

## THE AUSTRALIAN ACHILINE GENERA *ANEIPO* KIRKALDY AND *BUNDUICA* JACOBI (HOMOPTERA: FULGOROIDEA: ACHILIDAE)\*

K. J. LAMBKIN

Department of Entomology, University of Queensland, St Lucia, Queensland 4067.†

### Abstract

The achiline genera *Aneipo* and *Bunduica* are redescribed. A key and illustrated descriptions are given of the four species of *Aneipo*, *diva* Kirkaldy (north Queensland), *ceres* Fennah (southeast Queensland and northern New South Wales), *diana* Fennah (north Queensland) and *minerva* sp.n. (New South Wales), thereby providing the first accounts of the structure of the male and female genitalia in the genus. A similar description of the monotype of *Bunduica*, *rubrovenosa* Jacobi (southwest Australia), confirms the placement of *Bunduica* within the Achilini.

### Introduction

Fennah (1950) established the tribe Achilini and provided a key to the eight genera: *Achilus* Kirby (Australia), *Faventilla* Metcalf (southeast Asia), *Booneta* Distant (New Guinea), *Nelidia* Stål (Brazil), *Flatachilus* Fennah (Brazil), *Catonidia* Uhler (Japan, Australia), *Aneipo* Kirkaldy (Australia) and *Bunduica* Jacobi (Australia). *Bunduica* was only tentatively included in the tribe "pending a critical examination of the type species". No additional taxa have since been included.

*Aneipo* and *Bunduica* are now re-examined. *Aneipo*, with four species, is known from rain forest areas of eastern Australia from near Sydney to the Cairns district. The few known specimens have mostly been taken at light. As three of the species (*A. diva* Kirkaldy, *A. ceres* Fennah and *A. minerva* sp.n.) are large and colourful and have been taken in some well collected areas (e.g. Mission Beach and Kuranda in north Queensland, Lamington National Park and Mt Tamborine in southeast Queensland, and Barrington Tops in New South Wales), the very small number of known specimens is surprising. Indeed, the fourth species, *A. diana* Fennah, which is small and mostly white, is not represented in any Australian collection, being known only from the types in the British Museum. *Bunduica* is known only from a few specimens of the isolated southwest Australian *B. rubrovenosa* Jacobi. Re-examination of this species has confirmed Fennah's tentative placement of the genus.

### Male genitalia

Most of the species in the Achilini were described decades ago, the most recent descriptions being those of *A. ceres* and *A. diana* by Fennah (1949) and *Flatachilus diffinis* (Walker) by Fennah (1950). The structure of the female genitalia has been described for only *F. diffinis* (see Fennah 1950), and that of the male genitalia neglected except for Fennah's original brief description (from an external examination) of *A. diana*.

The structure of the male genitalia of the two genera herein examined is typically achilid, especially in having the aedeagus excessively withdrawn into the abdomen (Fennah 1945). However, a clearly defined "median apodeme" (Fennah 1945) or "aedeagal appendage strut" (O'Brien 1971) is not developed in *Aneipo* or *Bunduica*. This long sclerotised rod from the midpoint of the transverse bar connecting the bases of the claspers or from the "venter of the phallobase" (in *Juniperia* O'Brien, 1971), passing upward to the base of the aedeagus, is a characteristic feature of the Plectoderini, the largest achilid tribe. In *Aneipo* and *Bunduica* the basal region of the aedeagus is recurved ventrally for a short or a considerable distance (Figs 9, 51), but has no connection with either the ventral region of the phallobase or the bases of the claspers.

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†Present address: Department of Plant Pathology and Agricultural Entomology, University of Sydney, New South Wales 2006.

### Measurements

All measurements are in millimetres, with the part being measured placed in the horizontal plane. The total length of the insect was taken from the anterior extremity of the vertex to the apex of the folded fore wings; and the body length from the same anterior point to the tip of the claspers in the male, or the tip of the third ovipositor valves in the female. In specimens mounted with the wings set out, no measurement of total length was attempted. The length of the frons was measured from the most anterior part of the head to the points of indentation of the frontoclypeal suture, that of the postclypeus from these points to the points of indentation of the clypeal suture. The length of the fore wing was taken along a line from its basal articulation to the apical margin, parallel to the posterior margin of the clavus, and the width along a transverse line from the apex of the clavus to the anterior margin.

### Abbreviations

The following abbreviations are used: AM Australian Museum, Sydney; ANIC Australian National Insect Collection, CSIRO, Canberra; BMNH British Museum (Natural History), London; BPBM Bernice P. Bishop Museum, Honolulu; DPI Queensland Department of Primary Industries, Brisbane; NMV National Museum of Victoria, Melbourne; QM Queensland Museum, Brisbane; SAM South Australian Museum, Adelaide; UH Zoologisches Institut und Zoologisches Museum, Universität Hamburg, Hamburg; UQ Department of Entomology, University of Queensland, Brisbane; WAM Western Australian Museum, Perth.

### Genus *Aneipo* Kirkaldy

*Aneipo* Kirkaldy, 1906: 425. Type-species, by monotypy, *Aneipo diva* Kirkaldy, 1906: 425.

*Tudea* Distant, 1907a: 290. Type-species, by monotypy, *Tudea picturata* Distant, 1907a: 290 (= *Aneipo diva* Kirkaldy). (Synonymy by Distant, 1907b: 416.)

Small to large (total length 5.9-12.3, body length 4.0-8.0), with ♀ slightly larger than ♂.

**Head.**—Vertex distinctly depressed, wider than long, margins carinate or carinate to foliate. Lateral margins of frons and postclypeus convex. Frons depressed posteriorly, medially carinate for at least a short distance anteriorly, lateral margins strongly carinate anteriorly, markedly foliate posteriorly. Frontoclypeal suture obsolete medially, acutely converging anteriorly. Postclypeus slightly tumid medially, lateral margins carinate. Rostrum reaching to level of mid trochanters.

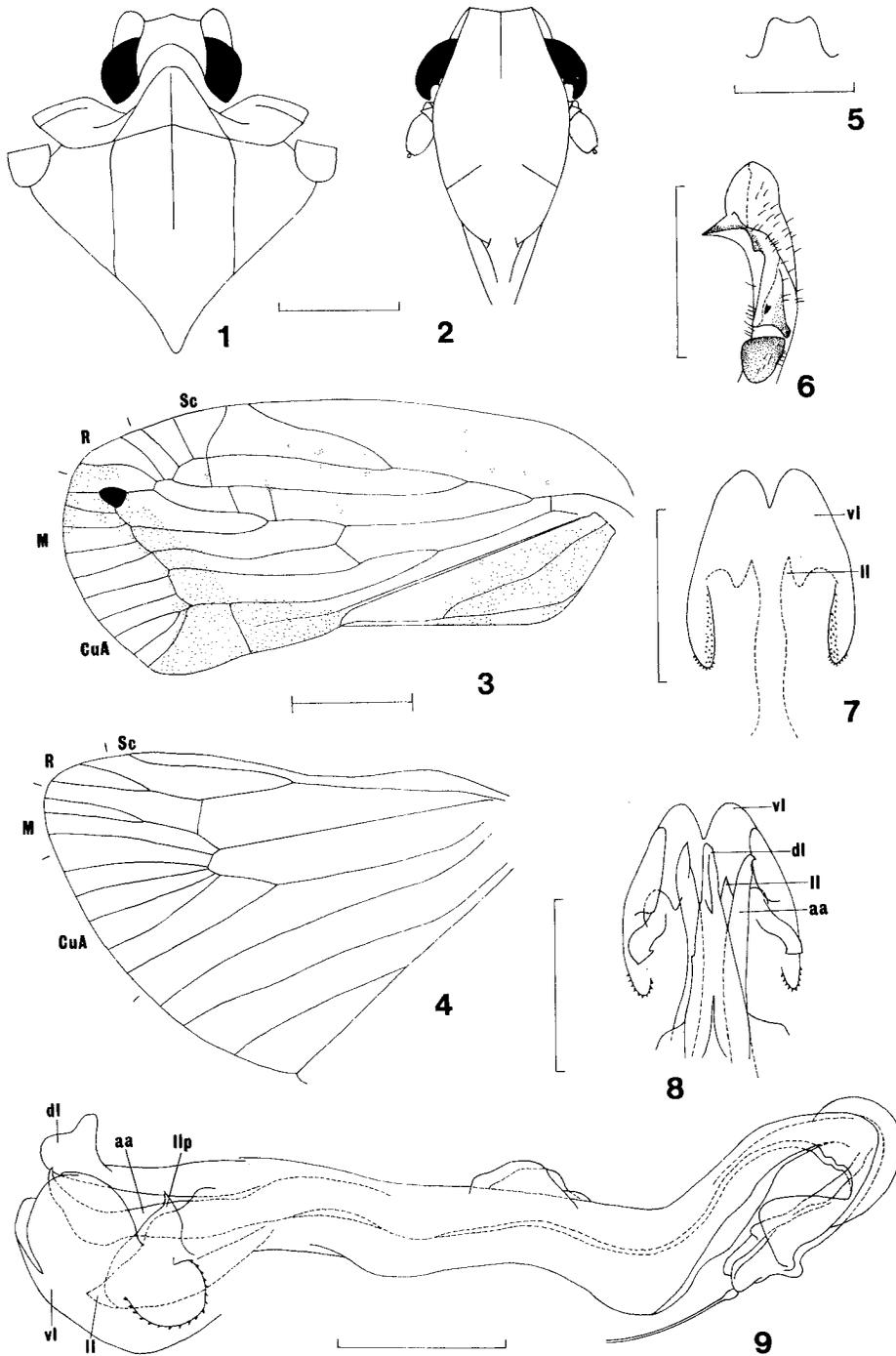
**Thorax.**—*Pronotum* distinctly wider than long, much shorter behind eyes than medially, posterior margin broadly obtusely angulate, lateral margins bicarinate; medial disc strongly developed, elevated, anteriorly projected, with median carina strongly developed, lateral margins carinate to foliate, joined anteriorly, at least slightly divergent posteriorly, reaching hind margin of pronotum. *Mesonotum* wider than long, tricarinate, the lateral carinae parallel, occupying entire length, median carina the anterior half. **Legs:** Hind tibia with one lateral spine at about midlength, a single bank of apical spines. **Wings:** Fore wings shallowly tectiform, distal regions partly overlapping. Fore wing broad, about 2-3 × as long as wide, about 2 × as long as claval suture; translucent; texture smooth; apical margin broadly rounded; posterior margin obtusely angulate at apex of clavus; CuA slightly curved to gently sinuate; point of separation of R from Sc far basal to level of basal forking of M.

**Abdomen.**—*Anal segment:* Anal lobe with paired basal processes short and broad, apex subconical; segment 11 transverse; segment 10 with posterodorsal margin straight. **Male genitalia:** Basal region of aedeagus dorsally upcurved and then recurved ventrally for a short distance. Phallobase with all lobes proximally distinct, each lateral lobe with a dorsally or posterodorsally directed process, ventral lobe with strongly upcurved lateral edges partly enclosing lateral lobes and distal aedeagal appendages. **Female genitalia:** Bursa copulatrix wall with dorsally attached internal sclerite. Ventral lobe of first valve with a central setose lobe, posterior margin with three longitudinal membranous lobes. Second valves simple, weakly sclerotised, the distinct distal regions of each valve broad-based, closely approximated; ventral basal lobe well developed, as is connecting pillar from dorsal basal lobe. Third valve with lateral lobe produced dorso-apically into a long, thin process; dorsal lobe with apex acutely pointed in dorsolateral view.

### Notes

The genus is most clearly distinguished by the depressed frons with carinate to foliate lateral margins, the rostrum reaching to the level of the mid trochanters, the shape of the basal region of the aedeagus and the strongly upcurved lateral edges of the ventral phallobase lobe.

*Aneipo* is restricted to the Australian continent.



FIGS 1-9—*Aneipo diva* Kirkaldy: (1) head and thorax, dorsal; (2) head, frontal aspect; (3) fore wing; (4) hind wing; (5) medioventral process of pygofer, ventral; (6) left clasper, dorsal; (7) ventral and lateral phallobase lobes, ventral; (8) phallobase and distal aedeagal appendages, dorsal; (9) aedeagus, lateral. (aa aedeagal appendage, dl dorsal lobe of phallobase, ll lateral lobe of phallobase, llp projection from lateral lobe of phallobase, vi ventral lobe of phallobase.) (Scale = 1 mm for 1, 2, 5; = 2 mm for 3, 4; = 0.5 mm for 6-9.)

**Key to species of *Aneipo***

1. Total length 5.9-6.5; body length 4.0-4.3; anterior carina of vertex weakly developed, incomplete laterally; median carina of frons occupying much less than anterior half length; lateral carinae of pronotum anteriorly converging and confluent; CuA apical crossvein line markedly recessed from M apical crossvein line; coloration predominantly white, fore wing with eight short, oblique brown stripes set along almost entire costal margin . . . . . ***diana*** Fennah
  - Total length 9.5-12.0; body length 5.9-8.0; anterior carina of vertex strongly developed, entire; median carina of frons occupying at least anterior half length; lateral carinae of pronotum parallel; CuA and M apical crossveins in line; coloration predominantly orange-yellow and red or brownish, fore wing without brown stripes along costal margin . . . . . 2
2. Posterior margin of vertex shallowly concave, lateral margins distinctly divergent posteriorly; fore wing without a large callus in subapical region of M<sub>1</sub>; coloration dull, mottled brown and stramineous. . . . . ***minerva*** sp.n.
  - Posterior margin of vertex deeply concave, lateral margins subparallel to slightly convergent or divergent posteriorly; fore wing with a large callus in subapical region of M<sub>1</sub>; coloration bright, stramineous to orange-yellow and red . . . . . 3
3. Anterior margin of vertex right-angled to acutely pointed; median carina of frons nearly entire, reduced for a very short distance posteriorly; fore wing with a small callus in subapical region of CuA, basal forking of M markedly distal to level of apex of clavus, mostly reddish, without small black-brown spots . . . . . ***ceres*** Fennah
  - Anterior margin of vertex broadly, obtusely angled; median carina of frons occupying anterior half length only; fore wing without a callus in subapical region of CuA, with basal forking of M at same level as or slightly proximal to level of apex of clavus, mostly orange-yellow with numerous small black-brown spots scattered over anterior half. . . . . ***diva*** Kirkaldy

***Aneipo diva* Kirkaldy (Figs 1-14)**

*Aneipo diva* Kirkaldy, 1906: 425.

*Tudea picturata* Distant, 1907a: 290 (Synonymy by Distant, 1907b: 416.)

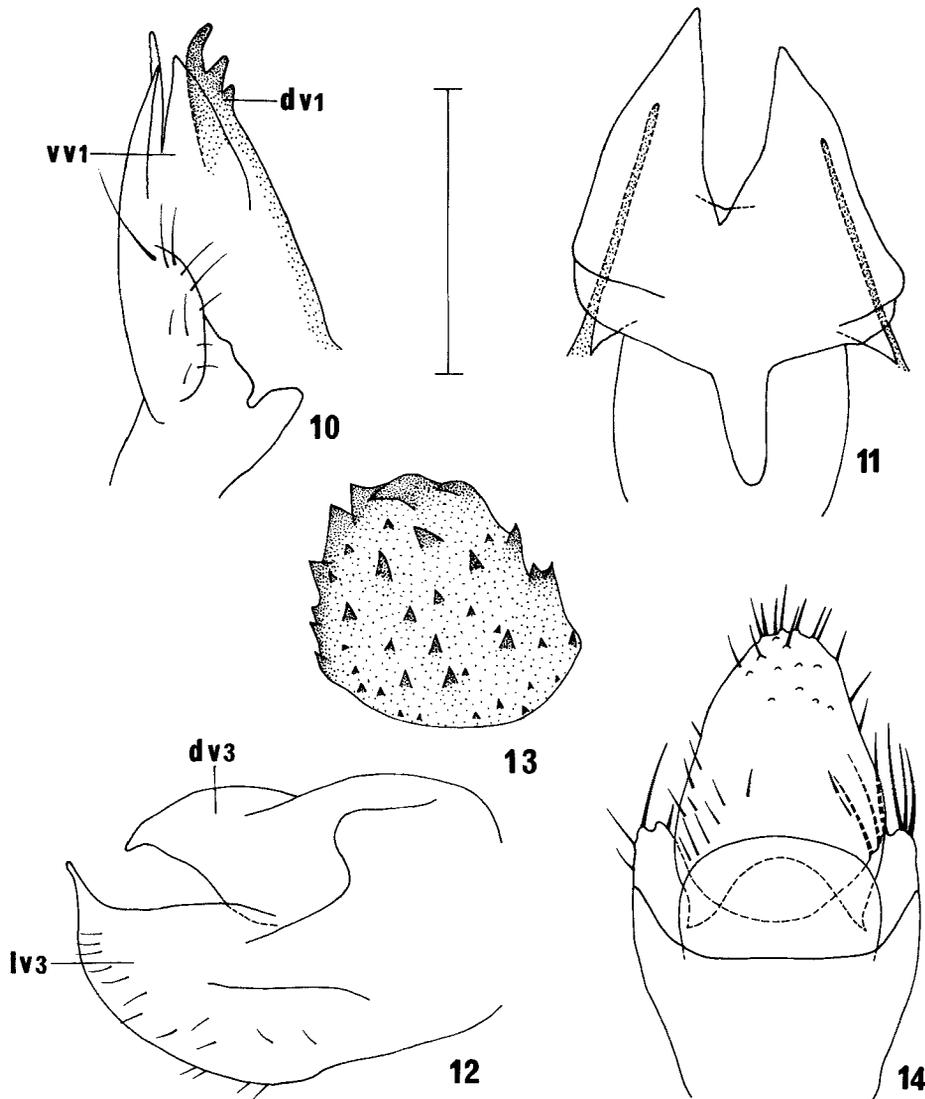
*Type.*—*Holotype* ♀ of *diva*, QUEENSLAND: Kuranda, 11.viii.1904, A. Koebele and R. L. C. Perkins, in BPBM. Type examined.

*Additional material examined.*—QUEENSLAND: three ♂♂, Mt Spec, 2,600' (800 m), 4-5.iii.1964, I. F. B. Common and M. Upton, in ANIC; one ♂, 9 miles (14 km) E of El Arish, 7.iii.1964, I. F. B. Common and M. Upton, in ANIC; one ♂, 25 miles (40 km) E of Tully, 8.iii.1964, I. F. B. Common and M. Upton, in ANIC; one ♀, Barron Falls, 6.ii.1965, J. G. Brooks, in ANIC; one ♀, Mourilyan Harbour, 6.vii.1911, Froggatt Collection, in ANIC; one specimen without abdomen, Mt Spec, 9.i.1968, J. G. Brooks, in ANIC; one ♂, Mission Beach, off foliage in rain forest, 8.x.1971, B. Franzmann, in DPI; one ♀, Kuranda, 28.xii.1963, G. B. Monteith, in UQ; one ♀, Kuranda, F. P. Dodd, in SAM.

Large, very colourful. Total length: holotype 11.3, ♂ 9.5-10.9, ♀ 11.1-11.3. Body length: holotype 6.5, ♂ 6.3-7.1, ♀ 6.7-7.9.

***Morphology and dimensions***

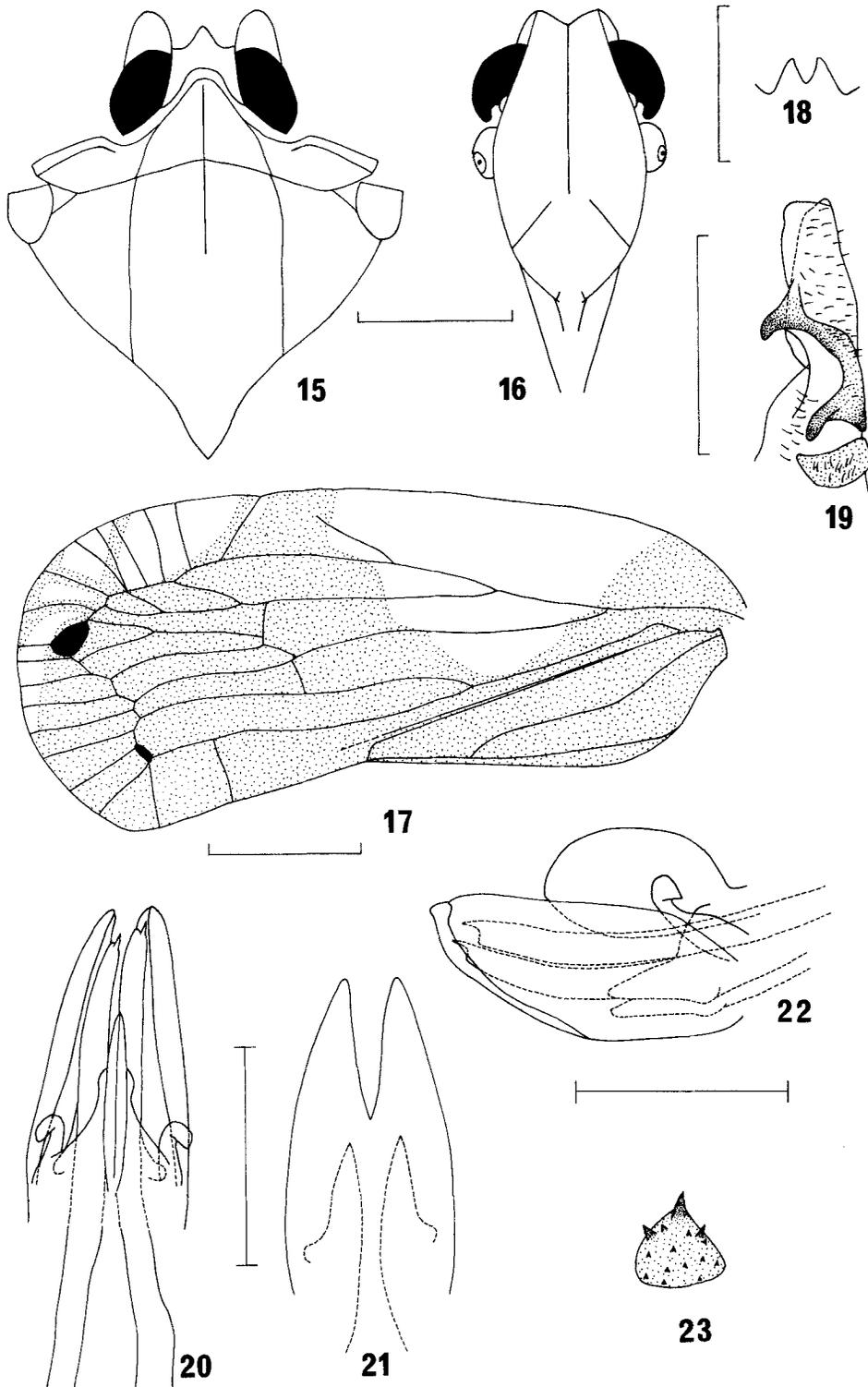
*Head.*—Vertex 1.9-2.4 × as wide as long (holotype 0.64: 0.30, ♂ 0.54 or 0.64: 0.28, ♀ 0.61-0.64: 0.28-0.30), margins carinate to foliate, anterior margin broadly, obtusely angled, posterior margin narrowly concave; lateral margins variable, ♀♀ subparallel to slightly outcurved posteriorly, ♂♂ of two types, those with narrower vertices (width 0.54) straight and parallel, those with wider vertices (width 0.64), slightly sinuate, incurved posteriorly. Width across eyes: holotype 1.42, ♂ 1.32-1.42, ♀ 1.38-1.42. Frons plus postclypeus 1.5-1.7 × as long as wide (holotype 1.86: 1.15, ♂ 1.69-1.79: 0.98-1.16, ♀ 1.82-1.89: 1.11-1.18),



FIGS 10-14—*Aneipo diva* Kirkaldy: (10) right first valve, ventral; (11) second valves, dorsal; (12) right third valve, dorsolateral; (13) bursa copulatrix sclerite, ventral; (14) ♀ anal segment, dorsal. (dvl dorsal lobe of first valve, dv3 dorsal lobe of third valve, vv1 ventral lobe of first valve, lv3 lateral lobe of third valve.) (Scale = 0.5 mm.)

frons 3.0-3.6 × as long as postclypeus (holotype 1.42: 0.44, ♂ 1.28-1.35: 0.41-0.44, ♀ 1.42-1.45: 0.41-0.44); median carina of frons occupying anterior half length only; clypeus ecarinate. Penultimate rostral segment 1.8-1.9 × as long as ultimate rostral segment (holotype 0.71: 0.38, ♂ 0.69-0.72: 0.38, ♀ 0.69-0.72: 0.38).

*Thorax*.—*Pronotum* 4.3-4.6 × as wide as long (holotype 2.48: 0.57, ♂ 2.16-2.33: 0.48-0.50, ♀ 2.46-2.53: 0.55-0.58), lateral carinae parallel; medial disc acutely rounded anteriorly; lateral margins nearly straight to slightly sinuate, posteriorly divergent. Width across eyes 0.56-0.62 × width pronotum. *Mesonotum* 1.3-1.4 × as wide as long (holotype 2.53: 1.92, ♂ 2.19-2.46: 1.69-1.86, ♀ 2.53-2.60: 1.82-2.02), 3.1-3.8 × as long as pronotum, lateral carinae straight. *Legs*: Hind tibia with five or six apical spines (holotype six), hind basitarsus with six or seven (holotype six), second hind tarsal segment with five to seven (holotype six). *Wings*: Fore wing 2.4-2.5 × as long as wide (holotype 10.3: 4.1, ♂ 8.4-9.5: 3.5-3.7, ♀ 9.7-10.0: 4.0), 1.9-2.0 × as long as claval suture (length claval suture: holotype 5.3, ♂ 4.5-4.9, ♀ 5.1-5.2); Sc with three or four apical branches (holotype four), R with one or two subapical branches (holotype two), two apicals, M with three or four subapicals (holotype three), CuA with two subapicals, M + CuA with nine or 10 apicals (holotype damaged, no data), total apical branches 14 to 16; apical cells of M and CuA 5-6 × as long as wide; points of separation of R from Sc and fusion of claval veins at about same level, level of basal forking of CuA slightly distal to this level; basal forking of M at same level as or slightly proximal to level of apex of clavus, level of basal forking of Sc between levels of basal forkings of CuA and M. Hind wing with Sc simple, R two-branched, M three- or four-branched, CuA four- to six-branched (holotype damaged, no data).



FIGS 15-23—*Aneipo ceres* Fennah: (15) head and thorax, dorsal; (16) head, frontal aspect; (17) fore wing; (18) medioventral process of pygofer, ventral; (19) left clasper, dorsal; (20) phallobase and distal aedeagal appendages, dorsal; (21) ventral and lateral phallobase lobes, ventral; (22) phallobase and distal aedeagal appendages, lateral; (23) bursa copulatrix sclerite, ventral. (Scale = 1 mm for 15, 16, 18; = 2 mm for 17; = 0.5 mm for 19-23.)

*Abdomen*.—*Anal segment*: Anal lobe smaller in ♂ than in ♀, as wide as segment 11 in ♀, narrower in ♂, as long as segment 10 in ♀, shorter in ♂; segment 11 longer in ♂ than in ♀, about equal in width, with posterior margin obtusely rounded in ♂, very broadly evenly rounded in ♀; segment 10 about same size in both sexes, posteroventral margin medially nearly straight in ♂, concave in ♀, with thick setae in both sexes. *Male genitalia*: Medioventral process of pygofer transverse, apex broadly, shallowly concave. Clasper with a rounded triangular basal dorsal knob; with a dorsal central projection occupying just over half total clasper length, with four strongly sclerotised processes: a distal mesally directed acutely pointed one at about three-quarters clasper length, a basal anteromesal short, thick spine, a basal anterolateral bluntly rounded long knob and a right-angled one from distal mesal margin. Aedeagal appendages symmetrical, with apices spinosely produced and distinctly upcurved. Dorsal lobe of phallobase nearly as long as ventral lobe, apical region laterally compressed with a dorsal truncate spinose process, apex in dorsal view acutely rounded, in lateral view broadly convex. Lateral lobes of phallobase about half length ventral lobe, in ventral view with bilobed apices, the inner, ventral lobes acutely pointed, outer lobes convex; lateral lobe process dorsally directed, with a broad base and apex produced as a short spine. Ventral lobe of phallobase shallowly bifid, distal region distinctly upcurved, each lateral basal area with a semicircle of small spines. *Female genitalia*: Posterior margin of last pregenital sternite straight. Bursa copulatrix sclerite a large, roughly circular plate with 42 very small to large spines directed ventrally into lumen, largest spines anteriorly, smallest spines posteriorly. Dorsal lobe of first valve with three teeth increasing in size apically.

### Coloration

Frons, clypeus, rostrum, ventral regions of thorax and abdomen stramineous to orange-yellow, lateral regions of frons and abdomen with greenish tint. Legs stramineous, with tibiae and tarsi of hind legs greenish. Vertex, sides of head and antennae orange-yellow. Eyes red to black. Pronotum with posterior half of medial disc and areas behind eyes red, lateral regions and anterior half of medial disc orange-yellow. Mesonotum brown, a thin strip on lateral margins near tegulae orange-yellow. Tegulae orange-yellow. Fore wing with clavus, except for distal third, a thin band below claval suture and sometimes a large spot near posterior angle of mesonotum (as in holotype), mottled red and brown; with a red and brown mottled band, broad at base (base from apex of clavus to posteroapical corner of wing), narrowing to a thin strip in subapical region of CuA and continuing antero-apically to join a large red-black callus in subapical region of M<sub>1</sub>; a small separate red area anterior and distal to this callus extending to margin of wing. Costal cell and area between Sc<sub>1</sub> and Sc<sub>2</sub> of fore wing with five to 12 small black-brown spots, areas between Sc and R, and R and M with two to five each. Rest of fore wing membrane orange-yellow; veins distal to transverse subapical red and brown mottled band, claval veins in distal third of clavus, and claval suture orange-yellow, other veins light green. Hind wings white.

### Notes

In older, faded specimens (as holotype), all green coloration is lost, much of the orange-yellow fades to cream or stramineous, red fades to pink and many of the black-brown spots on the fore wing are lost.

### *Aneipo ceres* Fennah (Figs 15-23)

*Aneipo ceres* Fennah, 1949: 601.

*Types*.—*Holotype* ♂, QUEENSLAND: Mt Tamborine, x.1924, A. Musgrave and C. Geissmann, in BMNH. *Paratype*: one ♂, Mt Tamborine, 2-9.iv.1935, R. Turner, in BMNH. Holotype examined.

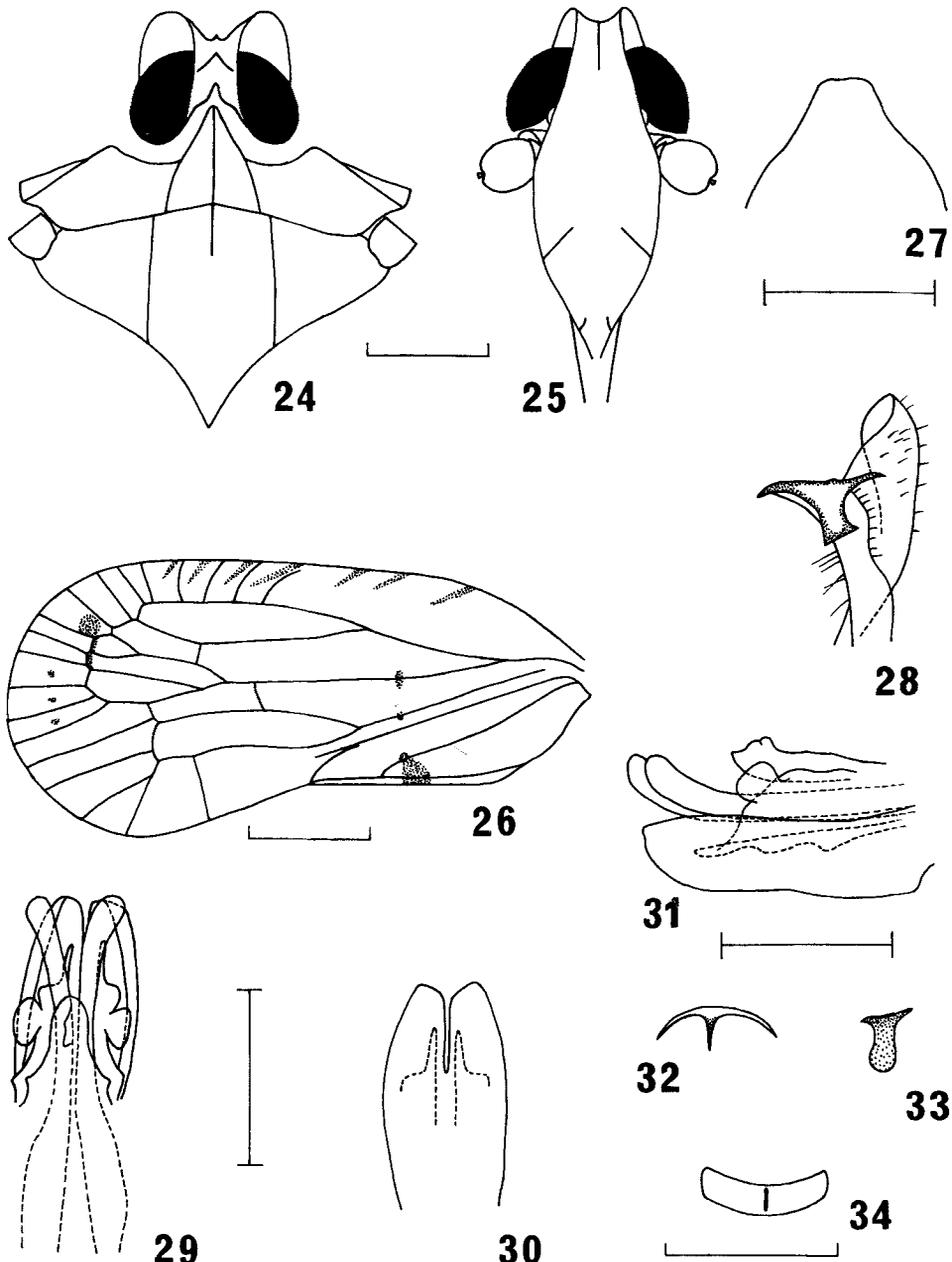
*Additional material examined*.—QUEENSLAND: one ♂, Coolangatta, 10.ix.1921, in UQ; one ♂, Tweed River, 27.i.1922, in UQ; one ♀, Numinbah, 20.iv.1935, in UQ; one ♀, Springbrook, 26.iii.1966, R. A. I. Drew, in UQ; one ♀, Woombye, 20.ii.1958, Kirkpatrick, in UQ; one ♀, National Park (Lamington), xii.1921, H. Hacker, in QM; one ♀, Tweed Heads, 8.i.1923, in SAM; one specimen without abdomen, Tweed Heads, 18.i.1923, in SAM. NEW SOUTH WALES: two ♂♂, one ♀, Upper Allyn River, 1,500' (450 m), 8.ii.1961, I. F. B. Common and M. Upton, in ANIC; two ♀♀, 7 miles (11 km) W of Rosebank, 1,700' (510 m), 8.ix.1961, I. F. B. Common and M. Upton, in ANIC; one ♀, 5 miles (8 km) W of Port Macquarie, 28.iii.1965, I. F. B. Common and M. Upton, in ANIC.

Large, very colourful. Total length: ♂ 9.6-9.9, ♀ 10.7-11.5. Body length: holotype 5.9, ♂ 5.9-6.4, ♀ 6.7-8.0

### Morphology and dimensions

*Head*.—Vertex 1.6-2.1 × as wide as long (holotype 0.54: 0.27, ♂ 0.51-0.57: 0.27-0.30, ♀ 0.49-0.61: 0.27-0.34), margins carinate to foliate, anterior margin right-angled to acutely pointed, posterior margin narrowly concave, lateral margins nearly straight, subparallel to slightly divergent posteriorly. Width across eyes: holotype 1.21, ♂ 1.21-1.32, ♀ 1.25-1.42. Frons plus postclypeus 1.8-2.0 × as long as wide (holotype 1.79: 0.91, ♂ 1.69-1.75: 0.84-0.98, ♀ 1.75-1.96: 0.91-1.08), frons 3.0-3.3 × as long as postclypeus (holotype 1.35: 0.44, ♂ 1.28-1.35: 0.40, ♀ 1.35-1.48: 0.40-0.47); median carina of frons nearly entire, reduced for a short distance posteriorly; clypeus with a weakly developed median carina. Penultimate rostral segment 1.6 × as long as ultimate rostral segment (♂ 0.70-0.72: 0.45-0.46, ♀ 0.72-0.77: 0.45-0.48, no holotype data).

*Thorax*.—*Pronotum* 4.1-4.7 × as wide as long (holotype 2.23: 0.52, ♂ 2.26-2.40: 0.51-0.54, ♀ 2.36-2.63: 0.54-0.61), lateral carinae parallel; median disc acutely rounded anteriorly, lateral margins nearly straight to slightly sinuate, posteriorly divergent. Width across eyes 0.53-0.55 × width pronotum. *Mesonotum* 1.3-1.5 × as wide as long (holotype 2.23: 1.69, ♂ 2.29-2.36: 1.55-1.69, ♀ 2.36-2.63: 1.72-1.99), 3.0-3.3 × as long as



FIGS 24-34—*Aneipo diana* Fennah: (24) head and thorax, dorsal; (25) head, frontal aspect; (26) fore wing; (27) medioventral process of pygofer, ventral; (28) left clasper, dorsal; (29) phallobase and distal aedeagal appendages, dorsal; (30) ventral and lateral phallobase lobes, ventral; (31) phallobase and distal aedeagal appendages, lateral; (32-34) bursa copulatrix sclerite: (32) lateral; (33) posterior; (34) ventral. (Scale = 0.5 mm for 24, 25; = 1 mm for 26; = 0.25 mm for 27-34.)

pronotum, lateral carinae straight. *Legs*: Hind tibia with six or seven apical spines (holotype six and seven), hind basitarsus with five to seven (holotype six), second hind tarsal segment with six to nine (holotype nine). *Wings*: Fore wing 2.6-2.8 × as long as wide (holotype 8.7: 3.2, ♂ 8.0-8.8: 2.9-3.3, ♀ 9.1-10.1: 3.3-3.9), 1.9-2.1 × as long as claval suture (length claval suture: holotype 4.4, ♂ 4.0-4.4, ♀ 4.7-5.2); R with two or three subapical branches (holotype three), Sc + R with eight to 10 apical branches (holotype nine), M with four to six subapicals (holotype five), CuA with two subapicals, M + CuA with seven to 11 apicals (holotype nine), total apical branches 15 to 20 (holotype 18); apical cells of M and CuA 3-5 × as long as wide; points of fusion of claval veins, basal forking of CuA and separation of R from Sc at about same level, or CuA forking slightly distal; apex of clavus and basal forking of Sc at same level, basal forking of M markedly distal to this

level. Hind wing with Sc simple, R two- to four-branched (holotype three), M two- or three-branched (holotype three), CuA three- to five-branched (holotype four).

*Abdomen.*—*Anal segment:* Segment 10 smaller in ♂ than in ♀, posteroventral margin very shallowly concave to nearly straight in ♂, distinctly concave in ♀, with thick setae in both sexes. *Male genitalia:* Medioventral process of pygofer transverse, deeply bifid. Clasper with a basal dorsal knob, rounded rectangular in shape with posteromesal corner acutely produced; with a dorsal central projection occupying about half total clasper length, with three strongly sclerotised processes: a distal anteromesal, bluntly rounded, long knob at about half clasper length, a basal anteromesal, long, thin, rounded lobe and a basal anterolateral acutely rounded process, not markedly projected. Aedeagal appendages symmetrical, slightly upcurved in region of phallobase, only upper half of actual apex spinosely produced. Dorsal lobe of phallobase about half length ventral lobe, strongly laterally compressed, elliptical in lateral view, in dorsal view tapering to an acutely pointed apex. Lateral lobes of phallobase about half length ventral lobe, each narrowed distally to an acute apex; lateral lobe process short, posterodorsally directed, base narrow, apex asymmetrically helmet shaped. Ventral lobe of phallobase deeply bifid, not distinctly upcurved. *Female genitalia:* Posterior margin of last pregenital sternite straight. Bursa copulatrix sclerite a small rounded triangular plate with 15 very small to large ventral spines, the larger spines placed anteriorly. Dorsal lobe of first valve with three teeth increasing in size apically.

### Coloration

Frons, clypeus, rostrum, legs, ventral regions of thorax and abdomen stramineous to orange-yellow, ventral region of abdomen with greenish tint and spiracles red-blotched. Vertex with posterior half and lateral regions red, posterolateral corners red-black, anteromedial region orange-yellow sometimes with one or two small red blotches. Sides of head orange-yellow with dorsal red blotch. Eyes red to black. Antennae orange-yellow. Pronotum with ventral lateral carinae cream-yellow, areas between lateral carinae of each side cream-yellow with anterior red blotch or entire dorsal half of this area red, dorsal lateral carinae red as are carinae of medial disc; rest of pronotum yellow-brown except for red blotches bordering dorsal lateral carinae and lateral to posterior half of medial disc lateral carinae, with or without a red blotch centrally in each half of disc. Tegulae with dorsal surfaces and posterior margins of lateral surfaces red, rest of lateral surfaces orange-yellow. Mesonotum patterned with red and yellow-brown to brown; median carina and posterolateral margins red, lateral half of each area between median and lateral carinae red or with a series of red blotches; posterior half of area outside each lateral carina with a variably shaped large red blotch, anterior region of this area with a similar, smaller blotch, area between these blotches and rest of area between lateral carinae yellow-brown to brown. Fore wing colour pattern as in Fig. 17, stippled area centrally red speckled on cream-brown to yellow-brown and broadly bordered, except along claval margin, with red; rest of wing membrane orange-yellow; veins in speckled region red-black, otherwise veins same colour as wing membrane; large red-black callus in subapical region of  $M_1$ , smaller callus of same colour in subapical region of CuA; in some specimens, both ♂ and ♀, the large proximal semicircular orange-yellow area extends to posterior margin as a thin band; first orange-yellow spot along anterior margin sometimes absent; third orange-yellow spot along margin sometimes divided by a red band along second last apical branch of Sc + R field. Hind wings patterned pink and white.

### Notes

In older, faded specimens (as holotype), red fades to pink or is lost altogether, any green coloration is lost, orange-yellow fades to cream or stramineous and the eyes fade from red-black to brown. In the left fore wing of the holotype, the first anterior red area distal to the large proximal orange-yellow semicircle is broken up by three orange-yellow bands from the anterior margin.

*A. ceres* is closest to *A. diva*, the two being similar in the key characters already stated and also in the general form of the bursa copulatrix sclerite. They differ in the shape of the medioventral process of the pygofer, in the form of the aedeagal appendages and phallobase, in the detail of the bursa copulatrix sclerite, in the more proliferate fore wing apical venation of *A. ceres* (total apical branches 15 to 20; *A. diva* 14 to 16), in the pattern of coloration of the head, thorax and hind wings, as well as in the key characters.

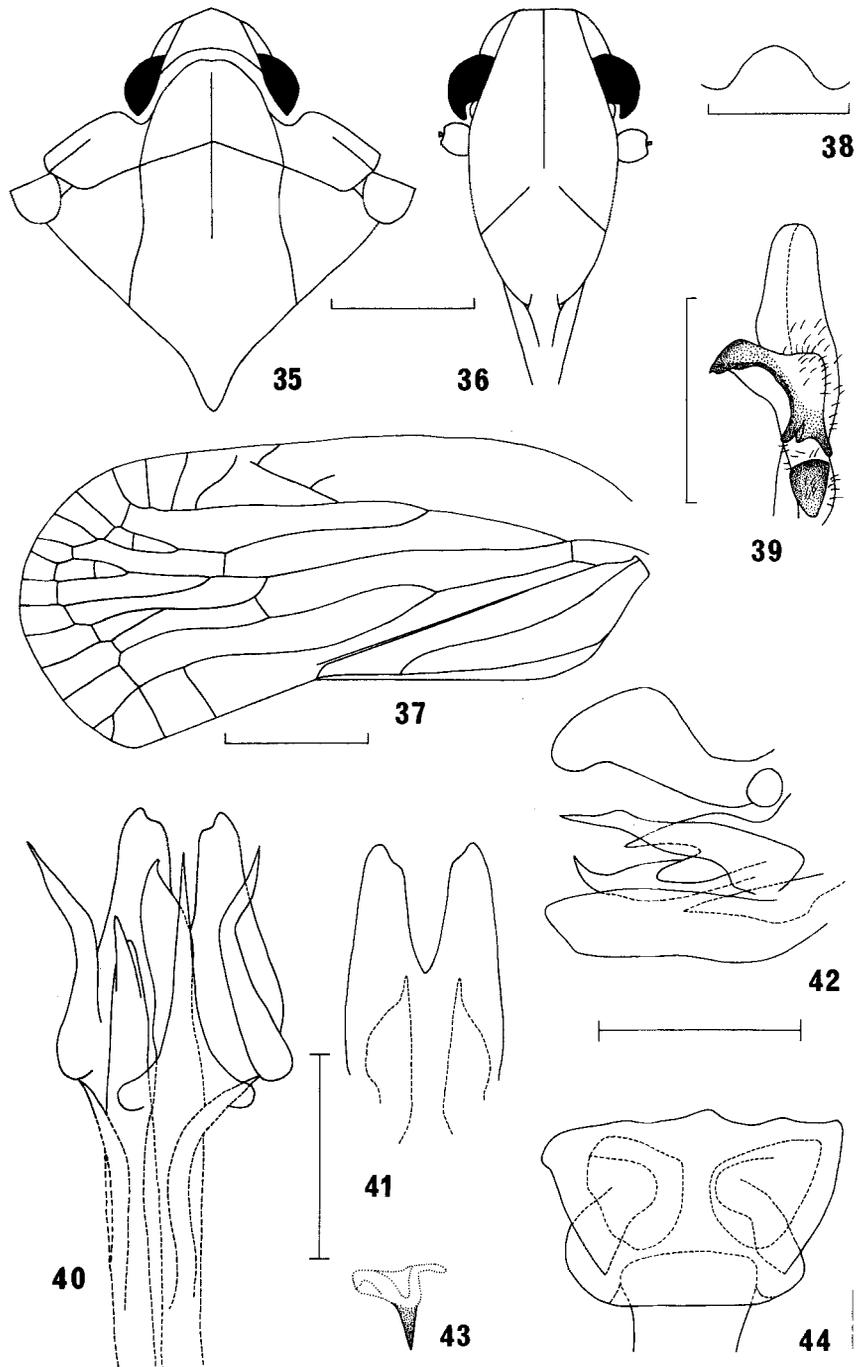
A bursa copulatrix sclerite of similar plate-like form to that of *A. diva* and *A. ceres* has been described by Fennah (1950) in *F. diffinis*.

### *Aneipo diana* Fennah (Figs 24-34)

*Aneipo diana* Fennah, 1949: 603.

*Types.*—*Holotype* ♂, "Queensland, F. P. Dodd 1902-319", in BMNH. *Paratypes:* two ♀♀, one ♂, as for holotype and one other specimen in very poor condition, stated by Fennah to be ♂, bearing label as holotype and with additional label "Kuranda, Qld. Apl '04 F. P. Dodd", in BMNH. Types examined.

Small, white. Total length: holotype 5.9, ♀ 6.5. Body length: holotype 4.0, ♀ 4.3.



FIGS 35-44—*Aneipo minerva* sp.n.: (35) head and thorax, dorsal; (36) head, frontal aspect; (37) fore wing; (38) medioventral process of pygofer, ventral; (39) left clasper, dorsal; (40) phallobase and distal aedeagal appendages, dorsal; (41) ventral and lateral phallobase lobes, ventral; (42) phallobase and distal aedeagal appendages, lateral; (43) bursa copulatrix sclerite; (44) sclerotised vaginal region, ventral. (Scale = 1 mm for 35, 36, 38; = 2 mm for 37; = 0.5 mm for 39-44.)

#### *Morphology and dimensions*

**Head.**—Vertex  $1.5-1.7 \times$  as wide as long (holotype 0.24: 0.14, ♀ 0.21-0.26: 0.14), anterior margin acutely pointed, weakly carinate, the carina incomplete laterally, posterior margin strongly carinate, deeply incised, lateral margins strongly carinate, nearly straight, subparallel to slightly divergent posteriorly. Width across eyes: holotype 0.74, ♀ 0.77. Frons plus postclypeus  $2.2-2.4 \times$  as long as wide (holotype 1.21: 0.55, ♀

1.28-1.32: 0.54), frons 3.2-3.7 × as long as postclypeus (holotype 0.95: 0.26, ♀ 0.98-1.02: 0.30); median carina of frons occupying about anterior fifth length only; clypeus ecarinate. Penultimate rostral segment 2.1-2.3 × as long as ultimate rostral segment (holotype 0.46: 0.22, ♂ 0.45: 0.21, ♀ 0.52: 0.22).

*Thorax.*—*Pronotum* 3.6-3.7 × as wide as long (holotype 1.50: 0.40, ♀ 1.59: 0.44), lateral carinae anteriorly convergent and confluent; medial disc acutely pointed anteriorly, lateral margins slightly sinuate, posteriorly divergent. Width across eyes 0.49 × width pronotum. *Mesonotum* 1.5-1.6 × as wide as long (holotype 1.38: 0.84, ♀ 1.46: 0.98), 2.1-2.3 × as long as pronotum, lateral carinae straight. *Legs:* Hind tibia with six apical spines, hind basitarsus with five, second hind tarsal segment with five. *Wings:* Fore wing 2.7-2.8 × as long as wide (holotype 5.2: 1.9, ♂ 4.7: 1.7, ♀ 5.6-5.7: 2.1), 2.1 × as long as claval suture (length claval suture: holotype 2.5, ♂ 2.3, ♀ 2.7-2.8); Sc with four to six apical branches (no holotype data), R with one subapical branch, two apicals, M with four subapicals, five or six apicals (holotype six), CuA with two subapicals, four apicals, total apical branches (minus Sc), 11 or 12 (holotype 12); CuA apical crossvein line markedly recessed from M crossvein line, M apical cells about 3 × as long as wide, CuA apical cells about 4 × as long as wide; Sc branches short, markedly recurved; basal forking of CuA slightly distal to level of point of fusion of claval veins; point of separation of R from Sc at about same level as basal forking of CuA or between this level and level of apex of clavus; basal forking of M markedly distal to level of apex of clavus. Hind wing (no holotype data) with Sc simple, R simple, M two-branched, CuA four-branched.

*Abdomen.*—*Anal segment:* Anal lobe much smaller in ♂ than in ♀, narrower than segment 11 in both sexes, longer than segment 10 in ♀, distinctly shorter in ♂; segment 11 about as long in ♂ as in ♀, distinctly narrower in ♂ than in ♀, with posterior margin broadly, evenly rounded in ♀, distinctly obtusely rounded in ♂; segment 10 transverse in ♀, distinctly longer than wide in ♂, with posteroventral margin of ♀ concave, with thick setae, of ♂, convex in outline but medially deeply bifid, without thick setae. *Male genitalia:* Medioventral process of pygofer transverse, with slightly sinuate lateral margins converging to a truncate apex. Clasper without a basal dorsal knob; with a dorsal central projection occupying about one-third total clasper length, with three strongly sclerotised processes: a long mesally directed distal one, acutely pointed and curved slightly anteriorly, a long, thin, acutely pointed posterolateral one and a broad, truncate, anterolateral one with concave lateral margins. Aedeagal appendages symmetrical, distinctly upcurved in distal region of phallobase, apices evenly rounded, non-spinose. Dorsal lobe of phallobase not markedly laterally compressed, about half length ventral lobe, in dorsal view with a pair of small lateral projections from basal region, then narrowing to a flap-like process with sinuate lateral margins and a convex apex, in lateral view with an acutely pointed apex and a dorsal subapical bilobed hump. Lateral lobes of phallobase about three-quarters length ventral lobe with ventral margins distinctly sinuate, each produced distally into a long, thin apically rounded process; lateral lobe process an oval lobe directed posterodorsally. Ventral lobe of phallobase deeply bifid, not distinctly upcurved. *Female genitalia:* Posterior margin of last pregenital sternite nearly straight to slightly concave. Bursa copulatrix sclerite a curved subrectangular basal plate (attached to bursa) with a central ventrally projected spinose process, very narrow and sharp in posterior view, lobate in lateral view. Dorsal lobe of first valve with three teeth increasing in size apically.

### Coloration

Frons, clypeus, rostrum, pronotum, mesonotum, tegulae, ventral region of thorax, legs, abdomen cream-stramineous to stramineous. Sides of head stramineous, slightly more brownish over dorsal half, with area between eye and posterodorsal margin black-brown. Antennae stramineous. Eyes reddish black. Vertex stramineous with posterolateral angles black-brown. Fore wing powdered white, with eight short oblique brown stripes set along almost entire costal margin, a small brown spot on M at about basal one-third, a much smaller brown spot on same level of CuA, a larger triangular brown spot with apex on 1A just before its fusion with 2A and base on posterior claval margin, small brown spots in centres of third and fourth or third, fourth and fifth M apical cells, a larger round brown spot in basal half of R-M apical cell, the rest of this cell tinged red, a brown strip bordering proximal side of each of the first two M apical crossveins, basal region of R apical cell with brownish tinge, veins white to cream. Hind wings powdered white.

### Notes

The proximal and/or distal costal colour stripes often fade considerably, leaving only six or seven clear stripes.

The distinguishable male paratype has the head broken and thorax warped with the pin; these conditions thus preclude measurements of these regions and of total and body lengths.

In addition to the key characters, *A. diana* is clearly distinguished from the other species of the genus by the form of the bursa copulatrix sclerite, the shape of the medioventral process of the pygofer, the absence of a basal dorsal knob on the clasper, and the non-spinose aedeagal appendages.

### *Aneipo minerva* sp.n. (Figs 35-44)

*Types.*—*Holotype* ♂, NEW SOUTH WALES: National Park, Sydney, 5.iv.1925, in AM. *Paratypes:* NEW SOUTH WALES: one ♀, Barrington Tops, via Salisbury, 28-30.xii.1965, T. Weir, in UQ; one ♀, Dorrigo, W. Heron, in SAM; one ♀, Upper Allyn River, 1,500' (450 m), 8.ii.1961, I. F. B. Common and M. Upton, in ANIC.

*Holotype male*

Large, brown. Body length 6.5.

*Morphology and dimensions*

*Head*.—Vertex  $2.7 \times$  as wide as long (0.64: 0.24), margins carinate, anterior margin broadly, obtusely rounded, posterior margin broadly, shallowly concave, lateral margins nearly straight, posteriorly divergent. Width across eyes 1.21. Frons plus postclypeus  $2.2 \times$  as long as wide (1.96: 0.91), frons  $3.1 \times$  as long as postclypeus (1.48: 0.48); median carina of frons nearly entire, reduced for a short distance posteriorly; postclypeus with a weakly developed median carina. Penultimate rostral segment  $1.2 \times$  as long as ultimate rostral segment (0.74: 0.60).

*Thorax*.—*Pronotum*  $4.4 \times$  as wide as long (2.36: 0.54), lateral carinae parallel; medial disc truncate anteriorly, lateral margins slightly sinuate, posteriorly divergent. Width across eyes  $0.51 \times$  width pronotum. *Mesonotum*  $1.4 \times$  as wide as long (2.33: 1.59),  $2.9 \times$  as long as pronotum, lateral carinae slightly sinuate. *Legs*: Hind tibiae with six and seven apical spines, hind basitarsi with eight each, second hind tarsal segments with nine each. *Wings*: Fore wing  $2.7 \times$  as long as wide (8.7: 3.2),  $1.9 \times$  as long as claval suture (8.7: 4.7); Sc with five apical branches, R with two or three subapical branches, three apicals, M with five subapicals, five apicals, CuA with two subapicals, four or five apicals, total apical branches 17 or 18; apical cells of M and CuA about  $2 \times$  as long as wide; point of separation of R from Sc and basal forking of CuA at about same level, point of fusion of claval veins slightly distal to this level; apex of clavus and basal forking of Sc at about same level, basal forking of M distal to this level. Hind wing with Sc simple, R three-branched, M two- or three-branched, CuA four-branched.

*Abdomen*.—*Anal segment*: Anal lobe smaller than in ♀, apex markedly acute, narrower than segment 11, slightly shorter than segment 10; segment 11 longer than in ♀, about equal in width, with posterior margin convex; segment 10 narrower and longer than in ♀, posteroventral margin with thick setae, only narrow medial region concave, lateral regions truncate, extended medially. *Genitalia*: Medioventral process of pygofer transverse, broadly convex in outline. Clasper with a rounded triangular basal dorsal knob; with a dorsal central projection occupying about one-third total clasper length, with three strongly sclerotised processes: a distal mesally directed thick knob at about half clasper length, acutely pointed, with anterior margin corrugated, and basal anteromesal and anterolateral long, thin lobes with rounded apices. Aedeagal appendages straight, not upcurved in region of phallobase, asymmetrical, with a pair of dorsal longitudinal, acutely pointed accessory processes, originating at about half length and extended into base of phallobase where their apices diverge laterally. Apex of right aedeagal appendage bilobed, ventral lobe narrowly rounded in lateral view, dorsal lobe acutely pointed. Left appendage with apex upcurved, spinosely produced. Dorsal lobe of phallobase slightly shorter than ventral lobe, with base produced laterally as a pair of ball-like lobes, then narrowing very suddenly into a dorsally produced, strongly laterally compressed process, with a broadly convex dorsal margin and subapically concave ventral margin in lateral view, in dorsal view this process appearing as a long, very sharp spine. Lateral lobes of phallobase about half length ventral lobe, each narrowed distally to an acutely pointed apex; lateral lobe process posterodorsally directed, long and narrow, with base broad and apex very acutely pointed. Ventral lobe of phallobase deeply bifid, not distinctly upcurved.

*Coloration*

Head, ventral regions of thorax and abdomen, legs, pronotum and tegulae stramineous. Eyes black-brown. Base of ocellus red. Mesonotum stramineous, with small dark brown blotches just mesal of tegulae, centrally placed halfway between tegulae and lateral carinae, just mesal to anterior ends of lateral carinae and just mesal to lateral carinae at about half length. Fore wing mottled white and stramineous, main longitudinal veins with pink tinge; with very numerous, very small to moderately sized dark brown blotches scattered over membrane, especially concentrated on main longitudinal veins. Hind wings white.

*Paratype females*

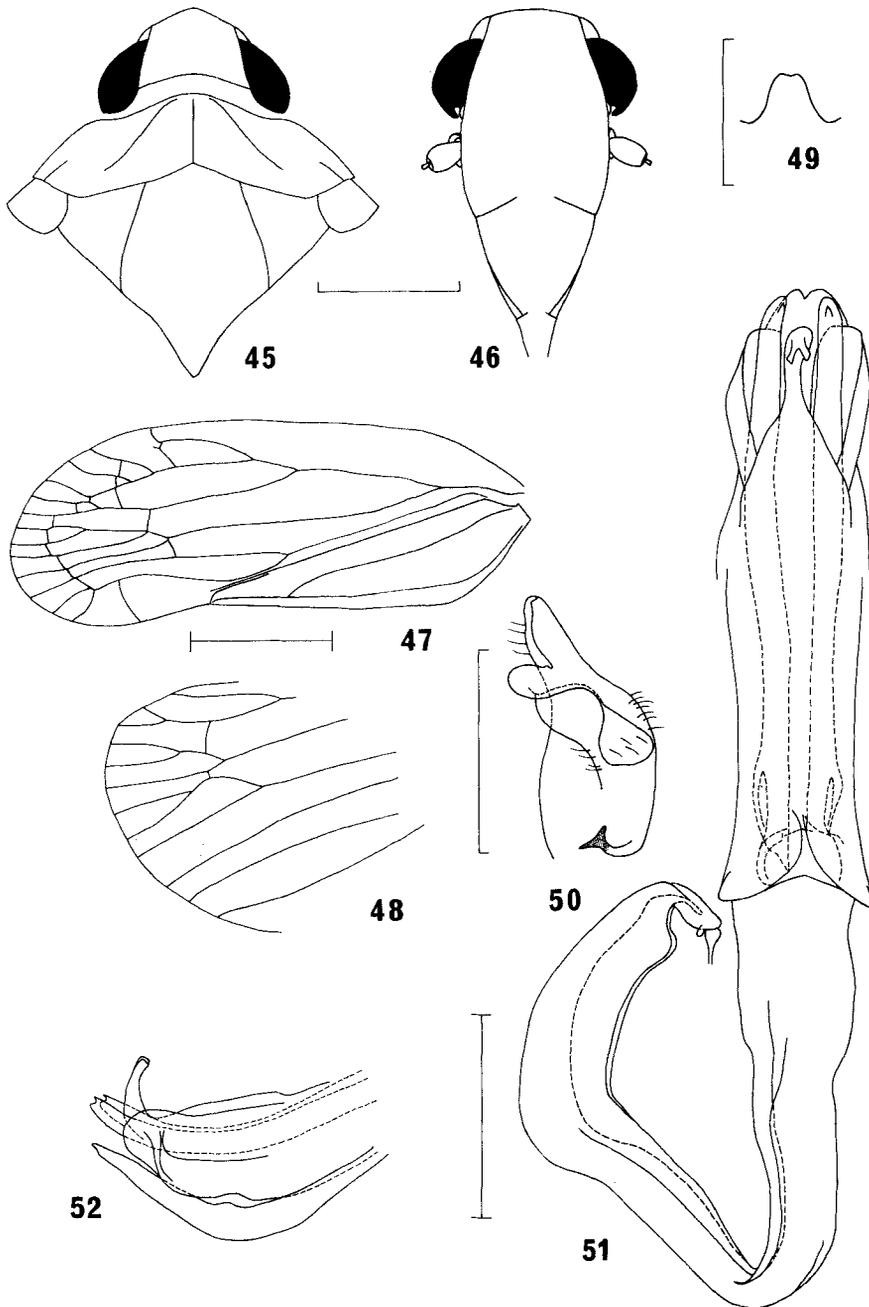
Total length 10.5-12.3. Body length 7.2-7.3.

*Morphology and dimensions*

*Head*.—Vertex  $2.6-3.5 \times$  as wide as long (0.71: 0.20-0.27), anterior margin obtusely to evenly rounded. Width across eyes 1.35. Frons plus postclypeus  $1.8-2.0 \times$  as long as wide (2.03-2.13: 1.05-1.11), frons  $3.2-3.6 \times$  as long as postclypeus (1.59-1.62: 0.44-0.51). Penultimate rostral segment  $1.3 \times$  as long as ultimate rostral segment (0.84: 0.64-0.65).

*Thorax*.—*Pronotum*  $4.3-4.7 \times$  as wide as long (2.60-2.70: 0.57-0.61); medial disc not truncate anteriorly, convex in outline, lateral margins only slightly divergent posteriorly (two apicimens), or disc of similar form to ♂ holotype (one specimen). Width across eyes  $0.50-0.52 \times$  width pronotum. *Mesonotum*  $1.3-1.4 \times$  as wide as long (2.43-2.63: 1.72-2.02),  $3.0-3.3 \times$  as long as pronotum. *Legs*: Hind tibia with six or seven apical spines, hind basitarsus with seven or eight, second hind tarsal segment with eight or 10. *Wings*: Fore wing  $2.6-2.8 \times$  as long as wide (8.9-10.5: 3.5-3.7),  $1.8-1.9 \times$  as long as claval suture (8.9-10.5: 4.9-5.6), Sc with five to seven apical branches, R with three subapical branches, three or four apicals, M with four to six subapicals, four to six apicals, CuA with two subapicals, four or five apicals, total apical branches 18 or 20. Hind wing with Sc simple, R two- or three-branched, M three-branched. CuA four-branched.

*Abdomen*.—*Anal segment*: Anal lobe as wide as segment 11, slightly longer than segment 10; posterior margin of segment 11 broadly rounded; posteroventral margin of segment 10 broadly concave, with thick

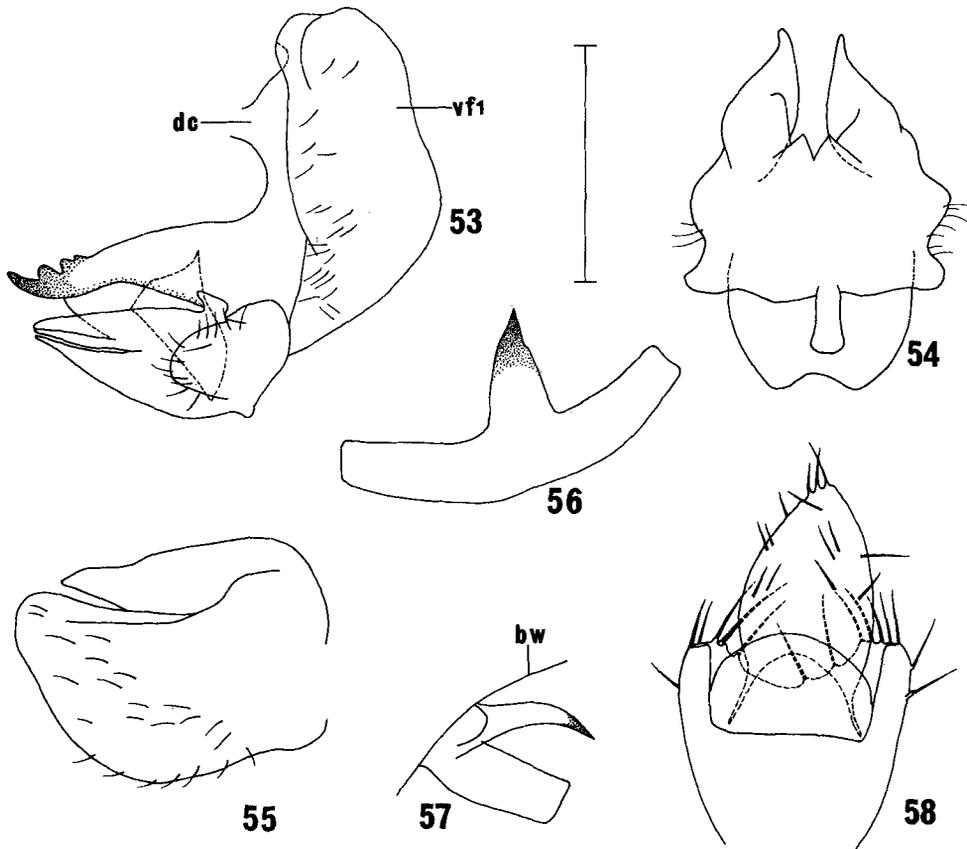


FIGS 45-52—*Bunduica rubrovenosa* Jacobi: (45) head and thorax, dorsal; (46) head, frontal aspect; (47) fore wing; (48) hind wing; (49) medioventral process of pygofer, ventral; (50) left clasper, dorsal; (51) aedeagus, dorsal; (52) phallobase and distal aedeagal appendages, lateral. (Scale = 1 mm for 45, 46, 49; = 2 mm for 47, 48; = 0.5 mm for 50-52.)

setae, lateral regions projected, not truncate nor medially extended. *Genitalia*: Posterior margin of last pregenital sternite slightly concave medially. Bursa copulatrix sclerite a single ventrally directed spine attached to a small poorly defined base. Vaginal region strongly sclerotised. Dorsal lobe of first valve with four teeth, basal one very small, three apical ones larger, subequal.

#### Coloration

Two older, faded specimens as for holotype male. One fresher specimen with head, pronotum, mesonotum, legs and ventral region of thorax with greenish tint; abdomen blotched with green, red and stramineous; fore wing with stramineous and brown regions darker.



FIGS 53-58—*Bunduica rubrovenosa* Jacobi: (53) right first valve and valvifer, slightly flattened, ventrolateral; (54) second valves, dorsal; (55) right third valve, dorsolateral; (56, 57) bursa copulatrix sclerite: (56) flattened, ventral; (57) *in situ*, right lateral; (58) ♀ anal segment, dorsal. (bw wall of bursa copulatrix; dc dorsal connection of first valve to tergum 9, vf1 first valvifer.) (Scale = 0.5 mm.)

### Notes

The very simple nature of the bursa copulatrix sclerite, the strongly sclerotised vagina and the asymmetrical aedeagal appendages with long dorsal accessory processes are the most distinctive genitalic features of *A. minerva*. Asymmetrical aedeagal appendages have been recorded in two other achilid tribes, the Plectoderini (Fennah 1950, Anufriev 1968) and the Myconini (Anufriev 1968).

In accordance with Fennah's precedent, the new species name is that of a Roman goddess, Minerva, the goddess of wisdom, and is a noun in the nominative singular placed in apposition to the generic name.

### Genus *Bunduica* Jacobi

*Bunduica* Jacobi, 1909: 345. Type-species, by monotypy, *Bunduica rubrovenosa* Jacobi, 1909: 345.

Large, with ♀ slightly larger than ♂.

*Head*.—Vertex shallow, not distinctly depressed, margins not markedly produced nor raised. Frons plus postclypeus smooth, slightly tumid, medially ecarinate; lateral margins convex, carinately produced laterally, these carinae indented at bases of frontoclypeal suture. Frontoclypeal suture incomplete medially, obtusely converging anteriorly. Rostrum reaching to level of hind trochanters.

*Thorax*.—*Pronotum* distinctly wider than long, about as long behind eyes as medially, with posterior margin broadly obtusely angulate; lateral margins ecarinate, or possibly each with a poorly differentiated dorsal carina for a short posterior length; medial disc weakly developed, not anteriorly projected nor markedly elevated, with median carina weak, lateral margins weakly carinate, not joined anteriorly, markedly divergent posteriorly, not reaching hind margin of pronotum. *Mesonotum* wider than long, with only a suggestion of a median carina for a short distance anteriorly, lateral carinae weak, divergent,

occupying entire length but obscure over posterior half. *Legs*: Hind tibia with one lateral spine at about midlength, a single bank of apical spines. *Wings*: Fore wings held nearly horizontally, distal regions partly overlapping. Fore wing broad, about 3 × as long as wide, just over 1.5 × as long as claval suture; translucent; texture smooth; apical margin narrowly rounded; posterior margin obtusely angulate at apex of clavus; CuA<sub>2</sub> gently sinuate; point of separation of R from Sc far basal to level of basal forking of M.

*Abdomen*.—*Anal segment*: Anal lobe with paired basal processes long and thin, apex subconical; segment 11 transverse; segment 10 with posterodorsal margin straight. *Male genitalia*: Basal region of aedeagus recurved ventrally for a considerable distance. Phallobase with all lobes proximally distinct. *Female genitalia*: Bursa copulatrix with dorsally attached internal wall sclerite. Ventral lobe of first valve with a central setose lobe, posterior margin with three longitudinal membranous lobes. Second valves simple, weakly sclerotised, median posterior margin of fused bases with a pair of short, broad, acutely pointed processes, the distinct distal regions of each valve broad-based, closely approximated; ventral basal lobe well developed, as is connecting pillar from dorsal basal lobe. Third valve with lateral lobe dorso-apically bluntly rounded; dorsal lobe with apex acutely pointed in dorsolateral view.

### Notes

The genus is most clearly distinguished by the shallow vertex, the tumid, ecarinate frons and the distinct form of the basal region of the aedeagus.

### *Bunduica rubrovenosa* Jacobi (Figs 45-58)

*Bunduica rubrovenosa* Jacobi, 1909: 345.

*Types*.—*Holotype* ♂, WESTERN AUSTRALIA: Stat. 162, Torbay, 19.viii.1905, Hamburg S. W. Australian Expedition, with label "A. Jacobi Typus", in WAM. *Paratype*: one ♂, as for holotype, but with labels "A. Jacobi Cotypus" and "W. Michaelsen ded. 14.vi.1910", in UH. Types examined.

*Additional material examined*.—WESTERN AUSTRALIA: one ♂, one ♀, Pemberton, 5.ix.1947, one ♂, Denmark, 5.ix.1947, four ♂♂, three ♀♀, Pimelea, 7.ix.1947, all RTMP, Russel Grimwade Expedition S.A.—W.A., 1947, in NMV; one ♂, Pemberton, 22.x.1974, J. Howard, in UQ.

Large, dark brown. Total length: holotype 7.5, ♂ 7.7-8.0. Body length: holotype 6.1, ♂ 6.5-7.6, ♀ 8.0-8.1.

### *Morphology and dimensions*

*Head*.—Vertex 1.5-1.6 × as wide as long (holotype 0.68: 0.44, ♂ 0.71-0.74: 0.44-0.51, ♀ 0.71-0.72: 0.44-0.47), posterior margin very shallowly concave, anterior margin broadly, obtusely rounded, lateral margins straight, slightly divergent posteriorly; disc with a shallow median groove and a pair of lateral shallow depressions. Width across eyes: holotype 1.24, ♂ 1.32-1.55, ♀ 1.35-1.48. Frons plus postclypeus 2.0-2.2 × as long as wide (holotype 2.04: 0.98, ♂ 2.09-2.23: 0.98-1.11, ♀ 2.16-2.23: 1.05-1.08), frons 1.9-2.3 × as long as postclypeus (holotype 1.38: 0.66, ♂ 1.38-1.45: 0.64-0.74, ♀ 1.48-1.52: 0.67-0.71). Penultimate rostral segment equal in length to ultimate rostral segment (holotype 1.02, ♂ 1.05-1.08, ♀ 1.08).

*Thorax*.—*Pronotum* 4.3-5.1 × as wide as long (holotype 2.16: 0.42, ♂ 2.30-2.40: 0.51-0.54, ♀ 2.30-2.36: 0.47-0.51); lateral carinae of medial disc very slightly sinuate. Width across eyes 0.57-0.65 × width pronotum. *Mesonotum* 1.2-1.4 × as wide as long (holotype 1.88: 1.36, ♂ 1.92-2.02: 1.38-1.62, ♀ 1.96-1.99: 1.72), 2.7-3.4 × as long as pronotum, posterior third transversely rugose and medially depressed. *Legs*: Hind tibia with eight apical spines, hind basitarsus with seven to nine (holotype eight), second hind tarsal segment with eight to 10 (holotype nine to 10). *Wings*: Fore wing 2.8-3.0 × as long as wide (holotype 6.2: 2.1, ♂ 6.3-7.2: 2.3-2.4, ♀ 6.8-7.1: 2.4-2.5), 1.6 × as long as claval suture (length claval suture: holotype 3.8, ♂ 3.9-4.4, ♀ 4.3-4.4); Sc with four to seven apical branches (holotype four), R with one or two subapical branches (holotype one), two or three apicals (holotype two), M with two to four subapicals (holotype two), two to four apicals (holotype two), CuA with two or three subapicals (holotype two), three to five apicals (holotype four), total apical branches 12 to 18 (holotype 12); apical cells of M and CuA about 3 × as long as wide; point of separation of R from Sc and basal forking of CuA each at variable levels between level of point of fusion of claval veins and half way between this level and level of apex of clavus; levels of basal forkings of Sc and M also quite variable, of Sc from just distal to level of point of fusion of claval veins to level of apex of clavus, of M from level of apex of clavus to half-way between this level and apical margin. Hind wing with Sc simple, R one- or two-branched, M two- or three-branched, CuA three- or four-branched (no holotype data).

*Abdomen*.—*Anal segment*: Anal lobe same size in both sexes, narrower than segment 11 in both sexes, longer than segment 10 in ♀, shorter in ♂; segment 11 longer in ♂ than in ♀, wider in ♀ than in ♂, with posterior margin broadly rounded in both sexes; segment 10 transverse in ♀, distinctly longer than wide in ♂, posteroventral margin in ♀ with thick setae, lateral projections extended for a short distance medially, median region concave; posteroventral margin in ♂ without thick setae, lateral projections not extended medially, median region shallowly concave. *Male genitalia*: Medioventral process of pygofer a simple flap-like process about as long as wide, very slightly concave at apex. Clasper in dorsal view markedly narrowed apically, basal region with a T-shaped strongly sclerotised knob projected posteromesally from lateral margin, with a central projection of two large, rounded lobate processes, a broad-based mesally directed one at about one-third length from clasper apex and an anterolaterally directed one at about half length, with narrow base and very broad apex, these lobes connected mesally by a concave ridge. Aedeagal appendages symmetrical, distinctly upcurved distally, apex of each rounded, with a short dorsal spine. Dorsal lobe of phallobase with apical third narrowed as a long process very strongly upcurved distally and distinctly bifid at apex. Lateral lobes of phallobase over three-quarters length ventral lobe, strongly developed as scoop-like processes, with lateral margins strongly upcurved to partly enclose aedeagal appendages, apices truncate.

Ventral lobe of phallobase distinctly upcurved distally, lateral margins very shallowly upcurved, not enclosing lateral lobes, apex very shallowly bifid. *Female genitalia*: Posterior margin of last pregenital sternite very shallowly concave medially. Bursa copulatrix sclerite a single long, thick spine attached to a long, slightly curved, subrectangular base, this base *in situ* attached to a strongly curved region of bursa and thus doubled over with ends nearly apposed (Figs 56, 57). Ventral lobe of first valve with a small knob on basal dorsal margin; dorsal lobe with four rounded teeth increasing in size apically.

### Coloration

Vertex, frons, clypeus, sides of head, pronotum and tegulae dark brown to black-brown with cream-brown spots. Antennae, ventral region of abdomen and thorax dark brown. Eyes black-brown. Fore and mid femora and tibiae each with six alternating colour bands of dark brown and cream-brown. Rostrum, rest of fore and mid legs as well as hind legs cream-brown to dark brown. Mesonotum with areas lateral to lateral carinae dark brown with cream-brown spots; two small cream-brown blotches at posterior ends of lateral carinae; median region black, with a few cream-brown spots. Fore wing mottled with dark brown and cream-brown; veins red. Hind wings smoky.

### Notes

Fennah (1950), in his generic revision of the family, did not examine specimens of this species but on general facies placed *Bunduica* in the Achilini. The following combination of characters confirms the placement of *Bunduica* within the Achilini rather than the Plectoderini, the only other tribe in which it might be placed: large size; well developed pronotum; width across eyes markedly less than width of pronotum; broad fore wing, with many subapical crossveins and proliferated apical venation; basal region of aedeagus recurved ventrally but without a clearly defined "median apodeme" connection with the claspers or phallobase.

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