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Six new genera of the subtribe Thioniina (Hemiptera: Auchenorrhyncha: Issidae) based on type material of L. Melichar and E. Schmidt in the Museum für Naturkunde in Berlin

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ABSTRACT

Six new genera are erected in the subtribe Thioniina of the tribe Issini to accommodate seven American species of the family Issidae, six of which were described by L. Melichar and E. Schmidt in early 20th century from Bolivia, Brazil, Mexico, and Peru, and one new species is described from Paraguay as follows: *Carimeta* gen. nov. (type species: *Carimeta maculipennis* sp. nov.); *Metopasius* gen. nov. (type species: *Thionia proxima* Melichar, 1906); *Cophteroma* gen. nov. (type species: *Thionia truncatella* Melichar, 1906); *Cyclometa* gen. nov. (type species: *Thionia bifasciatifrons* Melichar, 1906); *Memusta* gen. nov. (type species: *Thionia obtusa* Melichar, 1906); *Thiopara* gen. nov. (type species: *Thionia fusca* Melichar, 1906). *Thionia sinuata* Schmidt, 1910 is transferred to the genus *Carimeta* gen. nov. Six new combinations are formed: *Carimeta sinuata* (Schmidt, 1910), comb. nov.; *Metopasius proximus* (Melichar, 1906), comb. nov.; *Cophteroma truncatella* (Melichar, 1906), comb. nov.; *Cyclometa bifasciatifrons* (Melichar, 1906), comb. nov.; *Memusta obtusa* (Melichar, 1906), comb. nov.; *Thiopara fusca* (Melichar, 1906), comb. nov. The lectotypes are designated for *Thionia fusca* Melichar, *T. proxima* Melichar, and *T. sinuata* Schmidt to stabilize the nomenclature in the studied group according to the International Code of Zoological Nomenclature. New record for *Cyclometa bifasciatifrons* from Brasil is provided. Photographs of the type specimens with original labels including Melichar's and Schmidt's autographs as well as drawings of all studied species are given.

Key words: Issinae, Issini, lectotype designation, morphology, Neotropics, new combination, new genus, new species, systematics

Шесть новых родов подтрибы Thioniina (Hemiptera: Auchenorrhyncha: Issidae) по типовым материалам Л. Мелихара и Э. Шмидта в Музее Естественной Истории в Берлине

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РЕЗЮМЕ

Шесть новых родов установлены в подтрибе Thioniina трибы Issini для семи американских видов семейства Issidae, шесть из которых были описаны Л. Мелихаром и Э. Шмидтом в начале XX века из Боливии, Бразилии, Мексики и Перу и один новый вид описан из Парагвая: *Carimeta* gen. nov. (типовой вид: *Carimeta maculipennis* sp. nov.); *Metopasius* gen. nov. (типовой вид: *Thionia proxima* Melichar, 1906); *Cophteroma* gen. nov. (типовой вид: *Thionia truncatella* Melichar, 1906); *Cyclometa* gen. nov. (типовой вид: *Thionia bifasciatifrons* Melichar, 1906); *Memusta* gen. nov. (типовой вид: *Thionia obtusa* Melichar, 1906); *Thiopara* gen. nov. (типовой вид: *Thionia fusca* Melichar, 1906). *Thionia sinuata* Schmidt, 1910 перенесен в род *Carimeta* gen. nov. Предложены шесть новых комбинаций: *Carimeta sinuata* (Schmidt, 1910), comb. nov.; *Metopasius proximus* (Melichar, 1906), comb. nov.; *Cophteroma truncatella* (Melichar, 1906), comb. nov.; *Cyclometa bifasciatifrons* (Melichar, 1906), comb. nov.; *Memusta obtusa* (Melichar, 1906), comb. nov.; *Thiopara*

fusca (Melichar, 1906), comb. nov. Обозначены лектотипы для *Thionia fusca* Melichar, *T. proxima* Melichar и *T. sinuata* Schmidt в рамках стабилизации номенклатуры изучаемой группы в соответствии с положениями Международного кодекса зоологической номенклатуры. Приведено новое указание *Cyclometa bifasciatifrons* из Бразилии. Даны фотографии типовых экземпляров и оригинальных этикеток, включая автографы Мелихара и Шмидта, а также рисунки всех изученных видов.

Ключевые слова: Issinae, Issini, обозначение лектотипа, морфология, Неотропика, новая комбинация, новый род, новый вид, систематика

INTRODUCTION

Although the New World fauna of the family Issidae is under study for almost 200 years since the publication by Fabricius (1803), still now the taxonomic position of many species, described in the largest American genus *Thionia* Stål, 1859, remains controversial (Gnezdilov 2013). Two years ago a revision of *Thionia sensu lato* was initiated by neotype designation for *Issus longipennis* Spinola, 1839, type species of the genus, which led to stabilization of the generic concept of *Thionia* (Stål 1859; Gnezdilov and Dmitriev 2018). It was followed by designation of the subtribe Thioniina Melichar, 1906 in the tribe Issini Spinola *sensu* Gnezdilov et al. (2020), erection of two new genera for four North American species listed in *Thionia* (Gnezdilov 2018a), and transferring of another *Thionia* species from Haiti to the family Nogodinidae (Gnezdilov 2018b).

During my research stay in the Museum für Naturkunde in Berlin (Germany) in 2018 the type series of five *Thionia* species described by L. Melichar from Brazil, Mexico, and Peru (Melichar 1906) and one *Thionia* species described by E. Schmidt from Bolivia (Schmidt 1910) were examined, which led to lectotype designation for three species for stabilizing the nomenclature in the group (ICZN 1999: Art. 74), and erection of six new genera to accommodate all these species within the subtribe Thioniina. In addition to the type materials mentioned above a new species was discovered in the Hemiptera collection of the Museum für Naturkunde within unidentified specimens collected by K. Fiebrig in Paraguay. One new record for *Thionia bifasciatifrons* Melichar, 1906 was obtained from the Staatliche Naturhistorische Sammlungen in Dresden (Germany).

Material and methods

Taxonomy of the family Issidae follows Gnezdilov et al. (2020) and morphological terminology follows

Gnezdilov (2003), Gnezdilov et al. (2014), and Gnezdilov and Bartlett (2018).

Male genital segments of studied specimens were macerated for 1 min in boiling 10% KOH solution. Drawings were made from dissected genitalia in glycerine jelly from the “Brunel Micro Ltd” using a Leica MZ9.5 light microscope with a camera lucida attachment. Photos were taken using Leica Z16 APOA and Leica MZ9.5, both with a Leica DFC 490 camera. Images were produced using the software Leica Application Suite V 4.5, Helicon Focus 6.7.1 and Adobe Photoshop CS5.

Label information is quoted, with “/” indicating new line and “//” indicating next label.

The material examined including the type series of a new species described below are deposited in the following collections: Museum für Naturkunde, Berlin, Germany (ZMB); Staatliche Naturhistorische Sammlungen, Dresden, Germany (SNSD); Zoological Institute of the Russian Academy of Sciences, Saint Petersburg, Russia (ZIN).

Taxonomy

Family Issidae Spinola, 1839

Subfamily Issinae Spinola, 1839

Tribe Issini Spinola, 1839

Subtribe Thioniina Melichar, 1906

Genus *Carimeta* gen. nov.

Type species: *Carimeta maculipennis* sp. nov.

Etymology. Generic name is derived from combination of Greek “καρίνα” (carina) and “μέτοπο” (frons) referring to a strong median carina of metope. Feminine in gender.

Diagnosis. Metope nearly square, with median elevation bearing carina running from its upper margin and noticeably not reaching metopoclypeal suture. Coryphe transverse. Forewings wide, widely

truncate caudo-apically, with wide hypocostal plate and few transverse veins; $R\ 3\ M\ 2-3\ CuA\ 1$. Hind wings well developed, 3-lobed, with deep cubital cleft and weak vannal cleft; CuA_2 and CuP fused apically, Pcu and $A_{1,1}$ not fused. Hind tibia with two lateral spines in its distal half. Forewings usually with dark brown to black spots fused in large areas.

Description (Figs 1–6, 17–19, 38–42). Metope wide, nearly square, mostly flat, except slightly convex in its upper part (in lateral view), with distinct median carina running along elevation from its upper margin and noticeably not reaching metopoclypeal suture. Sublateral carinae of metope very weak (only traces visible). Upper margin of metope trapezoidally notched. Lateral margins of metope nearly parallel to each other. Metopoclypeal suture distinct. Postclypeus large, flattened frontally, without carinae. Ocelli absent. Rostrum almost reaching hind coxae; 3rd segment nearly equal in length to 2nd one, wide, not narrowing apically. Pedicels sphaerical. Coryphe and metope joined at obtuse angle (in lateral view). Coryphe transverse, 2–3 times as wide between eyes as long at midline, without carinae; anterior margin 4-pointed; posterior margin concave. Pronotum nearly as long as coryphe at midline; anterior margin obtusely angulate; posterior margin weakly concave medially. Paradiscal fields of pronotum narrow. Paranotal lobes wide, widely rounded, without pustules or carinae. Mesonotum 1.3 times longer than pronotum, with weak median carina or without it. Tegulae large. Forewings distinctly surpassing abdominal apex, wide, widely truncate caudo-apically, with hypocostal plate. Basal cell small, narrowly oval. Forewing vein sequence: $R\ 3$, firstly furcating closely to basal cell, posterior branch (R_2) furcating apically; $M\ 2-3$, firstly furcating in basal fourth of wing, its anterior branch (M_1) sometimes furcating also in apical third of wing; $CuA\ 1$; few transverse veins. Clavus long, almost as long as whole wing. Pcu joined A_1 after wing middle and running into claval apex. Hind wings almost equal in length to forewings, each with deep cubital cleft and weak vannal cleft; coupling lobe small. Basal cell small, oval. Hind wing vein sequence: $R\ 2-3$, firstly furcating right after coupling lobe, anterior branch (R_1) sometimes shortly furcating apically (Figs 5, 6); $r-m\ 1$; $M\ 1$; $m-cua\ 1$; $CuA\ 2-3$, anterior branch (CuA_1) sometimes furcating apically; $cua-cup\ 1$; $CuP\ 1$; $cup-pcu\ 1$; $Pcu\ 2$, furcating apically; $pcu-a_1\ 1$; $A_1\ 2$; $A_2\ 2-4$. CuA_2 and CuP fused apically, with two folds by sides. Pcu and

$A_{1,1}$ closely situated medially, but not fused. Hind tibia with 2 lateral spines in its distal half and 8 apical spines. First and second metatarsomeres nearly equal in length, with long setae on ventral surface. First metatarsomere short and wide, with 2 latero-apical and 7–10 intermediate spines arranged in arc. Second metatarsomere with only 2 latero-apical spines. Arolium of pretarsus not surpassing claw apices (in dorsal view).

Phallobase complex, with mobile dorsal portion bearing weakly sclerotized “sac” on top in active condition (Fig. 9) which collapses when dehydrated (Fig. 8). Style massive, with strongly convex (hump-shaped) hind margin (Fig. 12). Capitulum of style without neck.

Composition. In addition to the type species also *Thionia sinuata* Schmidt, 1910 is included in the genus (see below).

Distribution. Bolivia, Paraguay.

Differential diagnosis. The new genus is related to *Waorania* Gnezdilov et Bartlett, 2018 (subtribe Waoranina Gnezdilov et Bartlett, 2018) by hind wing venation (fused apically CuA_2 and CuP with two folds by sides and Pcu and $A_{1,1}$ closely situated, but not fused medially) and by phallobase with mobile dorsal portion bearing weakly sclerotized “sac”. However *Waorania* is distinguished by metope without intermediate carinae, forewings without hypocostal plate, CuA_2 and CuP of hind wings fused on longer distance, and aedeagus with 3-branched ventral hooks. Thus until further study I keep the genus described above in the subtribe Thioniina. Within Thioniina according to the presence of median elevation of metope the new genus is close to the monotypical genus *Thioniella* Metcalf, 1938, known from Barro Colorado, however, the last genus has rather elongate metope, almost square coryphe, and peculiar shape of forewings (Metcalf 1938, Pls. 3, 13).

***Carimeta maculipennis* sp. nov.**

(Figs 1–13)

Type material. Holotype, male, “S. Amerika [printed] / Paraguay [printed] / 14. Nov. [handwritten in ink] / Fiebrig S.V. [printed]” (ZMB). Paratypes: 1 male, “Paraguay [printed] / 22. Nov. [handwritten in ink] / Fiebrig S.V. [printed]” (ZMB); 1 female, “Paraguay [printed] / 11. Nov. [handwritten in ink] / Fiebrig S.V. [printed]” (ZMB); 1 female, “Paraguay [printed] / 11. Nov. [handwritten in ink] / Fiebrig

S.V. [printed]" // "11 Nov. / *Chrysophyllum lucentifol.* [handwritten in ink]" (ZMB); 1 male, "S. Amerika [printed] / Paraguay [printed] / 24. Dez. [handwritten in ink] / Fiebrig S.V. [printed]" // "24 Dez. / *Tecoma ipe* [handwritten in ink]" (ZMB); 1 male, "Paraguay [printed] / 18. Dez. [handwritten in ink] / Fiebrig S.V. [printed]" (ZMB); 2 males, "S. Amerika [printed] / Paraguay [printed] / 22. Okt. [handwritten in ink] / Fiebrig S.V. [printed]" (ZMB); 1 male, "Paraguay / leg. Fiebrig S.V. [printed]" (ZMB); 1 male, "Paraguay [printed] / 12. XII. [handwritten in ink] / Fiebrig S.V. [printed]" // "*Antomyrcia / rarem* [handwritten in ink]" (ZMB); 2 males, 2 females, "S. Amerika [printed] / Paraguay [printed] / 14. Nov. [handwritten in ink] / Fiebrig S.V. [printed]" (1 male, 1 female – ZMB; 1 male, 1 female – ZIN); 1 female, "S. Amerika [printed] / Paraguay [printed] / 14. Nov. [handwritten in ink] / Fiebrig S.V. [printed]" // "14 Nov. / *Chrysophyllum lucentifol.*" (ZMB); 1 male, "S. Amerika [printed] / Paraguay [printed] / 23. Nov. [handwritten in ink] / Fiebrig S.V. [printed]" (ZIN); 2 males, "S. Amerika [printed] / Paraguay [printed] / 15. Nov. [handwritten in ink] / Fiebrig S.V. [printed]" (1 male – ZMB; 1 male – ZIN); 1 male, "Paraguay [printed] / 20. Juni [handwritten in ink] / Fiebrig S.V. [printed]" // "[?] / 20. Juni [?][handwritten in ink]" (ZMB); 1 male, "S. Amerika [printed] / Paraguay [printed] / 13. April. [handwritten in ink] / Fiebrig S.V. [printed]" // "13 April / [?][handwritten in ink]" (ZMB); 1 ex. [without abdomen] "Paraguay / Fiebrig S.V. [printed]" // "19 Sept. / *Celtis / tala* [handwritten in ink]" (ZMB); 1 female, "Paraguay [printed] / 30. Dez. [handwritten in ink] / Fiebrig S.V. [printed]" // "30 Dezember / *Cercopia peltata* / [?][handwritten in ink]" (ZMB); 1 female, "Paraguay [printed] / 15. X. [handwritten in ink] / Fiebrig S.V. [printed]" (ZIN); 1 female, "Paraguay [printed] / 7. X. [handwritten in ink] / Fiebrig S.V. [printed]" (ZMB); 1 female, "Paraguay [printed] / 6. XI. [handwritten in ink] / Fiebrig S.V. [printed]" (ZMB); 1 female, "Paraguay [printed] / San Bernadino / K. Fiebrig S.V." // "? Picuz.../ [?] [on another side: ? 4 Nov.] [handwritten in ink]" (ZMB); 1 female, "Paraguay [printed] / 12. Nov. [handwritten in ink] / Fiebrig S.V. [printed]" (ZMB); 1 female, "S. Amerika [printed] / Paraguay [printed] / 1. Nov. [handwritten in ink] / Fiebrig S.V. [printed]" // "1 Nov. / ?Baumstamm [handwritten in ink]" (ZMB); 1 female, "Paraguay [printed] / 2. Nov. [handwritten in ink] / Fiebrig S.V. [printed]" // "2 Nov. / Au Baumstamm [handwritten in ink]" (ZMB);

1 female, "Paraguay [printed] / 13. I. [handwritten in ink] / Fiebrig S.V. [printed]" (ZIN); 1 female, "Paraguay [printed] / 12. Dez. [handwritten in ink] / Fiebrig S.V. [printed]" // "12 Dez / *Antomyrcia pacem* [handwritten in ink]" // "*Antomyrcia rarem* [handwritten in ink]" (ZMB); 1 female, "Paraguay [printed] / 23. I. [handwritten in ink] / Fiebrig S.V. [printed]" (ZMB); 1 female, "Paraguay [printed] / 8. Mai [handwritten in ink] / Fiebrig S.V. [printed]" (ZMB).

Description (Figs 1–3). Structure as mentioned for genus. Metope slightly enlarged above clypeus. Lateral margins of metope slightly overhanging pedicels. Coryphe three times as wide between eyes as long at midline. Pronotum without carinae. Forewing with wide hypocostal plate. First metatarsomere with 7–8 intermediate spines arranged in arc. Arolium of pretarsus with convex posterior margin (in dorsal view) and with two narrow dorso-lateral plates.

Coloration (Figs 1–3). General coloration light brown yellowish, with greenish tint. Metope dark brown to black between yellow traces of sublateral carinae, with dark brown to black upper and lower angles. Metope with wide pale band above metopoclypeal suture, and with yellow median carina, two spots on either side of median carina apically, and traces of larval sensory pits. Postclypeus with dark brown lateral stripes. Forewings with dark brown to black spots fused in large areas sometimes covering most of its surface. However, some females have forewings with almost no spots. In some specimens veins of clavus greenish. Hindwings brown. Fore and middle femora brown to dark brown outsides. Abdominal sternites IV–VI dark brown medially, sometimes totally greenish. Abdominal tergites IV–VII brown to dark brown or black. Apices of leg spines black. Dorsolateral plates of arolium dark brown.

Male genitalia (Figs 7–13). Anal tube short and wide, almost square, with straight anterior margin (in dorsal view) (Fig. 7). Anal column short. Pygofer with hind margins convex in its lower parts, with short lobe-shaped process turned inside (Figs 8, c, 13, c). Phallobase complex, with mobile dorsal portion bearing weakly sclerotized "sac" on top in active condition (Fig. 9), which collapses when dehydrated (Fig. 8). Sac bearing pair of short horn-shaped lateral processes (Figs 9, a, 10, a). Phallobase long and narrow (in lateral view), with small and rounded ventral lobe. Ventral aedeagal hooks long, pointed apically, arising subapically on aedeagus, each with lateral



Figs. 1–4. *Carimeta maculipennis* gen. et sp. nov., 1–3 – holotype, 4 – female paratype. 1 – dorsal view; 2 – lateral view; 3 – frontal view; 4 – ovipositor.

spine-shaped process near its middle. Style massive, with strongly convex (hump-shaped) hind margin (Fig. 12). Capitulum of style without neck, long and narrow (in dorsal view), with wide lateral tooth and two additional tooth-shaped processes on another side (Fig. 11).

Female genitalia. Sternite VII with weakly and widely concave hind margin (Fig. 4). Anal tube small, oval. Anal column short. Gonopods small, nearly square.

Total length. Males – 5.5–6.0 mm. Females – 6.0–7.0 mm.

Etymology. Species name referring to forewings with dark spots.

Notes. There is no information on concrete localities in Paraguay on the labels except one, which is San Bernardino (“San Bernadino” on the label) located on the shores of Ypacarai Lake in the Cordillera Department in southwest of the country.

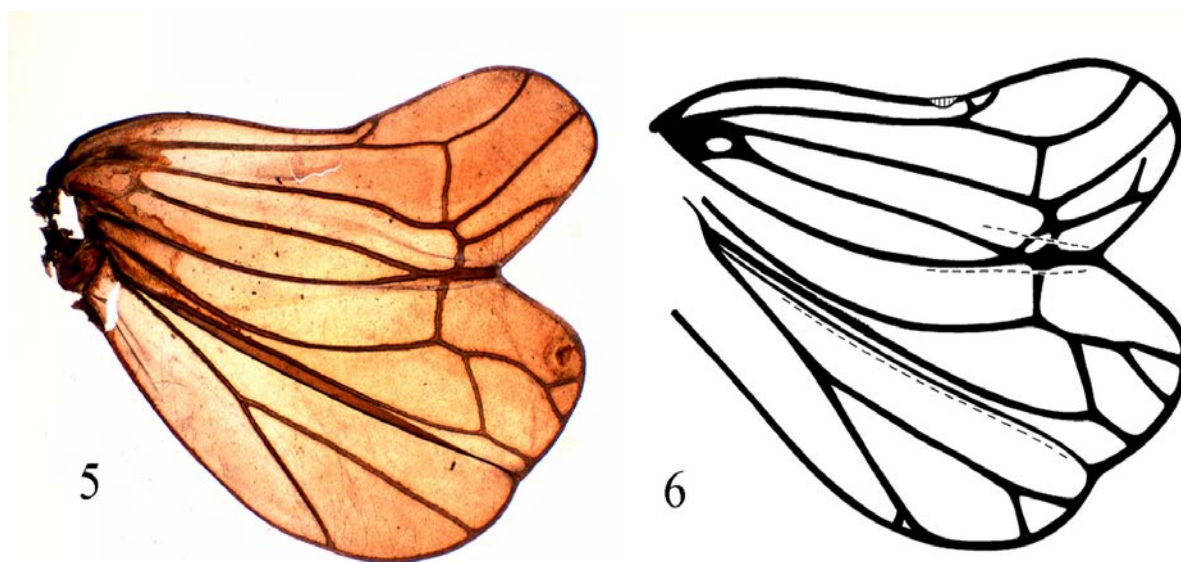
According to the label information the species was collected on the trees – *Chrysophyllum lucentifolium* Cronquist (Sapotaceae), *Cercopia peltata* L. (Urticaceae), *Celtis tala* Gillies ex Palnchon (Ulmaceae), and *Tecoma ipe* Mart. ex K. Schum. (Bignoniaceae).

Differential diagnosis. The new species differs from *Thionia sinuata* Schmidt by yellow median carina and two yellow spots on either side of the carina on metope apically (Fig. 3), wider hypocostal plate of forewing, and widely concave hind margin of female sternite VII (Fig. 4).

***Carimeta sinuata* (Schmidt, 1910), comb. nov.**
(Figs 17–19, 32, 38–43)

Thionia sinuata Schmidt, 1910: 195.

Type material examined. Lectotype (here designated), female, “Ost Bolivien [printed] / Prov. Sara [handwritten in ink] / 750 m [handwritten in ink] /



Figs. 5–6. *Carimeta maculipennis* gen. et sp. nov., hindwing, dorsal view. 5 – female paratype; 6 – male paratype.

Steinbach S.V. [printed] [green] // “Type” [red, printed] // “*Thionia* [handwritten in ink] / *sinuata* Schmidt [handwritten in ink] / ♀. [handwritten in ink] Edm. Schmidt [printed] / determ. 190 [printed] 9. [handwritten in ink]” [white]. The specimen is pierced by pin through the mesonotum.

Notes. The species was described after four females including one deposited in the Museum für Naturkunde in Berlin (Schmidt 1910), which is designated here as the lectotype (Fig. 32).

Supplementary description (Figs 17–19, 38–43). Structure as mentioned for genus. Median carina of metope smooth. Coryphe twice as wide between eyes as long at midline. Pronotum with median carina. Mesonotum with weak median carina and lateral grooves. Forewings with narrow hypocostal plate. First metatarsomere with 10 intermediate spines arranged in arc. Hind margin of female sternite VII wedge-shaped medially. Female anal tube wide. Gonoplacs rounded, convex.

Coloration (Figs 17–19). General coloration light brown yellowish. Metope dark brown between traces of sublateral carinae. Postclypeus with dark brown transverse stripes laterally. Each forewing with three black areas on corium and four black spots on clavus. Hindwings dark brown. Fore and middle femora with dark brown spots apically. Claws dark brown. Apices of leg spines black.

Total length. 8.0 mm.

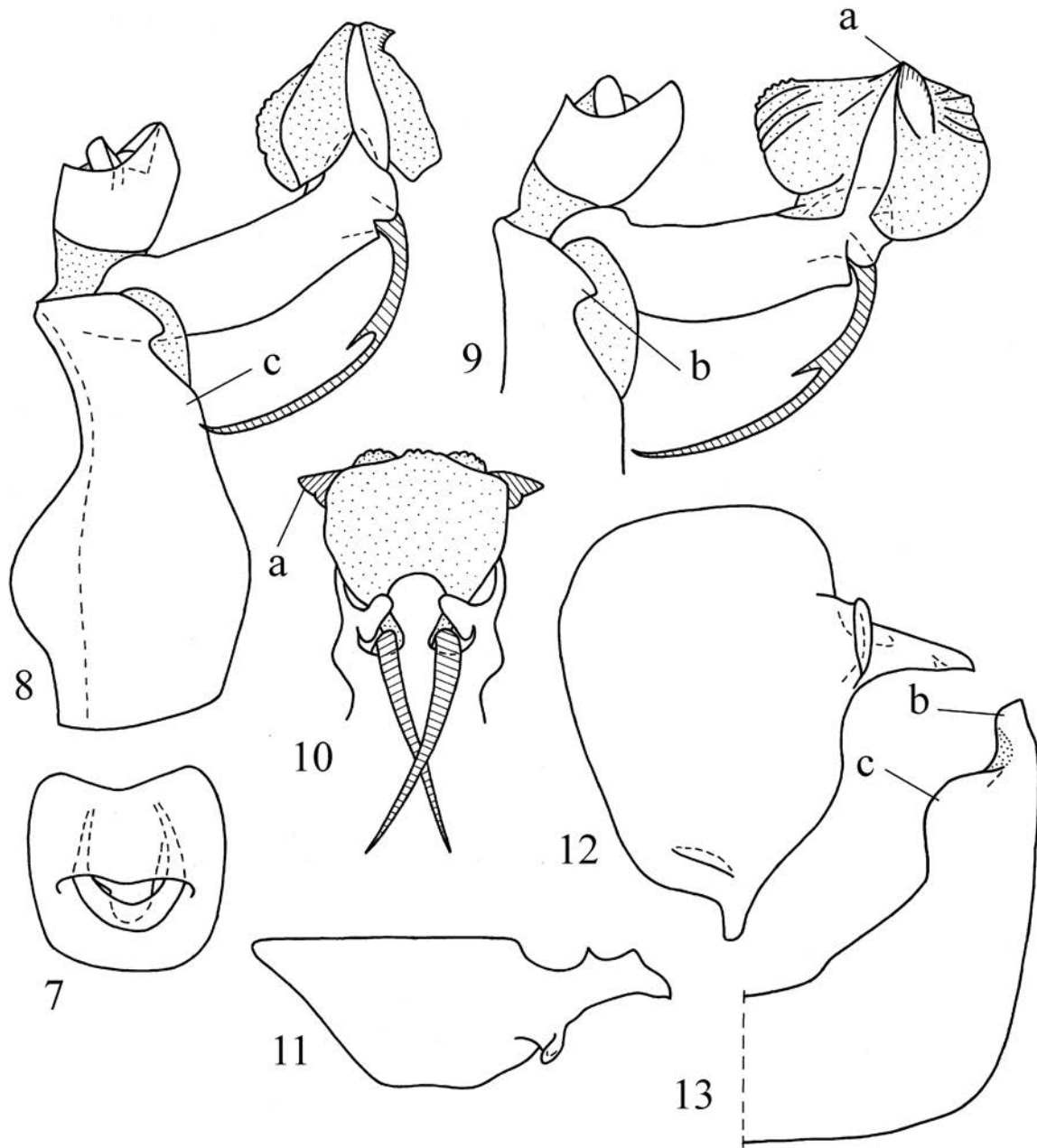
Genus *Metopasius* gen. nov.

Type species: *Thionia proxima* Melichar, 1906.

Etymology. The generic name is derived from combination of Greek “μέτωπο” (frons) and “ισίος” (flat) referring to flat metope. Masculine in gender.

Diagnosis. Metope slightly elongate, flat, with only median carina distinct running from its upper margin to its middle and with traces of sublateral carinae. Coryphe transverse. Forewings slightly surpassing abdomen apex, with narrow hypocostal plate and few intermediate veins; $R\ 2\ M\ 3\ CuA\ 1$. Hindwings well developed. Hind tibia with 2 lateral spines in its distal half.

Description (Figs 14–16, 44–48). Metope slightly elongate, flat, lateral margins nearly parallel to each other. Metope with only median carina distinct running from its upper margin to its middle and with traces of sublateral carinae. Upper margin of metope trapezoidally notched. Metopoclypeal suture arcuate. Postclypeus flattened frontally, without carinae. Ocelli present. Pedicels sphaerical. Rostrum reaching hind coxae, 3rd segment slightly shorter than 2nd one, weakly narrowing apically. Coryphe transverse, three times as wide between eyes as long at midline, without carinae; anterior margin weakly obtusely angulate; posterior margin concave. Coryphe and metope joined at obtuse angle (in lateral view). Pro-



Figs. 7–13. *Carimeta maculipennis* gen. et sp. nov., holotype, male genitalia. 7 – anal tube, dorsal view; 8 – anal tube, pygofer, and penis (sac collapsed), lateral view; 9 – same (sac in active condition); 10 – penis (sac in active condition), dorsal view; 11 – style, dorsal view; 12 – style, lateral view; 13 – pygofer, caudal view. Abbreviations: a – horn-shaped lateral processes of phallobase sac; b, c – processes of hind margins of pygofer.

notum slightly longer than coryphe at midline, with median carina; anterior margin steeply arched; posterior margin weakly concave medially. Mesonotum slightly longer than pronotum, with weak median

and lateral carinae. Paradiscal fields of pronotum narrow. Paranotal lobes of pronotum wide. Forewings slightly surpassing abdomen apex, obliquely truncate caudo-apically, with narrow hypocostal plate. Cla-

vus long, 4/5 of wing length; *Pcu* joined A_1 nearly at wing middle and running into claval apex. Basal cell narrowly oval. Forewing vein sequence: *R* 2, furcating closely to basal cell; *M* 3, firstly furcating at first third of wing, anterior branch (M_1) furcating apically; *CuA* 1; few intermediate veins. Hindwings slightly shorter than forewings, apparently 3-lobed (not visible). Hind tibia with 2 lateral spines in its distal half. First metatarsomere slightly longer than second one, with 2 latero-apical and 7 intermediate spines arranged in arc. Second metatarsomere with only 2 latero-apical spines. Ventral surface of first and second metatarsomeres with long setae.

Composition. The genus is so far only represented by the type species.

Distribution. Peru.

Differential diagnosis. The new genus is closely related to *Carimeta* gen. nov. according to metope with only median carina distinct and noticeably not reaching metopoclypeal suture; however, the new genus is well distinguished by flat metope without median elevation (Fig. 16).

***Metopasius proximus* (Melichar, 1906),
comb. nov.**

(Figs 14–16, 35, 44–48)

Thionia proxima Melichar, 1906: 278.

Type material examined. Lectotype (here designated), male, “9467” [white, printed] // “Peru Thamm” [green, handwritten in ink] // “Peru, Chan – / chamajo / Thamm” [blue, handwritten in ink] // “*Issus* / spec.” [white, handwritten in ink] // “Mus. / Berol.” [white, printed] // “*proxima* [handwritten in ink] / det. Melichar. [printed]” [white]. The specimen is pierced by a pin through the right wing clavus.

Notes. The species was described after males and females from Peru (Melichar 1906). The male from Chanchamajo listed by Melichar (1906) within the type series is deposited in the Museum für Naturkunde in Berlin and designated here as the lectotype (Fig. 35).

Supplementary description. Structure as mentioned for genus. General coloration light brown yellowish (Figs 14–16). Apices of rostrum and leg spines black. Apices of third tarsomeres and claws dark brown to black. Male anal tube almost round.

Total length. 5.0 mm.

Genus *Cophteroma* gen. nov.

Type species: *Thionia truncatella* Melichar, 1906.

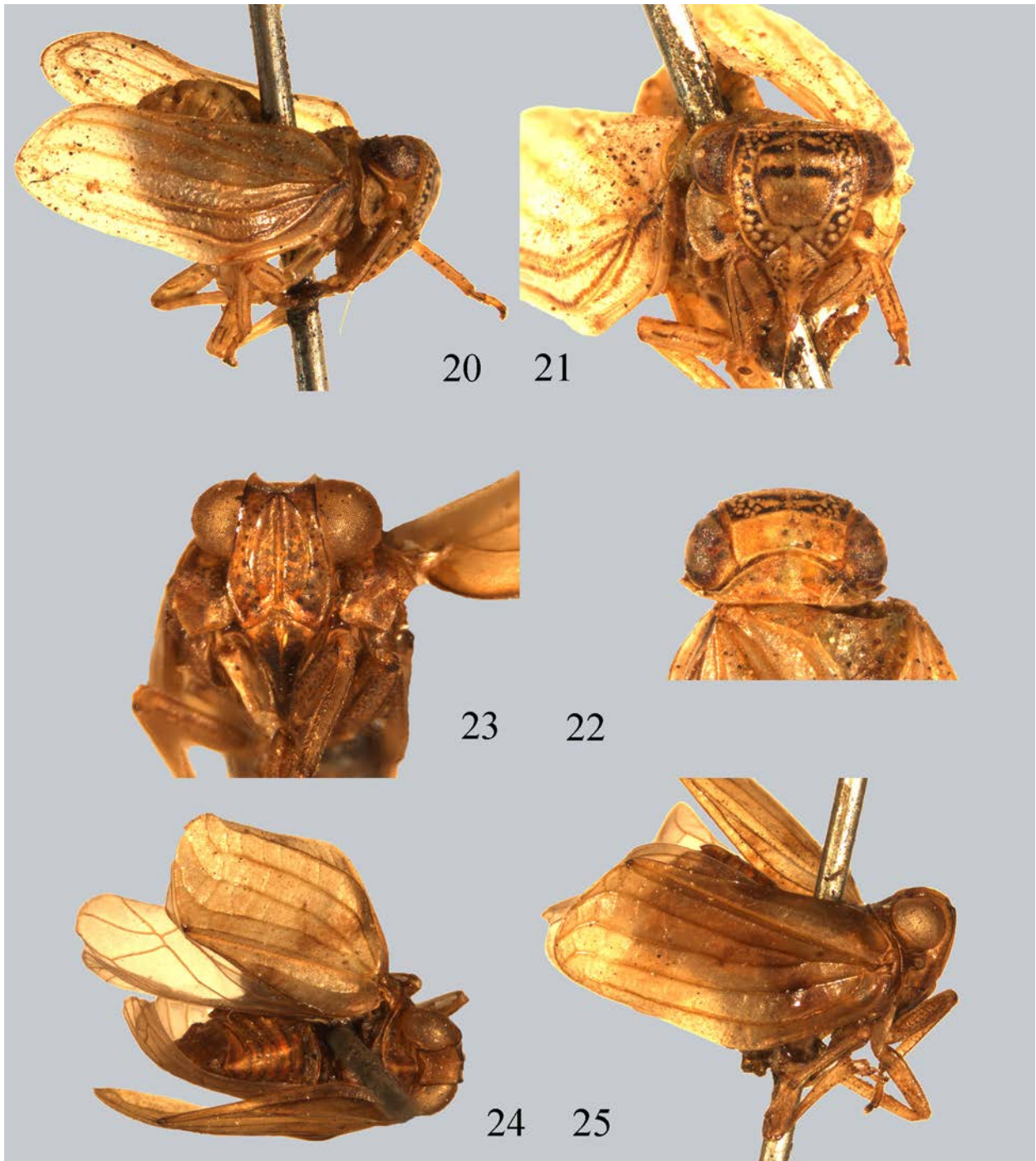
Etymology. The generic name is derived from combination of Greek “κοφτερός” (sharp) and “μέτωπο” (frons) referring to elongate metope, with sublateral carinae joined at acute angle. Feminine in gender.

Diagnosis. Metope distinctly elongate, with strong median and sublateral carinae joined at one point on its upper margin. Median carina of metope running throughout metopoclypeal suture to postclypeus. Coryphe slightly elongate. Forewings surpassing abdomen apex, with keel-shaped main veins, few transverse veins, and with hypocostal plate; *R* 2 *M* 2 *CuA* 1. Hindwings well developed, with sharply notched costal margin and with deep cubital cleft and weak vannal cleft; *CuA*₂ and *CuP* not fused apically and *Pcu* and $A_{1,1}$ not fused. Hind tibia with 2 lateral spines in its distal half.

Description (Figs 23–25, 49–57). Metope elongate, 1.5 times as long as wide between eyes, enlarged above clypeus; upper margin angularly notched. Metope with distinct median and sublateral carinae joined at one point on its upper margin. Median carina of metope running throughout metopoclypeal suture to postclypeus. Sublateral carinae noticeably not reaching metopoclypeal suture, which is distinct and sharply wedge-shaped. Pedicels globular. Ocelli absent. Rostrum with long 3rd segment, almost equal in length to 2nd one, narrowing apically. Metope and coryphe joined at right angle (in lateral view). Coryphe elongate, 1.2 times as long at midline as wide between eyes, with median groove; lateral margins weakly concave medially; anterior margin obtusely angulate; posterior margin angularly concave. Pronotum almost equal in length to mesonotum, without carinae, with steeply convex anterior margin; posterior margin weakly concave. Paradiscal fields of pronotum narrow. Paranotal lobes of pronotum wide, with curved lower margins, without pustules. Mesonotum as long as pronotum, without carinae. Tegulae large. Forewings significantly surpassing abdomen apex, widely truncate caudo-apically, with wide hypocostal plate. Basal cell nearly round. Forewing vein sequence: *R* 2, furcating closely to basal cell; *M* 2, furcating in basal third of the wing; *CuA* 1; few transverse veins mostly present in distal third of wing. Clavus long, almost as long as whole wing; *Pcu* joined A_1 nearly at wing middle and running into



Figs. 14–19. Thioniina, total view. 14–16 – *Metopasius proximus* (Melichar, 1906), male lectotype, 17–19 – *Carimeta sinuata* (Schmidt, 1910), female lectotype. 14, 17 – dorsal view; 15, 18 – lateral view; 16, 19 – frontal view.



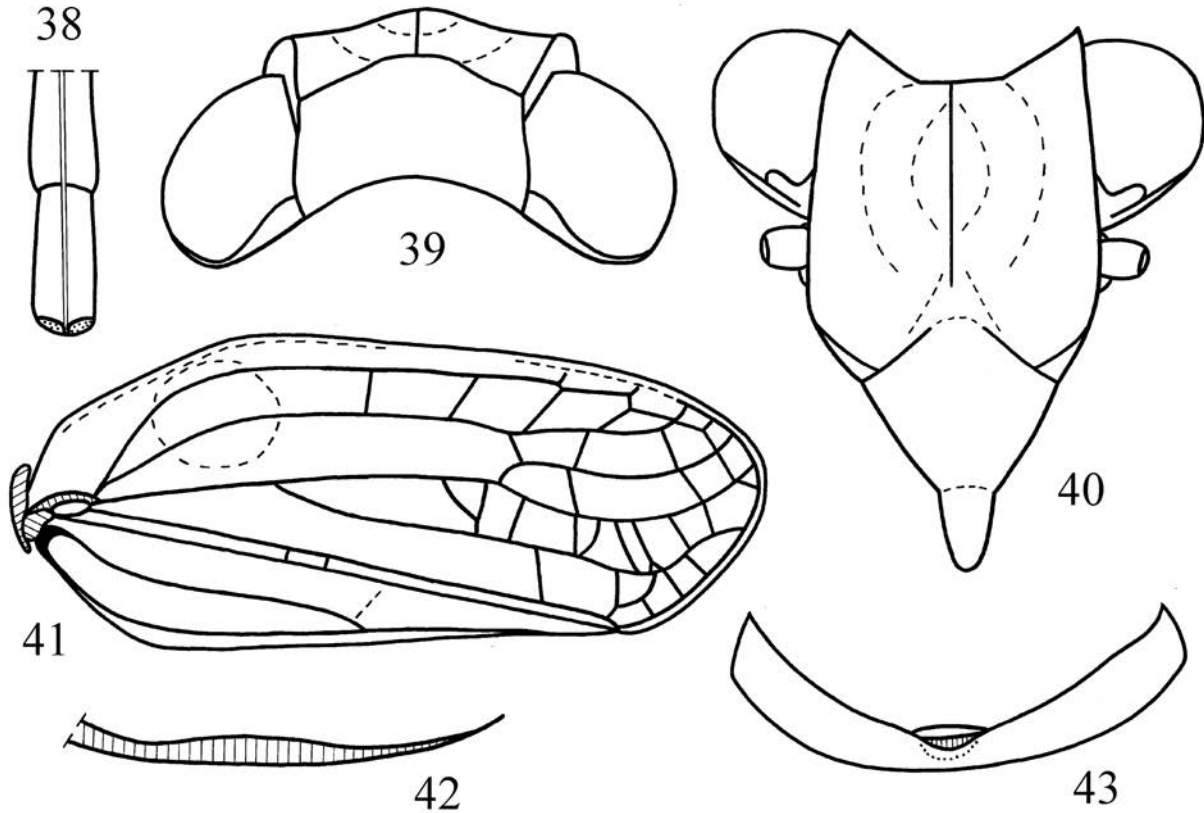
Figs. 20–25. Thioniina, total view. 20–22 – *Cyclometra bifasciatifrons* (Melichar, 1906), holotype, 23–25 – *Cophteroma truncatella* (Melichar, 1906), holotype. 20, 25 – lateral view; 21, 23 – frontal view; 22, 24 – dorsal view.



Figs. 26–31. Thioniina, total view. 26–28 – *Thiopara fusca* (Melichar, 1906), male lectotype, 29–31 – *Memusta obtusa* (Melichar, 1906), holotype. 26, 31 – dorsal view; 27, 29 – lateral view; 28, 30 – frontal view.



Figs. 32–37. Thioniina, type labels. 32 – *Carimeta sinuata* (Schmidt, 1910), female lectotype; 33 – *Cophteroma truncatella* (Melichar, 1906), holotype; 34 – *Memusta obtusa* (Melichar, 1906), holotype; 35 – *Metopasius proximus* (Melichar, 1906), male lectotype; 36 – *Cyclometra bifasciatifrons* (Melichar, 1906), holotype; 37 – *Thiopara fusca* (Melichar, 1906), male lectotype.



Figs. 38–43. *Carimeta sinuata* (Schmidt, 1910), female lectotype. 38 – apical part of rostrum, dorsal view; 39 – head, dorsal view; 40 – head, frontal view; 41 – forewing, dorsal view; 42 – hypocostal plate of forewing; 43 – sternite VII, ventral view.

claval apex. Hindwings equal in length to forewings, with sharply notched costal margin, with deep cubital cleft and weak vannal cleft; coupling lobe invisible. Hindwing vein sequence: *R* 2, furcating after notch of costal margin; *r-m* 1; *M* 1; *m-cua* 1; *CuA* 2, furcating apically; *CuP* 1; *cup-pcu* 1; *Pcu* 2, furcating apically; *pcu-a*₁ 1; *A*₁ 3 (two main branches, *A*_{1,1} furcating apically); *A*₂ 5. *CuA*₂ and *CuP* running closely in apical part of wing, but not fused. *Pcu* and *A*_{1,1} running closely, but not fused. Hind tibia with 2 lateral spines in its distal half and with 8 apical spines. First and second metatarsomeres short and wide, almost equal in length. First metatarsomere with 2 latero-apical and 6 intermediate spines arranged in arc. Second metatarsomere with only 2 latero-apical spines.

Composition. The genus is so far only represented by the type species.

Distribution. Mexico.

Differential diagnosis. The new genus differs markedly from *Thionia* s. str. by elongate metope,

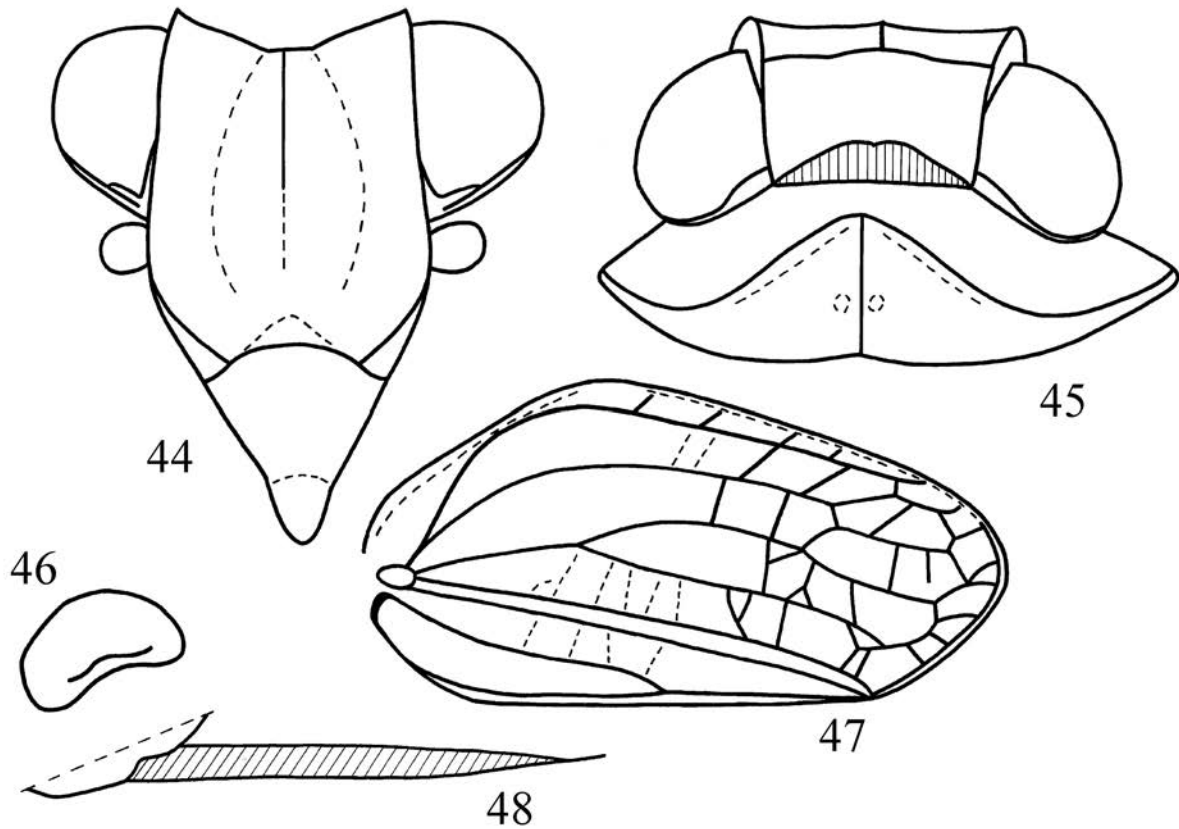
with distinct intermediate carinae joined at acute angle (Figs 23, 50), elongate coryphe (Figs 24, 55) and wide forewings with hypocostal plate (Figs 25, 52, 53).

***Cophteroma truncatella* (Melichar, 1906),
comb. nov.**

(Figs 23–25, 33, 49–57)

Thionia truncatella Melichar, 1906: 284.

Type material examined. Holotype, male, “4930” [white, printed] // “Type” [red, printed] // “Mexic Deppe” [blue greenish, handwritten in ink] // “4930” [lilac, handwritten in ink] // “*Issus* / spec.” [white, handwritten in ink] // “[?] Distant / für die Biol. / Centr. benutzt.” [white, handwritten in ink] // “Mus. / Berol.” [white, printed] // “*truncatella* [handwritten in ink] / det. Melichar. [white, printed]”. The specimen is pierced by a pin through the thorax on the left side near the scutellum.



Figs. 44–48. *Metopasius proximus* (Melichar, 1906), male lectotype. 44 – head, frontal view; 45 – head and pronotum, dorsal view; 46 – tegula; 47 – forewing, dorsal view; 48 – tegula and hypocostal plate of forewing.

Note. The species was described after a single male (Melichar 1906) which is listed above as the holotype.

Supplementary description (Figs 23–25, 56, 57). Structure as mentioned for genus. Male anal tube with pair of long latero-apical processes. General coloration brown yellowish (Figs 23–25). Metope with black upper margin and upper parts of intermediate carinae and black spots around traces of larval sensory pits. Post- and anteclypeus dark brown to black frontally, except median carina. Pedicels brown. Claws dark brown. Apices of rostrum and leg spines black.

Total length. 4.7 mm.

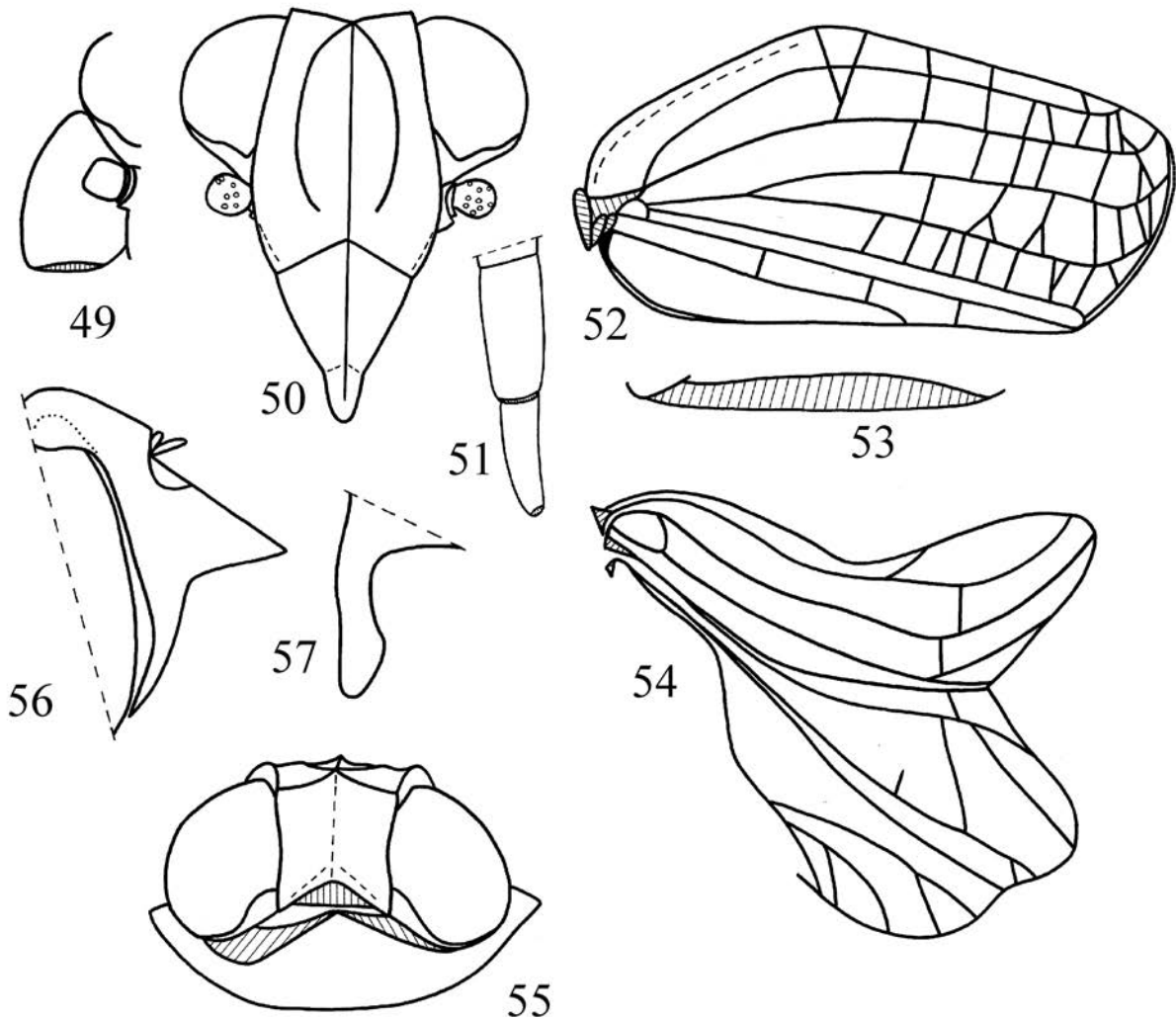
Genus *Cyclometa* gen. nov.

Type species: *Thionia bifasciatifrons* Melichar, 1906.

Etymology. The generic name is derived from combination of Greek “κύκλος” (rounded) and “μέτωπο” (frons) referring to wide metope. Feminine in gender.

Diagnosis. Metope convex, wide, almost square, with weak median and sublateral carinae. Sublateral carinae joined below upper margin of metope. Post- and anteclypeus with smooth median carina. Coryphe transverse, short. Forewings with wide hypocostal plate and without transverse veins; *R* 2 *M* 2 *CuA* 1. Hind wings rudimentary. Hind tibia with 2 lateral spines distally. Gonoplags rounded, convex. Hind margin of VII sternite sharply concave medially – wedge-shaped. Metope with two black bands in its upper part crossed by weak median carina.

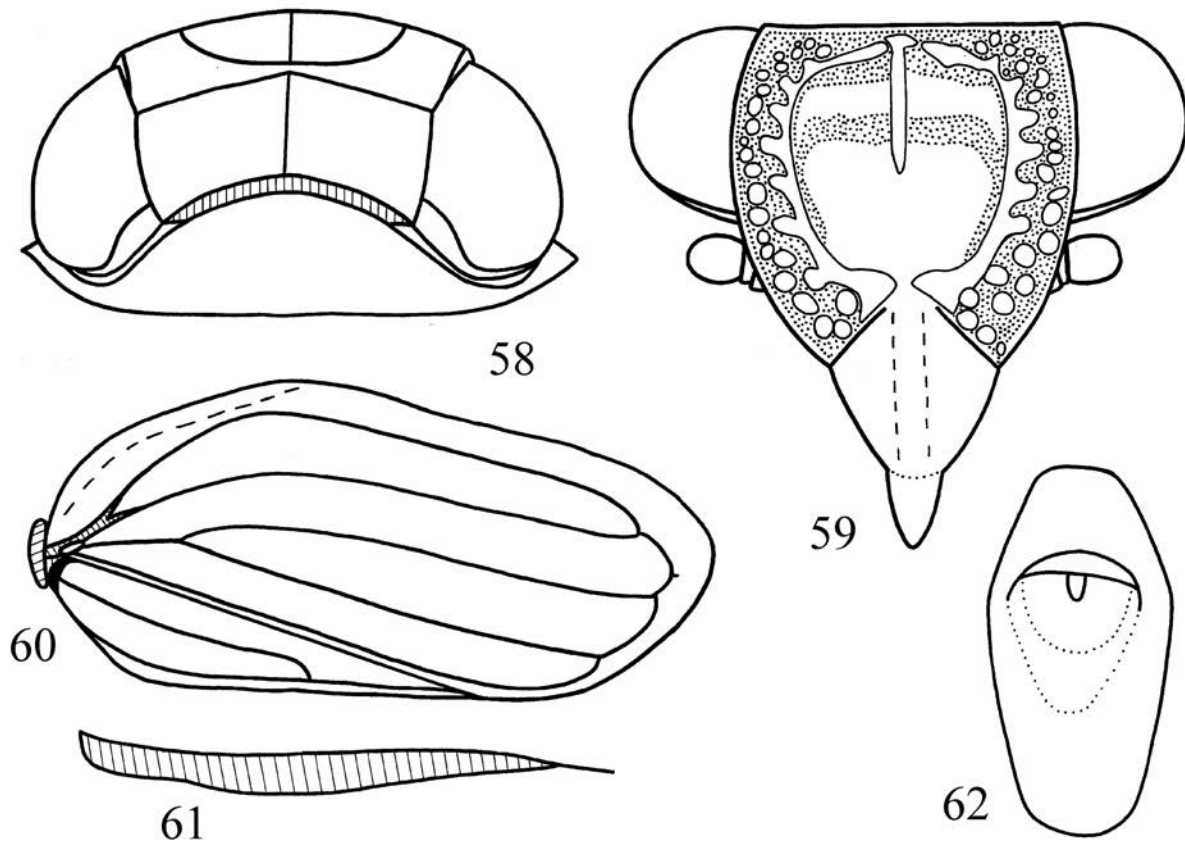
Description (Figs 20–22, 58–62). Metope convex (visible from above), wide, almost square; lateral margins converging to clypeus; upper margin straight. Median and sublateral carinae of metope



Figs. 49–57. *Cophteroma truncatella* (Melichar, 1906), holotype. 49 – parantol lobe of pronotum and pedicel; 50 – head, frontal view; 51 – rostrum, lateral view; 52 – forewing, dorsal view; 53 – hypocostal plate of forewing; 54 – hindwing, dorsal view; 55 – head and pronotum, dorsal view; 56 – anal tube, lateral view; 57 – process of anal tube, caudal view.

smooth. Median carina running from upper margin of metope to its middle. Sublateral carinae joined below upper margin of metope, not reaching metopoclypeal suture. Two rows of pustules (traces of larval sensory pits) present on each side of metope between its lateral margins and sublateral carinae. Metopoclypeal suture distinct, sharply wedge-shaped. Post- and anteclypeus with smooth median carina. Pedicels cylindrical. Ocelli absent. Coryphe and metope joined at right angle (in lateral view). Coryphe transverse, 4 times as wide between eyes as long medially, with weak median carina; anterior

margin obtusely angulate; posterior margin concave. Rostrum with 3rd segment apparently equal in length to 2nd one (covered by glue). Pronotum slightly longer than coryphe medially, without carinae; posterior margin almost straight. Paradiscal fields of pronotum narrow. Parantol lobes of pronotum wide, with bent lower margins. Mesonotum 1.5 times as long as pronotum, without carinae. Tegulae small. Forewings elongate, wide, obliquely truncate caudo-apically, with wide hypocostal plate. Basal cell small, narrowly oval. Forewing vein sequence: *R* 2, furcating closely to basal cell; *M* 2, furcating after



Figs. 58–62. *Cyclometeta bifasciatifrons* (Melichar, 1906), holotype. 58 – head and pronotum, dorsal view; 59 – head, frontal view; 60 – forewing, dorsal view; 61 – hypocostal plate of forewing; 62 – anal tube, dorsal view.

radius; *CuA* 1; no transverse veins. Clavus long, 2/3 of wing length; *Pcu* joined *A*₁ before wing middle and running into claval apex. Hindwings rudimentary. Hind tibia with 2 lateral spines in its distal half and with 7 apical spines. First metatarsomere short, equal in length to second one, with 2 latero-apical and 4 (3 + 1) intermediate spines. Second metatarsomere with only 2 latero-apical spines. Arolium of pretarsus not surpassing claw apices (in dorsal view). Male anal tube elongate, rounded apically (in dorsal view). Anal column short.

Composition. The genus is so far only represented by the type species.

Distribution. Southern and Southeastern Brasil.

Differential diagnosis. The new genus differs markedly from *Thionia s. str.* by wide forewings, with wide hypocostal plate and without transverse veins (Figs 20, 60, 61), and by rudimentary hind wings.

***Cyclometeta bifasciatifrons* (Melichar, 1906), comb. n.**

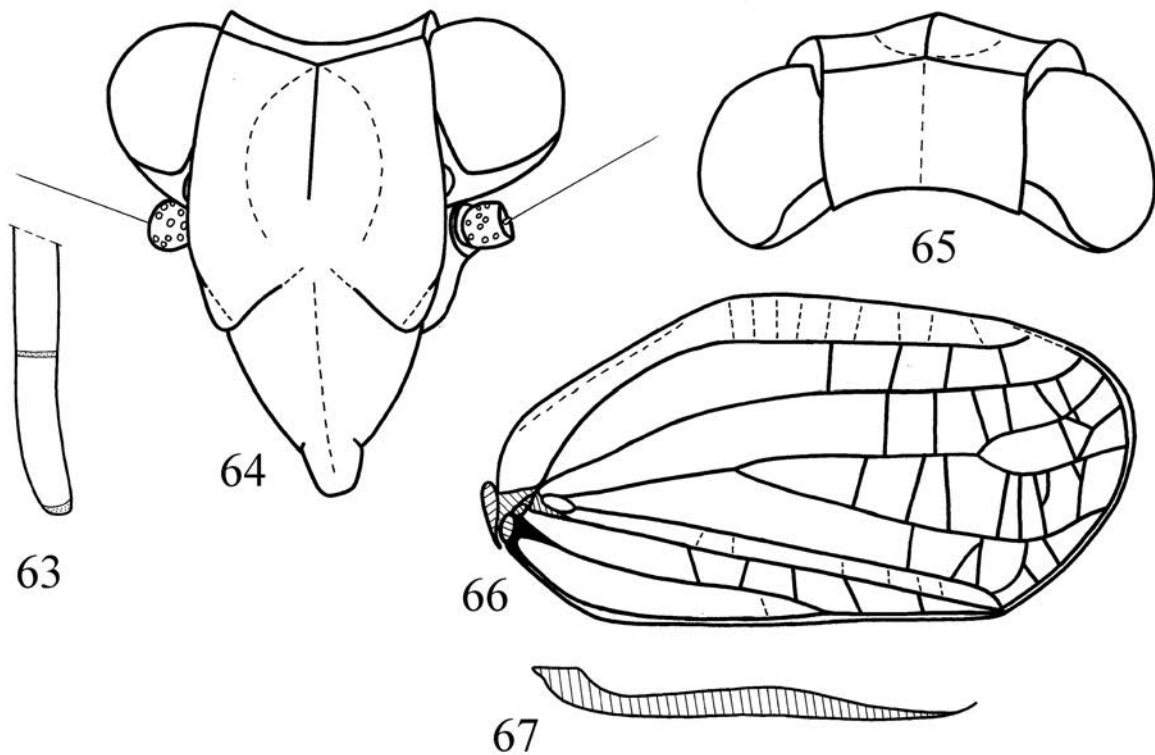
(Figs 20–22, 36, 58–62)

Thionia bifasciatifrons Melichar, 1906: 274.

Type material examined. Holotype, female, “4931” [white, printed] // “Type” [red, printed] // “Sello” [green, handwritten in ink] // “Brasil / Sello” [green, handwritten in ink] // “*Issus spec.*” [white, handwritten in ink] // “Mus. Berol.” [white, printed] // “bifasciati- / frons [handwritten in ink] / det. Melichar. [white, printed]”. The specimen is pierced by a pin through the abdomen below the scutellum.

Other material examined. Brasil: 1 female, “Petropolis / Dr. Ohaus” (on the other side “19.XI.04”) // “1 / 1907” // “coll. A. Jacobi” (SNSD).

Notes. Apparently Melichar (1906) mistakenly mentioned male in the original description as all la-



Figs. 63–67. *Memusta obtusa* (Melichar, 1906), holotype. 63 – apical part of rostrum, lateral view; 64 – head, frontal view; 65 – head, dorsal view; 66 – forewing, dorsal view; 67 – hypocostal plate of forewing.

bels correspond to the female deposited in the Museum für Naturkunde in Berlin mentioned above (Fig. 36). Possibly “Sello” on the labels refers to Friedrich Sellow (1789–1831) who collected in southern Brazil and Uruguay (D. Takiya pers. comm.).

Supplementary description (Figs 20–22). Structure as mentioned for genus. General coloration light yellow. Metope with two black cross bands on the sides of median carina and between sublateral carinae in its upper half and with dark brown to black background between pustules (traces of larval sensory pits). Postclypeus with dark brown transverse stripes on sides of median carina. Anteclypeus with two pairs of dark brown spots on sides of median carina. Median carina of coryphe and pronotum and mesonotum medially light green. Paranotal lobes each with dark brown spot in front of pedicel. Forewing veins red or just radius edged by brown stripes. Femora and fore and middle tibiae with longitudinal dark brown stripes. Leg spines black.

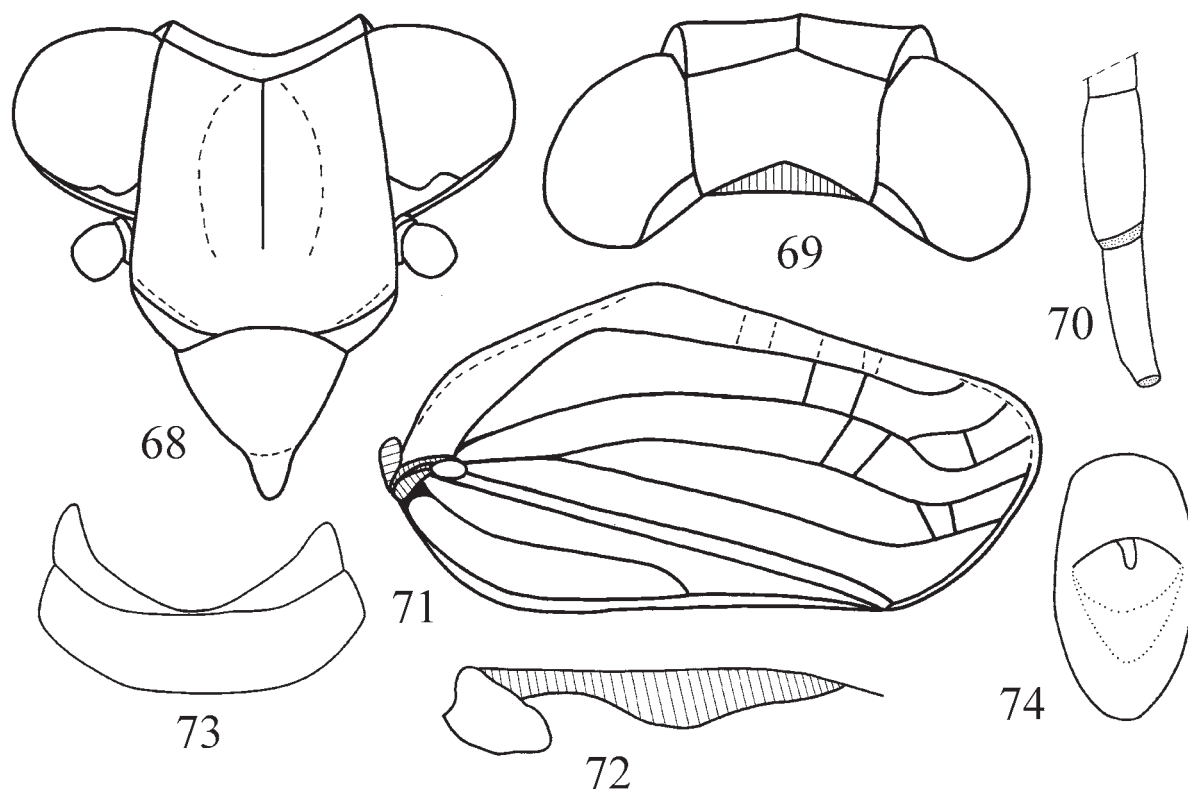
Total length. 5.0 mm.

Genus *Memusta* gen. nov.

Type species: *Thionia obtusa* Melichar, 1906.

Etymology. The generic name is derived from combination of Greek “μουςτάκι” (mustache) and “μέτωπο” (frons) referring to strongly convex metopoclypeal suture, with mustache-shaped lower corners of metope. Feminine in gender.

Diagnosis. Metope flat, wide, nearly square, with distinct median carina running from its upper margin, but not reaching metopoclypeal suture. Sublateral carinae of metope weak and running from one point with median carina on upper margin of metope, converging above metopoclypeal suture, which is strongly convex. Lateral margins of metope convex. Coryphe transverse, twice as wide between eyes as long at midline. Paradiscal fields of pronotum wide. Forewings slightly surpassing abdominal apex, wide, with narrow hypocostal plate; *R* 2, *M* 3, *CuA* 1. Hind wings 3-lobed. Hind tibia with 2 lateral spines.



Figs. 68–74. *Thiopara fusca* (Melichar, 1906), 68–72 – male lectotype, 73, 74 – female paralectotype. 68 – head, frontal view; 69 – head, dorsal view; 70 – apical part of rostrum, lateral view; 71 – forewing, dorsal view; 72 – tegula and hypocostal plate of forewing; 73 – sternites VI–VII; 74 – anal tube, dorsal view.

Description (Figs 29–31, 63–67). Metope flat, not visible from above, wide, nearly square, with distinct median carina running from its upper margin, but not reaching metopoclypeal suture. Upper margin of metope angularly notched. Lateral margins of metope convex. Sublateral carinae of metope smooth, running from one point with median carina on upper margin of metope, converging above metopoclypeal suture, which is distinct and strongly convex. Ocelli rudimentary. Pedicels sphaerical. Metope and coryphe joined at obtuse angle (in lateral view). Coryphe transverse, twice as wide between eyes as long at midline, with median groove; anterior margin weakly obtusely angulate; posterior margin concave. Post- and anteclypeus with smooth median carina. Rostrum reaching hind coxae; 3rd segment long, nearly equal in length to 2nd one, narrowing apically. Pronotum nearly equal in length to coryphe; anterior margin obtusely angulate; posterior margin

weakly concave; without carinae. Paradiscal fields of pronotum wide. Paranotal lobes of pronotum wide, nearly rectangular, with bent lower margins. Mesonotum nearly as long as pronotum, without carinae. Forewings slightly surpassing abdominal apex, obliquely truncate caudo-apically, with narrow hypocostal plate. Basal cell narrowly oval. Forewing vein sequence: *R* 2, furcating near to basal cell; *M* 3, firstly furcating before wing middle, anterior branch (*M*₁) furcating also apically; *CuA* 1; transverse veins present in distal half of wing. Clavus long, 4/5 of wing length, *Pcu* joined *A*₁ at wing middle and running into claval apex. Hindwings equal in length to forewings, 3-lobed. Hind tibia with 2 lateral spines in its distal half and 11 apical spines. First and second metatarsomeres are equal in length, short and wide. First metatarsomere with 2 latero-apical spines and 4 (3 + 1) intermediate ones. Second metatarsomere with only 2 latero-apical spines. Female sternite VII

with medially convex hind margin. Female anal tube narrow and long. Gonoplares weakly convex.

Composition. The genus is so far only represented by the type species.

Distribution. Mexico.

Differential diagnosis. The new genus differs from *Thionia* s. str. by weak sublateral carinae of metope (Figs 30, 64) and wide forewings, with hypocoastal plate (Figs 29, 66, 67).

***Memusta obtusa* (Melichar, 1906), comb. nov.**
(Figs 29–31, 34, 63–67)

Thionia obtusa Melichar, 1906: 279.

Type material examined. Holotype, female, “4927” [white, printed] // “Type” [red, printed] // “Mexico Deppe” [blue, handwritten in ink] // “4927” [lilac, handwritten in ink] // “*Issus* / spec.” [white, handwritten in ink] // “[?] Distant / für die Biol. / Centr. [?]” [white, handwritten in ink] // “Mus. / Berol.” [white, printed] // “*obtusa* [handwritten in ink] / det. Melichar [printed]” [white].

Note. The species was described after a single female (Melichar 1906), which is listed above as the holotype.

Supplementary description (Figs 29–31). As mentioned for genus. General coloration light brown yellowish. Metope with dark brown to black upper angles, two pairs of large dark brown areas on sides of median carina; traces of larval sensory pits with dark brown to black background. Postclypeus with dark brown transverse stripes on sides. Each genae with dark brown to black stripe above pedicel. Each preocular field with dark brown to black spot. Pedicels dark brown. Rostrum with dark brown apical segment. Mesonotum with pair of dark brown to black spots on its upper margin. Hindwings translucent, with dark brown veins. Femora with dark brown stripes. Abdominal tergites dark brown laterally and posteriorly. Laterotergites dark brown. Abdominal sternites IV–VI dark brown medially, with dark brown dots at setal bases. Gonoplares dark brown.

Total length. 5.0 mm.

***Thiopara* gen. nov.**

Type species: *Thionia fusca* Melichar, 1906.

Etymology. Generic name is derived from combination of “Thionia” and “Para”. Feminine in gender.

Diagnosis. Metope wide, with only median carina distinct and with lateral margins diverging above clypeus. Metopoclypeal suture slightly convex. Coryphe transverse. Postclypeus flattened frontally, without carinae. Paradiscal fields of pronotum narrow. Forewings wide, with wide hypocoastal plate; R 3–4 *M* 2 *CuA* 1. Hindwings well developed, 3-lobed. Hind tibia with 2 lateral spines distally.

Description (Figs 26–28, 68–74). Metope wide, with lateral margins slightly diverging above clypeus, with only median carina distinct, noticeably not reaching metopoclypeal suture. Only color traces of sublateral carinae visible. Upper margin of metope obtusely angularly concave. Metopoclypeal suture slightly convex. Coryphe transverse, twice as wide between eyes as long at midline; anterior margin weakly obtusely angulate; posterior margin angularly concave. Postclypeus flattened frontally, without carinae. Ocelli present. Pedicels cylindrical. Paradiscal fields of pronotum narrow. Paranotal lobes of pronotum wide and rounded. Forewings with wide hypocoastal plate. Basal cell widely oval. Forewing vein sequence: R 3–4, firstly furcating closely to basal cell, posterior branch (R_2) furcating apically (in female paralectotype R 4, posterior branch (R_2) furcating twice); M 2, furcating at first fourth of wing length; *CuA* 1; few intermediate veins. Clavus long, 4/5 of wing length, *Pcu* joined A_1 at wing middle and running into claval apex. Hindwings equal in length to forewings, 3-lobed. Hind tibia with 2 lateral spines in its distal half and 8 spines apically. First metatarsomere with 2 latero-apical spines and 6 intermediate spines arranged in arc. Second metatarsomere with only 2 latero-apical spines. Ventral surface of first and second metatarsomeres with long setae. Male anal tube narrowing to acute apex (in dorsal view), with a process ventrally. Hind margin of female sternite VII deeply concave. Female anal tube nearly oval, gradually narrowing apically (in dorsal view). Anal column short. Gonoplares rounded.

Composition. The genus is so far only represented by the type species.

Distribution. Northern Brasil.

Differential diagnosis. The new genus differs from *Thionia* s. str. by weak sublateral carinae of metope (Figs 28, 68), lateral margins of metope diverging above clypeus, slightly convex metopoclypeal suture, and wide forewings with wide hypocoastal plate (Figs 27, 71, 72).

***Thiopara fusca* (Melichar, 1906), comb. nov.**
(Figs 26–28, 37, 68–74)

Thionia fusca Melichar, 1906: 274.

Type material examined. Lectotype (here designated), male, “Cat. № / 4922” [white, handwritten in ink] // “Para / [?] Lieb.” [blue, handwritten in ink] // “*Issus / fusca* N.” [white, handwritten in ink] // “Mus. / Berol. [white, printed] // “*fusca* [handwritten in ink], / det. Melichar [printed]” [white]. Female, paralectotype, “4922” [white, printed] // “Para. [?] Sieb” [blue-green, handwritten in ink] // “*Fuscus / N.*” [blue-green, handwritten in ink] // “Mus. / Berol.” [white, printed] // “*fusca* [?] [handwritten in ink], det. Melichar. [printed]” [white]. The male lectotype is pierced by a pin through the abdomen below the scutellum.

Notes. In the original description Melichar (1906) mentioned the material from Fonteboa, deposited in Stockholm, and the specimens from Para and Bogota, deposited in Berlin. In fact four specimens from “Para” and “Bogota” studied in the collection of Museum für Naturkunde belong to three different species. Herewith male and female from Para among these four specimens belong to the same species, and I designate them as lectotype and paralectotype accordingly (Fig. 37).

Supplementary description (Figs 26–28). As mentioned for genus. General coloration light brown. Metope with dark brown spots. Postclypeus dark brown frontally. Paranotal lobes of pronotum dark brown, each with pair of dark brown to black spots behind pedicel. Forewings with dark brown and light yellow marks. Hind wings translucent, with dark brown veins. Apices of rostrum and leg spines black.

Total length. 6.0 mm.

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