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TRICHOPTERA COLLECTED BY PROF. J. ILLIES IN NEW GUINEA AND NEW CALEDONIA

By Jan Sykora[1]

LIMNOLOGISCHE FLUSSSTATION, SCHLITZ, W. GERMANY

Abstract: The following are described: *Caledonotrichia* (n. g.) *illiesi, C. minor, Cheumatopsyche amiena,* and *Gracilipsodes* (n. g.) *psocopterus* from New Caledonia; and *Chimarra sedlaceki, C. goroca, C. gressitti* and *Diplectrona triangulata* from New Guinea.

During the period of his expedition to Australia and New Zealand Prof. J. Illies also made collections on New Guinea and New Caledonia. Through his courtesy I have been able to study this material.

The collections were not large in numbers, but during the short period that Illies worked on New Guinea and New Caledonia no fewer than 11 species were collected; all but 3 are described as new in this paper. Specimens captured on Mount Wilhelm in New Guinea are not included in this paper and will be described in a special study.

The caddis flies of New Guinea are scarcely known and have been little studied. Ulmer (1915, 1938) described some species from New Guinea; Ross (1951) discovered 3 species of the genus *Agapetus*. As a result of a very intensive collection made by Miss Cheesman on her expedition to New Guinea, Kimmins (1962) wrote a fundamental study on Trichoptera of this region and described 50 new species, bringing the total recorded up to 86. On the other hand the Trichoptera of New Caledonia appear to be almost completely unknown. The first records of New Caledonian Trichoptera were by Kimmins (1953) who described 4 new species from this island.

On the basis of this relatively poor material it is impossible to make any definite statement on the affinities and origin of New Guinean and especially New Caledonian Trichopteran fauna but the greater part of the species seems to be endemic.

Except where noted, types described in this paper are deposited in the collection of Bishop Museum (BISHOP), Honolulu, Hawaii.

Family HYDROPTILIDAE

Genus **Caledonotrichia** Sykora, new genus

♂. Spurs 0, 3, 4; 3 ocelli present, antenna with about 30 segments; segments 1 and 2

1. This study was supported by a research scholarship from the Humboldt Foundation in West Germany.

of maxillary palpus short, 3rd rather longer than 4th and slightly shorter than 5th which is longest; clypeus bearing a conspicuous brush of long androconia. Fore wing broad, apex scarcely produced, base with costal area apparently thickened bearing a dense fringe of black androconia. Venation of wings as in figs. 1, 2. R_3 arising from stem of R_4+R_5, vein M_{1+2} fused with R_5 arising slightly basad from R_3, M_3+M_4 simple. Cell R_{4+5} of hind wing with a short footstalk, R_{2+3} simple. Genital characters of male are obscure; it is difficult to homologize them with corresponding parts in other Hydroptilidae. Especially the structure which I have termed "clasper" is perhaps open to criticism. This clasper is somewhat bean-shaped with dorsal and ventral lobes, subgenital plate composed of 2 long rods.

Type-species: *Caledonotrichia illiesi* n. sp.

Caledonotrichia illiesi Sykora, new species

This peculiar species is very similar to *C. minor*, but differs from it by distinct genital characters and in lacking a patch of androconia in the central part of fore wing.

♂. Length of body 3 mm. Color of head and body dark brown, appendages and venter slightly lighter, wings grayish brown fringed with long, gray hairs, fore wing bearing a row of androconia on thickened part of Sc. General structure typical for genus. Genitalia as in fig. 1A, B. Segment 9 deep, dorsal aspect trianguloid, lateral aspect quad-

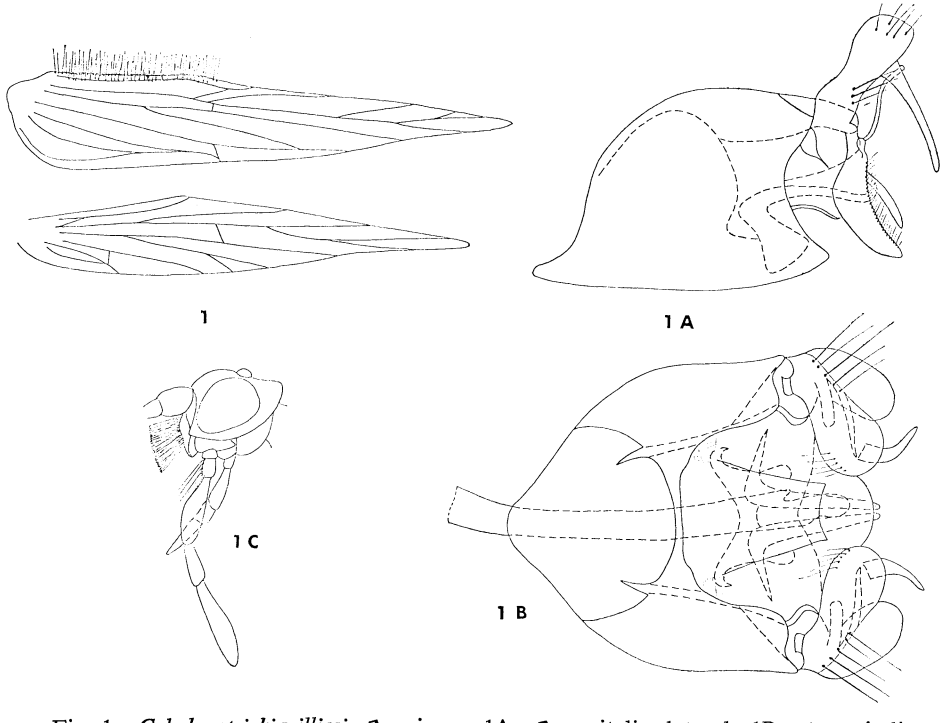

Fig. 1. *Caledonotrichia illiesi*, ♂, wings; 1A, ♂ genitalia, lateral; 1B, ♂ genitalia, dorsal; 1C, head, lateral.

rangular with fairly sharp and prolonged anteroventral angle, dorsum incised apically forming a fairly narrow, external sclerotized bridge with 2 short lateral processes projecting anteriorly. Tergite 10 membranous, in dorsal view, widest at base and somewhat tapering to apex; latter slightly emarginate, 1/2 as wide as base. Subgenital plate is a paired, sclerotized rod which has a long straight apical part with pointed apex curved dorsad, and a short ventral part having a large heel-like base. Clasper bean-shaped, divided into 2 lobes; dorsal lobe with a rounded somewhat dilated dorsal portion provided with a long sinuous mesal spine directed posteroventrad and projecting from its mesal face at apex; ventral lobe with an oblique apex with 2 long spine-like mesal processes projecting dorsally, one with an oval, dilated apex, the other with a short bristle at distal end. Aedeagus simple, basal part slightly curved, apical part straight with slightly dilated, membranous apex.

Holotype ♂ (BISHOP 7468), New Caledonia, River near Col d'Amieu, 478 m, 13–14.IX. 1966. Paratopotypes: 2♂♂ same data (coll. Sykora).

This species is dedicated to Prof. Dr J. Illies, the world famous plecopterist, whose intensive collecting in the Australian region has greatly increased our knowledge of the water insects.

Caledonotrichia minor Sykora, new species

Most closely related to *C. illiesi*, this species is readily characterized by a patch of an-

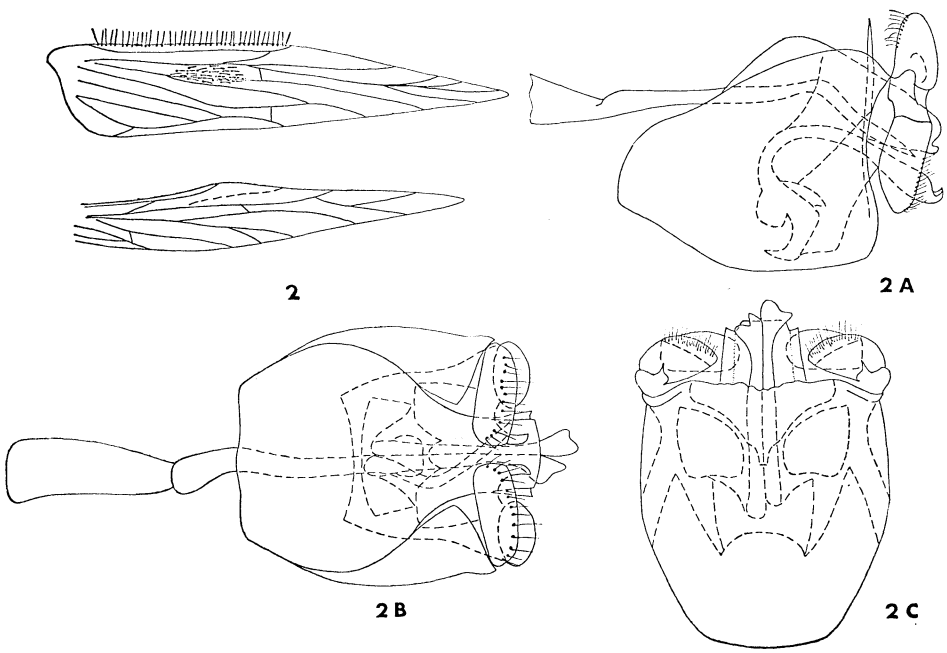

Fig. 2. *Caledonotrichia minor*, ♂, wings; 2A, ♂ genitalia, lateral; 2B, ♂ genitalia, dorsal; 2C, ♂ genitalia, ventral.

droconia in fore wing, by the form of its 10th tergite and aedeagus, and the curious, dilated apex of the paired subgenital "rods."

♂. Length of body 2.5 mm. Color dark brown, without conspicuous markings. Wings fringed with long hairs, fore wing with a conspicuous, oval patch of androconia between Cu_1 and Rs and with a row of stiff androconia located on thickened part of Sc. General structure typical for genus. Genitalia as in figs. 2A, B, C. Segment 9 long and massive having dorsal portion imcomplete, lateral aspect trianguloid with obliquely truncate anteroventral portion and a long, inner, unpaired rod. Tergite 10 composed of a large mesal portion with truncate apex and a pair of short, slender lateral bands with acute apices. Subgenital plate formed by a pair of slender processes curved posteriad, provided with a dilated and incised tip and a heel-shaped anterior part arising from a massive quadrangular base. Clasper bean-shaped, dorsal lobe flattened with truncate apex curved mesad and bearing a long mesal process; ventral lobe elongated, slightly cylindrical with rounded apex hirsute on its mesal face. Clasper attached to base of subgenital plate with frame-like structure. Aedeagus long, rod like, with sclerotized pointed tip curved laterad.

Holotype ♂ (BISHOP 7469), New Caledonia, River near Col d'Amieu, 478 m, 13-14.IX. 1966. Paratypes: 7♂♂ (Sykora coll., BISHOP, H.H. Ross coll.).

Family PHILOPOTAMIDAE

Chimarra falcata Kimmins

Specimens examined: 1♂, New Guinea, Wau, Edie Creek, 2050 m, 11.X.1966 (Sykora coll.).

Chimarra sedlaceki Sykora, new species

This species is most closely related to *Ch. falcata* Kim., differing from it in the form of its aedeagus with leaf-like, sclerotized ventral part and in the structure of the 10th tergite. Also, it may be distinguished from other New Guinea species by the footstalked fork R_2 in fore wing as well as by the situation and form of mesal keel in addition to other differences in the genitalia.

♂. Length 7 mm. Color yellowish brown, antennae fuscous, faintly annulated with yellow in basal 1/2, palpi grayish brown, legs yellowish, head and prothorax also yellowish covered with pale yellow hairs, rest of thorax and dorsal side of abdomen fuscous, ventrum slightly lighter. Wings with grayish membrane covered with gray pubescence. In fore wing cell R_2 with a short footstalk, R_4 sessile, the former rather narrow, cell M_1 shorter than its footstalk, Cu_1 with a very short footstalk. Rs arises slightly distad of base of thyridial cell. Rs sinuous conspicuously narrowing before discoidal cell, whose veins are slightly thickened. Median cell with a whitish oval spot near the upper margin. In hind wing cells R_2 and R_4 sessile, cell M_1 very short with a long footstalk, Cu_{1a} with a short one. Loop of 2A absent. Genitalia as in figs. 3A, B, C, D. Segment 9 with lateral aspect slightly sinuous, narrowed dorsally and with wide ventral portion bearing a short mesoventral keel situated in the center. Lateral aspect of segment 10 long and triangular, gradually tapering to a somewhat blunt apex, dorsal aspect with a deep incision forming a pair of lateral lobes linked by membranous central lobe, lateral lobes slightly

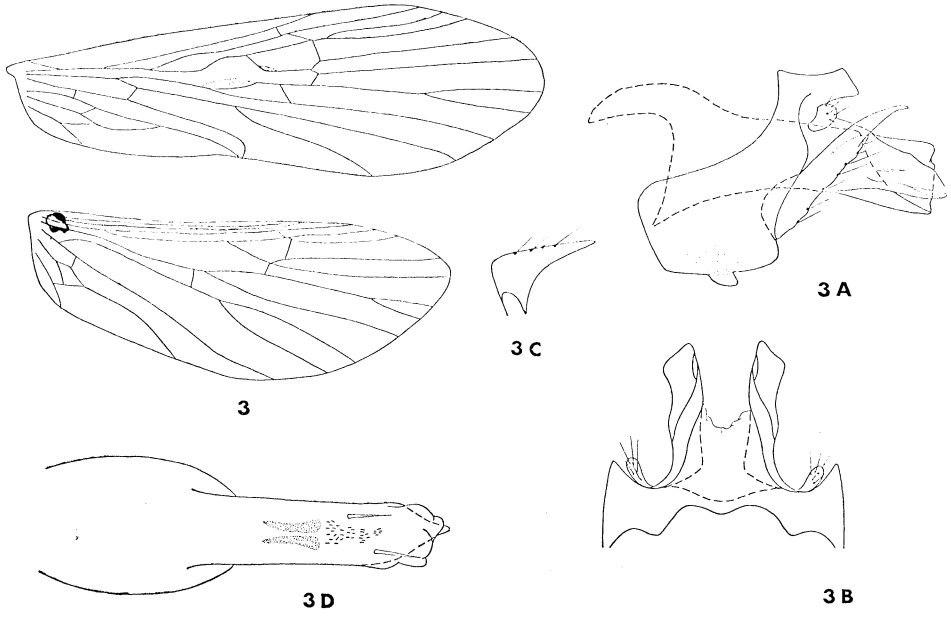

Fig. 3. *Chimarra sedlaceki*, ♂, wings; 3A, ♂ genitalia, lateral; 3B, ♂ genitalia, dorsal; 3C, clasper, dorsal; 3D, aedeagus, dorsal.

sinuous with dilated, trianguloid posterior part. Cerci small, rounded at apex. Aedeagus with a swollen basal part and slender apical portion with leaf like ventral side abruptly narrowing to a sharp apex; within the enclosed membrane can be seen a pair of straight black spines and a brown sclerotized structure located basally. Clasper directed dorsad, its pointed apex bowed mesad, lateral aspect ensiform with setate posterior margin.

Holotype ♂ (BISHOP 7470), NE New Guinea, Wau, 1500 m, 10.X.1966, at light.

This interesting new species is named in honor of Mr J. Sedlacek of Bishop Museum whose intensive collecting in New Guinea has greatly increased our knowledge of the insect fauna.

Chimarra goroca Sykora, new species

This species is related to *Ch. falcata* Kim. and *sinuosa* Kim., but differs in form of aedeagus having a pair of sclerotized hooks within membranous portion. It may be also distinguished from all other New Guinean species by the elongate mesal process of segment 9 forming a strong keel in addition to other differences in venation and genitalia.

♂. Length 7 mm. General color yellowish with prominent dark eyes, antennae brown, annulated with yellow, palpi brown. Grayish membrane of fore and hind wings with fine pubescence, fore wing with cells R_2 and R_4 sessile, M_1 shorter than its footstalk, Cu_{1a} with very short footstalk, median and thyridial cells short, Rs arises slightly distad of base of the latter, Rs sinuous without any thickening before discoidal cell, but base of latter with veins slightly thickened; hind wing with cells R_2 and R_4 sessile, cell M_1 short

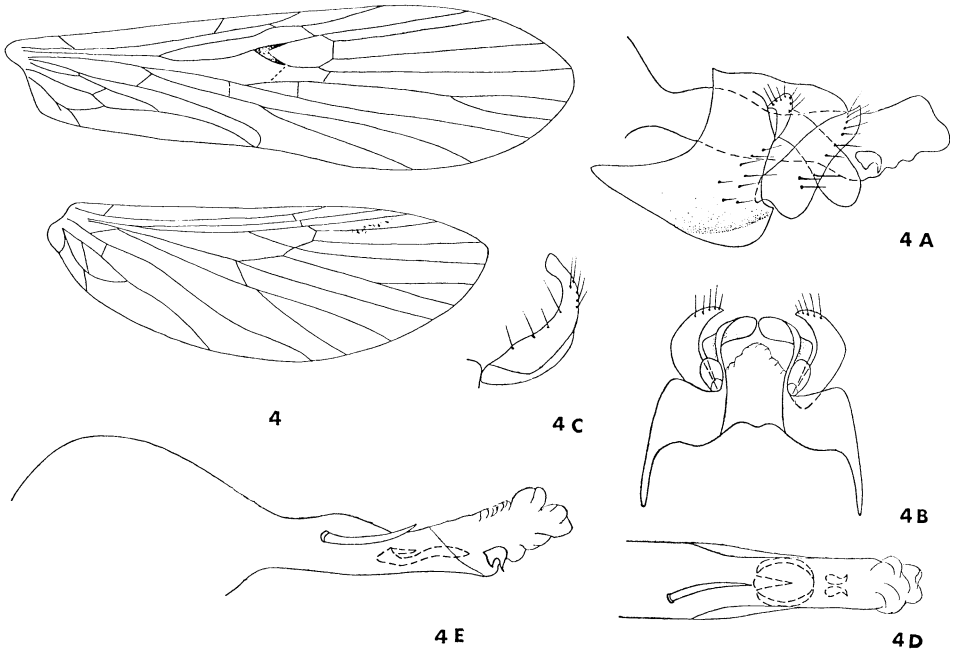

Fig. 4. *Chimarra goroca*, ♂, wing; 4A, ♂ genitalia, lateral; 4B, ♂ genitalia, dorsal; 4C, clasper, caudal aspect; 4D, aedeagus, dorsal; 4E, aedeagus, lateral.

with very long footstalk, loop 2A absent. Genitalia as in figs. 4A, B, C, D, E. Lateral aspect of segment 9 nearly triangular, its basal part very broad with prolonged anteroventral corners and bearing a large, sharp mesal keel on ventrum. Tergite 10 somewhat shorter than segment 9, fused to it. Mesal lobe membranous and short, lateral lobes developed in a simple, flattened strips from lateral side oblongate with rounded apices slightly twisted and curved mesad. Cercus short, laterally compressed with rounded apical margin. Aedeagus tubular with bulbous basal part, lower margin extending to a triangular plate. Within the aedeagus there are a black spine and a fork-like chitinized structure in the center; membranous apex enclosing a pair of short hooks with pointed apices directed ventrad. Clasper shorter than in *Ch. falcata* Kim., lateral aspect stout near base, tapering to acute, slightly sinuous apex; posterior aspect of latter rounded and slightly dilated.

Holotype ♂ (BISHOP 7471), NE New Guinea, Goroka, Omaheka River, 2200 m, 28.IX. 1966.

Chimarra gressitti Sykora, new species

This species is very close to *Ch. sabrona* Kim. and *Ch. schmidi* Kim. from which it differs in the shape of clasper and lateral aspect of tergite 10 with a deep incision in the center. The following description is based on a single, well developed pharate adult, dissected from its pupal skin.

Mature pupa, ♂. Length of body 3.5 mm, wings probably grayish, head, dorsal side

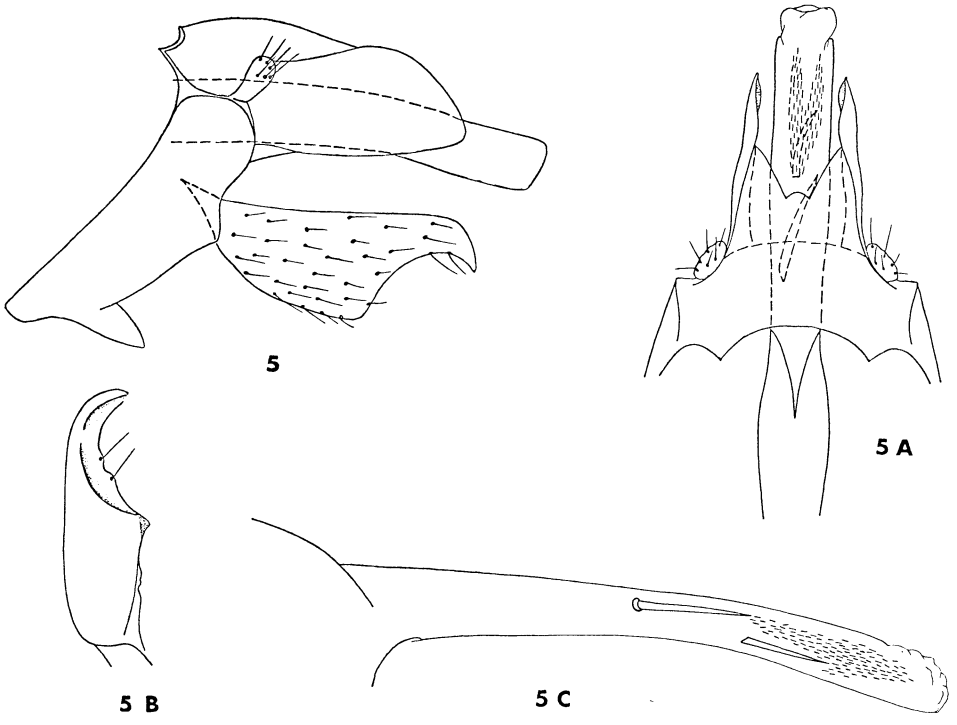

Fig. 5. *Chimarra gressitti*, ♂ genitalia, lateral; 5A, ♂ genitalia, dorsal; 5B, clasper, ventral aspect; 5C, aedeagus, lateral.

of thorax, sclerotized parts of abdomen brown, antennae brown, annulated with faint, yellow rings, palpi brown. Genitalia as in figs. 5, A, B, C. Segment 9 narrow, ring-like, only slightly dilated in central portion, bearing a keel-like ventral process directed apically. Segment 10, 3-lobed, median lobe membranous, slightly longer than 1/2 of lateral one, with a rectangular incision in center, lateral lobes forming a pair of thin plates with lateral aspect nearly oblongate, lower margin straight, apicodorsal angle curving down to a rounded apex. Cerci small, pear-shaped, rounded at apex. Clasper attached by anterodorsal corner; from lateral aspect narrowed at its base, parallel-sided for 1/2 its length, with roundly excised ventral margin in apical 1/2, dorsal margin straight resulting in a long, digitate, slightly pointed apicodorsal angle curved ventrad. Ventral aspect with a black tooth located about half way along inner margin. Aedeagus slender, cylindrical enclosing 2 black spines and a patch of spiculae.

Holotype ♂ (mature pupa) (BISHOP 7472), NE New Guinea, Wau, Edie Creek, 2050 m, nr Wau, 11.X.1966.

I take pleasure in naming this new species in honor of Dr J. L. Gressitt, the eminent entomologist and the world famous student of insular fauna.

Chimarra sp.

Specimen examined: 1♀, New Guinea, Edie Creek, 2050 m, nr. Wau, 11.X.1966.

Family HYDROPSYCHIDAE

Herbertorossia striata Kimmins

Specimens examined: 1♂, 1♀, New Guinea, Wau, 1500 m, at light, 10.X.1966.

Cheumatopsyche amiena Sykora, new species

This rather large species may be readily separated from all other species by the form of its 10th tergite bearing 2 pairs of digitate processes and by the shape of terminal segment of the clasper.

I have placed this New Caledonian species in the genus *Cheumatopsyche* with some hesitation and would be not surprised if a new genus should be erected for it.

♂. Length of body 13.5 mm, fore wing 11 mm. Body and wings uniformly ochraceous, ventrum and legs slightly lighter; with only a few inconspicuous dark areas in anal region of fore wing. Fore wing with crossvein m- cu and Cu widely distant from one another, space between R_5 and M_1 with a row of short spiculae. In hind wing veins M and Cu_1 are close to each other, crossvein m- cu very short, M forking markedly basad than Cu_{1a} and Cu_{1b}. Wing coupling mechanism consisting of some strong, short bristles on distal part of A_1.

Genitalia as in figs. 6 A, B, C. Segment 9 from side view narrow, bow-like, lateral lobe ovate and projected caudad about as far as tergum, dorsal aspect divided by a central furrow into 2 lateral, slender parts, rounded at apex. Tergite 10 fused to 9, forming

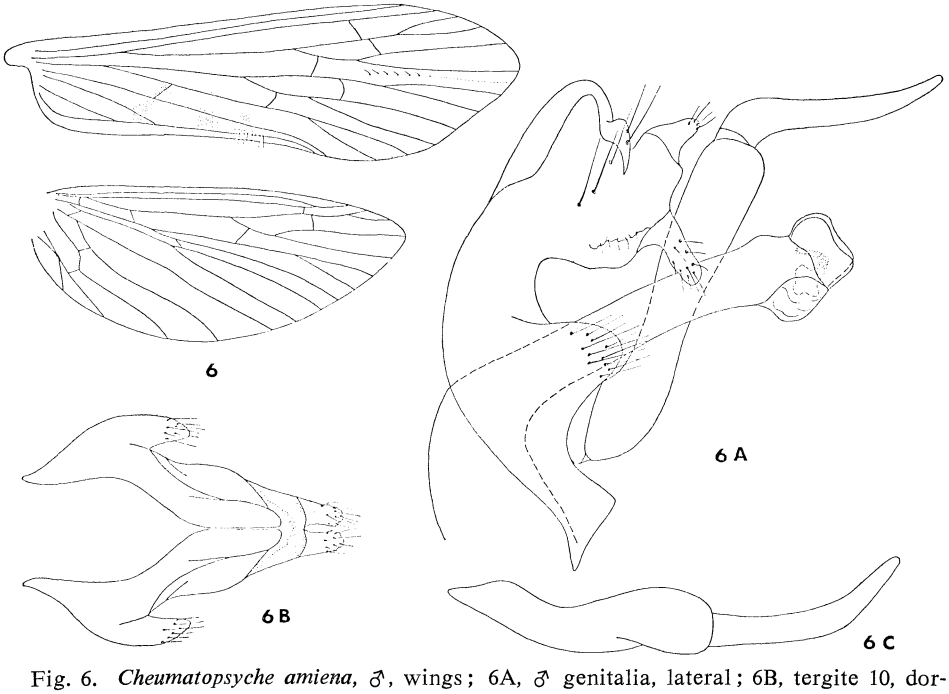

Fig. 6. *Cheumatopsyche amiena*, ♂, wings; 6A, ♂ genitalia, lateral; 6B, tergite 10, dorsal; 6C, clasper, ventral aspect.

a short hood with some warts near central margin, apicodorsal angles produced slightly upwards, projecting in a pair of digitate processes; 2nd pair of longer, finger-like processes arises from the middle of the caudal margin of tergite 10. Clasper with nearly cylindrical basal segment, slender distal segment about 1/2 as long as basal one, slightly sinuous and narrowing gradually to sharp apex. Aedeagus from side tubular with somewhat dilated base bowed ventrad, bulbous apex carrying a pair of incurved lobes on dorsal part, and a ventral widened membranous lobe.

Holotype ♂ (BISHOP 7473), New Caledonia, River near Col d'Amieu, 478 m, 13–14.IX. 1966.

Diplectrona triangulata Sykora, new species

This species is most closely related to *D. mafulua* Kim., differing from it in the shape of tergite 10 which possesses a deep, triangular incision and in its long, slender terminal segment of clasper. Moreover, the presence of a pair of internal structures within abdominal segment 7 as well as slightly elongated lateral filaments of segment 5 may be helpful for the determination of this species.

♂. Length of body 11 mm, fore wing 9 mm. Head light brown with very dark, large eyes, interocular distance very narrow. Antennae yellowish brown, as long as fore wing, gradually tapering to apex. Dorsal side of thorax light brown, ventral parts, including legs yellowish. Fore wing with hyaline membrane sparsely covered with fuscous hairs. Abdomen pale, lateral filaments slightly longer than segment 5, segment 7 with a pair of internal, oval, reticulated bodies. Genitalia as in figs. 7, 7A. Lateral aspect of segment 9 with broad dorsal portion abruptly narrowing to ventral part, dorsum with sclerotized caudal margin divided by a central, membranous area into 2 parts. Tergite 10 from the side forming a pair of triangular plates with pointed apices directed dorsad, dorsal aspect divided by a deep, triangular incision into 2 lateral lobes fused at broad base and grad-

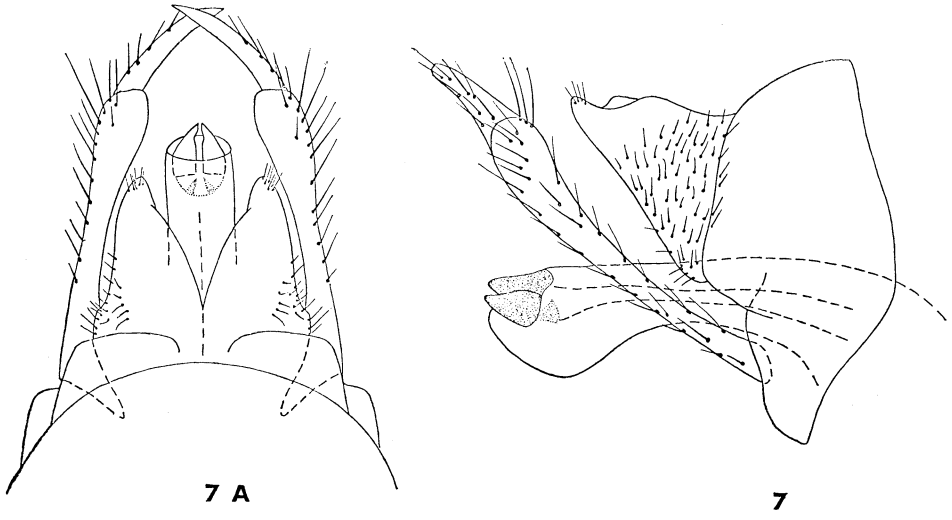

Fig. 7. *Diplectrona triangulata*, ♂, genitalia, lateral; 7A, ♂ genitalia, dorsal.

ually tapering to rounded apex. Aedeagus short, with heavily dilated apex bearing a pair of sclerotized processes. Clasper slender, basal segment longer than apical, the latter very narrow with apex slightly curved mesad.

Holotype ♂ (BISHOP 7474), NE New Guinea, Wau, 1500 m, at light, 10.X.1966.

Family POLYCENTROPODIDAE

Polycentropus similis Kimmins

Specimen examined: 1♂, New Guinea, Wau, 1500 m, at light, 10.X.1966.

Family LEPTOCERIDAE

Genus **Gracilipsodes** Sykora, new genus

In wing venation *Gracilipsodes* approaches most closely *Athripsodes* differing from it in the thickened, relatively short Sc and a very short crossvein m- cu in the fore wing. *Gracilipsodes* may be easily distinguished from other genera by the unique spur formula.

♂. Spurs 0, 1, 1. Antenna about 3× as long as fore wing. Maxillary palpus with basal segment short and about 2/3 as long as 2, 2 slightly shorter than 3, the last about 2× as long as basal one, 4 and 5 as long as 1; labial palpi very short. Frons with a pair of whitish, longitudinal, lateral warts covered with hairs, middle and hind legs with tibiae and basal segments of tarsus very long. Fore wing about 4× as long as wide, slightly broadening towards rounded apex. Sc thickened and short, fork R_2 with a very short footstalk, discoidal cell as long as thyridial, the former nearly 1.5× as long as its footstalk; Cu_{1a} present, crossvein m- cu very short. Hind wing narrow, about 2× as long as wide with Sc slightly thickened and M forked.

Type-species: *Gracilipsodes psocopterus* n. sp.

Gracilipsodes psocopterus Sykora, new species

♂. Length of body 7 mm. Color of body dark brown, legs slightly lighter with some whitish spots, wings nearly transparent covered with very sparse pubescence. Venation (fig. 8) and general structure as in generic description. Male genitalia as in figs. 8A–C. Segment 9 ring-shaped, narrow, nearly as long dorsally as ventrally; dorsal apical margin triangularly produced at its center, ventral apical margin deeply incised resulting in a central, narrow sclerotized bridge. Tergite 10 takes the form of 2 long, straight spines dilated laterally before apex. At their base arise the digitate and stout cerci slightly shorter than the 10th tergite. Clasper deep and broad at base, 2-segmented; basal segment separated from apical one by a short rounded excision resulting in a massive process directed dorsocaudad and toothed on inner face; apical segment small, pyriform, projecting from mesal portion of basal segment and composed of 2 lobes armed with strong teeth on their mesal portion. Aedeagus boot-shaped, composed of tubular basal part and membranous apex with lateral portion produced in a long paired, heavily sclerotized process directed ventrad and gradually tapering to rounded tip.

Holotype ♂ (BISHOP 7475), New Caledonia, River near Col d'Amieu, 478 m, 13–14.IX. 1966.

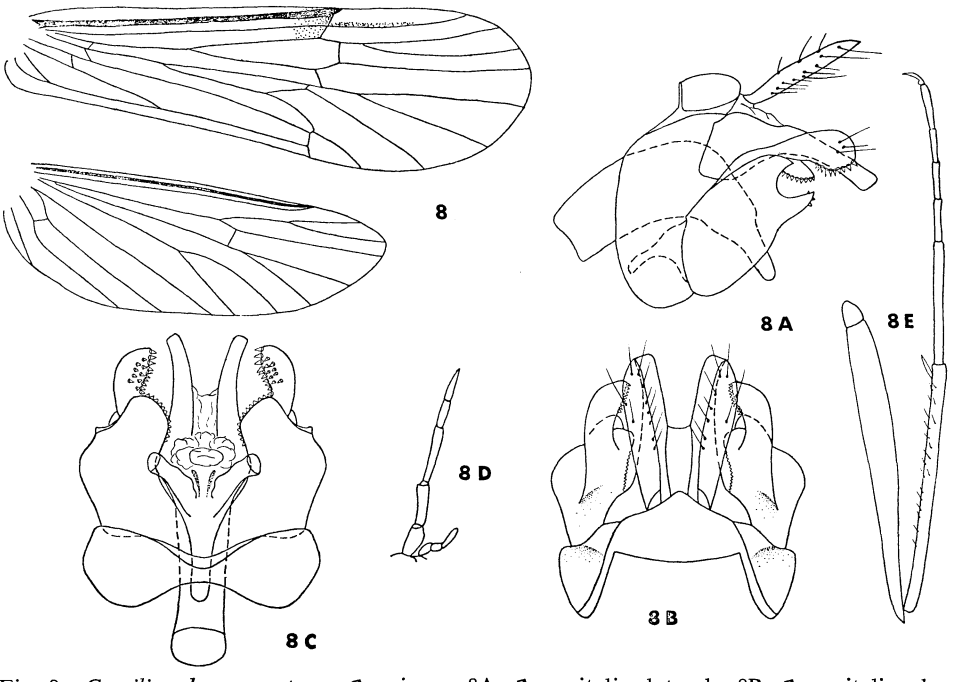

Fig. 8. *Gracilipsodes psocopterus*, ♂, wings; 8A, ♂ genitalia, lateral; 8B, ♂ genitalia, dorsal; 8C, ♂ genitalia, ventral; 8D, maxillary and labial palp, lateral; 8E, middle leg, lateral.

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