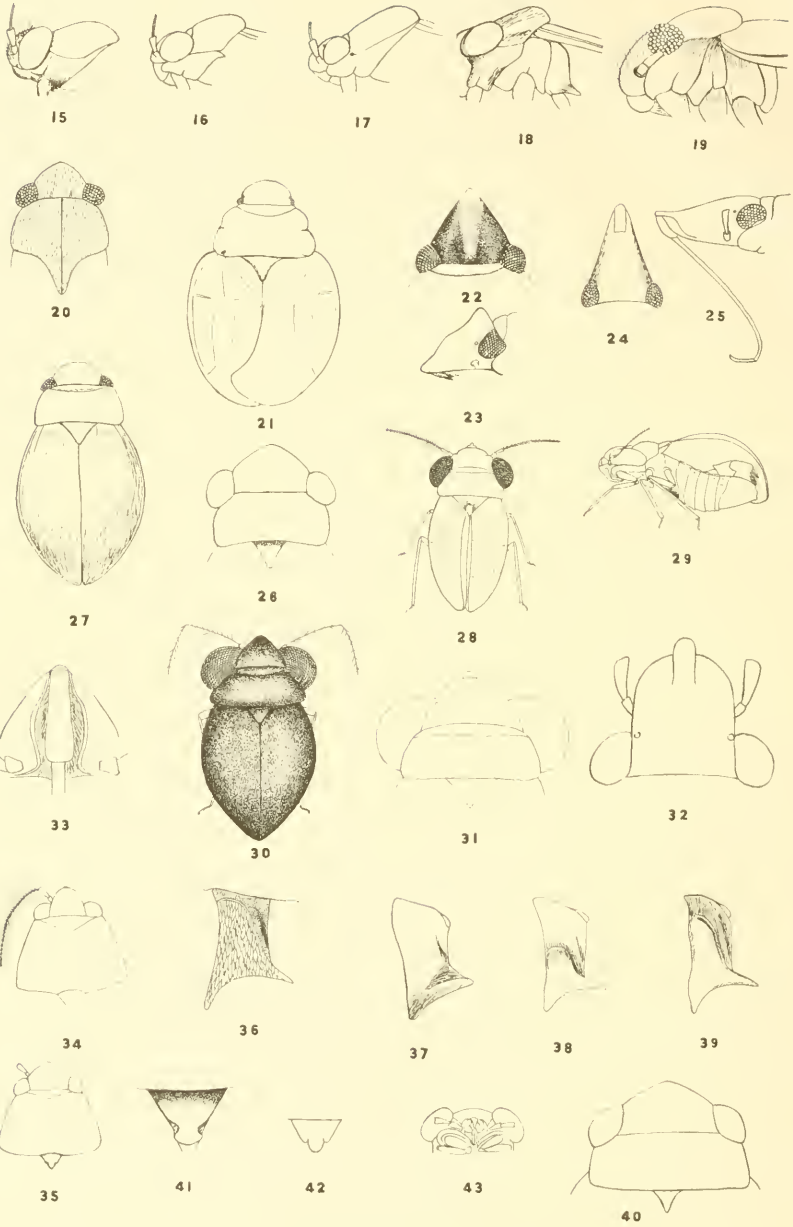
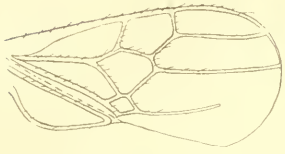


STRUCTURAL CHARACTERS OF SCHIZOPTERINAE

FOR EXPLANATION OF PLATE SEE PAGE 38



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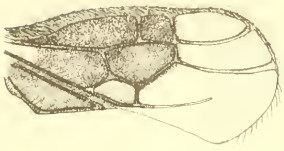

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46

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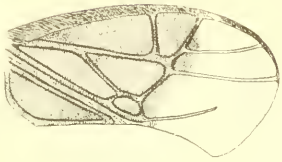

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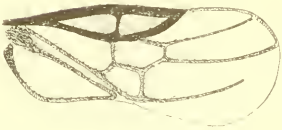


53

51

52

57

56

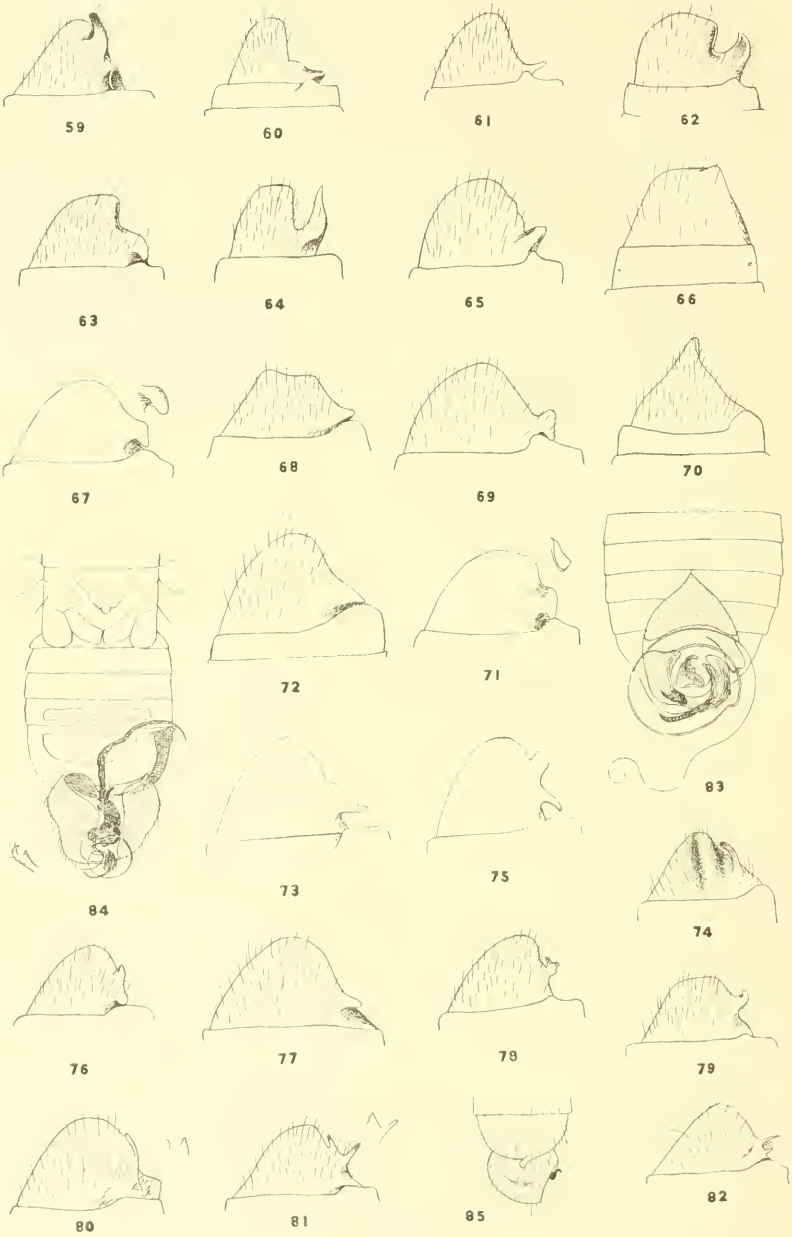
54

55

58

WINGS OF SCHIZOPTERINAE

FOR EXPLANATION OF PLATE SEE PAGE 38



HYPOPYGIAL CHARACTERS OF SCHIZOPTERINAE

FOR EXPLANATION OF PLATE SEE PAGE 39