

NEW GUINEA BITING MIDGES

(Diptera: Ceratopogonidae), 3¹

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This is the third report of the serial studies on the New Guinea Ceratopogonidae. In the first report of this series (1959, New Guinea biting midges, Pacific Insects 1: 177-313), the outline of the New Guinea fauna of the family was shown with the revision on 58 known species and descriptions on 52 new species. In the second paper (1962, Biting midges of the genus *Culicoides* from New Guinea, Pacific Insects 4: 457-516), I added 28 new species to the 30 known species of *Culicoides*.

In this present third paper, I intend to report the result of the review on the 5 genera, *Leptoconops*, *Alluaudomyia*, *Echinohelea*, *Monohelea* and *Stilobezzia*, which were little known hitherto from New Guinea, except for 8 species of *Stilobezzia*. The total number of the species dealt with in this paper is 66 including 44 species which are new to science. Of these species, 2 belong to *Leptoconops*, 14 to *Alluaudomyia*, 5 to *Echinohelea*, 9 to *Monohelea* and 36 to *Stilobezzia*. The genus *Echinohelea* is quite new to the records from New Guinea and its 5 species are new to science. *Leptoconops*, *Alluaudomyia* and *Monohelea* are not very common, though almost world wide, but there have been found 1, 11 and 7 new New Guinea species respectively. The genus *Stilobezzia* is rather more cosmopolitan, but there have been known only 14 species hitherto from New Guinea, and at this time 22 species are newly added to this genus. The discovery of such a considerable number of new species of these genera suggests the biological richness and zoogeographical speciality in the Ceratopogonid fauna of New Guinea.

Almost all specimens investigated were mounted in Gater's solution and ringed with paraffin-balsam sealing mixture. Most of the material, including types, is deposited in B. P. Bishop Museum. Duplicates are in the U. S. National Museum and in my collection.

Morphological terms used in the text were mainly adopted from Tokunaga and Mura-chi's paper on Micronesian Ceratopogonidae (1959, Insects of Micronesia, Diptera: Ceratopogonidae, Bishop Museum, 12 No. 3).

Abbreviations used in the specific descriptions of this paper are as follows: AR is the antennal ratio showing the combined length of distal 5 segments X-XIV to that of basal preceding 8 segments II-IX taken together. CR is the costal ratio showing the length of the costal vein to that of the wing both measured from the incision between the alula

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and squama. CRL is the combined relative length of antennal segments. PR is the maxillary palpal ratio showing the length of the palpal segment III to the width of the broadest part of the segment. RL is the relative length measured by an ocular micrometer under magnification of 150 (1 unit = 0.013 mm) in the cases of wings, wing veins, proboscis head-capsule and leg segments and under magnification of 600 (1 unit = 0.003 mm) in the cases of antennae, maxillary palpi, spermathecae and male hypopygia. RL-A is the relative length of antennal segments (Arabic numeral prefixed before A shows the number of the distal antennal segments). RL-L is the relative length of leg segments, excluding coxa and trochanter. RL-V is the relative length of wing veins R, M, stem of fMCu, R₁ and Rs. RR is the radial ratio showing the relative length of radial cell II to I. TR is the tarsal ratio showing the relative length of the tarsal segment I to II. W is the relative width of the broadest part measured in the perpendicular position to the long axis. Roman numeral shows the ordinal number of the segment of the antenna, palpus, tarsus, abdomen, etc., and in the case of the wing, the first and second radial cell. NG is the abbreviation of New Guinea showing the locality of specimen.

I wish to express my appreciation to Dr. J. L. Gressitt, Bernice P. Bishop Museum, Hawaii for his continuing guidance and inspiration, and under whose financial and material support, this study was performed. I must extend my deepest thanks to Dr. W. W. Wirth, U. S. Department of Agriculture in Washington for his useful suggestions given on this work.

Genus *Leptoconops* Skuse

For synonymy and literature refer to Cater's paper (1921, Bull. Ent. Res. 12: 1-28).

KEY TO NEW GUINEA SPECIES OF LEPTOCONOPS

- Fore leg almost entirely yellow, mid and hind legs with femora dark on apical 1/2, yellow on basal 1/2; abdomen very pale, almost white. Female with cerci shorter than wide, claws each with only minute seta-like basal tooth..... **1. albiventris**
- All legs with femora and tibiae dark brown; abdomen with tergites uniformly brown. Female with cerci far longer than wide, claws each with distinct blunt basal tooth **2. maai**

1. *Leptoconops albiventris* de Meijere Fig. 1 a-b.

For synonymy and literature refer to my paper (1959, Pacific Ins. 1: 178).

Female: Body 1.03-1.6 mm long; wing 0.82-1.03×0.38-0.46. General color dark brown, but abdomen and legs mainly yellowish to pale ochreous. Head dark brown, eyes bare, widely separated and as wide as 7 facets; proboscis rather long, longer than 1/2 of head-capsule (13:23), brown; frons with about 10-13 bristles between eyes; clypeus with 8 strong bristles arranged along upper margin and 2 median bristles. Palp (fig. 1b) with I-II somewhat fused and very pale; III elongate-oval, with deep sensory pore on sub-basal part, PR 2.0-2.44; IV subcylindrical; RL-P 7.5:7.5:19.5:18. Antenna (fig. 1a) 13-segmented, brown, with verticils more or less reduced; XIII subequal to X-XII combined, II-XII discoidal; RL-A 9×14.5:11.5×11.8:5.8×8.8:6.3×9:6.3×9.....5.8×7.7:5.8:5.3×7:19.5:9.4. Thorax entirely dark brown; scutellum with 2 large mid and 3 small setae.

Legs with coxae and apical 1/2 of mid and hind femora brown; dorsal side of apical 1/2 of fore femur, base of fore tibia and preapical part of mid tibia of some specimens very faintly fuscous, other parts yellow; hind femur somewhat more inflated than others; hind tibia with 6-8 black apical spines and 6 apical bristles of tibial comb; tarsal spines somewhat irregular in length, some of them dark and others pale; in fore, I with 9-12 dark ventral, II with 1 dark apical, 1-3 pale ventral, III with 0-2 pale apical; in mid, I with 6-9 dark and 0-3 pale ventral, II with 0-2 dark and 0-2 pale apical, III with 2 pale apical; in hind, I with 10-13 dark and 11-17 pale ventral, II with 2-9 dark and 0-3 pale ventral, III with 2 pale apical; all IV somewhat cordiform; claws of all legs small, equal, each with 1 minute spine-like basal tooth. TR and RL-L 2.0-2.13 and 22.1 : 19.5 : 8.3 : 4 : 3.4 : 3 : 4.2 in fore, 1.82-2.02 and 28 : 22.8 : 11.7 : 6.1 : 3.6 : 2.9 : 4 in mid, 1.37-1.38 and 30.5 : 26.5 : 12.7 : 9.3 : 4.9 : 3 : 4.2 in hind.

Wing white, without macrotrichia; costa ending above or just beyond fMCu, CR 0.48,

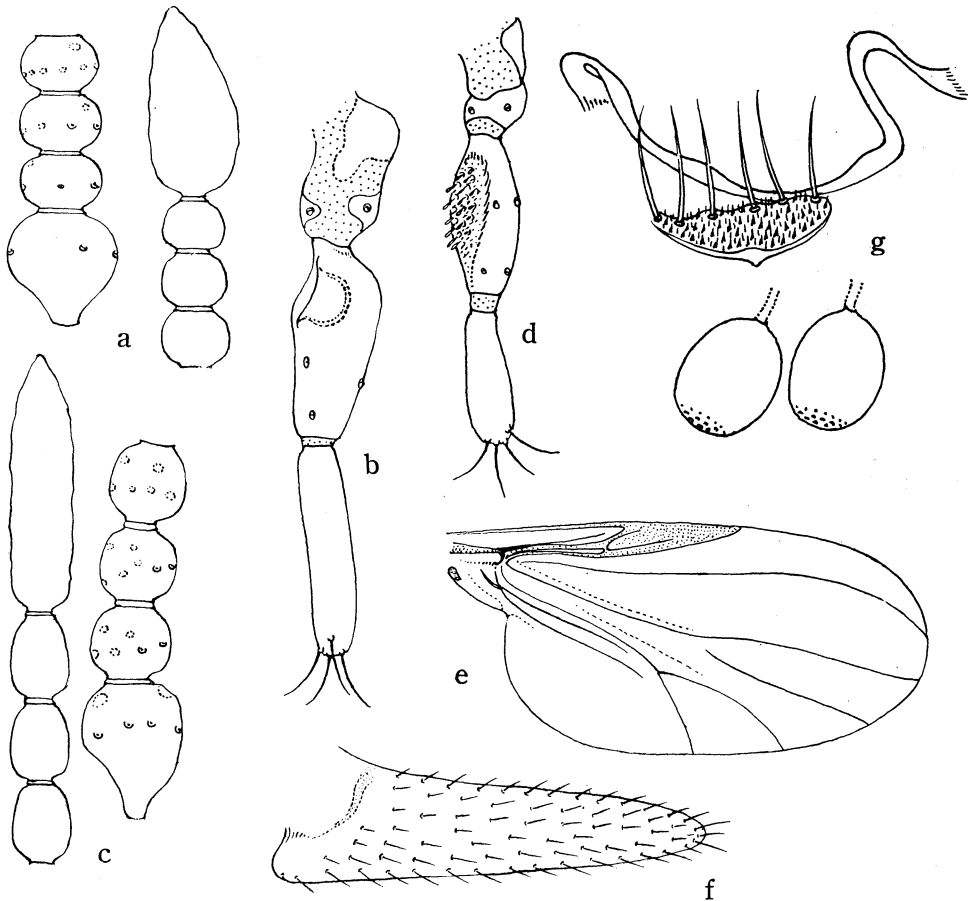


Fig. 1. *Leptoconops* spp., ♀. a-b, *albiventris*: a, antennal segments II-V and X-XIII; b, maxillary palpus. c-g, *maai*: c, antennal segments II-V and X-XIII; d, maxillary palpus; e, wing; f, cercus; g, genital plates and spermathecae.

RL-V 15 : 15 : 35 : 7 : 17. Halter white. Abdomen entirely very pale, cerci very small; spermathecae 2, brown, equal, round (5+16×16, 4+17×15).

DISTRIBUTION: New Guinea, New Britain, Marquesas Is.

SPECIMENS EXAMINED: 1 ♀, Alula Reg., E of Lindenhafen, New Britain, 22. IV. 1956, Gressitt, in Nipa swamp; 1 ♀, Aroa Estate, W of Redscar Bay, NG, Papua, 30. IX. 1958, Gressitt.

This biting midge is undoubtedly annoying on the coastal regions of New Guinea (Lee, 1948, Proc. Linn. Soc. N. S. W. 72 : 335).

2. **Leptoconops maai** Tokunaga, n. sp. Fig. 1 c-g.

Small black species closely allied to Thailand *siamensis* Cater (from Patani Cape), but may be distinguished by the darker color, less setigerous structure and weak development of tarsal spines. Male unknown.

Female: Body 2.21 mm long; wing 1.06–1.08×0.51. Head entirely dark brown; eyes bare, widely separated and as wide as 5 facets, proboscis about 1/2 as long as head-capsule (11 : 21). Palp (fig. 1d) dark brown; 3-segmented I and II fused, III elongate-oval, with large shallow sensory pore area on entire ventral side, PR 1.9, RL-P 6.5+8.8 : 17 : 16. Antenna (fig. 1c) 13-segmented, entirely brown, III–XII spherical to short-oval, XIII slightly shorter than preceding 3 segments combined (28.3 : 30.3), RL-A 10×19 : 15×9 : 8.5×8 : 8.8 : 8.4 : 8.6 : 9 : 9.2 : 9.4 : 9.5 : 9.8 : 11×7 : 27×7.8. Frons without setae between eyes; clypeus with only 6 small setae arranged into 2 ventral lines on midportion. Thorax entirely dark brown, scutellum with 2 mid large and 4–5 small setae. Legs slender, mainly brown; trochanters, bases of femora and fore tibial end-part paler; all tarsi also pale brown; hind tibial comb with 4 apical bristles, all leg claws stout, equal, each with 1 blunt basal tooth; tarsal spines rather irregular in size; in fore, I with 8–11 ventral spines, II with 1 apical; in mid, I with 6–10 ventral, II with 1–2 dark apical, III with 0–2 slender apical; in hind, I with 12–16 ventral, II with 1–2 apical, III with 2 slender apical; TR and RL-L 2.18 and 29.5 : 26.5 : 12 : 5.5 : 4.5 : 3.2 : 5 in fore; 1.8 and 36 : 31 : 13.5 : 7.5 : 4.7 : 3 : 4.5 in mid; 1.52 and 38 : 35 : 18 : 11.4 : 6 : 3.2 : 5 in hind.

Wing (fig. 1e) white, short-oval, without macrotrichia, squama with 1 seta; costa ending somewhat beyond tip of Cu₁, CR about 0.57, RL-V 21 : 21 : 33 : 6 : 21, basal section of Rs present and R₁ and Rs forming an interspace, basal radial cell very narrow, apical radial cell elongate-triangular, as long as basal radial cell, fMCu under mid of Rs, supposed fM above tip of Cu₁ and just beyond tip of costa. Halter white, with base brown. Abdomen with tergites brown, sternites and pleural membranes very pale yellow; cerci (fig. 1f) pale brown, about 4 (3.8–4.3)× as long as basal width; subgenital plate U-shaped, very slender, genital plate lunula-shaped, spinulose, with 6 strong marginal bristles, spermathecae 2, brown, equal, oval (16×11, 16×10) and with pale punctures on bottom-part (fig. 1g).

DISTRIBUTION: New Guinea.

Holotype: ♀, Sarmi, NW NG, 20–23. VII. 1959, Maa, by light trap. *Paratype*: 2 ♀♀ with type.

This is closely allied to W. Australian *grandis* Cater, but is distinctly different from the new species by the absence of the basal barbs of the claws. More closely allied species

may be Thailand *siamensis* Cater, which may be different from the new species in the following points: clypeus with more than 6 setae, being 8, antennae paler being yellowish brown instead of brown, scutellum with more setae, middle strong setae being 6 instead of 2, wing with confluent or fused radial cell, R_1 and R_s not forming an interspace and abdomen waxen creamy white.

Genus *Alluaudomyia* Kieffer

KEY TO NEW GUINEA SPECIES OF ALLUAUDOMYIA

1. Wing with many dark spots on radial and other posterior veins..... **3. splendida**
Wing with or without a few dark spots on anterior veins.....2
- 2 (1). Wing quite devoid of dark spot just before cross-vein r-m 3
Wing with dark spot just before cross-vein r-m 5
- 3 (2). Fore tibia with median dark band **4. papuae**
Fore tibia entirely very pale or yellow 4
- 4 (3). Scutellum entirely yellow; eyes quite bare **5. immaculata**
Scutellum with dark median spot; eyes distinctly pubescent **6. bifasciata**
- 5 (2). Scutellum with only 2 median bristles..... 6
Scutellum with 4 bristles..... 7
- 6 (5). Scutum almost entirely brown..... **7. platipyga**
Scutum mainly yellow at least on anterior 1/2, before scutal sutures ... **8. insulana**
- 7 (5). Scutum with 1 isolated star-like or subrhombic fuscous median spot or very broadly yellow on median part 8
Scutum with median fuscous spot confluent with other fuscous spots or broadly fuscous at least on caudoscuteal area..... 10
- 8 (7). Mid femur with dark preapical ring; scutellum with distinct dark median spot **9. astera**
Mid femur without dark preapical ring; scutellum without distinct dark median spot..... 9
- 9 (8). Scutum with epsilon-shaped dark markings on humeral areas; in ♀, spermathecae with very small processes **10. brandti**
Scutum without epsilon-shaped dark markings on humeral areas; in ♀, spermathecae with long processes **11. tenuistylata**
- 10 (7). Scutellum entirely yellow, without dark spots..... **12. NG No. 1**
Scutellum at least with 1 dark spot 11
- 11 (10). Mid femur without isolated preapical dark ring (broadly brown on midportion)..... **13. novaguineana**
Mid femur with isolated preapical dark ring 12
- 12 (11). Mid tibia with sub-basal dark band confluent with dark base forming a large basal band **14. petersi**
Mid tibia with sub-basal dark band isolated from dark base by yellow ring..... 13
- 13 (12). One spermatheca with long and sinuous process **15. jimmensis**
Both spermathecae with straight processes **16. smeei**

3. *Alluaudomyia splendida* Tokunaga, n. sp. Fig. 2 a-d.

Medium-sized to small and highly mottled species, thorax with tergites yellow and mottled with many isolated or subconfluent dark dots or spots, pleural side with dark longitudinal stripe, legs with femoral basal 1/2 dark, apical 1/2 and entire tibiae with dark small spots on white ground color, wings with at least 9 dark spots on veins and ♀ with many dark dot-like spots at bases of some macrotrichia, spermatheca large and single, parameres of ♂ hypopygium with slender apical processes.

Female: Body 1.52–1.82 mm long; wing 1.38–1.63×0.52–0.64. Head yellowish brown; vertex with dark median spot, eyes bare, just separated; proboscis hardly 1/2 of head-capsule (11 : 24.5). Palp with I and basal 1/2 of II white, other parts dark, PR 2.2, RL-P 7 : 12 : 12 : 9.5 : 12.5. Antenna with I dark yellow, II dark and with petiole white, III–XIII broadly fuscous at middle and bases and apical parts white, XIV entirely fuscous brown; short flagellar segments with elongate neck parts; AR about 0.9, RL-8A 16.5 : 17 : 16.5 : 23 : 23 : 24 : 23.5 : 26.5 (W=5–5.2). Thorax widely yellow, scutum mottled with many small dark dots or spots and subconfluent fuscous slender short stripes, scutellum entirely yellow, with 4 median setae, postscutellum yellow, with 3 fuscous clouds, pleural side with 1 longitudinal dark stripe, sternopleurite brown. Legs with fore coxa and all knee parts yellow; other coxae, all trochanters and hind basitarsus dark, femora with basal 1/2 dark; apical 1/2 white and with some dark spots, tibiae mainly white, with apical dark ends and several dark spots on entire length, tarsi mainly white, but basitarsus more or less fuscous, penultimate light brown; in fore, femur basally yellow, with 1–4 dark spots before dark preapical ring, tibia with 2 dark spots between sub-basal dark ring and preapical dark band; in mid, femur with 3–8 small dark spots on apical 1/2 before preapical dark ring; tibia with 4–6 dark spots between sub-basal dark ring and dark apical end; in hind, femur with 2–4 dark spots on apical 1/2 before preapical dark ring, tibia with 3–4 dark spots between sub-basal dark ring and dark end. Hind tibial comb with 6–8 apical bristles, claws single, long, with basal barbs, their RL to tarsi V 28 : 15.5 : 27 in fore, 29 : 12.5 : 28.5 in mid, 23.5 : 9.5 : 25 in hind; TR and RL-L 2.14–2.6 and 37 : 34.5 : 14 : 6 : 3.3 : 3.3 : 7 in fore, 2.67–3.36 and 51 : 47.5 : 23.8 : 8 : 3.5 : 2.8 : 7.5 in mid, 3.0–4.0 and 40.5 : 42 : 18.5 : 5.5 : 3 : 2.8 : 6.8 in hind.

Wing (fig. 2a) elongate-oval, white, with many dark spots and dots, dark costal spot covering apical end of radial cell II and somewhat extended onto membrane of cell R₅, small dot-like spots at trichial bases variable in number; costa ending somewhat before tip of M₃₊₄, CR 0.68–0.7, RL-V 36.5 : 34 : 49 : 17 : 33.5, radial cell II rather long, longer than basal stem (18.5 : 11.5), M₁₊₂ about 3× of r-m (17 : 5.5), fMCu somewhat beyond r-m, and far before fM. Halter white, knob slightly fuscous at base and tip. Abdomen largely pale ochreous or yellow; tergites very pale brown, dark dots at trichial bases of pleural side; cerci white, spermatheca large, pale, single, oval (0.5+32×23), with hyaline dots before duct.

Male: Body 1.24 mm long; wing 0.98–1.08×0.33–0.35. General color as in ♀, but thoracic tergites somewhat darker, scutum with wider fuscous clouds connecting dark dots of trichial bases. Head with eyes separated as wide as 1 facet. Palp with RL-P 4 : 6.5 : 9.5 : 7 : 11.8. Antenna with I brown, II–XI yellow, XII–XIV pale brown basally, white on apical 1/2–1/4, plumose hairs yellow; CRL of II–XI to XII–XIV 114 : 87, RL-8A 10 : 10 : 9 : 10 : 11 : 24 : 30 : 32 (W=6–5). Thorax with irregular fuscous clouds and many dark

dot-like spots at setal bases on scutum, scutellum with a small dark median spot and only 2 median setae, postscutellum fuscous brown, but paler on lateral sides. Legs dark and white, mottled as in ♀, but fore coxa not paler; hind tibial comb with 4–5 apical bristles, claws normal, cleft at tips; TR and RL-L 2.5–2.75 and 26.5 : 25 : 11.8 : 4.5 : 2.5 : 2 : 3.4 in fore, 3.27–3.38 and 35 : 30.5 : 20 : 6 : 2.8 : 2 : 3.8 in mid, 3.0 and 26.5 : 26.5 : 14.2 : 4.8 : 2.8 : 2 : 3.9 in hind.

Wing (fig. 2b) with 3 costal dark spots, mid one on R₁ small (absent in ♀), 7 dark small spots on posterior veins distinct, macrotrichia only along apical margin of cells R₅ and M₁, costa ending beyond tip of Cu₁, fMCu just before tip of R₁ and under fM, CR 0.59–0.6, RL-V 24.5 : 22.5 : 34.5 : 8.5 : 15, radial cell II as long as basal stem (7 : 6), M₁₊₂ about 4× of r-m (9.5 : 2.5). Abdomen without dark spots or dots, uniformly pale; hypopygium (fig. 2 c–d) pale ochreous, with sternite pale brown, aedeagus and basal sclerites of parameres dark, coxites with large lateral dark spots; sternite widely concave on caudal margin, tergite with anal points blunt, inconspicuous; coxite slender, arcuate, only slightly thick on basal part, about 1/2 as long as coxite (24.5 : 41); aedeagus with large semi-circular basal arch and caudal lobe small; paramere slender, with apical 1/3 flattened on lateral part and with slender preapical process.

DISTRIBUTION: New Britain, New Guinea.

Holotype: ♀, Lowlands Agr. Stat., Keravat, New Britain, 20–26. VIII. 1960, Smee, by light trap. *Allotype*: ♂, Goldie Riva, nr. Port Moresby, NG, 25. IX. 1959, Ardley. *Paratypes*: 1 ♀, Minj, W. Highlands, NG, 8. V. 1959, Peters; 1 ♂, Lae, NG, 6. VII. 1957, Hardy.

This species is somewhat related to S. African *natalensis* de Meillon in the wing markings, the mottled legs and the structures of the spermatheca; but, in the related species, the scutum is creamy throughout, without any brown spots, the ♀ wing is more widely hairy and 4 marginal dark spots are located at the tips of the veins, distinctly differing from the new species.

4. *Alluaudomyia papuae* Tokunaga, n. sp. Fig. 2 e–h.

Small, dark and yellow species with wings unmarked; scutellum yellow, with a dark median spot, abdomen with sub-basal white band and preapical pale or white band, legs yellowish pale ochreous with fuscous ill-defined clouds and white mid and hind tibiae; eyes distinctly pubescent.

Male: Body 1.41 (1.39–1.43) mm long; wing 0.92 (0.87–0.94) × 0.31 (0.29–0.33). Head dark brown, frons pale ochreous, mouth parts white, eyes entirely hairy and just contiguous or linearly separated. Palp white, PR 4.3 : 10.2 : 9.5 : 8.3 : 10.8. Antenna with I dark, flagellum and plumose hairs brown; CRL of II–X to XI–XIV 93 : 71.7, RL-8A 7.2 : 7.7 : 7.5 : 8.3 : 12 : 22.8 : 25.5 : 23. Thorax almost entirely and uniformly brown, but scutellum yellowish and with a fuscous median spot and 2 median setae. Legs yellowish and very pale ochreous and with faint fuscous clouds, all coxae fuscous, all tarsi (excluding dark basitarsus of hind leg) white; in fore, knee part, femoral preapical part and tibial midportion slightly fuscous; in mid, femoral apical and sub-basal parts slightly fuscous, tibia entirely white; in hind, femora broadly fuscous (excepting yellow both ends), tibia white. Hind tibial comb with 4–5 apical bristles, claws simple, equal, small; TR and RL-L 2.18 (2.13–2.25) and 24.2 : 20.2 : 9.5 : 4.4 : 2.4 : 2 : 4.2 in fore, 2.28 (2.19–2.4) and 33 : 28 : 17.2 :

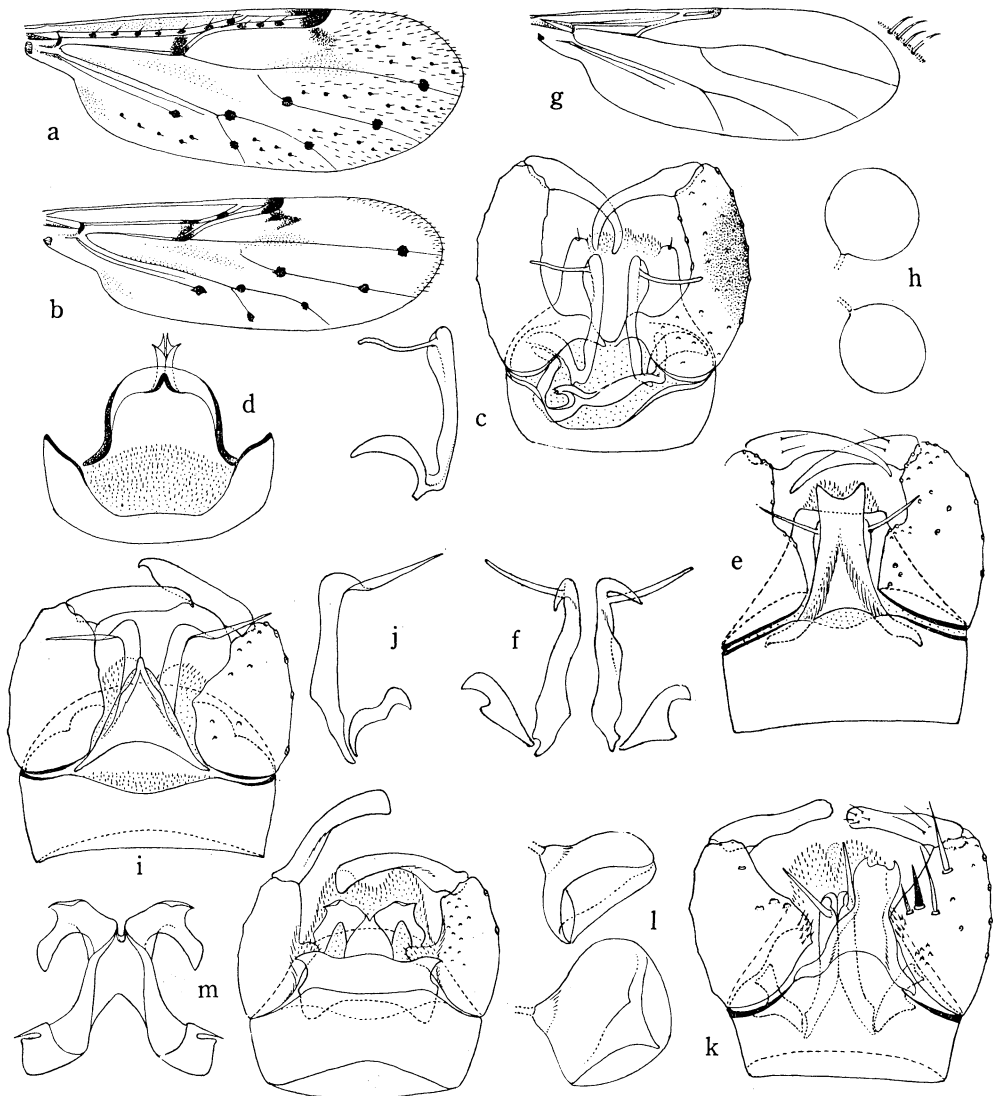


Fig. 2. *Alluaudomyia* spp. a-d, *splendida*: a, ♀ wing; b, ♂ wing; c, ♂ hypopygium and paramere; d, sternite and aedeagus. e-h, *papuae*: e, ♂ hypopygium; f, parameres; g, ♀ wing and marginal setae of costal area of cell R_5 ; h, spermathecae. i-j, *immaculata*: i, ♂ hypopygium; j, paramere. k-l, *bifasciata*: k, ♂ hypopygium; l, ♀ spermathecae. m, *platipyga*, ♂ hypopygium and parameres.

7.5 : 3.2 : 2 : 3.9 in mid, 2.46 (2.25–2.63) and 25 : 23.5 : 9.8 : 4 : 2.7 : 2 : 4.2 in hind.

Wing very pale, almost white, with tip of R_s faintly pale brown, several macrotrichia very closely situated along apical margin of cell R_5 ; costa ending slightly beyond $fMCu$, CR 0.51, RL-V 18.7 : 17.7 : 31 : 7.5 : 11, radial cell I absent, II about 1/2 of stem vein (3.3 : 7.3), M_{1+2} long and 4.5× as long as $r-m$ (9 : 2). Halter white. Abdomen with ter-

gites I, III-V, VIII-IX brown to dark, II white, VI-VII slightly fuscous, sternites and pleural membranes very pale. Hypopygium (fig. 2 e-f) dark, with styles yellowish brown; coxite with mesal hump, style claw-like and about 0.8 as long as coxite (23 : 30); aedeagus very strong, with caudal lobe broad and ending fish-tail-like tip, paramere slender, caudal end hook-like, with slender preapical spine-like process, basal sclerite almost as long as preapical process (12 : 14.3) and about 1/3 as long as main part (12 : 32.3); anal points of tergite almost absent.

Female: Body 1.33 (1.27-1.4) mm long; wing 0.88 (0.85-0.92) × 0.34 (0.33-0.35). Color somewhat darker and more distinctly marked than in ♂, but general color as in ♂. Head with eyes pubescent and just separated, proboscis longer than 1/2 of head-capsule (8 : 18.7). Palp white, but with apical part fuscous, PR 2.0-2.3, RL-P 4.7 : 8.7 : 9.7 : 7.7 : 10.5. Antenna entirely dark brown, III-VIII elongate-oval, IX with rather long neck part; AR 1.18 (1.14-1.22), RL-8A 9 : 9.8 : 11.2 : 15.3 : 16.3 : 17.8 : 18.3 : 20.5. Thorax quite as in ♂. Legs as in ♂, but fore femur more widely fuscous on midportion, hind femur fuscous on apical 3/4; hind tibial comb with 5-6 apical bristles, claws single, unequally bifid at bases, RL of claws to last segment 20.7 : 12.7 : 19.7 in fore, 24 : 15.7 : 20.7 in mid, 14.7 : 9.3 : 18.3 in hind; TR and RL-L 2.0 and 24.3 : 22.7 : 8.3 : 4.2 : 2.5 : 5.2 in fore, 2.11 (2.0-2.27) and 36.3 : 33.3 : 17.5 : 8.5 : 3 : 2.5 : 5.3 in mid, 2.33 (2.25-2.5) and 26 : 24.8 : 9.8 : 3.9 : 2.5 : 2 : 4.8 in hind.

Wing (fig. 2g) without markings and macrotrichia, cell R_5 with spinule-like setae of fringe, apical part of radial cell II very faintly brownish; costa ending above end of Cu_1 CR 0.5-0.55, RL-V 15 : 14 : 28 : 8 : 15, radial cell II slightly shorter than stem (6 : 7.3), M_{1+2} 5 × as long as r-m (10 : 2), fMCu just beyond fM and middle of radial cell II. Halter white. Abdomen as in ♂, but posterior 1/2 of tergite V, entire VI and anterior 1/2 of VII white; cerci white, spermathecae (fig. 2h) 2, brown, round, subequal (0.7+14 × 14, 0.8+12.3 × 12), 1 vestigial also round (6 × 6).

DISTRIBUTION: New Guinea, New Britain.

Holotype: ♂, Lowlands Agr. Stat., Keravat, New Britain, 22-26.VIII.1960, Smee.

Allotype: ♀, Maprik, Sepik Distr., NG, II.1959, Peters. *Paratypes*: 1 ♂ with holotype; 2 ♂♂, 2 ♀♀, Lowlands Agr. Stat., Keravat, New Britain, 13-17.VI.1960, Smee; 3 ♂♂, 1 ♀, Keravat, New Britain, 12-16.III.1961, Smee, by light trap; 1 ♂, Bainyik, NG, III.1959, Peters.

This is somewhat allied to S. African *congolensis* de Meillon and *sentia* de Meillon, but distinctly differs in the absence of the macrotrichia on wing membrane, in possession of only 2 setae of the scutellum, a dark abdomen with 2 pale bands and absence of a distinct dark costal spot at end of radial cell II. Aedeagus of 1 ♂ paratype with a rather high basal arch which is somewhat 1/2 of the total length.

5. *Alluaudomyia immaculata* Tokunaga, n. sp. Fig. 2 i-j.

Minute, pale ochreous species, wings and legs without any dark or fuscous spots or bands, somewhat allied to *papuae* n. sp., but is provided with quite a different ♂ hypopygium, ill-defined fuscous clouds on legs and pubescent eyes. Female unknown.

Male: Body 1.07 mm long; wing 0.9 × 0.31. Head almost entirely ochreous, eyes bare and contiguous. Palp with I-III white, IV-V fuscous, PR 1.8, RL-P 4 : 8 : 9 : 7 : 8.5, An-

tenna with I yellow, other distal segments pale brown, CRL of II-X to XI-XIV and II-XI to XII-XIV 101 : 103 and 113 : 91, RL-8A 9 : 9 : 9 : 9 : 12 : 27 : 32.5 : 31.5. Thorax entirely pale ochreous, scutum entirely yellow on anterior 1/2 before scutal sutures, with white humeral areas, ochreous clouds behind white areas, widely ochreous on posterior 1/2, caudoscuteal area slightly paler, scutellum entirely yellow and with only 2 median setae, postscutellum ochreous. Legs pale ochreous or yellowish, with only hind basitarsus slightly fuscous; claws small, cleft at tips, hind tibial comb with 5 apical bristles; TR and RL-L 1.88 and 23 : 21 : 9 : 4.8 : 2.5 : 1.5 : 3.5 in fore, 2.5 and 34 : 31 : 20 : 8 : 3 : 2 : 3.5 in mid, 2.56 and 24 : 25 : 11.5 : 4.5 : 2.5 : 2 : 3.5 in hind.

Wing white, with veins very pale brown, tip of Rs pale ochreous, macrotrichia absent on membrane; costa ending above tip of Cu₁, CR 0.56, RL-V 20 : 20 : 30 : 8 : 13, radial cell II slightly shorter than basal stem (5 : 6.5), M₁₊₂ 4× as long as r-m, fMCu under tip of R₁. Halter white. Abdomen very pale brown, pleural membranes only slightly fuscous; hypopygium (fig. 2 i-j) brown; sternite very shallowly concave on caudal margin, tergite without prominent anal points; coxite simple, short, style rather stout, almost as long as coxite (23 : 25), with tip suddenly narrowed and curved; aedeagus triangular; paramere slender, tapered and curved on apical 1/3, with basal sclerite small, slender and undulate.

DISTRIBUTION: New Guinea.

Holotype: ♂, Kampong Landbouw, Biak, NG, 17. VII. 1957, Hardy.

This is somewhat similar to Micronesian *monopunctata* Tokunaga and Murachi in the structures of the ♂ hypopygium and thoracic general color; however, may be easily distinguished by the completely separated parameres, absence of the costal dark spot of the wing and the uniformly pale legs.

6. *Alluaudomyia bifasciata* Tokunaga, n. sp. Fig. 2 k-l.

Small, pale brown or ochreous species; wing with only 1 costal dark spot on apical end of radial cell, abdomen with white bands on basal and preapical parts; legs without distinct dark bands; ♀ spermathecae simple, and ♂ hypopygium with very strong spines on mesal side of coxites.

Female: Body 1.25-1.3 mm long; wing 1.12 (1.08-1.16) × 0.43 (0.42-0.46). Head pale ochreous, vertex with faint fuscous median cloud, eyes distinctly entirely pubescent, just contiguous or just separated, proboscis about 1/3 of head-capsule (7.5 : 21). Palp with I-III white, other segments slightly fuscous, III with several surface sensillae on preapical part, PR 2.0, RL-P 4.5 : 7.5 : 9 : 7 : 12. Antenna with I yellow, but its apical margin slightly fuscous, other segments pale brownish fuscous, short basal flagellar segments elongate-oval, AR 1.26 (1.09-1.37), RL-8A 9.5 : 9.8 : 11.8 : 17.2 : 18.2 : 21.7 : 22.2 : 24.7 (W=4.1-4). Thorax pale brown or pale ochreous, with shoulder and lateral parts somewhat yellowish, scutellum pale yellow, with fuscous median spot and 2 median setae, sternites yellowish. Legs largely yellow, mid and hind coxae pale brown; hind basitarsus brown; mid femur fuscous at end and sometimes slightly fuscous on basal 1/2; hind femur somewhat fuscous on apical part; hind tibial comb with 5 apical bristles; tarsal apical spines present only on mid leg: I-II each with 1, II with 2; claws with long basal barb, RL to V 19.5 : 12.5 : 21.5 in fore, 20.5 : 12 : 20.5 in mid, 16.5 : 7.5 : 20 in hind; TR and RL-L 1.87 (1.82-1.93) and 27 : 23.5 : 10 : 5.4 : 2.5 : 2.2 : 5.8 in fore, 2.35 and 36.5 : 32.3 : 18.8 : 8 : 2.7 : 2.3 : 5 in mid, 2.54 (2.4-2.67) and 29.5 : 28.5 : 11.8 : 4.5 : 2.5 : 2.1 : 5 in hind,

Wing markings as in *monopunctata* and macrotrichia spread as in *novaguineana*, costa ending beyond or above tip of Cu_1 , fMCu under tip of R_1 or fM, CR about 0.6, RL-V 22 : 21 : 35.5 : 11.5 : 23, radial cell II as long as stem (9.5 : 10.5), M_{1+2} about 5× of r-m (13 : 2.7). Halter white. Abdomen with segments I–II and V–VI mainly white, III–IV and VII–IX mainly fuscous, but anterior part of V fuscous and anterior part of VII white; cerci white, spermathecae (fig. 21) 2, round, brown, equal (2+15×16, 2+14×15.5), without process.

Male: Body 1.29 mm long; wing 0.98×0.36. General color and structures as in ♀. Palp with PR 3.3, RL-P 3 : 8 : 10 : 9 : 11.5. Antenna with I yellowish ochreous, flagellum missing. Legs with claws small, cleft at tips, TR and RL-L 2.0 and 25.8 : 22 : 10 : 5 : 3 : 2.5 : 4.5 in fore, 2.13 and 35 : 30 : 19 : 8 : 3.5 : 2.3 : 4 in mid, 2.44 and 27 : 26 : 11 : 4.5 : 3 : 2.5 : 5 in hind.

Wing with markings as in ♀, macrotrichia very sparse, only arranged in a line very closely along wing marginal fringe of cell R_5 , costa ending above tip of Cu_1 , CR 0.43, RL-V 21.5 : 20.5 : 35 : 10 : 16.5, radial cell II about 1/2 as long as stem (5.5 : 9), M_{1+2} 6× of r-m (12 : 2). Abdomen with segment I pale ochreous, II yellow, III–V and VIII–IX brown, VI–VII pale yellow; hypopygium (fig. 2k) brown, with tergal tip and styles pale yellow; tergite without anal points; coxite conical, with 3 strong spines on mesal side, style almost straight, not tapered, about 0.7 as long as coxite (23 : 33); aedeagus fully as long as style (25 : 23), constricted preapically, with paired pointed tips; paramere slender, round at tip, with slender and sharply pointed process on preapical part, basal sclerite also slender.

DISTRIBUTION: New Britain, New Guinea.

Holotype: ♀, Lowlands Agr. Stat., Keravat, New Britain, 13–17. VI. 1960, Smee, by light trap. *Allotype*: ♂, Waris, 450–500 m, S of Hollandia, Neth. NG, 16–31. VIII. 1959, Maa, at light. *Paratypes*: 1 ♀ with holotype; 2 ♀♀ with allotype.

This is rather closely allied to *S. African congolensis* de Meillon; only the ♀ is known. Allied species may be distinguished from the new species in the following points: Antennal segment IX equal to X, palpal segment III with small sensory pore, scutellum with 4 bristles, post scutellum yellowish laterally, legs with dark knee-spots, hind tibial end dark, apical tergites and apices of basal tergites of abdomen with creamy pigment.

7. *Alluaudomyia platipyga* Tokunaga, n. sp. Fig. 2m.

Minute, dark brown species with mottled legs banded with white and dark bands, scutum almost uniformly brown, wings with 3 costal dark spots more or less developed, abdomen almost entirely white, ♂ hypopygium highly specific in structures of aedeagus and parameres. Female unknown.

Male: Body 1.04 mm long; wing 0.71×0.25. Head brown, mouth parts white, eyes bare and just separated. Palp rather slender, PR 1.8, RL-P 3 : 8 : 7 : 6 : 8. Antenna with I black, II and XI–XIV fuscous, III–X and plumose hairs very pale; CRL of II–X to XI–XIV and II–XI to XII–XIV 72 : 65 and 80.5 : 57, RL-8A 6.5 : 6 : 6 : 6 : 8 : 16 : 19 : 19. Thorax mainly brown, only yellowish on lateral margins of scutum, scutellum yellow, with dark median spot and only 2 median setae. Legs with fore coxa, all trochanters and femoral bases yellowish ochreous, mid and hind coxae brown, hind basitarsus dark, all other tarsi white, all femora largely brown, with dark knee parts, and preapical white bands (in mid very narrow), all tibiae largely white, with both ends dark, fore tibia with median

dark band, other tibiae each with 1 narrower dark band just before middle; hind tibial comb with 5 apical bristles; TR and RL-L 2.06 and 18 : 15.5 : 7 : 3.4 : 2 : 1.5 : 3 in fore, 2.9 and 25 : 20 : 13 : 4.5 : 2.5 : 1.8 : 2.7 in mid, 2.43 and 19 : 17.5 : 8.5 : 3.5 : 2 : 1.8 : 3 in hind.

Wing with apical costal dark spot on distal marginal veins of radial cell II prominent, median dark spot on middle part of stem vein of radial cell II small, basal dark spot just before r-m very faint, only very slightly fuscous on distal part of R, macrotrichia very few at tip of cell R₅, costa ending at middle of wing and above fMCu, RL-V 11 : 10 : 22 : 7 : 10, radial cell II 1/2 as long as its stem (2.5 : 5), M₁₊₂ about 5× of r-m (8 : 1.5). Halter white. Abdomen very pale, almost white, with only very pale fuscous clouds on tergites I-IV; hypopygium (fig. 2m) dark brown, but tergite and styles white; tergite without prominent anal points; coxite rather slender, but with mesal blunt process at base, style almost as long as coxite (21 : 23), not tapered, slightly arcuate, somewhat flattened on apical 1/2; aedeagus very wide, subsquare, about 2× as wide as long, with lateral caudal angles bluntly hooked; parameres widely fused, each with apical part flattened, angulated and somewhat irregularly barbed, with basal sclerite square.

DISTRIBUTION: New Guinea.

Holotype: ♂, Maprik, Sepik Distr., NE NG, I. 1959, Peters.

This is highly specific in the structures of the ♂ hypopygium, especially in the sub-square broad aedeagus and the flattened and irregularly angulated parameres.

8. *Alluaudomyia insulana* Tokunaga and Murachi Fig. 3 a-b.

Alluaudomyia insulana Tok. & Mura., 1959, Ins. Micron. 12 (3) : 358.

Small, yellowish species with wings 0.73-0.79×0.28-0.29 mm, scutellum and knee parts entirely yellow and rather variable fuscous markings on scutum and legs.

The ♂ specimen examined at present is somewhat similar in general appearance to paler specimens from Caroline Is.; the scutum is widely brownish on posterior 1/2, yellowish on anterior 1/2 and lateral parts and with small fuscous clouds on anterior margin; all femora and trochanters are mainly pale yellow and with large fuscous median bands on femora and fore tibia, but mid and hind tibiae are almost entirely yellow, except for a sub-basal small fuscous spot of hind tibia and hind tibial comb which is provided with 6 apical bristles; 3 costal dark spots of the wing are more or less reduced, the basal one especially is almost absent and the middle one is present only on vein R₁, radial cell II is almost as long as its stem vein (4 : 5) and M₁₊₂ is about 10× of r-m (10 : 1).

DISTRIBUTION: Micronesia (Carolines), New Britain.

SPECIMEN EXAMINED: 1 ♂, Lowlands Agr. Stat., Keravat, New Britain, 20-26. VIII. 1960, Smee, by light trap.

This species is highly characteristic in having a fish-tail-like median plate and very large basal arch of aedeagus and barbed apices of parameres of the ♂ hypopygium (fig. 3 a-b).

9. *Alluaudomyia astera* Tokunaga, n. sp. Fig. 3 c-d.

Small, yellow species with thoracic mottled appearance somewhat similar to *brandti* n. sp. and legs banded as in *jimmensis* n. sp., but thorax with more broadly fuscous clouds

and mid femur yellow on basal 2/3, median fuscous area being absent; wing with 3 costal dark spots, ♂ hypopygium with styles long, sharply pointed and parameres with apical ends flattened and oval. Female unknown.

Male: Body 1.37 mm long; wing 1.09×0.35 . Head ochreous, eyes bare, just contiguous. Palp pale ochreous, III with shallow preapical sensory pore, PR 2.2, RL-P 5 : 10 : 11 : 9 : 11. Antenna with I and XII–XIV brown, other segments and plumose hairs pale yellow, CRL of II–XI to XII–XIV 120 : 103 and II–X to XI–XIV 136 : 87, RL-8A 11 : 11 : 11 : 12 : 16 : 29 : 32 : 28.5 ($W=6-5$). Thorax with tergites mainly yellow, pleurites and sternites fuscous; scutum with rather large star-like or crux-shaped fuscous spot, ill-defined fuscous humeral clouds which are irregularly zigzag and extend from anterior margin to scutal sutures around mesal margins of humeral areas, several small fuscous clouds on lateral sides, rather large fuscous spot on caudal part just before scutellum, scutellum and post-scutellum with large dark common median spot, scutellar setae 4 on median part. Legs with fore coxa yellow, other coxae and all trochanters pale ochreous, hind basitarsus dark, other tarsi white; femora and tibiae mottled as in *jimmensis*, but fore femur with preapical dark band indistinctly separated by pale ring from fuscous median part and mid femur with only 1 preapical dark ring besides dark knee part; hind tibial comb with 6–7 apical bristles, tarsal apical spines present only on mid leg: I–II each with 2, III with 1; TR and RL-L 2.26 and 29 : 26 : 12 : 5.3 : 3 : 2.5 : 6 in fore, 2.48 and 40 : 35 : 20.8 : 8.4 : 3 : 2.7 : 5 in mid, 2.55 and 30 : 30 : 14 : 5.5 : 3 : 2.5 : 6 in hind.

Wing with 3 costal dark spots as in *petersi* n. sp., macrotrichia very sparsely spread closely along wing margin between ends of R_s and M_2 , costa ending above midway between tips of M_{3+4} and Cu_1 , CR 0.6 (50 : 84), RL-V 27 : 25 : 37 : 8 : 11, radial cell II 2/3 as long as its stem, M_{1+2} $4.4 \times$ of r-m, fMCu under tip of R_1 . Halter white. Abdomen yellowish ochreous, tergites I–VI with very pale fuscous clouds, pleural membranes dark. Hypopygium (fig. 3 c–d) yellow, with coxites and tips of styles dark; tergite with distinct anal points; coxite broad on basal 1/2, style almost as long as coxite (30 : 32), slender, arcuate, sharply pointed; aedeagus elongate-triangular, about 2/3 as long as style, paramere as long as style (27 : 30), flattened on apical 2/5 and oval at end, with basal sclerite slender.

DISTRIBUTION: Solomon Is.

Holotype: ♂, Inis Atoll, Bougainville Is., Solomon Is., 26. V. 1959, Peters.

This is allied to *brandti* in general appearance, but the scutal central fuscous spot is larger, scutellum is with distinct dark median spot and mid femur is with preapical dark ring and without sub-basal or median dark area differing from the allied species.

10. *Alluaudomyia brandti* Tokunaga, n. sp. Fig. 3e.

Small, yellow species with thoracic and wing markings somewhat similar to those of *tenuistylata* Tokunaga, but legs with different markings; scutum with central fuscous rhombic spot and humeral area with W-shaped dark stripes around dark spots of humeral pits, wing with 2 costal fuscous spots and without small spot on R_1 , spermathecae each with only very small process. Male unknown.

Female: Body 1.53 mm long; wing 1.03×0.43 . Head dark brown, eyes bare and contiguous. Mandible with about 11 small teeth. Palp pale brown, very small, III with only 3 surface sensillae on preapical part, PR 1.8, RL-P 5 : 7 : 9 : 8 : ?. Antenna with I brown,

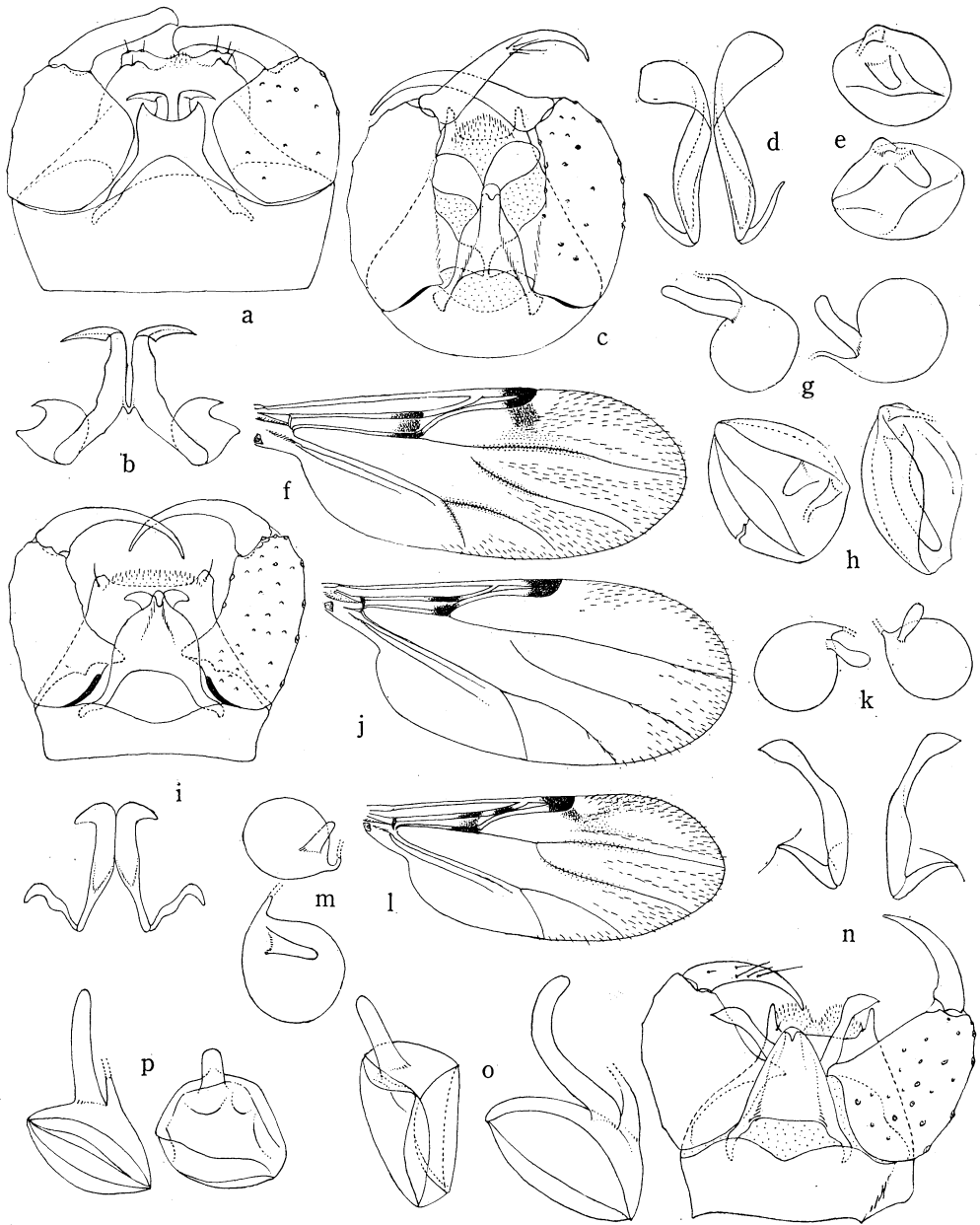


Fig. 3. *Alluaudomyia* spp. a-b, *insulana* ♂: a, hypopygium; b, parameres. c-d, *astera* ♂: c, hypopygium; d, parameres. e, *brandii* ♀, spermathecae. f-g, *tenuistylata* ♀: f, wing; g, spermathecae. h, NG No. 1 ♀, spermathecae. i-k, *novaguineana*: i, ♂ hypopygium and parameres; j, ♀ wing; k, ♀ spermathecae. l-m, *petersi* ♀: l, wing; m, spermathecae. n-o, *jimmensis*: n, ♂ hypopygium and parameres; o, ♀ spermathecae. p, *smeei* ♀, spermathecae.

flagellum missing. Thorax with tergite widely yellow, pleurites brown, sternites yellowish ochreous; scutum with fuscous anterior margin, pale yellow humeral areas, dark small humeral pits, W-shaped dark stripes around caudal margins of humeral areas, fuscous rhombic median spot, small fuscous clouds behind scutal sutures, small fuscous cloud just before scutellum; scutellum with 4 median setae; postscutellum dark and with lateral parts yellow. Legs with coxae and trochanters yellowish ochreous, tarsi (except for fuscous hind basitarsus) white; in fore leg, femur ochreous basally, widely brown on middle part, clearly white preapically, dark at end, tibia yellow at basal tip, narrowly dark sub-basally, then clearly white, broadly brown on middle part, white preapically, dark at end; in mid, femur pale brown on basal 1/2 beyond yellowish ochreous base, yellowish pale brown on apical 1/2 before dark end, tibia with basal part as in fore, but broadly very pale brown on middle part, pale brown before white preapical band, dark at end; in hind, femur widely white, yellowish ochreous basally, with dark oblique ring before white preapical band, dark at end, tibia also widely white, with dark median band and apical end. Hind tibial comb with 5-6 apical bristles, tarsal spines present only on mid leg: I-II each with 2 apical, III with 1 apical. TR and RL-L 2.25 and 27 : 24 : 9.8 : 4.5 : 3 : 2 : 5.3 in fore, 2.84 and 34.8 : 29 : 16 : 5.8 : 3 : 2.8 : 6 in mid, 2.67 and 28 : 27 : 16.9 : 4.6 : ? : ? : ? in hind.

Wing with macrotrichia and markings as in *tenuistylata*, but small dark spot on R_1 absent and apical dark spot slightly less extending onto cell R_5 , costa ending beyond tip of Cu_1 , fMCu under fM and tip of R_1 , CR 0.65, RL-V 22 : 21 : 35.5 : 21.5 : 10, radial cell II slit-like, hardly as long as its stem (9 : 10), M_{1+2} 3× as long as r-m (10 : 3). Halter white. Abdomen yellow, tergites I-VI with pale brown T- or V-shaped clouds on anterior part, VIII with dark narrow median band; cerci pale yellow, spermathecae (fig. 3e) 2, dark brown, round, equal, each with small tubercle-like process (?+15×14 and process 4, ?+13×12 and 3.8).

DISTRIBUTION: New Guinea.

Holotype: ♀, Kulumadau Hill, Woodlark (Murua) I., NG, 27-30. IV. 1957, Brandt.

This is allied to *tenuistylata* Tokunaga, but may be rather easily distinguished by the dark bases of the fore and mid tibiae, the W-shaped or epsilon-shaped dark humeral stripes and the very small processes of the spermathecae.

11. *Alluaudomyia tenuistylata* Tokunaga Fig. 3 f-g.

Alluaudomyia tenuistylata Tok., 1959, Pacific Ins. 1 : 296.

Only the ♂ was reported and at present the opposite sex is recorded.

Female: Body 2.05 mm long; wing 1.56×0.6. General structure as in type but color more yellowish. Head with proboscis short, about 2/5 as long as head-capsule. Palp brown, slender, with RL-P 7 : 12 : 12 : 11 : 14. Antenna mainly brown, II-X with basal parts white, III-IX elongate, subcylindrical, somewhat basally swollen; AR 1.0, RL-8A 16 : 16.5 : 17 : 21 : 24 : 27 : 28 : 34 (W=5-5.5). Thorax with tergites and sternites largely yellow, pleural sides brown; scutum entirely yellow, scutellum with 4 bristles, postscutellum as in type. Legs as in type, hind tibial comb with 7 apical bristles, claws of all legs single, with basal barb, their RL to last tarsal segments about 28 : 15 : 32 in fore, 29 : 15 : 29 in mid, 20 : 9 : 26 in hind; tarsal spines present only on mid leg: I-III each with 2 apical; TR and RL-L 2.13 and 34 : 33.5 : 16 : 7.5 : 4 : 3 : 8 in fore, 2.53 and 47 : 46 : 24 : 9.5 : 4 : 3.5 : 7.7 in

mid, 2.85 and 39 : 41 : 18.5 : 6.5 : 4.5 : 3 : 7 in hind.

Wing (fig. 3f) with 2 costal dark spots: 1 before r-m, 1 on apical end of radial cell II and extending behind onto cell R_5 , but not reaching vein M_1 , without small dark spot on R_1 differing from type, macrotrichia spread on apical 1/2 beyond level of costal end; costa ending slightly before tip of M_{3+4} , CR 0.64, RL-V 40 : 37 : 50 : 14 : 26, radial cell II as long as its stem (12 : 12), fMCu under middle of R_1 and slightly before fM, M_{1+2} 2.7× as long as r-m (16 : 6). Halter white. Abdomen widely white, tergites II-VI and VIII with pale fuscous bands on anterior parts, pleural membranes slightly fuscous; cerci white, spermathecae (fig. 3g) 2, brown, round, subequal, each with slightly curved horn-like process (6+17×17 and process 12, 5+15×15 and 14).

DISTRIBUTION: New Guinea.

SPECIMENS EXAMINED: 1 ♀, Kamo Vall., 1500 m, Itouda, Wisselmeren, Neth. NG, 12. VIII. 1955, Gressitt; 1 ♂, Maprik, Sepik Distr., NG, I. 1955, Peters.

Both specimens examined at present are more widely yellow than the type, scutum of ♀ being entirely yellow and that of ♂ being faintly fuscous only on anterior margin and with small fuscous median cloud, and the wings of both specimens are quite devoid of small dark spot of wing on vein R_1 and ♂ TR are more or less smaller being 2.33 in fore, 2.44 in mid, 2.75 in hind, differing slightly from the type specimen.

12. *Alluaudomyia* sp. NG No. 1 Fig. 3h.

Medium-sized, brown species, all femora dark at least on basal 1/2, knee parts dark, hind tibia with oblique sub-basal dark band, scutum brown with many pale brown spots, scutellum entirely yellow, wing at least with dark spot just before r-m (main part of wing missing), and spermathecae with unequal processes: 1 minute and other long and undulate. Male unknown.

Female: Body 1.53 mm long; wing ?×?. Head entirely brown, eyes bare, just contiguous, proboscis 0.4 as long as head-capsule. Mandible with 8-9 teeth. Palpal segment III with shallow preapical sensory pore, PR 2.0, RL-P 5 : 8 : 10 : 9 : 11. Antenna with I brown, II-VIII very pale basally, brown apically, IX-XIV brown, short basal flagellar segments elongate, bottle-shaped, with long neck parts; AR 1.04, RL-8A 11.8 : 12.4 : 12.5 : 16 : 16 : 16.5 : 18 : 25 (W=5). Thorax largely brown, scutum with obscure pale brown spots, scutellum entirely yellow, with 4 median setae. Legs with all coxae, trochanters, knee parts and tibial ends dark, hind basitarsus dark, all tarsal segments IV fuscous, other tarsal segments white; fore and hind femora fuscous on basal 2/3 and white preapically, mid femur fuscous on basal 1/2, white on preapical 1/2; tibiae widely white, fore with broad fuscous median cloud, mid with fuscous preapical cloud, hind with prominent oblique fuscous sub-basal band; hind tibial comb with 5-7 apical bristles, claws single, unequally bifurcate at bases, their RL to V 31 : 22 : 26 in fore, 33 : 18 : 25 in mid, 21 : 11 : 20 in hind, tarsal apical spines present only on mid leg: I-II each with 2, III with 1, TR and RL-L 2.08 and 28.5 : 27 : 12.5 : 6 : 3 : 2.8 : 7 in fore, 2.4 and 38.5 : 36.5 : 18 : 7.5 : 3.5 : 2 : 6.5 in mid, 2.7 and 30 : 31 : 13.5 : 5 : 3 : 2.5 : 5 in hind. Wing largely broken off, with basal dark costal spot before r-m. Abdomen very pale ochreous, almost white; cerci white; spermathecae (fig. 3h) 2, brown, round, equal but tubular processes distinctly unequal (4.5+17×16 and process 15, 4+17×17 and 4).

DISTRIBUTION: New Guinea.

SPECIMEN EXAMINED: 1 ♀, Aiyurop, 1530 m, nr. Mendi, S. Highlands, NG, 7. X. 1958, Gressitt.

Unfortunately, both wings of this species were broken off and only the basal part of one wing remained, but the characteristic color of the femora and tibiae, and the specific structures of the spermathecae suggests that the midge at least belongs to the unknown New Guinea species.

13. *Alluaudomyia novaguineae* Tokunaga, n. sp. Fig. 3 i-k.

Small, brown and pale yellow mottled species with thoracic and leg ornamentation somewhat similar to Micronesian *bipunctata* Tokunaga and Murachi, but somewhat more darker, mottled appearance being more distinct than in related species; ♂ hypopygium with very sharply pointed styles and ♀ spermathecae each with clavate small process, distinctly differing from related species.

Male: Body 1.4 (1.3–1.59) mm long; wing 1.0 (0.9–1.05) × 0.35 (0.33–0.36). Head entirely pale brown, eyes bare, contiguous. Palp with PR 2.95 (2.8–3.2), RL-P 5 : 10 : 11 : 8.8 : 10.5. Antenna brown, but III–X and base of XI almost white, plumose hairs pale brown; CRL of II–X to XI–XIV and II–XI to XII–XIV 104.3 : 79.3 and 117.5 : 66.5; RL-8A 9.8 : 9.8 : 9.5 : 9.5 : 13.3 : 22.8 : 21.3 : 22.3. Thorax brown, scutum with many yellow spots on lateral sides and anterior 1/2, widely brown or with ill-defined faint median spot, 2 median and 2 lateral setae. Legs with fore coxa yellow, mid and hind coxae brown, all trochanters ochreous, hind basitarsus brown, other tarsi white; in fore and mid legs, knee parts and tibial ends dark, middle parts of femora and tibiae widely brown, bases and pre-apical parts of femora, sub-basal and preapical parts of tibiae yellow; in hind, femur and tibia mainly yellow, but dark on end and middle parts. In some paratypes, median brown parts of mid femur and tibia very faint and almost absent; in a paratype, middle dark spot of hind tibia reduced into minute spot. Hind tibial comb with 6–7 apical bristles, claws small, equal, cleft at tips; TR and RL-L 2.4 (2.3–2.44) and 24 : 22.5 : 10.8 : 4.5 : 2.7 : 2 : 4 in fore, 3.13 (3.0–3.23) and 33.1 : 30.1 : 19.3 : 6.2 : 3.3 : 2 : 3.5 in mid, 2.28 (2.0–2.4) and 25.3 : 25.8 : 11.1 : 4.9 : 2.8 : 2 : 4 in hind.

Wing with 2 dark costal spots: basal one covering tips of R and M and r-m, apical on distal ends of costa and Rs and not extending onto adjacent membrane, macrotrichia very sparsely spread only along margin between tips of Rs and M₂, costa ending slightly before or just above fMCu, CR 0.47–0.49, RL-V 17 : 16.3 : 32 : 8 : 12.5, radial cell II very narrow, slit-like, 1/2 of its stem (3.5 : 7.5), M₁₊₂ 5 × r-m (12.5 : 2.5). Halter white. Abdomen widely very pale brown, tergite I with pale brown median spot, II–VI with brown T-shaped spots on anterior 3/4, VII almost white, VIII–IX brown. Hypopygium (fig. 3i) brown, but styles yellow, closely similar to that of *tenuistylata* Tokunaga, but styles more slender and strongly arcuate, parameres basally narrowed and apical 3/4 far broader and anal points blunt and somewhat flattened.

Female: Body 1.29–1.47 mm long; wing 1.11–1.17 × 0.51–0.53. General color and structure as in ♂ with usual sexual differences. Head with proboscis hardly 1/2 of head-capsule (10 : 22). Palp with PR 2.67–3.0, RL-P 5 : 12.5 : 12 : 9.5 : 11. Antenna brown, but I darker, bases of II–IX paler, AR 0.97–1.02, RL-8A 11 : 11 : 11 : 15.3 : 15.5 : 16.5 : 16 : 22 (W=5). Legs with claws strongly barbed basally, their RL to last tarsal segments 11 :

11 : 19 in fore, 11.3 : 10.8 : 17.5 in mid, 13.5 : 5.4 : 17.8 in hind ; hind tibial comb with 7-8 apical bristles ; TR and RL-L 2.3-2.56 and 27.3 : 24.5 : 11.5 : 4.8 : 2.6 : 2.2 : 4.9 in fore, 3.38-3.61 and 37.6 : 34.5 : 23.3 : 6.7 : 3.1 : 2.1 : 4.8 in mid, 2.45-2.6 and 29.5 : 29 : 13 : 5.2 : 2.8 : 2 : 4.9 in hind.

Wing (fig. 3j) with 2 costal dark spots as in ♂, macrotrichia sparsely spread on apical parts of cells R_5 , M_1 and M_2 , costa ending above mid between tips of M_{3+4} and Cu_1 CR 0.53-0.57, RL-V 17.5 : 16 : 35 : 10 : 22.5, radial cell II fully as long as its stem (10 : 9), M_{1+2} 5.4× of r-m (13.5 : 2.5), fMCu under tip of R_1 or mid radial cell II and just before or under fM. Halter with knob pale brown, stem yellow. Abdomen with cerci white, other parts as in ♂ ; spermathecae (fig. 3k) 2, brown, equal, subspherical, with similarly clavate processes (2.8+14.5×13.5 and process 7, 2.3+14×12.5 and 5).

DISTRIBUTION: New Guinea.

Holotype: ♂, Minj, W. Highlands, NG, 3-8. V. 1959, Peters. *Allotype*: ♀ with type. *Paratypes*: 2♂♂, 2♀♀ with types; 1♂, Maprik, Sepik Distr., NG, II. 1959, Peters.

This species is related to *bipunctata* Tokunaga and Murachi, but may be easily distinguished by the characteristic structures of the spermathecae and ♂ hypopygium.

14. *Alluaudomyia petersi* Tokunaga, n. sp. Fig. 3 l-m.

Medium-sized, dark and yellow species with mottled thoracic tergites and legs, wing with 3 costal dark spots, spermathecae with coniform processes, all claws of ♀ unequally bifid at bases, and AR less than 1.0 being about 0.84. Male unknown.

Female: Body 1.46 (1.33-1.63) mm long; wing 1.07 (0.96-1.26)×0.43 (0.39-0.48). Head ochreous, eyes bare, just contiguous or very narrowly separated, proboscis short, 0.44 of head-capsule (9.6 : 22). Palp pale brown, PR 2.2 (2.1-2.4), RL-P 5 : 8.9 : 11.3 : 8.5 : 9.9. Antenna mainly brown, but II-IX with basal parts white, III-IX with slender neck parts, AR 0.84 (0.79-0.87), RL-8A 12.8 : 14.1 : 13.8 : 16.5 : 17.5 : 19 : 18 : 18.3 (W=4.3). Thoracic tergites mottled with many yellow spots on brown ground color, without dark dots at setal bases, scutellum with median fuscous spot, yellow on lateral sides, with 4 setae on median part, postscutellum fuscous, with 2 yellowish spots on anterior part. Legs with fore coxa yellowish, other coxae pale brown, all trochanters pale ochreous, tarsi (except for fuscous hind basitarsus) white; fore femur and tibia largely pale brown, with knee part dark, femoral base and preapical part and tibial sub-basal part pale yellow, femur with very pale brown and fuscous narrow bands before preapical pale yellow ring and tibia with ill-defined paler band before dark end; mid femur and tibia pale yellow, with dark knee part, each with fuscous preapical ring, femur with sub-basal wide fuscous band, tibia with sub-basal 1/3 fuscous (but this fuscous part subdivided by a faint paler ring); hind femur dark at end part, broadly pale brown on median part, basal and preapical part pale yellow, tibia pale yellow with median large fuscous band and dark end. Hind tibial comb with 5-6 apical bristles; claws single, with basal barb small and not sharply pointed, RL of claws, barbs and last tarsal segments 28.8 : 14.8 : 28 in fore, 29.8 : 14.3 : 27.5 in mid, 19.3 : 8 : 22 in hind; TR and RL-L 2.29 (2.08-2.73) and 29.3 : 27.8 : 10.3 : 4.6 : 3 : 2.8 : 7.5 in fore, 2.63 (2.46-2.85) and 37.8 : 34.1 : 16.8 : 6.4 : 3 : 2.8 : 7.6 in mid, 2.88 (2.6-3.13) and 30 : 30.3 : 12.9 : 4.5 : 2.6 : 2.1 : 5.8 in hind.

Wing (fig. 3l) with 3 small dark costal spots: basal one just before r-m, median on R_1 , apical on apical 1/2 of radial cell II and extending slightly onto cell R_5 , macrotrichia

rather sparsely spread on apical part beyond level of costal end; costa ending above middle, between ends of M_{3+4} and Cu_1 , CR 0.6 (0.58–0.62), RL-V 22.3 : 20.3 : 34 : 9.5 : 19.6, M_{1+2} about $4\times$ of r-m (11.3 : 2.8), radial cell II longer than its stem (9.5 : 7.3), fMCu under tip of R_1 and before end of M_{1+2} . Halter white. Abdomen with tergites mainly brown, but I widely yellow, II–VIII yellow on caudal margins, IX and caudal end white, pleural sides pale fuscous; cerci white, spermathecae (fig. 3m) 2, brown, subequal, round, each with conical straight process (3.1+16.8×16 and process 8.5, 3.8+15×14.5 and 5.8).

DISTRIBUTION: New Guinea.

Holotype: ♀, Maprik, Sepik Distr., NG, II. 1959, Peters. *Paratypes*: 1♀ with type; 2♀ ♀, Bainyik, NG, III. 1959, Peters.

This species is very closely allied to darker specimens of Micronesian *insulana* Tokunaga and Murachi in general color, but may be easily distinguished by the presence of a coniform process of the spermatheca and the different ornamentation of the legs.

15. *Alluaudomyia jimmensis* Tokunaga, n. sp. Fig. 3 n–o.

Small, yellow and brown mottled species with markings very closely similar to those of *petersi*, but may only be distinguished by the well separated sub-basal dark band of mid tibia from dark basis, large central yellow spot of scutellum and long sinuate tubular process of one spermatheca.

Male: Body 1.76 mm long; wing 1.05×0.38 . Head brown, frons yellow, eyes bare and just contiguous. Palp brown, PR about 2.3, RL-P 4 : 8 : 11 : 9 : 12. Antenna with I brown, flagellum missing. Thorax brown, mottled with many yellow spots on scutum and scutellum, scutellum with 1 median and 2 lateral yellow spots and 4 median setae. Legs with all coxae brown, trochanters ochreous, tarsi mainly yellow, but hind I dark, all IV and basal parts of fore and mid I more or less fuscous; fore femur and tibia mainly dark, base and preapical part of femur, sub-basal and preapical part of tibia yellow; mid femur with base yellow, basal 1/2 dark, 2 yellow and 1 dark band on apical 1/2 before dark knee, tibia mainly yellow, with 2 well separated dark bands besides dark ends of both; hind femur widely dark on midportion, yellow on base and preapical part, dark on end part, tibia largely yellow with small dark median band besides dark end. Hind tibial comb with 3–5 apical bristles, claws equal, simple; TR and RL-L 2.55 and 26 : 24 : 10.2 : 4 : 2.5 : ? : ? in fore, 2.92 and 35.5 : 29.7 : 19 : 6.5 : 3 : 2.4 : 4.3 in mid, 2.8 and 27 : 26.5 : 12 : 4.3 : 2.7 : 2 : ? in hind.

Wing with 2 dark costal spots before r-m and on apical end of radial cell II, macrotrichia spread very closely along wing margin between ends of R_s and M_2 , costa ending above tip of Cu_1 , fMCu under fM or just before tip of R_1 , CR 0.54, RL-V 23 : 21.5 : 35 : 9 : 14, RR about 1/3 (3 : 8), M_{1+2} about $5\times$ of r-m (12 : 2.5). Halter white. Abdomen very pale, but tergite I fuscous on lateral parts, II–III with M-shaped dark spots, IV–V widely dark, VI–VII only fuscous on lateral parts, VIII entirely fuscous. Hypopygium (fig. 3n) largely very pale, with sternite and coxites brown, aedeagus brown, with lateral basal arms dark, parameres yellow, with basal sclerites dark; tergite with distinct anal points, sternite with shallow caudal incision; style slender, arcuate, sharply pointed, 0.7 as long as coxite (22 : 31); aedeagus triangular, slightly longer than style (24 : 22), paramere slender, with apical part flattened and sharply pointed.

Female: Wing $1.07-1.29 \times 0.47-0.57$. Color as in ♂, only differing on abdominal tergites. Mandible with about 12 teeth basally smaller; palp brown, slender, III with sensory pore on preapical part, small but distinct, PR 2.2, RL-P 6 : 9 : 11 : 9 : 12. Antenna similar to that of *petersi* n. sp., AR 0.92-0.95, RL-8A 14.4 : 14.5 : 15.9 : 20.2 : 20.8 : 23.3 : 22.5 : 22.5 ($W=4.8-5.3$). Thorax as in ♂, but postscutellum with 2 faint yellowish clouds on anterior part. Legs as in ♂ in color, hind tibial comb with 6 apical bristles, tarsal apical spines present on fore and mid legs: fore I-III each with 0-1 spine, mid I-II each with 2, III with 1; claws with basal barbs, their RL to last tarsal segments 28 : 15 : 30 in fore, 30 : 12 : 30 in mid, 20 : ? : 24.5 in hind; TR and RL-L 2.33-2.67 and 31.5 : 29.3 : 11.5 : 4.6 : 3 : 3 : 7.5 in fore, 2.54-2.87 and 41.5 : 36 : 19 : 7.1 : 3.7 : 3.3 : 7.5 in mid, 2.74-3.2 and 32.5 : 33.2 : 14.7 : 5 : 3 : 2.5 : 6.5 in hind.

Wing as in *petersi*, but relatively broader in length and macrotrichia very few or absent on cell M_4 , mid costal dark spot on vein R_1 very faint or almost absent; CR about 0.62 (61 : 99), RL-V 31 : 30 : 42 : 13 : 23, radial cell II $3/4$ of its stem vein, M_{1+2} about $5\times$ of r-m. Abdomen pale brown, pleural sides fuscous, tergite I with small fuscous cloud, II-VI with M-shaped spots, VII-VIII uniformly fuscous, XI and cerci white; spermathecae (fig. 3o) dark brown, equal, round, one with tubular process short and straight ($10+18.5 \times 18$ and process 9.8) but other with process long and undulate ($10+19 \times 18.5$ and 17.5).

DISTRIBUTION: New Guinea.

Holotype: ♂, Tsenga, 1200 m, Jimmi Vall., NE NG, 14. VII. 1955, Gressitt. *Allotype*: ♀, Enarotadi, 2000 m, Wisselmeren, Neth. NG, 31. VII. 1955, Gressitt, by light trap. *Paratype*: 1 ♀, Kainantu, 1650 m, NE NG, XI. 1959, Maa, by light trap.

This species is very closely allied to *petersi* n. sp., but may be separated by the longer and undulated tubular process of 1 spermatheca, distinctly separated sub-basal dark band of mid tibia from the dark basis by a yellow band and the distinct yellow median spot of scutellum.

16. *Alluaudomyia smeei* Tokunaga, n. sp. Fig. 3p.

Very small, brown species with thoracic tergites and legs mottled with many yellow spots and bands as in New Guinea *petersi* and *jimmensis*; color of legs more closely similar to that of *jimmensis* than of *petersi*, but spermathecae more closely resembling those of *petersi* than of *jimmensis*. Male unknown.

Female: Body 1.04 mm long; wing 0.81×0.33 . Head with eyes bare and just contiguous. Mandible with 9-10 teeth. Palp brown, III oval, with shallow preapical sensory pore, PR 1.6, RL-P 4 : 7 : 8 : 6.5 : 8. Antenna as in *jimmensis*, AR 0.87, RL-8A 10.2 : 10.5 : 10.2 : 11.8 : 13.4 : 14.6 : 14.8 : 17.5 ($W=4$). Thorax situated very closely as in *jimmensis*. Legs also as in *jimmensis*, hind tibial comb with 6 apical bristles, tarsal apical spines present only on mid leg: I-II each with 1 spine; claws single, with small basal barb, their RL to last tarsal segments 20 : 12 : 19 in fore, 20 : 19 : 17 in mid, 14 : 6 : 16 in hind; TR and RL-L 2.5 and 21 : 19 : 8 : 3.5 : 2.5 : 2 : 5 in fore, 2.53 and 27 : 24 : 12.8 : 5 : 2.8 : 2.3 : 4.2 in mid, and 21.5 : 22 : 10 : 3.4 : 2.3 : 2 : 4 in hind.

Wing with only 2 costal dark spots, small dark spot of R_1 absent, apical dark spot on distal part of radial cell II slightly extending onto cell R_5 , macrotrichia very sparse, spread only along wing margin in single line between ends of R_s and M_{3+4} , not arranged along veins; CR 0.6, RL-V 17 : 16 : 26.5 : 7 : 17, radial cell II about $3/4$ of its stem vein (5 : 8),

M_{1+2} $4.5\times$ of r-m (2:9), fMCu under tips of R_1 and of M_{1+2} . Halter white. Abdomen with markings as in *jimmensis*; spermathecae (fig. 3p) 2, dark brown, slightly unequal, round, larger one with long straight horn-like process ($4+15\times 14$ and process 12), smaller one with small similar process ($2+13\times 12$ and process 6).

DISTRIBUTION: New Britain.

Holotype: ♀, Lowlands Agr. Stat., Keravat, New Britain, 20–26. VIII. 1960, Smee, by light trap.

This is intermediate between *petersi* and *jimmensis*; the ornamentation of the legs is similar to *jimmensis* and the structure of the spermathecae to *petersi*, but the development of the macrotrichia of the wing is very poor differing from the 2 species.

Genus *Echinohelea* Macfie

This genus was reported by Macfie (1940, Proc. Roy. Ent. Soc. Lond. ser. B 9: 187) for 3 very similar species from British Guiana. The main generic characters are as follows: Antennae of both sexes filiform similarly, ♂ without plumose hairs; thorax without anterior tubercle or spine; wing without macrotrichia on membrane, M_1 and M_2 forked off from each other before or at r-m, 2 radial cells present; femora of all legs not greatly swollen, almost all femora and tibiae with rather long spines scattered rather irregularly; tarsal segments IV short, not distinctly bilobate or cordiform, V far longer than IV, slender, unarmed; claws paired and barbed; abdominal tergites of ♀ without gland rods.

KEY TO NEW GUINEA SPECIES OF ECHINOHELEA

1. Wing adorned with 2 costal dark spots **17. pictipennis**
Wing unadorned 2
2. Fore tibia with spines **18. zonata**
Fore tibia without spines 3
3. Hind tibia entirely yellow **19. flava**
Hind tibia dark and without preapical yellow band..... 4
4. Caudoscutal area without lateral fuscous stripes; ♀ with claws of mid and hind legs distinctly unequal **20. hardyi**
Caudoscutal area with faint lateral fuscous stripes; ♀ with all claws equal...**21. laensis**

17. *Echinohelea pictipennis* Tokunaga, n. sp. Fig. 4 a–c.

Rather large yellow species with adorned wings, legs and abdomen, very closely similar to *ornatipennis* Macfie, but may be distinguished by the following points: caudoscutal area of thorax without dark area, halter with knob pale yellow, hind femur entirely yellow.

Female: Body 2.08 mm long; wing $1.87\text{--}2.04\times 0.53\text{--}0.65$. Head almost entirely brown, proboscis about $1/2$ as long as head-capsule, eyes bare, just confluent. Mandible with 8 teeth. Palp brown or ochreous, slender, III with small preapical sensory pore, PR about 3.6, RL-P 7: 15: 25: 14: 20. Antenna with I ochreous or yellowish orange, flagellum very slender, II–VI with basal parts yellow, apical parts brown, VII–XIV brown, II somewhat clavate, with several sensory tufts on apical part, III–IX elongate-fusiform, other segments cylindrical; AR 0.86, RL-13A $37\times 10: 23\times 6: 24\times 5.5\text{.....}28.5: 30: 31: 43: 41: 40: 37: 35$ (W=5). Thorax yellow, with fuscous clouds on tergite, scutum with 3 small

clouds along anterior margin, 2 elongate stripes along foveae on posterior 2/3, 2 short oblique stripes which cover scutal sutures and extend to anterior ends of elongate stripes, scutellum somewhat fuscous on lateral sides, postscutellum broadly fuscous and only yellowish along posterior margin; supra-alar setae of scutum 7-9, scutellum with 6 large and 6-7 small setae. Legs entirely yellow, fore coxal base, mid and hind coxal ends partially fuscous, hind tibia with apical end and basal 2/3 black, all last tarsal segments fuscous; in holotype, fore femur with faint but rather broad fuscous cloud on midportion, mid knee part and tibial end slightly fuscous; femora and tibiae of all legs with black spines: in fore, femur with 9-10, tibia with 1 sub-basal; in mid, femur with 12-13, tibia with 1 sub-basal, 2 middle, 1 preapical; in hind, femur with 14-15, tibia with 9-11; tarsal spines: in fore, I-III each with 1 apical; in mid, I with 3 ventral, II-III each with 1 apical; in hind, I with 1 sub-basal pale spine; hind tibial comb with 5-6 apical bristles; claws quite equal, with small basal tooth. TR and RL-L 1.89-1.93 and 52 : 48 : 17 : 8.8 : 6 : 4 : 11 in fore, 1.93-2.07 and 57 : 49 : 26 : 13.5 : 8.2 : 4 : 9 in mid, 2.33-2.65 and 62 : 69 : 35 : 13 : 9 : 4 : 10 in hind.

Wing (fig. 4b) rather slender, with veins and costal cell brownish, without macrotrichia, with 2 distinct fuscous spots: basal covering r-m and radial cell I, apical under tip of radial cell II; RL-V 71.5 : 67+4 : 61.8 : 13+45, costa ending before tip of M_2 , CR about 0.83, radial cell II rather wide, RR 4.1-4.6 (34.5 : 8), r-m longer than basal section of Rs and of M_1 (7 : 4 : 3). Halter with stem slightly fuscous, knob pale yellow. Abdomen mainly yellow, with many fuscous tergal bands which are broadened laterad: tergite I with band on mid portion, II-VI each with band on caudal margin; cerci pale yellow; spermatheca single, round (15+34×33), brown, with many hyaline punctures, chitinized part of duct slender and hyaline; no gland rods.

Male: Body 1.9 mm long; wing 1.7-1.87×0.49-0.55. General color and structures similar to ♀. Palp with RL-P 5 : 11 : 16 : 8 : 14, PR 2.7. Antenna (fig. 4a) closely similar to that of ♀, no plumose hairs; II-V or II-VII with basal parts very pale and apical parts brown, other distal segments brown; CRL of II-IX to X-XIV 204 : 177, RL-13A 37×8.5 : 23×5.5 : 25×5.3 : 25.5 : 26 : 25.5 : 26 : 26.5 : 42 : 37.5 : 38.5 : 31.5 : 31.5 (W = 4.5-5). Scutum with supra-alar setae 9-11, scutellum with 6 large and 5-6 small setae. Legs as in ♀, but in allotype, fore tibia very faintly fuscous at both ends and on midportion; femoral and tibial spines: in fore, femur with 10-13 ventral, tibia with 1 sub-basal on dorsal side; in mid, femur with 10-12 ventral, tibia with 2-5; in hind, femur with 15 ventral, tibia with 8-11 dorsal and lateral; tarsal spines: in fore, I with 0-1 sub-basal and 1 apical, II-III each with 1 apical; in mid, I with 1 sub-basal and 2 apical, II-III each with 2 apical; in hind, I with 1 pale sub-basal spine; hind tibial comb with 5-6 apical bristles, claws as in ♀; TR and RL-L 1.88-2.2 and 45 : 41 : 15 : 8 : 6 : 4 : 9.5 in fore, 2.09-2.19 and 51 : 43 : 23 : 11 : 8 : 4 : 7 in mid, 2.33-2.5 and 55 : 63 : 30 : 12 : 8.5 : 4.5 : 9.5 in hind.

Wing with costa ending above midway between ends of M_2 and M_{3+4} , CR about 0.85, RL-V 63.5 : 61+3.3 : 53.5 : 11.5 : 42.5, RR 5.0-6.0 (32.5 : 6), M_1 distinctly sinuous, fMCu far before base of M_1 . Abdomen not slender, as wide as in ♀. Hypopygium (fig. 4c) yellow, with styles, parameres and caudal lobe of aedeagus dark or brown; coxite triangular in dorsoventral aspect; style almost straight, slightly tapered, about 0.7 as long as coxite (55 : 80); tergite with anal points subtriangular and dark; aedeagus with semicircular basal arch, caudal lobe with 2 sharply pointed tips, basal membrane spinulose; parameres

not fused, rather slender, with apical parts suddenly curved, pointed, about 0.37 as long as stems (14 : 38), basal sclerite somewhat square.

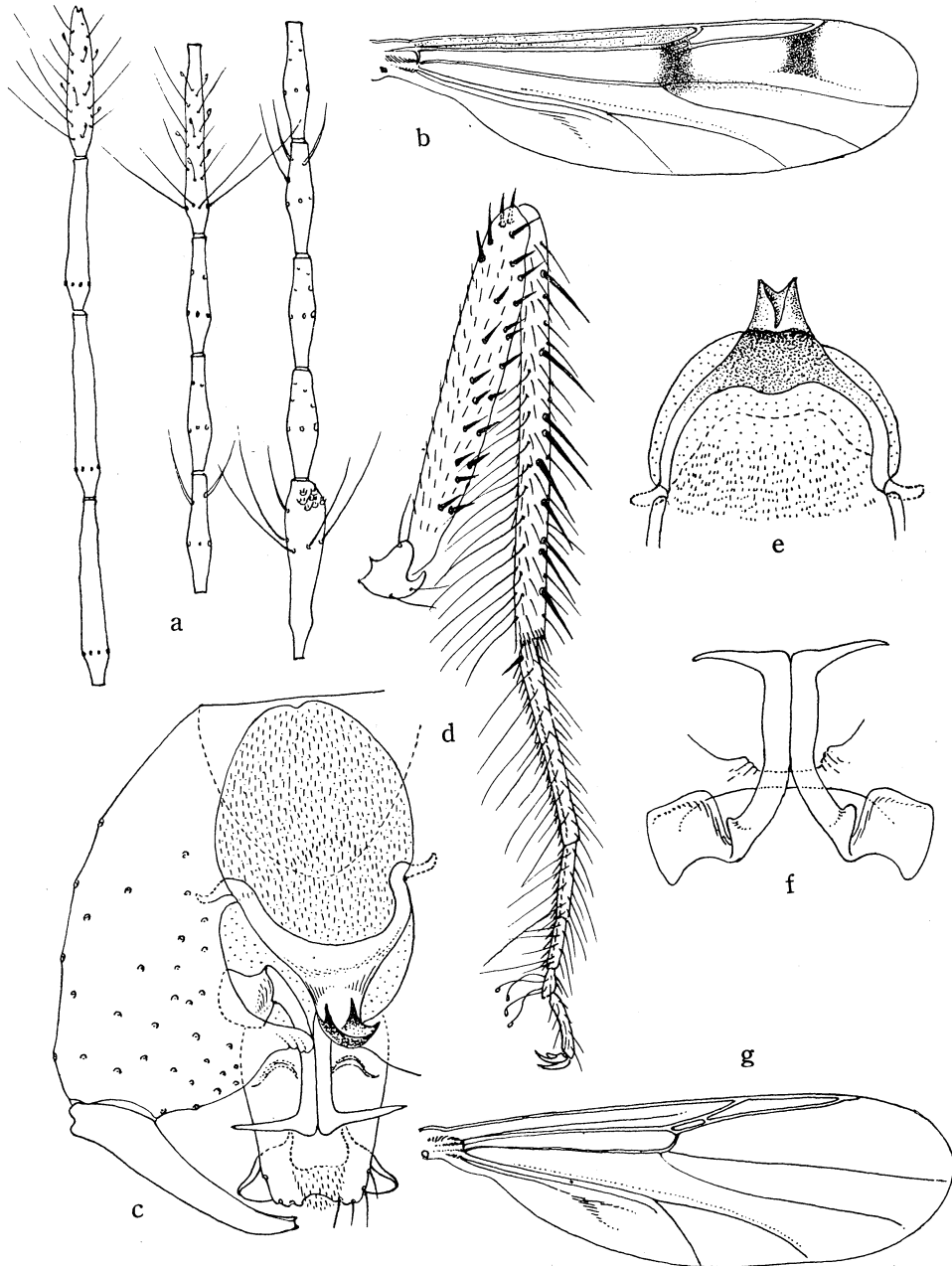


Fig. 4. *Echinohelea* spp. a-c, *pictipennis*: a, ♂, antennal segments II-XIV; b, ♀ wing; c, ♂ hypopygium. d-f, *zonata* ♂: d, hind leg; e, aedeagus; f, parameres. g, *flava* ♀, wing.

DISTRIBUTION: New Guinea.

Holotype: ♀, Amok, 165 m, NE NG, 6. I. 1960, Maa. *Allotype*: ♂, Gurakor Vill., 950 m, Wampit Vall., nr. Wau, NE NG, 7. VII. 1957, Hardy. *Paratypes*: 1 ♀, Swart Vall., 1300–1350 m, W. Fork, NW NG, 17. XI. 1958, Gressitt; 1 ♂, Waris, 450–500 m, S of Hollandia, NW NG, 24–31. VIII. 1959, Maa, at light.

DISTRIBUTION: New Guinea.

This is very closely allied to British Guiana *ornatipennis* Macfie, but the allied species is different from the new species in the following points: scutum with dark area immediately anterior to scutellum, scutellum with 10 large bristles, radial cell II of wing 3× as long as I, vein M_{1+2} forking at end of r-m or perhaps slightly distal to it, halter with knob brownish, hind femur dark brown on apical 1/3, ♀ with claws of mid and hind legs unequal, ♂ with claws of legs apparently simple, parameres of ♂ hypopygium fused about middle, slightly expanded preapically and without curved processes.

18. *Echinohelea zcnata* Tokunaga, n. sp. Fig. 4 d–f.

Rather large yellow species with unadorned wings and very closely similar to New Guinea *pictipennis* n. sp. and British Guiana *ornatipennis* Macfie except for the wing markings. Female unknown.

Male: Body 2.21 mm long; wing 1.96×0.53 . General color and structures as in *pictipennis*. Head yellow, mouth parts brown, eyes bare and widely contiguous, proboscis about 1/2 as long as head-capsule (18 : 35). Palp pale ochreous, slender, PR about 2.8, RL-P 5 : 13 : 21 : 15 : 19, III with preapical sensory pore. Antenna with I yellow, other segments brown, but II pale ochreous and only brownish on apical part; RL-13A $40 \times 12 : 24 : 28 : 28 : 28 : 29 : 31 : 30 : 42 : 40 : 40 : 37 : 42$ (W=6–7). Thorax mainly yellow, scutum with 2 small fuscous clouds on humeral areas, 2 subtriangular fuscous clouds behind scutal sutures, 2 short stripes along foveae on caudoscuteal area, postscutellum largely fuscous and only yellow along caudal margin; scutum with supra-alar setae 11, scutellum with 10 large and 8 small setae. Legs largely yellow, mid and hind coxal ends and all last tarsal segments fuscous, base of fore tibia pale fuscous, both ends of hind tibia dark; femoral and tibial spines: in fore, femur with 14 ventral, tibia with 2 dorsal on sub-basal and mid part; in mid, femur with 15, tibia with 4 dorsal: in hind (fig. 4d), femur with 23 ventral, tibia with 9 dorsal; tarsal spines: in fore, I with 1 sub-basal, II–III each with 1 apical; in hind, I with 1 sub-basal pale spine (tarsus of mid leg missing); hind tibial comb with 7 apical bristles; claws of legs equal, each with basal small tooth. TR and RL-L 2.01 and 60 : 54 : 19.5 : 9.7 : 7 : 5 : 12 in fore, 2.63 and 75 : 84 : 39.5 : 15 : 11 : 6 : 12 in hind.

Wing with veins brown, costal cell, radial cell I and adjacent membrane to r-m very faintly brownish, no macrotrichia; costa ending above midway between tips of M_2 and M_{3+4} , CR about 0.86, RL-V $67 : 66 + 1.5 : 60 : 17 : 48$, RR 3.7 (35.5 : 9.5), fMCu slightly before base of M_2 , Cu_1 ending under radial septum. Halter very pale fuscous yellow. Abdomen yellow, with pale fuscous tergal bands: I with slender band on middle part, II–VII each with inverted T-shaped band along caudal margin which is broadened on lateral sides and middle part. Hypopygium (fig. 4 e–f) yellow, but styles, parameres and tergal end dark, with structures closely as in *pictipennis*; style about 0.6 as long as coxite (15 : 105); aedeagus with caudal lobe short and tapered, basal membrane incompletely spinulose; parameres with apical suddenly curved parts only 0.35 as long as stems,

DISTRIBUTION: New Guinea.

Holotype: ♂, E of Lae, 100 m, Busu Reg., NE NG, 14. IX. 1955, Gressitt.

This is very closely allied to *pictipennis* n. sp., but may be distinguished by the unadorned wing, highly setigerous scutellum, paler hind tibia and fuscous abdominal bands expanded at middle parts.

19. *Echinohelea flava* Tokunaga, n. sp. Fig. 4g.

Medium-sized, very yellow species, wings and legs unadorned, abdomen with 4 brown slender bands, scutum faintly fuscous on anterior part, fore tibia without spines, closely similar to *hardyi* n. sp. but more extensively yellow. Male unknown.

Female: Body 1.29 mm long; wing 1.17×0.39 . Head yellow, vertex and proboscis pale ochreous, eyes bare and just separated, proboscis about $1/2$ as long as head-capsule (13 : 28). Palp yellowish pale ochreous, rather slender, III with preapical sensory pore, PR about 2.0, RL-P 3.5 : 10 : 14 : 6.8 : 12. Antenna with I yellowish orange, flagellum brown, but II-VII paler on basal parts, III-IX elongate-fusiform, X-XIV cylindrical: AR 0.85 (126 : 149), RL-14A $18 \times 28 : 25 \times 7 : 15 : 15 : 16 : 17 : 17 : 18 : 19 : 26 : 27 : 25 : 23.5 : 23$ (W=4-5). Thorax yellow, scutum rather widely infusate on anterior margin and paratergites, propleural parts slightly fuscous; scutum with 8-9 supra-alar setae, scutellum with 6 large and 5 small setae. Legs entirely yellow, only last tarsal segments faintly infusate; hind tibial comb with 4-5 apical bristles; femoral and tibial apical spines: in fore, femur with 8 ventral, tibia without spines; in mid, femur with 8-9 ventral, tibia with 2 on basal $1/2$; in hind, femur with 7 ventral and apical, tibia with 4-5 on midportion; tarsal spines: in fore, II with 1 slender apical, III with 1 apical; in mid, I with 1 sub-basal, 0-1 median and 1 apical, II-III each with 2 apical; in hind, I with 1 pale sub-basal; claws equal, small, each with small basal tooth; TR and RL-L 2.2 and 33 : 30 : 11 : 5 : 4 : 3 : 7.5 in fore, 2.1 and 37 : 30 : 16.8 : 8 : 5.7 : 2.7 : 6 in mid, 2.75 and 38.5 : 41 : 22 : 8 : 5.5 : 3 : 6.8 in hind.

Wing (fig. 4g) very pale brown, without macrotrichia, CR 0.83, RL-V 36 : 35 : 34 : 12 : 30, RR 3.7 (22 : 6), fMCu under base of M_2 , M_2 arising before end of r-m. Halter yellow or with knob very pale brown. Abdomen with tergite I white, II-VI very pale ochreous, II-V with slender brown bands on caudal margins, VII-VIII yellow; cerci brown; spermatheca brown, single, punctuated, round ($1.5+7+23 \times 23$), with neck part curved, chitinized part of duct pale and slender.

DISTRIBUTION: New Britain.

Holotype: ♀, Lowlands Agr. Stat., Keravat, New Britain, 16-18. VIII. 1960, Smee, at light.

This is very closely allied to *hardyi* n. sp., but may be distinguished by the more yellowish legs and scutum. Other allied species may be *zonata* n. sp., which is provided with more spines on the femora and tibiae, more bristles on the scutellum, fuscous clouds on caudoscuteal area and characteristic abdominal bands, differing from the present insect.

20. *Echinohelea hardyi* Tokunaga, n. sp. Fig. 5 a-c.

Medium-sized, yellow and brown species, wing unadorned, legs adorned, fore tibia without spines, hind tibia dark and with yellow preapical band, claws of posterior 4 legs

distinctly unequal, abdomen brown uniformly and closely similar to British Guiana *richardsi* Macfie. Male unknown.

Female: Body 1.43–1.52 mm long; wing $1.17-1.26 \times 0.39-0.42$. Head brown, eyes bare and just contiguous, proboscis about $1/2$ as long as head-capsule (13 : 28). Mandible with 8 teeth. Palp pale brown, slender, III elongate-oval, with shallow preapical sensory pore, PR 2.36–2.67, RL-P 5 : 11 : 14.5 : 9 : 14. Antenna with I yellow, II–IX pale brown on basal parts and brown on apical parts, other distal segments brown; AR 1.08, RL-A $22 \times 26 : 25 \times 7 : 13 : 14 : 14 : 14 : 16 : 17 : 19 : 29 : 29 : 31 : 28 : 29$ (W=5–4.5). Thorax widely yellow, scutum with 4 fuscous clouds: 2 arising from paratergites, extending mesad, curved, crescent, but not confluent with each other, 2 short and just behind scutal sutures, pleural side with brown stripe arising from cervix, ending under base of halter, scutellum and postscutellum entirely yellow, former with 6 large and 2–4 small setae, scutum with 5–6 supra-alar bristles. Legs mainly yellow, fore coxa and trochanter pale ochreous, mid and hind coxae brownish apically, all last tarsal segments slightly fuscous, hind tibia mainly dark and with preapical yellow band, fore femur with small faintly fuscous cloud at middle, fore knee part, bases of mid and hind femora and basal $1/3$ of mid tibia very faintly fuscous; femoral and tibial spines: in fore, femur with 8, tibia without spine; in mid, femur with 6–7, tibia with 2–3; in hind, femur with 8, tibia with 2–3 median; tarsal spines: in fore, I with 1 sub-basal and 1 apical, II–III each with 1 slender apical; in mid, I with 2–3 ventral, II–III each with 1 small apical, IV with 2 strong apical; in hind, I with 1 pale sub-basal, IV with 2 as in mid; hind tibial comb with 5 apical bristles. Claws of fore leg each probably with basal tooth and quite equal, those of 2 posterior pairs each with distinct basal tooth and quite unequal (fig. 5 a–b); RL of claws and tarsal segments V 16.5 : 16.5 : 30.5 in fore, 22.5 : 12 : 24.5 in mid, 24.5 : 12.5 : 29.5 in hind; TR and RL-L 1.8–1.92 and 32.5 : 30 : 11.7 : 6.3 : 5 : 3 : 7.8 in fore, 2.1 and 37.5 : 31 : 17.9 : 8.5 : 5.2 : 3.1 : 6.8 in mid, 2.44–2.72 and 39.8 : 43.3 : 23.3 : 9 : 5.8 : 3.4 : 7.7 in hind.

Wing (fig. 5c) brownish along costal area, with veins dark brown, no macrotrichia, costa ending above midway between tips of M_2 and M_{3+4} , CR 0.81–0.82, RL-V 36 : 36 : 36 : 11.5 : 30, RR 3.1–3.5 (21.9 : 6.7), M_2 arising from end of r-m, fMCu under end of r-m or just before it. Halter brown. Abdomen entirely brown, tergites with slender dark bands on posterior margins; but, in paratype, tergite I pale yellow and VIII widely yellow on middle part; cerci brown; spermatheca single, brown, round ($15.5+21.5 \times 19$), with hyaline punctures, chitinized part of duct slender and paler.

DISTRIBUTION: New Guinea.

Holotype: ♂, Kampong Landbouw, 46 m, 30 km NE of air strip, Biak, NW NG, 17. VII. 1957, Hardy. *Paratype*: 1 ♀ with type.

This species is closely allied to British Guiana *richardsi* Macfie, but the allied species is provided with longer wings (1.3–1.4 mm long) and the hind femur less spinous (5 spines) distinctly differing from the new species.

21. *Echinohelea laensis* Tokunaga, n. sp. Fig. 5d.

Medium-sized, yellow species very closely similar to *hardyi* n. sp. with only the following main differences: claws of all legs with basal small teeth and quite equal, spermatheca far larger and scutum with very faint fuscous vittae on caudoscuteal area. Male un-

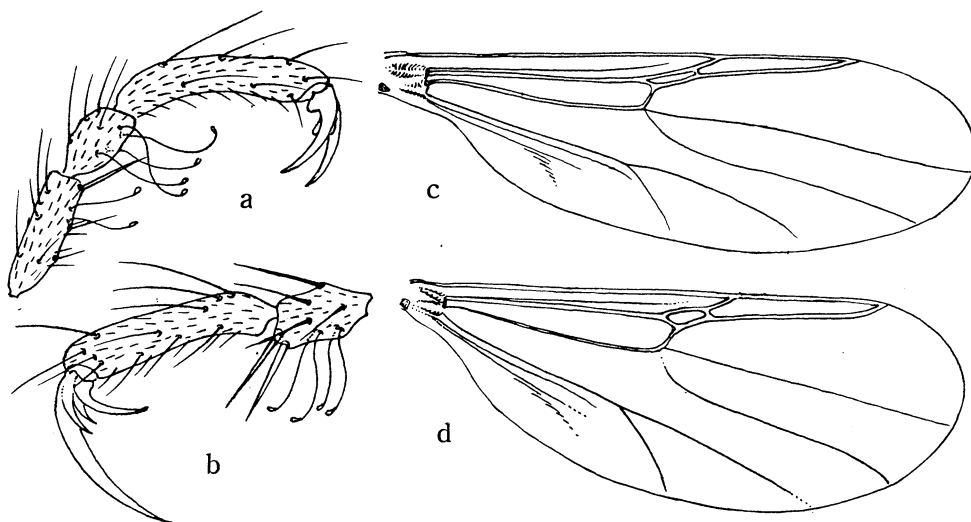


Fig. 5. *Echinohelea* spp., ♀. a-c, *hardyi*: a, fore tarsal segments III-V; b, hind tarsal segments IV-V; c, wing. d, *laensis*, wing.

known.

Female: Body 1.56 mm long; wing 1.37×0.5 . Head with vertex and mouth parts ochreous, frons brown, eyes bare and just contiguous, proboscis about 0.44 (15 : 34) of head-capsule in length. Mandible with 7-8 teeth. Palp rather slender, brown, III with distinct preapical sensory pore, PR about 2.8, RL-P 6 : 12 : 21 : 10 : 17.3. Antenna with I brown, flagellum missing. Thorax extensively yellow, scutum with fuscous clouds on humeral areas, fuscous spots immediately posterior to scutal sutures, very faint fuscous stripes along foveae on caudoscuteal area, scutellum obscurely brownish at sides; supra-alar bristles 7, scutellum with 6 large and 4 minute setae. Legs with color as in *hardyi*, but fore femur without median cloud, fore tibia light brownish at tip, all femoral bases and entire fore coxa slightly infuscate; femoral spines: 7-8 in fore, 6-8 in mid, 7-8 in hind; tibial spines: 0 in fore, 2-3 in mid, 5 in hind; tarsal spines: in fore, I with 1 sub-basal, II with 1 small apical, III with 0-1 strong apical; in mid, I with 3 strong, II-III each with 1 slender apical; in hind, I with 1 pale sub-basal, II-III each with 0-2 slender apical. TR and RL-L 1.86 and 39 : 36 : 13 : 7 : 5 : 3 : 8.4 in fore, 2.16 and 42 : 36 : 20.5 : 9.5 : 6 : 3 : 6 in mid, 2.5 and 45 : 50 : 25 : 10 : 6.9 : 3.8 : 8.4 in hind. Claws of all legs barbed and quite equal.

Wing (fig. 5d) brownish, without macrotrichia and markings. RL-V 41.5 : 41 : 37 : 15 : 40, CR about 0.84 (88 : 105), RR about 4 (29 : 7), M_2 arising from end of r-m, fMCu far before r-m, Cu_1 ending under middle of radial cell I. Halter brown, with base yellow. Abdomen brown, with slender brown bands along caudal margins of tergites; cerci brown; spermatheca brown, large, single, subspherical ($17+35 \times 30$), with pale punctures, chitinized part of duct very slender, brown.

DISTRIBUTION: New Guinea.

Holotype: ♀, Lae, 10 m, NE NG, 6. VII. 1957, Hardy.

This species is closely allied to *hardyi* n. sp., but may be distinguished by the absence of a faint fuscous cloud on midportion of fore femur, more spinous hind tibia and absence of strong apical spines of penultimate tarsal segments of the 2 posterior pairs of legs, besides the distinct differences of the claws, spermatheca and scutal adornment.

Genus **Monohelea** Kieffer

KEY TO NEW GUINEA SPECIES OF MONOHELEA

1. Wings uniformly colored and without markings **22. tigrina**
Wings with dark or fuscous markings..... 2
- 2 (1). Hind femur and tibia mainly yellow, with dark brown rings 3
Hind femur and tibia mainly dark or dark brown, sometimes with only knee yellow..... 4
- 3 (2). Hind femur brown or fuscous on basal 1/3..... **23. smeei**
Hind femur with broad yellow band on sub-basal 1/4..... **24. lutea**
- 4 (2). Wing without fuscous spot on midportion of basal radial cell..... 5
Wing with fuscous spot on midportion of basal radial cell 6
- 5 (4). Scutellum with yellow and dark spots; all knee parts yellow **25. xanthogonua**
Scutellum uniformly fuscous; all knee parts uniformly fuscous..... **26. nigra**
- 6 (4). Wing with fuscous spots isolated and small..... **27. novaguinensis**
Wing with fuscous spots confluent and large..... 7
- 7 (6). Wing vein M with fusiform sub-basal swelling **28. papuae**
Wing vein M without swelling 8
- 8 (7). Legs with all knee parts yellow, hind tarsal segments III and IV with apical spines; abdominal tergites I-IV yellowish..... **29. solidipedalis**
Legs with all knee parts uniformly fuscous, hind tarsal segments III-IV without apical spines; abdominal tergites I-II yellowish **30. basiflava**

22. Monohelea tigrina (Skuse) Fig. 6 a-b.

Ceratopogon tigrinus Sk., 1889, Proc. Linn. Soc. N. S. Wales 4: 306.

Ceratolophus tigrinus, Kieffer, 1906, Gen. Ins. 42: 61.

Stilobezzia tigrinus, Kieff., 1917, Ann. Mus. Nat. Hung. 15: 191.

Monohelea tigrinus, Lee, 1947, Proc. Linn. Soc. N. S. Wales 72: 352.

At present, the specific characters are reported in the modern critical examination on New Guinea specimens.

Female: Body 1.73 mm long; wing 1.2×0.46. General color dark, wings without markings being uniformly pale fuscous. Head dark brown, eyes separated, their frontal side with dot-like fine pubescence, proboscis about 2/5 of head-capsule, mouth parts dark brown. Palpal segment III with sensory pore on apical part rather small, RL-P 6: 11: 14: 8: 12. Antenna uniformly fuscous brown, segments III-IX short-oval to oval, AR 1.15, RL-8A 9.5: 10: 10: 18: 18: 19: 18: 23 (W=6.7-5.5). Thorax dark brown, scutellum ochreous, with 4 large and several small setae. Legs mainly dusky brown, bases of femora and tarsi ochreous; hind tibial comb with 5 apical bristles; tarsal spur-like spines: in fore, I with 1 sub-basal; in mid, I with 1 sub-basal and 2 slender apical, II-III each with 2 slender apical; in hind, I with 1 sub-basal and 1 slender apical, II-III each with 1 slender apical, IV with 2 strong ventral; claws of fore and mid legs small, simple, equal, that of hind

large, single, with small and sharply pointed basal tooth, as long as V (20 : 19) and $3\times$ as long as small tooth (20 : 7); TR and RL-L 2.14 and 30 : 31.5 : 15 : 7 : 4.8 : 3.5 : 6 in fore, 2.62 and 34 : 32 : 17 : 6.5 : 4.5 : 3.5 : 5 in mid, 2.22 and 39 : 39.5 : 20 : 9 : 6 : 4 : 5 in hind.

Wing infusate slightly, macrotrichia spread closely along wing margin between ends of costa and M_2 , costa ending above apical $2/5$ between ends of M_2 and M_{3+4} , CR 0.77, RL-V 33 : 32 : 33 : 12 : 29, RR 1.7 (16 : 9), r-m somewhat longer than M_{1+2} (5 : 4), fMCu just before r-m. Halter with stem brown, knob white. Abdomen entirely fuscous brown; spermathecae 2 dark brown, equal, oval ($1+20\times 14$ respectively), 1 vestigial, dark brown, tubular (4×1).

Male: Body 1.37 mm long; wing 0.98×0.3 . Almost entirely brown, halter whitish. Eyes with fine dot-like pubescence on mesal marginal areas of frontal aspect, proboscis slightly shorter than $1/2$ of head-capsule (10 : 23). Palp brown, III with rather deep sensory pore on preapical part, PR 2.33, RL-P 5.5 : 9 : 14 : 9 : 12. Antenna with segment I dark, others entirely brown, CRL of II–XI to XII–XIV 93 : 62.5, RL-8A 8 : 7 : 7 : 11 : 23 : 19 : 20. Thorax entirely brown, scutum with small irregular faint paler spots, scutellum as in ♀. Legs brown, but trochanters, knee joints, femoral bases and tarsi pale brown or pale ochreous; hind tibial comb with 4–5 apical bristles; claws equal, cleft at apices; tarsal spur-like spines: all I with 1 strong sub-basal and 1 slender apical, all II and mid and hind III each with 1 slender apical; TR and RL-L 2.2 and 25 : 25 : 12 : 5.5 : 4 : 2.8 : 3.5 in fore, 2.33 and 29 : 26 : 14 : 6 : 4 : 2.8 : 3.5 in mid, 2.0 and 29 : 29 : 13 : 6.5 : 5 : 3.2 : 4 in hind.

Wing paler than in ♀, without macrotrichia, costa ending slightly beyond tip of M_{3+4} , CR 0.76, RL-V 27 : 26 : 29 : 9 : 22, RR 1.7 (12 : 7), M_{1+2} longer than r-m (5 : 3), fMCu under origin of r-m. Halter yellowish white. Abdomen brown, with pleural membranes very pale. Hypopygium (fig. 6a) brown; sternite with 6 small setae on caudal spinulose area just before aedeagus; coxite conical, with blunt elevation on mesal side of basal part; style rather slender, arcuate, about $2/3$ of coxite (23 : 33); aedeagus triangular, with caudal tip bifurcate and pointed; parameres with basal arms broad, basally fused, paired caudal lobes membranous and incompletely folded.

DISTRIBUTION: Australia, New Guinea.

SPECIMENS EXAMINED: 1 ♀, Mendi, 1860 m, S. Highlands, NG, 8. X. 1958, Gressitt; 1 ♂, Bubia, Lae, NG, 11. III. 1957, Ardley, by light trap.

The main specific characters are quite similar to those given by Skuse *et al.*, but the Australian specimen is different only from the above description in having yellowish femoral tips and smaller hind TR which is 2.0.

23. *Monohelea smeei* Tokunaga, n. sp. Fig. 6e.

Medium-sized, yellow species with wing markings as in *maculipennis* Coquillett and hind leg color as in *macfieii* Wirth from N. America. Male unknown.

Female: Body 1.5 mm long; wing 1.03×0.35 . General color yellow. Head almost entirely yellow, eyes bare, separated as wide as 2 facets, proboscis short, $1/2$ as long as head-capsule (9 : 20). Palpal segment III with sensory pore on preapical part, PR 1.82, RL-P 5 : 7 : 10 : 7 : 12; mandible with 8 teeth. Antenna with 2 basal segments brown, others missing. Thorax largely yellow, scutum with pale fuscous median vitta through

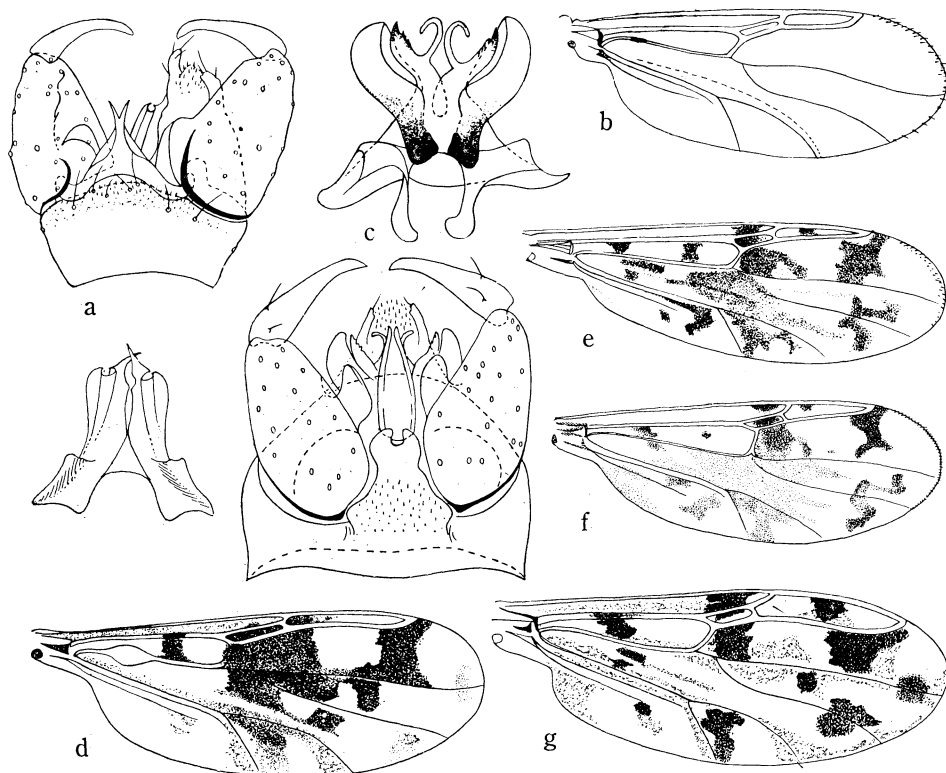


Fig. 6. *Monohalea* spp. a-b, *tigrinus*: a, ♂ hypopygium and parameres; b, ♀ wing. c-d, *papuae*: c, ♂ parameres and hypopygium; d, ♀ wing. e, *smeei*, ♀ wing; f, *lutea*, ♀ wing; g, *novaguinensis*, ♀ wing.

entire length of scutum and lateral pale clouds behind scutal sutures, scutellum with small pale fuscous median spot, 4 large and 3 small setae, postscutellum fuscous, pleura and sternum pale ochreous. Legs largely yellow, with all coxae and trochanters fuscous, but fore coxa somewhat yellow on basal dorsal part, anterior 2 pairs similar in color, basal ends of femora, apical parts of tibiae and basal 1/2-1/3 of basitarsi fuscous, but in hind leg, femur with basal 1/3 fuscous brown before dark ring, middle dark ring oblique and with a small ventral preapical fuscous spot, tibia with apical 1/5 dark, small median fuscous spot; hind tibial comb with 6 apical bristles; tarsal spur-like spines: in fore, I-III each with 1 minute apical, I with 1 strong sub-basal; in mid, II-IV each with 2 slender apical, I with 2 unequal strong sub-basal; in hind, I with 1 strong sub-basal; claws of 2 anterior pairs simple, equal, shorter than segment V (20 : 24 in fore, 18 : 24 in mid), that of hind single, simple, longer than V (20 : 17); TR and RL-L 2.67 and 30 : 27.5 : 16 : 6 : 4 : 2.7 : 6 in fore, 2.71 and 35 : 33.5 : 19 : 7 : 4 : 3 : 6 in mid, 2.25 and 39 : 37 : 19.8 : 8.8 : 6 : 5 : 4.5 in hind.

Wing (fig. 6e) with markings intermediate between those of *maculipennis* and *macfiei*, macrotrichia very sparsely arranged closely along apical margin, veins pale yellow; costa ending above apical 1/3 of anal margin of cell M_2 , R_1 ending above middle of anal margin

of cell M_4 , CR 0.82, RL-V 30 : 31 : 31 : 9 : 27, RR about 2.4, fMCu slightly before end of R, r-m as long as M_{1+2} . Halter with stem yellow, knob fuscous. Abdomen very pale ochreous, pleural membranes fuscous; cerci almost white, spermathecae brown, very unequal, larger one short-oval (3+19×17), smaller one round (9×9), vestigial one tubular (4×0.5).

DISTRIBUTION: New Britain.

Holotype: ♀, Lowlands Agr. Stat., Keravat, New Britain, 22–26. VIII. 1960, Smee, by light trap.

The wing markings are similar to those of N. America *maculipennis* and *macfieii*, but this species is slightly different in the following points: large central fuscous spot extending towards basal spot located between M and stem of fMCu, X-shaped apical spot distinctly separated from Rs, sigmoid apical spot not extending along M_2 , differing from *maculipennis* and omega-shaped spot with only small pale space at angle between r-m and M_{1+2} , X-shaped spot with far shorter leg-parts and separated from Rs, sigmoid spot not distinctly connected with large central spot, differing from *macfieii*. The color of the hind legs of the present species is closely similar to *macfieii*, but the preapical femoral fuscous spot is far smaller and not forming a complete ring, sub-basal fuscous tibial band is completely absent, mid tibial fuscous spot is smaller not forming a complete ring, tips of all tarsal segments are not dark, differing from *macfieii*.

24. *Monohelea lutea* Tokunaga, n. sp. Fig. 6f.

Medium-sized, yellow species, with wing markings closely similar to those of *lanei* Wirth from N. America. However, it may be separated by the different color of hind legs. Male unknown.

Female: Body 1.52 mm long; wing 1.25×0.44. General color yellow. Head yellow, eyes bare, separated as wide as 2 facets, proboscis short, about 1/2 as long as head-capsule (10 : 22). Palps yellowish white, III with sensory pore on preapical part, PR 1.7, RL-P 7 : 10 : 12 : 8.5 : 13, mandible with 8 teeth. Antenna with I ochreous, II–IX yellow basally and brown apically, X–XIV brown, AR 0.91, RL-8A 16.5 : 17.5 : 18 : 23 : 24 : 26 : 27 : 30 (W=5.5–5). Thorax almost entirely yellow, scutum with very faint fuscous median vitta on anterior 1/2 and lateral clouds behind scutal sutures, scutellum with very faint small median fuscous spot, 4 large and 6 small setae; pleura and sternum pale ochreous. Legs mainly yellow, with coxae and trochanters brown, but fore coxa yellow on dorsal 1/3, basal ends of all femora and basal 1/4 of basitarsi fuscous, hind femur with 2 fuscous rings before middle, white band between these 2 rings and ventral small fuscous preapical spot, hind tibia with apical black band and U-shaped fuscous sub-basal spot; hind tibial comb with 7–8 apical bristles; tarsal spur-like spines: in fore, I with 1 strong sub-basal and 1 slender apical, II–IV each with 1 slender apical; in middle, I with 1 strong and 1 slender sub-basal and 2 slender apical, II–III each with 2 slender apical, IV with 1 slender apical; in hind, I with 1 strong sub-basal and 2 slender apical, II–IV each with 2 slender apical; claws of fore and mid legs simple, equal, shorter than V (23 : 28 in fore, 20 : 25 in middle), that of hind single, simple, longer than V (28 : 20). TR and RL-L 2.71 and 36 : 35 : 19 : 7 : 5 : 3.5 : 7 in fore, 3.56 and 42 : 40 : 28.5 : 8 : 5 : 3.5 : 6.5 in mid, 1.45 and 47 : 46 : 26 : 11 : 7 : 6 : 5 in hind.

Wing (fig. 6f) elongate-oval, macrotrichia very sparsely arranged in line closely along

apical margin between apices of costa and M_2 , large central cloud and 2 basal small clouds of anal cell pale brownish, other spots fuscous, veins very pale; costa ending above middle between tips of M_2 and M_{3+4} , R_1 ending above basal 1/3 between tips of M_{3+4} and Cu_1 , fMCu under tip of R, CR 0.81, RL-V 37 : 41 : 42 : 11 : 33, RR about 2 (21 : 10), M_{1+2} very short, almost absent. Halter yellowish, but knob very slightly fuscous. Abdomen yellowish, but pleural membranes of caudal segments faintly fuscous; cerci pale yellow, spermathecae round, very unequal, larger one ochreous (27×26), smaller one yellow (7×7), vestigial one invisible.

DISTRIBUTION: New Guinea.

Holotype: ♀, Goldie Riva, nr. Port Moresby, NG, 25. IX. 1959, Ardley.

This belongs to the *hieroglyphica*-group and bears the wing markings and hind tibial coloration as in *lanei* Wirth and hind femoral coloration as in *maculipennis* Coquillett. Differing from the present new species, *lanei* has a dark preapical ring and dark basal 1/3 on hind femur, brown abdominal tergites and a larger hind TR which is about 2.06, and *maculipennis* has brown dots at the bases of the dark scutal setae, separated sub-basal and median fuscous rings of hind tibia, separated sigmoid subapical wing spot from basal large spot and a smaller hind TR which is about 2.06.

25. *Monohalea xanthogonua* Tokunaga, n. sp. Fig. 7 a-b.

Dark brown or dark, large species with all knees and tarsi yellow, scutellum yellow and with dark or brown median spot, wing with 2 costal dark spots and very faint fuscous posterior clouds, being very closely similar to those of British Guiana *guianae* Wirth.

Male: Body 2.56 mm long; wing 1.79×0.52. Head dark brown, with eyes bare, almost contiguous, proboscis about 1/2 of head-capsule (16 : 31). Palp dark, rather small, with sensory pore of segment III large, round, situated at midportion, PR 2.56, RL-P 10 : 14 : 23 : 12 : ?. Antenna entirely dark brown, CRL of II–XI to XII–XIV 151 : 123, RL-8A 13 : 13 : 13 : 12.5 : 18 : 47 : 38 : 35. Thorax mainly dark, scutum only yellow just behind head, scutellum yellow, with median dark brown spot, 4 large and 10 small setae. Legs with coxae, trochanters, femora and tibiae largely dark, bases of femora paler, knee parts distinctly yellow, tarsi pale ochreous, but hind I dark; hind legs not strong differing from those of *tessellata*-group, hind tibial comb with 7–8 apical bristles, claws small, equal, cleft at tips; tarsal spur-like spines: fore I with 1 sub-basal, middle I with 9–11 ventral and 2 apical, following 2 each with 2 apical, hind I with 1 sub-basal and 1 apical, II with 2 apical; TR and RL-L 2.12 and 57.5 : 55 : 29 : 13.7 : 9 : 5.7 : 8 in fore, 2.25 and 66 : 61 : 31.5 : 14 : 8.7 : 5 : 7.5 in mid, 2.14 and 79 : 68 : 45 : 21 : 11.5 : 7.5 : 9 in hind.

Wing without macrotrichia, with 2 distinct dark spots on costal 1/2 and very faint fuscous clouds on anal 1/2, costa ending beyond apex of M_{3+4} , CR 0.76, RL-V 57 : 53 : 56 : 15 : 37, RR about 1.8 (21 : 12), r-m longer than M_{1+2} , fMCu under end of r-m. Halter white. Abdomen dark brown, pleural membranes dark. Hypopygium (fig. 7a) dark brown; sternite with 4 bristles before base of aedeagus; coxite large, elongate-oval, style thickened, somewhat undulate, 1/2 as long as coxite; aedeagus broad, bilobate, with recurved and sharply pointed processes; parameres fused basally, with curved and slender apical processes.

Female: Body 1.95 mm long; wing 1.24×0.48. Color generally as in ♂. Head with proboscis 1/2 as long as head-capsule. Palp stout, III with large sensory pore on middle

part, PR 1.5, RL-P 8 : 11 : 12 : 11 : 14. Antenna brown, but bases of flagellar segments almost white, short basal segments elongate-oval, AR 0.96, RL-8A 14 : 14 : 13.5 : 19 : 19 : 21 : 21.5 : 29 (W=6.5-7). Scutum with irregular brown spots on dark brown ground color, scutellum yellow, with 1 median and 2 lateral fuscous spots, 4 small setae. Legs with color as in ♂ but all femora distinctly darkened apically, fore basitarsus fuscous basally; hind tibia somewhat thickened, hind tibial comb with 8 apical bristles; tarsal spur-like spines: in fore, I with 1 sub-basal; in mid, I with 1 sub-basal, 2 slender apical (without ventral), II-III each with 2 slender apical; in hind, I with 1 sub-basal, 1 slender apical, II with 1 slender apical, III with 1 slender and 1 strong apical, IV with 2 apical; claws of anterior 4 legs equal, each with minute basal tooth, shorter than tarsal segment V being 27 : 34 in fore and 21 : 30 in mid, claws of hind legs single, probably simple, far longer than V (40 : 29); TR and RL-L 2.38 and 38 : 37 : 19 : 8 : 5 : 3.7 : 9 in fore, 2.6 and 45 : 43 : 22 : 8.5 : 5 : 3.7 : 8.2 in mid, 2.82 and 53 : 47 : 31 : 11 : 6 : 5 : 8 in hind.

Wing (fig. 7b) with color marking as in ♂, macrotrichia very sparsely arranged closely along wing margin of cell R_5 , costa ending just before tip of M_2 , CR 0.84, RL-V 34 : 34 : 38 : 15 : 36, RR 1.67 (20 : 12), r-m longer than M_{1+2} (5 : 3), fMCu under end of r-m, Cu curved, meeting anal margin with angle 90 degrees. Halter with knob dark brown. Abdomen with last segment and cerci white; spermathecae 2 small, brown, oval, equal (1+16×14 respectively).

DISTRIBUTION: New Guinea.

Holotype: ♂, Mendi, S. Highlands, Papua, 8. X. 1958, Gressitt. *Allotype*: ♀, Bubia, Lae, NG, 8. VIII. 1959, Ardley, by light trap.

The present new species is closely allied to the known members of *multilineata*-group in color and most closely allied to *guianae* Wirth from British Guiana in the structure of the ♂ hypopygium. In *guianae*, however, the aedeagus is attenuated basally not being bilobated and with 4 slender apical processes, the parameres are far larger than the aedeagus and the apical parts are broad not being cord-like, and highly differing from New Guinea *xanthogonua*.

26. *Monohelea nigra* Tokunaga, n. sp. Fig. 7c.

Small, dark brown species with very faint wing markings, very closely allied to *xanthogonua* n. sp. and Micronesia *mcdanieli* Tokunaga. Male unknown.

Female: Body 1.37 mm long; wing 0.94×0.35. Head with vertex dark, frons, clypeus and mouth parts brown, eyes bare and contiguous, proboscis short, shorter than 1/2 of head-capsule. Mandible with 7-8 teeth. Palp with PR about 1.9, RL-P 3 : 8 : 12.5 : 6 : 13, III with sensory pore shallow and located on preapical part. Antenna with I dark brown, flagellum missing. Thorax entirely dark brown, but scutum with humeral areas yellowish, scutellum with 4 large and 5 minute setae. Legs mainly fuscous brown, all femoral bases, fore and mid trochanters and all tarsal segments very pale, all knee parts not yellowish; hind leg with femur and tibia rather slender, 6 apical bristles of tibial comb; tarsal spines: in fore, I with 1 sub-basal, 1 apical, II with 1 slender apical; in mid, I with about 9 ventral, II with 2 apical, III with 2 slender apical; in hind, I with 1 sub-basal (apical end of I and following segments missing); claws of fore and mid legs barbed, equal and small. TR and RL-L 2.6 and 26.5 : 25.8 : 13.7 : 5.3 : 4 : 2.5 : 5.2 in fore, 2.42 and 30.5 :

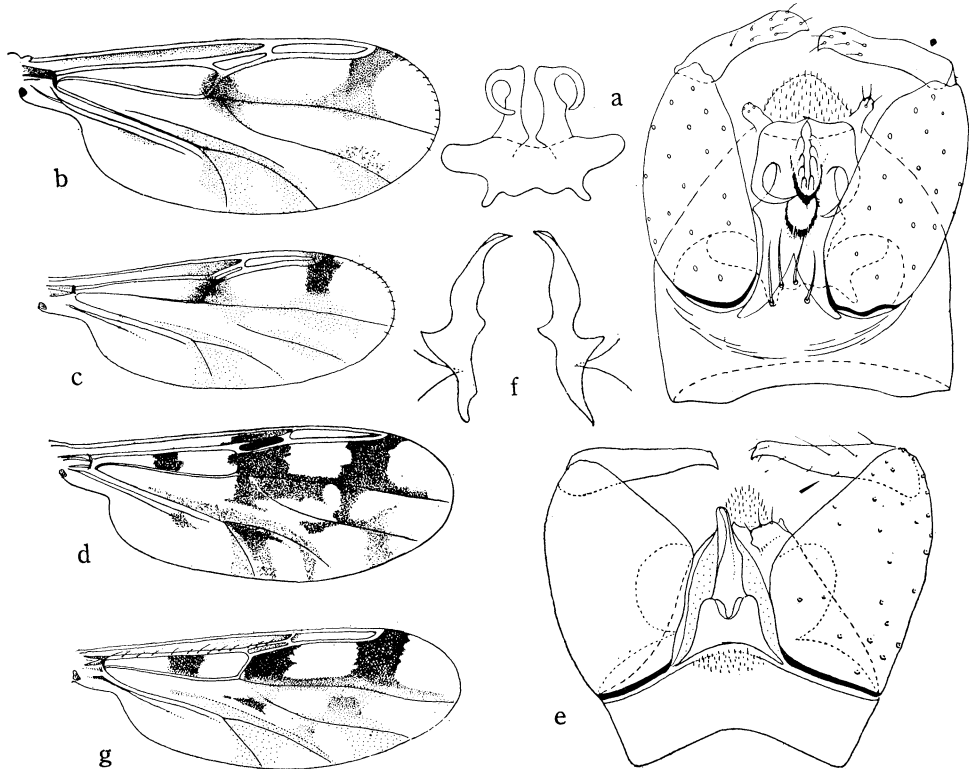


Fig. 7. *Monohelea* spp. a-b, *xanthogonua*: a, ♂ hypopygium and parameres; b, ♀ wing. c, *nigra*, ♀ wing. d, *solidipedalis*, ♀ wing. e-g, *basiflava*: e, ♂ hypopygium; f, ♂ parameres; g, ♀ wing.

27 : 14.5 : 6 : 4 : 2.4 : 4.8 in mid.

Wing (fig. 7c) closely as in *xanthogonua*, fuscous clouds posterior to veins M and M_1 very pale and apical costal spot of cell R_5 dark on anterior 1/2 and paler on posterior 1/2, with macrotrichia as in allied species; costa ending just before tip of M_2 , CR 0.83, RL-V 27 : 26 : 27.5 : 10 : 25, RR 2.1 (15 : 7), fMCu just before r-m, M_{1+2} 1/2 of r-m (2 : 4). Halter white, with basis yellow. Abdomen dark brown, with pleural membranes black, tergite I with basal spot, caudal end and cerci white; spermathecae dark, round, unequal (2+16×16, 2+12×11), 1 vestigial, tubular (4×1.5).

DISTRIBUTION: New Guinea.

Holotype: ♀, Wanuma, 800-1000 m, Adelbert Mts., NE NG, 26.X.1958, Gressitt, from grasses.

This is closely similar to *xanthogonua* n. sp., but may be separated by the smaller costal spots of the wing and entirely fuscous knee parts of all legs. *Micronesia mcdanieli* Tokunaga may be another allied species, but may be distinguished from the new species by the following points: darker and larger fuscous wing spots and equally developed spermathecae.

27. *Monohelea novaguinensis* Tokunaga Fig. 6g.

Monohelea novaguinensis Tok., 1959, Pacific Ins. 1: 309.

General color of ♀ closely similar to that of ♂, but wing venation of radial field characteristic sexually and specifically.

Female: Body 1.78 mm long; wing 1.35×0.48 . Head with proboscis about $2/5$ of head-capsule (10:26); palp stout, with I-III white, IV-V brown, RL-P 6:9:12:9:14, PR 1.6. Antenna mainly brown, but III-XI basally pale, AR 1.01, RL-8A 12.5:12.5:12.5:19:19:20:18:25 ($W=6.5-8$). Hind leg with femur, tibia and tarsal segment I very strong, tibial comb with 6 apical bristles; tarsal spur-like spines: I of mid leg with 9-10 ventral, I of hind with 1 basal and IV with 2 large preapical; claws of fore and mid legs small, equal, far shorter than last tarsal segments, each cleft at extreme tip and flanged with minute tooth at either basal side, hind claw single, simple, very long, longer than last tarsal segment (39:28); RL-L and TR 33:33:16:7:5:4:5 and 2.3 in fore, 39:38:18.5:7.5:4.8:3.8:5.8 and 2.47 in mid, 45:41:23:9.8:5.5:5:7 and 2.35 in hind.

Wing (fig. 6g) with dark spots and very faint clouds, macrotrichia very sparsely arranged along apical margin of cell R_s , R_s undulate, radial cell II very broad, costa ending far beyond apex of M_2 , CR 0.84, RL-V 35:35:35:15:42, RR about 3 (28:10), r-m slightly longer than M_{1+2} , fMCu under end of r-m. Halter fuscous. Abdomen with cerci dusky brown, spermathecae dark, larger 2 subspherical, subequal (20×18, 18×17), vestigial 1 tubular (4×2). Other specific characters as in ♂ with usual sexual differences.

DISTRIBUTION: New Guinea.

SPECIMEN EXAMINED: 1 ♀, Bubia, Lae, NG, 23. II. 1959, Ardley.

The ♀ is very specific in the shape of radial cell II which is very broad, wing vein R_s being distinctly undulate and somewhat different from the ♂ in the position of the dark spot of radial cell of the wing.

28. *Monohelea papuae* Tokunaga, n. sp. Fig. 6c-d.

Dark brown species; wing adorned with dark markings as in *tessellata* Zetterstedt and closely allied to Malaya *bellula* Macfie and Ryukyu *inflativena* Tokunaga in general color and presence of spindle-like swelling near base of wing vein M, but quite different from these allied species in the structure of ♂ hypopygium.

Female: Body 1.86 (1.59-2.02) mm long; wing $1.24 (1.21-1.27) \times 0.43 (0.42-0.44)$. Head brown, with eyes bare, just contiguous, proboscis slightly longer than $1/2$ of head-capsule (12.3:22.7). Palp brown, III with large sensory pore just beyond middle, PR about 2.0, RL-P 5.2:10:14.3:10.8:20. Antenna with I yellow or ochreous, other segments pale brown, but II-IX with bases white, elongate-oval; AR 1.11 (1.0-1.19), RL-8A 12.4:13.1:13.5:21:21.3:22:21.1:28 ($W=6-7$). Thorax almost entirely and uniformly brown or fuscous brown, but sometimes scutum with faint irregular dark clouds, scutellum yellow and with dark median spot, 4 large and several (5-7) small setae. Legs with all coxae brown, tarsi yellowish white; fore and mid femora and tibiae largely ochreous, with femoral and tibial bases yellow; hind femur and tibia almost entirely brown or dusky brown and with pale brown or ochreous small ring on preapical part of femur; hind tibial comb with 8 (7-9) apical bristles, claws of fore and mid legs small, equal, each with 1 basal small

tooth, that of hind leg very long, about $2\times$ as long as tarsal segment V and $3.5\times$ long of basal tooth (50.8 : 25 : 14.5); tarsal spur-like spines: in fore, I with 3 (apical, middle, basal), II with 1 apical, III with 2 apical; in mid, I with 4 dark (2 apical, 1 middle, 1 basal) and several (5–7) slender ventral, II–III each with 2 apical; in hind, I with 1 dark apical, 1 pale basal, II–III each with 1 apical; TR and RL-L 2.3 (2.22–2.35) and 38.5 : 38.3 : 19.8 : 8.6 : 5.3 : 3.8 : 6.2 in fore, 2.43 (2.3–2.56) and 46 : 43.9 : 22.4 : 9.2 : 5.7 : 3.6 : 6 in mid, 1.94 (1.9–2.0) and 59.3 : 54.3 : 21.5 : 11.1 : 6.4 : 8.3 : 7.2 in hind.

Wing (fig. 6d) without macrotrichia, markings as in *tessellata*; costa ending before apex of M_2 , CR 0.83–0.85, basal swelling of M spindle-like (9.8 \times 3.9), RL-V 30.8 : 32.3 : 35 : 14.8 : 39.8, RR about 2 (23.3 : 12.3), r-m as long as M_{1+2} , fMCu under r-m. Halter white. Abdomen with tergal side mainly brown, but tergite I with oval yellow spot, II and III widely yellow on median part, IV sometimes yellow on anterior marginal part, pleural membranes and sternites very pale; cerci white, spermathecae 2 brown, round, equal (1+16.7 \times 16.3 respectively), 1 small, round, pale brown (5.2 \times 4.8).

Male: Body 2.02–2.2 mm long; wing 1.33–1.35 \times 0.38–0.39. Color as in ♀ or somewhat more yellowish. Head with eyes separated as wide as 2 facets, proboscis about 1/2 as long as head-capsule (12 : 22). Palp with RL-P 6 : 10.5 : 16 : 11.3 : 20.5, PR 2.0–2.7. Antenna entirely ochreous, CRL of II–XI to XII–XIV 139.5 : 90.5, RL-8A 11 : 10.8 : 11 : 10.3 : 16.5 : 34.5 : 27 : 29.5. Scutellum with 4 large and 6 small setae. Legs with larger yellow preapical spot of hind femur than in ♀; hind tibial comb with apical bristles 8 and rarely 6; claws of fore and mid legs small, equal, each with minute basal tooth on either side and cleft at tip, hind claw single, slender, with 1 basal small tooth, about 1.4 \times as long as last tarsal segment and 4.6 \times as long as basal tooth (41 : 29 : 9); tarsal spur-like spines mainly as in ♀, but I of mid leg without median strong one and with about 3–4 slender ventral, II of hind leg with 2 apical; TR and RL-L 2.2–2.33 and 41.8 : 40 : 21.5 : 9.5 : 6.1 : 4.1 : 5.9 in fore, 2.3 and 48.5 : 45.5 : 24 : 10.5 : 6 : 4 : 5.9 in mid, 1.75–1.83 and 61.5 : 56 : 21.5 : 12 : 6.3 : 8.3 : 7.8 in hind.

Wing without macrotrichia, apical and anal spots faint and pale brown, basal swelling of M about 3 \times as long as wide, costa ending above midway between tips of M_2 and M_{3+4} , CR 0.72–0.78, RL-V 36.5 : 38.5 : 22.5 : 13.3 : 34.8, RR about 2 (21 : 11). Abdomen paler than in ♀, tergites II–IV widely yellow on midportion. Hypopygium (fig. 6c) brown, with caudal lobe of sternite membranous, spiculate, round at tip, with apical small concavity; coxite conical, with small basal lobe on tergal side, style tapered, slightly arcuate, about 0.6 as long as coxite (34.5 : 54.5); aedeagus horn-like, rather slender, slightly shorter than style; parameres basally united, complicate, with paired root-like processes, caudal spoon-like lateral lobes and median serrate lobes the latter with cord-like curved process.

DISTRIBUTION: New Ireland.

Holotype: ♀, Kavieng, New Ireland, 3–4. VI. 1959, Peters. *Allotype*: ♂, with holotype. *Paratypes*: 4♀♀, 1♂, with types; 1♀, same place, 2. VII. 1959, Gressitt.

This is closely allied to *Ryukyu inflativena* Tokunaga and *Malaya bellula* Macfie. The 1st allied species differs from the new species in the following points: tarsal segment I of fore leg is not provided with median spur-like spine, palpal segment III is subequal to V in length, larger spermathecae are oval and vestigial one is tubular, median caudal lobe of paramere of ♂ hypopygium is provided with cord-like process at tip and without serrate part, and ♀ abdominal tergites are largely ochreous. In the 2nd allied species, pal-

pal segment III is subequal to V, ♀ AR is smaller than 1.0 being about 0.96, scutellum bears 6 large bristles and is paler on midportion, TR of hind leg is larger than 2.0, wing vein M_{1+2} is longer than r-m, ♂ hypopygium is provided with cord-like process of median lobe of paramere and is serrulate and larger, style is much curved.

29. *Monohalea solidipedalis* Tokunaga, n. sp. Fig. 7d.

Closely similar to *Micronesia insularis* Tokunaga and *N. America nebulosa* Coquillett in general color and wing marking, but may be distinguished clearly by the absence of dark dots at setal bases of scutum and the characteristic development of tarsal spines. Male unknown.

Female: Body 1.63–1.69 mm long; wing $1.07\text{--}1.16 \times 0.38\text{--}0.44$. Thorax mainly brown or fuscous brown, scutellum with yellow median spot, fore and mid legs with femora and tibiae very pale brown, but knee parts yellow, hind femur and tibia black but knee part narrowly yellow, wing with marking of *tessellata*-group, abdomen with pleural membranes dark, tergites yellow to pale brown. Head with vertex fuscous brown, frons and mouth parts ochreous, eyes bare, contiguous, proboscis about 1/2 of head-capsule (11 : 23). Palp with PR about 2.0, RL-P 6.5 : 11 : 15.3 : 9.5 : 16.3 Antenna with I fuscous brown, other segments pale brown to brown, III–IX oval to elongate-oval; AR 1.07–1.12, RL-8A 11.3 : 11 : 10.8 : 18.5 : 18.5 : 19.5 : 18.3 : 22 ($W=5.5\text{--}6$). Scutum with faint paler spots but without dark dots at setal bases, scutellum dark, with yellow median spot, 4 large and 8–9 small setae. Legs with all knee parts narrowly yellow; fore and mid legs with trochanters, bases and preapical parts of femora, sub-basal parts and apices of tibiae pale brown, middle parts of femora and tibiae broadly very pale brown; hind leg with coxa, trochanter, femur and tibia dark brown or black, except for yellow knee part; all tarsal segments pale ochreous. Hind tibial comb with 6–8 apical bristles; tarsal spur-like spines: in fore leg, I with 3 (basal, middle and apical); in mid, I with 7–12 ventral, II and III each with 2 apical; in hind, I with 2 (apical and basal), II and III each with 1 apical, IV with 2 ventral; claws of fore and mid legs slender, equal, each with small basal tooth, shorter than V (11 and 5 : 20 in fore, 10 and 3 : 18 in mid), claw of hind leg elongate, single, with long basal tooth, far longer than V (34.5 and 11.5 : 26); TR and RL-L 2.33–2.4 and 32 : 33.5 : 17.2 : 7.3 : 5 : 3.6 : 5.5 in fore, 2.43–2.45 and 36.5 : 33.9 : 18 : 7.4 : 4.5 : 3.5 : 4.9 in mid, 1.75–1.83 and 46.8 : 43 : 17 : 9.5 : 5.5 : 6.5 : 6.8 in hind leg.

Wing (fig. 7d) closely as in *tessellata* Zetterstedt, but dark spots covering fMCu, preapical part of vein M_2 and apical part of 1A paler than costal, veins pale brown, macrotrichia absent; costa ending before apex of M_2 , CR 0.83–0.84, RL-V 30 : 30 : 31.5 : 14 : 33.5, M_{1+2} far shorter than r-m (2.5 : 5), RR about 2.3 (19.5 : 8.5). Halter entirely white. Abdomen very pale, yellowish anteriorly, ochreous posteriorly, but lateral membranes dusky; cerci white, spermathecae: 2 functional round, dark brown, equal (2.3+18×15.5 and 2.8+17×16), 1 vestigial tubular (4.5×1.4).

DISTRIBUTION: New Guinea.

Holotype: ♀, Lae, NG, 6. VI. 1957, Hardy. *Paratype*: 1 ♀, Bubia, Lae, NG, 3. II. 1959, Ardley, light trap.

This is closely allied to *insularis* Tokunaga and *nebulosa* Coquillett. However, these 2 allied species are provided with dark dots at bases of scutal setae differing from the pre-

sent species; and moreover, in the Micronesian species, the fore tarsi have no spines, mid tarsal segment I with only 3, II with 1 apical, hind tarsal segments II and III each with 2 apical spines and posterior abdominal tergites bear brownish caudal bands and, in N. American species, hind tarsal segment II bears 2 distal spines and abdomen is dark brown, differing from the new species.

30. *Monohelea basiflava* Tokunaga, n. sp. Fig. 7 e-g.

Medium-sized, dark species with 2 basal abdominal tergites yellowish, all knee parts uniformly fuscous, scutellum yellow on mid part, wings with markings as in *tessellata*, and closely similar to *solidipedalis* n. sp. and *insularis* Tokunaga.

Female: Body 1.69–2.15 mm long; wing 1.21–1.34×0.42–0.47. Head dark brown, eyes bare and just contiguous or linearly separated, mouth parts brown, proboscis short, shorter than 1/2 of head-capsule (11.5 : 25). Mandible with 8 teeth and 2–3 minute basal teeth. Palp slender, brown, III with distinct sensory pore at middle, PR 1.9–2.3, RL-P 6 : 11 : 15.5 : 9.5 : 16.5. Antenna with I dark brown, II–VII yellow basally and brown apical VIII–XIV almost entirely brown; basal flagellar segments elongate-oval, apical 5 segments sub-cylindrical; AR 0.94–1.0, RL-8A 12.1 : 12.4 : 12.3 : 17.4 : 18.5 : 20.5 : 19.1 : 24 (W=6). Thorax almost entirely dark brown, scutum with obscure fuscous spots and clouds which are somewhat irregular, sub-confluent, scutellum with yellowish median spot, 4 large and 4–5 small setae. Legs dark brown, hind leg darker, fore and mid femora with apical parts darker, tarsi of fore and mid legs paler and yellowish, those of hind legs dark brown on basal segments; and ochreous on apical segments; hind tibial comb with 8 apical bristles, claws of fore leg equal, 1/2 as long as last tarsal segment (11 : 23), each with 1 small basal tooth, those of hind legs single, far longer than the segment (42.5 : 27.5) and with 1 basal blunt tooth; tarsal spur-like spines: in fore, I with 3 ventral, II with 1 apical; in mid, I with 10–11 ventral, II with 2 apical, III with 1–2 apical; in hind, I with 1 sub-basal and 1 apical, II with 2 apical. TR and RL-L 2.13–2.24 and 36.1 : 36.3 : 17.5 : 8 : 5.3 : 4 : 5.9 in fore, 2.38–2.43 and 40.5 : 38.5 : 18 : 7.5 : 4.8 : 2.8 : ? in mid, 1.64–1.7 and 53 : 50.3 : 16.5 : 9.9 : 5.6 : 7.8 : 7.4 in hind.

Wing (fig. 7g) with anterior dark spots large and distinct, posterior spots very light and only partly dark, without macrotrichia on membrane; costa ending before tip of M_2 , CR 0.78–0.81, RL-V 33.8 : 33.5 : 33.5 : 14.8 : 36.5, RR 2.1–2.3 (22 : 10), M_{1+2} as long as or shorter than r-m. Halter pale yellow, with base pale brown. Abdomen with 2 basal tergites yellow or II yellowish ochreous, III–X dark brown, pleural membranes dark, caudal end and cerci white; spermathecae dark brown, subspherical; holotype with 3 unequal (2+18×15, 2+16×16, 2+12×12), paratype with 2 equal (4+14×12 respectively) spermathecae.

Male: Body 1.74 mm long; wing 1.26×0.36. Color as in ♀. Palp with PR 1.75, RL-P 5 : 10 : 14 : 8 : 17. Antenna with I dark brown, other parts all brown, RL-8A 10.5 : 11 : 11 : 11 : 13 : 39 : 25 (W=7–5.5) : 25×7. Thorax: scutellum with 5 large and 5 small setae. Legs with hind femur and tibia slightly thickened, but more slender than in ♀, hind tibial comb with 7 apical bristles, claws and tarsal spines as in ♀; TR and RL-L 2.18 and 36.5 : 35 : 18.5 : 8.5 : 5.5 : 3.8 : 5.4 in fore, 2.24 and 41 : 37 : 18.8 : 8.4 : 5.4 : 3.9 : 5 in mid, 1.78 and 51 : 47.5 : 16 : 9 : 5 : ? : ? in hind.

Wing as in ♀, CR 0.8, RL-V 36 : 36 : 38 : 13 : 29, RR 1.5 (15 : 10), M_{1+2} shorter than

r-m (2.5 : 4), fMCu under end of r-m. Abdomen with tergite II more or less yellowish ochreous. Hypopygium (fig. 7 e-f) dark, with anal points minute; coxite very large, sub-triangular; style almost straight, tapered, with curved tip, about 2/3 as long as coxite (28.5 : 42); aedeagus with basal socket-like sclerite and caudal lobe; paramere about 1.5× as long as aedeagus (35 : 24), with basal root tapered, slightly curved, not sharply pointed.

DISTRIBUTION: New Guinea.

Holotype: ♀, Wanuma, 800-1000 m, Adelbert Mts., NE NG, 26. X. 1958, Gressitt, from grasses. *Allotype*: ♂ with type. *Paratype*: 1 ♀ with types.

This species is closely allied to *solidipetalis* n. sp., however, it may be distinguished by the dark brown knees of all legs, uniformly dark brown abdominal tergites III-IV, unarmed hind tarsal segments III-IV and paler radial cell I and apical part of costal cell. Another allied species may be Micronesia *insularis* Tokunaga, but this is different in the following main characters: wing markings darker and more distinct, scutum with yellowish spots, coxites, styles and caudal lobes of parameres of ♂ hypopygium far more slender.

Genus *Stilobezzia* Kieffer

KEY TO NEW GUINEA SPECIES OF STILOBEZZIA

1. Wing at least with 1 dark or fuscous spot or cloud 2
Wing without dark or fuscous spot or cloud..... 4
- 2 (1). Abdomen with distinct tergal dark spots.....**31. notata**
Abdomen without distinct tergal spots..... 3
- 3 (2). Legs with femora and tibiae bicolored, yellow and dark; hind tibia with strong spine-like apical dorsal bristles; wing with 2 fuscous spots **32. nebulosa**
Legs uniformly yellowish; hind tibia without strong spine-like apical dorsal bristles; wing with only 1 fuscous cloud covering cross-vein r-m **33. centripictura**
- 4 (1). Hind femur with preapical isolated pale fuscous spot on yellow ground color...
.....**34. basizonata**
Hind femur widely bicolored, or entirely unicolored or basal part differing from apical part in color (knee sometimes fuscous)..... 5
- 5 (4). Hind femur bicolored, widely fuscous and yellowish 6
Hind femur almost unicolored (knee sometimes fuscous) 10
- 6 (5). Hind femur basally fuscous or brownish and apically pale or yellowish 7
Hind femur basally pale or yellowish and apically fuscous or brownish 8
- 7 (6). Pale brown species **35. palpalis**
Fuscous or brown species.....**36. bizonata**
- 8 (6). Abdomen with 2 basal segments distinctly paler than posterior..... **37. spadicifibialis**
Abdomen uniformly light brown..... 9
- 9 (8). Wing with radial cell I very small, square or rhombic; legs not very long; minute species (wing shorter than 1.0 mm) **38. hollandia**
Wing with radial cell I normal, elongate; legs very long, somewhat tipuliform; larger species (wing longer than 1.5 mm) **39. acrotrichis**
- 10 (5). Hind femur almost uniformly dark..... 11
Hind femur and tibia uniformly pale or yellowish (knee joint sometimes fuscous) 13

- 11 (10). Fore and mid tibiae broadly pure white, except for pale yellow on both ends...12
 Fore and mid tibiae uniformly brown..... **62. NG No. 2**
- 12 (11). Thorax with scutum pale ochreous.....**40. longihamata**
 Thorax with scutum dark brown or brown **41. subviridis**
- 13 (10). Scutum with dark or fuscous spot or vittae on pale or yellow ground color.....14
 Scutum unicolor, without distinct spot or vittae..... 15
- 14 (13). Scutum with a single dark spot just behind head..... **42. postcervix**
 Scutum with paired dark median vittae on anterior 1/2.....**43. vittula**
- 15 (13). Fore femur with several ventral spines of spine-like stout bristles.....16
 Fore femur without ventral spines or spine-like bristles 17
- 16 (15). Hind tibia with several spine-like strong bristles on apical part **44. armatibae**
 Hind tibia with only ordinal strong bristles **45. spinifemorata**
- 17 (15). Wing without macrotrichia even on apical part; abdomen with fuscous band
 on white ground color or pale basal band on dark ground color.....18
 Wing with macrotrichia at least on apical marginal area; abdomen almost uni-
 colored, without distinct band 19
- 18 (17). Abdominal tergites III–IV fuscous.....**46. unifasciata**
 Abdominal tergites III–VIII dark **47. flavizonata**
- 19 (17). Maxillary palpus with many surface sensillae spread on apical 1/2 or 1/3 of
 segment III.....20
 Maxillary palpus with common sensory pore or a few surface sensillae on seg-
 ment III..... 24
- 20 (19). Abdominal tergites uniformly dark brown; hind tibial comb with dark apical
 bristles **63. NG No. 3**
 Abdominal tergites pale brown, ochreous or yellowish; hind tibial comb with
 pale or yellowish apical bristles 21
- 21 (20). Small species, wing far shorter than 2.0 mm; legs not highly setigerous...**48. maai**
 Large species, wing length at least 2.0 mm; legs very highly setigerous: hind
 tibia with 10 or more strong dark dorsal bristles 22
- 22 (21). Legs very pale, almost white.....**49. eliptaminensis**
 Legs pale yellow or ochreous 23
- 23 (22). Male with style of hypopygium bluntly pointed at tip and slightly arcuate, ster-
 nite IX with caudal margin almost straight or very shallowly concave (♀
 as in *setigeripes*)..... **50. crassiforceps**
 Male with style of hypopygium round at tip and somewhat strongly curved
 beyond middle, sternite IX with caudal margin concave (♀ as in *crassifor-*
ceps) **51. setigeripes**
- 24 (19). Maxillary palpus with a large common sensory pore.....25
 Maxillary palpus with only a few sensillae in small sensory pore or on small
 area 32
- 25 (24). Large species (wing as long as or longer than 2.0 mm)..... 26
 Small species (wing shorter than 2.0 mm) 28
- 26 (25). Mid leg with TR at least 3.0 27
 Mid leg with TR less than 3.0 **65. NG No. 5**
- 27 (26). Scutellum with at least 6 large bristles besides small setae; fore leg with TR
 2,3–2,5 **52. reflexa**

- Scutellum with 5 large bristles besides small setae ; fore leg with TR 2.7-2.9...
61. NG No. 1
- 28 (25). Mid leg with TR 2.45 64. NG No. 4
 Mid leg with TR at least 2.5 and usually about 3.0..... 29
- 29 (28). Abdominal tergites brown or fuscous 53. *clavicula*
 Abdominal tergites very pale and almost white 30
- 30 (29). Scutellum with only 4 large bristles, hind leg with TR 2.07-2.12 in ♀
66. NG No. 6
 Scutellum with 4-6 large bristles besides 0-4 small setae, hind leg with TR at
 least 2.5 in ♀ 31
- 31 (30). Male with parameres of aedeagus unequally bifurcate. Female abdominal ter-
 gites pale ochreous.....54. *bifurcata*
 Male with parameres of aedeagus not bifurcate. Female abdominal tergites
 almost hyaline and colorless 55. *papuae*
- 32 (24). Legs very strongly setigerous, all femora with dark strong apical bristles, hind
 tibia with about 14 strong dark dorsal bristles.....33
 Legs not strongly setigerous, all femora with apical bristles rather slender, hind
 tibia with about 8 large dorsal bristles..... 34
- 33 (32). Scutellum at most with only 6 large bristles. Male with parameres bluntly
 pointed at apices.....56. *thyridofera*
 Scutellum with 6 or more large bristles besides small setae. Male with para-
 meres quite round at apices..... 57. *similisegmenta*
- 34 (32). Male with parameres strongly curved at 2 points. Female with about 9 setae
 on scutellum including small setae..... 58. *biangulata*
 Male with parameres only slightly undulate. Female with only 4 large bristles
 on scutellum 35
- 35 (34). Male with parameres pointed at apices. Female with fore TR 1.8-1.84, wing
 with macrotrichia spread on apical area beyond level between tips of Rs
 and M_{3+4} 59. *nigriapicalis*
 Male with parameres oval at apices. Female with fore TR 2.1-2.2, wing with
 macrotrichia spread very closely along wing margin of cells R_5 and M_1
 60. *brandti*

As shown in the above key, there are several un-named species (NG Nos. 1-6), which are represented only by ♀ specimens. Some of these ♀♀ are very closely similar in many specific characters to some named species which are reported only on the ♂ sex ; but there are some unsettled points and the identification in coupling remains for further studies. Other un-named ♀♀ are incomplete being badly broken or insufficient in the number of specimens for critical identification.

31. *Stilobezzia notata* (de Meijere)

For synonymy, literature and specific characters, refer to Tokunaga's report (1959, Pacific Ins. 1 : 299).

DISTRIBUTION : Japan, Taiwan, Sumatra, Malaya, New Guinea.

SPECIMEN EXAMINED : 1 ♀, Ifar, 300 m, Cyclops Mts., NG, 4. XI. 1958, Gressitt,

32. *Stilobezzia nebulosa* Tokunaga, n. sp. Fig. 8a.

Medium-sized; yellow and black species with 2 costal wing spots, banded legs, dark thoracic scutum and abdomen. Male unknown.

Female: Body 2.6 mm long; wing 1.92×0.66 . Head entirely black, eyes bare, very narrowly separated. Palp black, III with small sensory pore beyond middle, PR 2.33, RL-P 8 : 18 : 21 : 15 : 20. Antenna with I dark, II white on basal 1/2, dark on apical 1/2, III entirely dark, IV-IX dark brown basally and gradually paler towards apical segments becoming pale brown, X-XIV dark, II-IX elongate-oval to subcylindrical, X-XIV quite cylindrical, RL-13A 26×9 : 18 : 19 : 22 : 23 : 26 : 29 : 38.5 : 42 : 45 : 57 ($W=7$), AR 1.12. Thorax almost entirely black, but scutum with faint brownish clouds, scutellum dark, with median yellow spot, 4 large and 2 small setae. Legs with coxae, trochanters and knee parts dark brown, but coxae with faint yellowish clouds; in fore leg, femur yellow, with basal end and preapical large band fuscous, tibia yellowish, with apical part dark, midportion broadly pale fuscous, basitarsus yellow, with basal end dark; in mid, femur with both ends fuscous or dark, median part dark brown, tibia entirely fuscous, but sub-basal part slightly paler, tarsal segments I-II yellow, both ends of I and apical end of II fuscous, III-V entirely fuscous; in hind, femur fuscous brown on basal 2/3, with distinct large yellow preapical band, tibia darkened on apical 1/2, yellow on sub-basal 1/2, tarsal segments I, III-V fuscous, II yellow, with apical end fuscous. Hind tibia with 4-5 strong spine-like bristles on apical 1/3 of extensor side and 3 long bristles on basal 2/3 of same side, comb with 6-7 apical bristles; tarsal spur-like spines: fore basitarsus with 1 sub-basal, 1 median, 1 apical; mid I-III each with 2 apical, I with additional 1 sub-basal and 1 median; hind I-III each with 1 apical, I with 1 additional sub-basal; TR and RL-L 3.03 and 55 : 54 : 44 : 14.5 : 6 : 4 : 6 in mid, 2.32 and 55 : 58 : 32.5 : 14 : 5.5 : 4 : 7 in hind, tarsal segments II-V of fore leg missing.

Wing (fig. 8a) with 2 costal dark spots, basal covering R_1 , radial cell I and r-m, apical covering tip of R_5 , macrotrichia sparsely spread on apical part between apices of R_5 and M_2 ; costa ending just beyond tip of M_{3+4} , CR 0.85, radial cell I very small, subsquare, RR 1/9 (4 : 35), RL-V 58 : 60 : 59 : 10 : 46, M_{1+2} about 2/3 of r-m (5 : 7.5). Halter with stem yellow, knob dark. Abdomen entirely brown including cerci, with pleural membranes fuscous; spermathecae dark, small, oval, unequal ($1+18 \times 13$, $1+14 \times 11$), probably without pale punctures.

DISTRIBUTION: New Guinea.

Holotype: ♀, Nondugl, 1600 m, NE NG, 5. VIII. 1955, Gressitt, by light trap.

This is very closely allied to *crassipes* Kieffer from Malaya (Singapore), however, it may be distinguished from *crassipes* in the possession of a dark head (not yellow), dark to pale brown antennal segments II-IX (not whitish), shorter X-XIV (each shorter than $3 \times$ of IX), very short M_{1+2} (not $2 \times$ of r-m), and unequal coloration of 3 pairs of legs.

33. *Stilobezzia centripictura* Tokunaga, n. sp. Fig. 8b.

Medium-sized, yellowish pale brown species with a single brown central cloud of wing covering r-m, palp with scattered surface sensillae on apical 1/3, AR about 0.83, scutellum with only 4 bristles, hind TR about 2.19. Male unknown.

Female: Body 2.21 mm long; wing 1.94×0.62 , Head pale brown, mouth parts pale

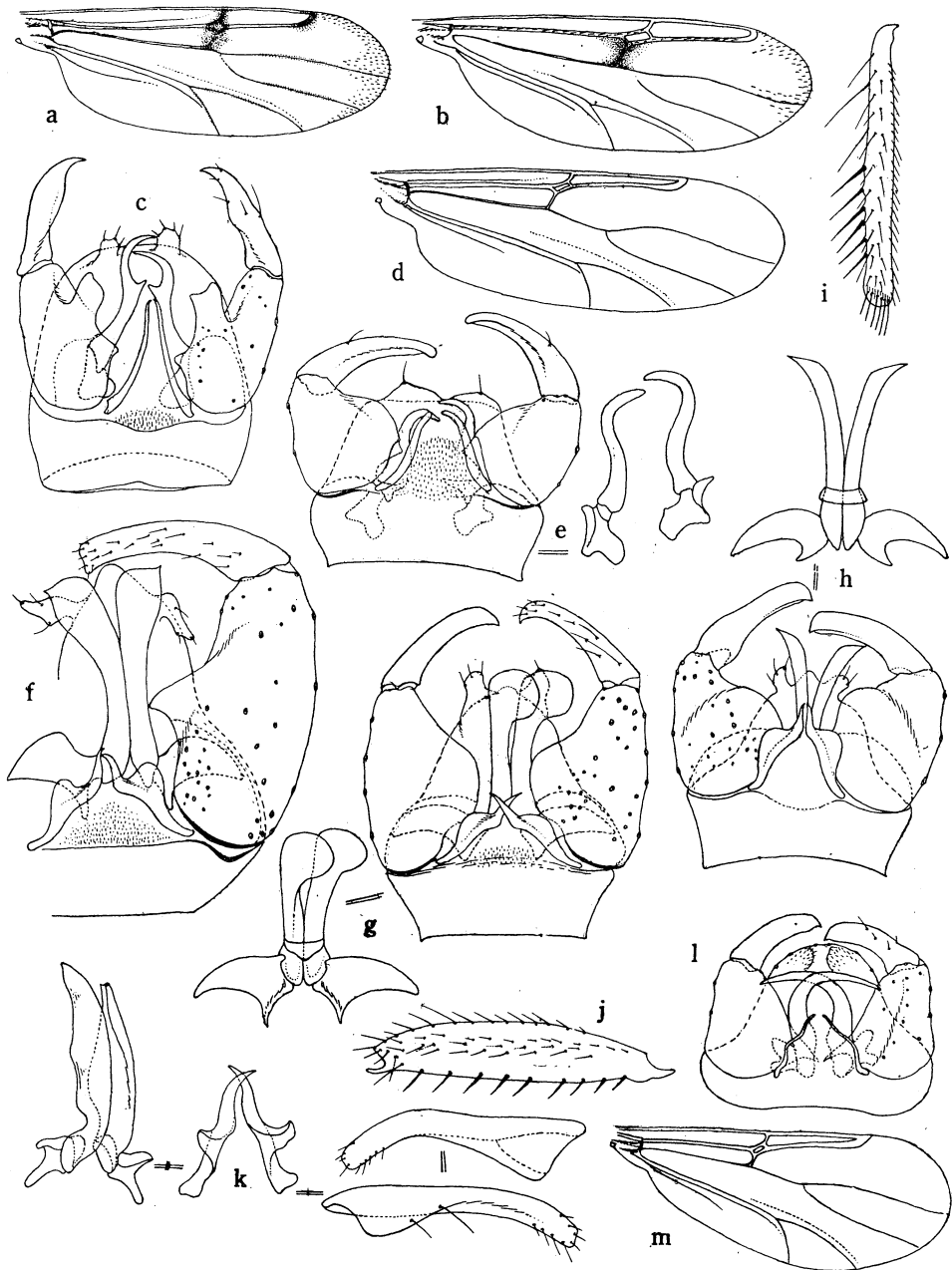


Fig. 8. *Stilobezzia* spp. a, *nebulosa*, ♀ wing; b, *centripictura*, ♀ wing; c, *basizonata*, ♂ hypopygium; d, *palpalis*, ♀ wing; e, *bizonata*, ♂ hypopygium and parameres; f, *acrotichis*, ♂ hypopygium; g, *postcervix*, ♂ hypopygium and parameres. h-i, *armatibiae*, ♂: h, hypopygium and parameres; i, hind tibia. j-k, *spinifemorata*, ♂: j, fore femur; k, parameres, aedeagal sclerites and styles. l-m, *unifasciata*: l, ♂ hypopygium; m, ♀ wing.

fuscous, eyes bare and just separated. Palp slender, PR 3.54, RL-P 6.5 : 16 : 23 : 8 : 21, III with scattered sensillae on apical 1/3. Antenna with I pale ochreous, II-IX very pale brown, X-XIV brown, AR 0.83, RL-13A 40×7.5 : 31×6.5 : 31×6.....33 : 36 : 36 : 44 : 43 : 42 : 44 : 58 (W=6). Thorax with tergites yellowish pale ochreous, other parts pale brown, scutellum with only 4 large bristles. Legs with coxae pale brown, other segments yellowish pale ochreous, setae not strongly developed, brown and rather slender; TR and RL-L 2.13 and 52 : 51 : 33 : 15.5 : 5 : 4.5 : 8.4 in fore, 2.76 and 65 : 63 : 40 : 14.5 : 5.5 : 4.5 : 8 in mid, 2.19 and 66 : 66 : 35 : 16 : 6 : 4.5 : 9 in hind.

Wing (fig. 8b) with veins very pale brown, small brown cloud covering r-m, macrotrichia sparsely spread on apical marginal area between apices of Rs and M₂, costa ending before tip of M₂, CR, 0.86, RL-V 62 : 66 : 62 : 15 : 52, RR about 3.5 (38 : 11), fMCu before r-m, M₁₊₂ as long as r-m (7 : 8), Cu₁ ending under origin of r-m. Halter white. Abdomen pale brown, with pale brown small setae, tergite I with 10-11 setae on either side; cerci pale brown, spermathecae brown, short-oval, unequal (28×20, 21×17), punctuate, vestigial one pale brown (5.5×4.5).

DISTRIBUTION: New Guinea.

Holotype: ♀, Waris, 450-500 m, S of Hollandia, NW NG, 16-23. VIII. 1959, Maa, at light.

This is quite specific in the possession of a single small central spot on the wing. In the case of the known species with spotted wings, the wings are provided with 2 or 3 anterior spots. While in the case of this species, the apical wing spots are quite absent.

34. *Stilobezzia basizonata* Tokunaga, n. sp. Fig. 8c.

Very small, yellow and brown species; legs and abdomen with very distinctive coloration: hind femur with pale fuscous spot before apical 1/4, mid and hind tibiae fuscous on basal 1/2 and yellow on apical 1/2, 3 basal abdominal tergites and hypopygium yellow, but III with a dark narrow anterior band; aedeagus with lateral sclerites very slender and parameres strongly arcuate on apical 1/2 and each with a small blunt process beyond middle. Female unknown.

Male: Body 1.37 mm long; wing 1.0×0.29. Head largely yellow, vertex pale brown, eyes linearly separated. Palp very pale, III with only 3 surface sensillae grouped on pre-apical part, PR 2.8, RL-P 6 : 9 : 11 : 10.5 : 15. Antenna almost entirely brown, but last 2 segments very pale ochreous, CRL of II-XI to XII-XIV 147 : 189, RL-13A 27 : 13 : 13..... 13 : 13 : 13.5 : 14 : 16 : 46 : 53 : 89. Thorax with scutum extensively and caudoscuteal area somewhat paler, scutellum yellow, with 4 large bristles, postscutellum brown and with anterior part ochreous, pleural and sternal parts yellow. Legs almost entirely yellow, only pale fuscous on basal 1/2 of mid and hind tibiae, hind femur with pale fuscous oval cloud beyond middle; hind tibial comb with 6-7 apical bristles, TR and RL-L 2.08 and 27 : 26 : 15 : 7.2 : 2.8 : 2 : 3.2 in fore, 2.32 and 37 : 33 : 22 : 9.5 : ? : ? : ? in mid, 2.08 and 31.5 : 31.5 : 16 : 7.7 : 2.4 : 1.5 : 3.2 in hind.

Wing slender, without macrotrichia, entirely very pale, costa ending slightly before apex of M₃₊₄, fMCu beyond tip of R₁, CR about 0.7, RL-V 28 : 28.5 : 38.5 : 5 : 20, M₁₊₂ very short, far shorter than r-m (2.5 : 9), Cu₁ arcuate, ending on wing margin with an angle of 90 degrees. Halter fuscous brown. Abdomen with segments I-III largely yellow,

I slightly fuscous on either side, III with narrow dark band along anterior margin, IV–VIII dark. Hypopygium (fig. 8c) entirely yellow; aedeagus elongate-triangular, with lateral sclerites very slender, basal membrane spiculous only on basal part; coxite with subsquare basal lobe on mesal side; style tapered, pointed, as long as coxite (25:26); paramere rather slender, strongly arcuate on apical 1/3, with small process beyond middle; sternite slightly concave on caudal margin, tergite without anal points.

DISTRIBUTION: New Guinea.

Holotype: ♂, Hollandia-Binnen, 100 m, NW NG, 1. XI. 1958, Gressitt.

This is somewhat similar to S. African *intermedia* de Meillon. However, it may be easily distinguished by the following differences: body smaller, wing far shorter than 1.4 mm, scutellum far paler than scutum, wing vein M_{1+2} far shorter than r-m, abdomen more widely yellow, coxite with larger sub-basal lobe, and paramere with small process beyond middle. Marquesan *maculipes* Macfie has similar color markings of mid and hind femora to those of hind femur of *basizonata* n. sp., although quite different in many other important specific characters.

35. *Stilobezzia palpalis* Tokunaga, n. sp. Fig. 8d.

Small, brown and very pale species, wing without macrotrichia, palp with last segment far longer than III, AR larger being 1.77, legs mainly pale ochreous, but basal 1/2 of mid and hind femora slightly fuscous, all last tarsal segments with strong ventral spines. Male unknown.

Female: Body 1.56 mm long; wing 1.27×0.42. Head pale ochreous entirely, eyes separated as wide as 1 facet. Mandible with 6 teeth. Palp very pale ochreous, slender, without sensory pore, PR 2.2, RL-P 3.5:10.5:14:10:18. Antenna very pale ochreous, but I yellow, II–IX elongate-oval, very pale basally, AR 1.77, RL-A 24×8:16:14:14.... 15.5:15:18:38:38:41:43:74 (W=6–5). Thorax entirely brown, scutellum with 5 bristles. Legs with coxae brown, trochanters slightly fuscous pale ochreous, mid and hind femoral basal 1/2 slightly fuscous, other parts pale ochreous; hind tibial comb with 7–9 apical bristles, tarsal spur-like spines: all V each with 2 ventral; in mid, I–II each with 2 apical, I with 1 sub-basal; TR and RL-L 2.13 and 32:28:16:7.5:2.5:2.5:6.5 in fore, 2.6 and 41:39:26:10:3:3:7.2 in mid, 2.24 and 37:37:19:8.5:3:2.5:5.5 in hind.

Wing (fig. 8d) white, main veins very pale brown, without macrotrichia, costa ending above tip of M_{3+4} , fMCu slightly beyond tip of R_1 and far before tip of M_{1+2} , CR 7.55, RL-V 34:34:46:7:32, RR about 6 (25:4), M_{1+2} about 3.4 as long as r-m (15.5:4.5). Halter brown. Abdomen entirely brown, tergite I with 4+1 and 3+1 setae on either side; cerci brown, spermathecae 2 brown, very unequal, round (3+25×23, 2.5+18×9), vestigial one invisible.

DISTRIBUTION: New Guinea (Biak).

Holotype: ♀, Kampong Landbouw, 40 m, 30 km NE of air strip, Biak, NW NG, 17. VII. 1957, Hardy.

Somewhat resembles *dryadum* Macfie (British Guiana and Trinidad) in having a single large spermatheca and absence of the wing macrotrichia and ventral spines of the last tarsal segments. But the related species is rather distinctly different from *palpalis* in the following points: the general color is somewhat darker, palpal segment V is as long as III,

AR is only 1.23, scutellum bears only 4 bristles, stem vein of fMCu is short ending under r-m and hind TR is 2.5.

36. *Stilobezzia bizonata* Tokunaga, n. sp. Fig. 8e.

Medium-sized species; ♂ generally fuscous, with legs mainly yellow; ♀ generally dark, with legs mainly yellow, mid and hind femoral basal 2/3 darker than in ♂, tibial midportions of paratype ♀ broadly dark; wings of both sexes without macrotrichia, ♀ with ventral spines on fore and mid tarsal segments V.

Male: Body 1.98 mm long; wing 1.31×0.49 . Head entirely fuscous pale ochreous, eyes just contiguous. Palp slender, III without sensory pore, PR 2.36, RL-P 4 : 9 : 13 : 11 : 18. Antenna with I fuscous yellow, other segments and plumose hairs slightly fuscous pale brown; CRL of II–XI to XII–XIV 151 : 196, II–X short-oval to elongate-oval, XI subcylindrical, XII–XIV cylindrical, RL-8A 13 : 13 : 13 : 14 : 20 : 46 : 57 : 92. Thorax entirely fuscous pale brown, scutellum with 5 bristles. Legs with all coxae brown, fore trochanter yellow, other trochanters brown, other segments mainly yellow but basal 2/3 of femora, except for yellow bases, very pale fuscous in fore and dark in mid and hind legs; hind tibial comb with 7–8 apical bristles, claws cleft at extreme ends; tarsal spur-like spines: absent in fore and hind; in mid, I–II each with 2 apical, I with 1 sub-basal; TR and RL-L 2.5 and 34 : 30.5 : 18 : 8 : 2.5 : 2.5 : 4.5 in fore, 2.75 and 44 : 41 : 27.5 : 10 : 3 : 2.5 : 4 in mid, 2.16 and 38 : 38 : 20.5 : 9.5 : 3 : 2.5 : 4.8 in hind.

Wing colorless, with main veins brown, no macrotrichia, costa ending slightly before end of M_{3+4} , CR 0.72, RL-V 34 : 35 : 48 : 7 : 28, fMCu just beyond tip of R_1 and far before tip of M_{1+2} , M_{1+2} forked just beyond tip of Cu_1 , very long, 5× as long as r-m (15 : 3), RR about 4. Halter fuscous. Abdomen fuscous pale brown, tergite I with 4 setae on either side. Hypopygium (fig. 8e) dark brown; tergite rather broad on caudal part, with anal points very low; style tapered, evenly arcuate, slightly longer than coxite (33 : 30); aedeagus with lateral sclerites slender, simple, membrane spiculous; parameres somewhat S-shaped, with basal sclerites small, subrhombic.

Female: Body 1.48 mm long; wing 1.24×0.43 . Head fuscous, eyes very narrowly separated. Palp as in ♂ in shape; mandible with 6 teeth. Antenna with I fuscous yellow, II–IX almost white, only pale brownish on apical margins, elongate-oval, X–XIV pale brown; AR 1.53, RL-13A 23 : 14 : 14 (W=7)...13 : 14 : 17 (W=6) : 31 : 32 : 34 : 50 : 62 (W=5). Thorax dark, scutellum with 4 bristles. Legs with all coxae dark, fore leg almost entirely yellow, mid and hind femora broadly dark on basal 2/3, excepting yellow basal ends, yellow on apical 1/3, other segments almost yellow, but only pale brownish on sub-basal 1/2 of fore tibia and apical end of mid tibia; in paratype ♀, mid and hind tibiae broadly dark on middle parts and narrowly so at apical end; hind tibial comb with 6 apical bristles; tarsal spur-like spines: in fore, V with 2 ventral; in mid, I–III each with 2 apical, I with 1 sub-basal, V with 2 ventral; hind without spines; TR and RL-L 2.46–2.5 and 32 : 30 : 16.8 : 6.8 : 2.3 : 2.3 : 5.2 in fore, 3.0–3.11 and 44 : 39.3 : 26.3 : 8.6 : 3 : 3 : 8 in mid, 2.63 and 38.5 : 38 : 21 : 8 : 2.5 : 2.5 : 4.8 in hind.

Wing with veins brown, on macrotrichia, costa ending just before midway between ends of M_2 and M_{3+4} , CR 0.76, RL-V 30 : 31 : 43 : 8 : 33, RR 4.6 (23 : 5), M_{1+2} 3× as long as r-m, fMCu just beyond tip of R_1 and far before end of M_{1+2} . Halter dark, only base yellow. Abdomen with tergites dark, I with yellow elongate-oval spot, 5 setae on

either side, hemisternites brown, membranes very pale brown; cerci dark brown, spermathecae dark brown, very unequal, 1 short-oval (22×19), 1 small, subspherical (7×6), vestigial spermatheca invisible.

DISTRIBUTION: New Guinea, New Ireland.

Holotype: ♂, Markham Vall., 50 m, Bubia, NG, 3. IX. 1955, Gressitt. *Allotype*: ♀, Gilingil Pl'n., New Ireland (SW), 6. VIII. 1956, Gressitt. *Paratype*: 1 ♀, Kavieng, New Ireland, 2. VII. 1959, Gressitt.

This is very closely allied to *tenebrosa* Macfie, except for the characteristic abdominal bicolor. The allied Marquesan species, however, is different from the new species in the following main points: antennae not pale but dark brown, radial wing cell II only 3× as long as I instead of 4× or more of I, legs almost uniformly dark brown, with only bases of tibiae paler than the rest, aedeagal lateral sclerites very slender and parameres of ♂ hypopygium extending caudad beyond end of tergite.

37. *Stilobezzia spadicitibialis* Tokunaga and Murachi

Stilobezzia spadicitibialis Tok. & Mura., 1959, Ins. Micr. **12** (3): 370.—Tokunaga, 1959, Pacific Ins. **1** (2-3): 304.

DISTRIBUTION: Caroline Is., New Guinea.

38. *Stilobezzia hollandia* Tokunaga

Stilobezzia hollandia Tok., 1959, Pacific Ins. **1** (2-3): 299

I have examined many new specimens and intend to supplement the original description of ♀ as follows:

Female: Legs mainly very pale ochreous, except fore coxae and trochanters; in fore, sub-basal 1/2 of femur, knee part and tibial end pale brown; in mid, femur and tibia as in fore, but sub-basal 1/2 of femur more faintly brownish than in fore; in hind, apical 2/3 of femur, knee part, apical end of tibia and basitarsus distinctly brownish; last tarsal segments each with 2 strong ventral spines.

DISTRIBUTION: New Guinea, New Britain.

SPECIMENS EXAMINED: 1 ♀, 2 ♂♂, Hollandia, 100 m, NG, 27. VII, 23. VII. 1955, Gressitt; 2 ♀♀, 1 ♂, Bubia, Lae, NG, 9. II, 18. III, 26-27. IV. 1959, Ardley; 1 ♀, Bubia, 10 m, Lae, NG, 6. VI. 1957, Hardy; 3 ♀♀, 4 ♂♂, Lowlands Agr. Stat., Keravat, New Britain, 13, 17. VI, 26. VIII. 1960, 12-16. III. 1961, Smee, by light trap.

One of the paired ventral spines of the last tarsal segment of the hind leg is reduced into a slender bristle in some ♀♀ and the wing rarely is provided with a faint brownish cloud covering cross-vein r-m.

39. *Stilobezzia acrotrichis* Tokunaga Fig. 8f.

Stilobezzia acrotrichis Tok., 1959, Pacific Ins. **1** (2-3): 301.

Rather large, slender species with legs very slender, somewhat tipuliform, all femora pale yellow on basal 1/2, pale brown on distal 1/2.

Male: Body 2.9 mm long; wing 2.22×0.66. Head with vertex dark brown, mouth parts brown, eyes very narrowly separated. Palp brown, very slender, III with small pre-

apical sensory pore, PR 3.82, RL-P 8 : 15 : 21 : 10 : 22. Antenna with I brown, flagellum missing. Thorax with tergites brown, scutellum pale ochreous, with only 5 large bristles, sternum and pleura pale brown. Legs generally pale or very pale brown, but trochanters and basal 1/2 of femora pale yellow, hind tibial comb with 6 apical bristles; TR and RL-L 2.0 and 61 : 62.5 : 42 : 21 : 6 : 3.5 : 4 in fore, RL of femur to basitarsus of other legs 83.5 : 83 : 66 and 80 : 83 : 46 respectively (mid and hind tarsal segments II-V missing).

Wing with anterior veins pale brown, macrotrichia very sparsely spread closely along wing margin of cell R_5 and a few along apical margin of cell M_1 , costa ending above middle between apices of M_2 and M_{3+4} , fMCu before r-m, CR 0.82, RL-V 76 : 74 : 73 : 15 : 53, PR about 3 (38 : 12), M_{1+2} as long as r-m (11 : 10). Halter very pale brown. Abdomen pale brown, slender, tergite I with 16 setae on either side. Hypopygium (fig. 8f) brown; sternite without caudal incision, tergite elongate, tapered; coxite elongate, style arcuate, almost uniform in width, truncate at tip, about 3/5 as long as coxite (55 : 73); aedeagus with lateral sclerites rather small, basal membrane spiculous; paramere as long as style, slightly widened apically, with minute but sharply pointed tip, basal sclerite wing-shaped.

Female: General appearance as in ♂; scutellum with 4-6 large bristles and without small accessory setae.

DISTRIBUTION: New Guinea.

SPECIMENS EXAMINED: 1 ♂, 1 ♀, Nondugl, 1600 m, NE NG, 9.VII.1955, Gressitt; 2 ♀♀, Waris, 450-500 m, S of Hollandia, NW NG, 1-7, 24-31.VIII.1959, Maa, at light.

This species is highly characteristic in possession of very slender and somewhat tipuli-form legs.

40. *Stilobezzia longihamata* Tokunaga, n. sp.

Medium-sized, very pale ochreous species, with mouth parts fuscous, hind femur dark or brown differing from yellowish white fore and mid legs, abdominal tergites dark brown; wing without macrotrichia even on apical area, last tarsal segments of fore and mid legs with ventral spines, claws as long as last segment. Male unknown.

Female: Body 2.24 mm long; wing 1.55-1.81 × 0.52-0.57. Head ochreous, eyes contiguous, mouth parts fuscous. Mandible with 8 teeth. Palp slender, fuscous, III with several sensillae on preapical part, PR 4.0, RL-P 5 : 13 : 24 : 15 : 24. Antenna with I yellow, II-IX white, cylindrical, X-XIV pale brown; AR 1.41, RL-13A 34 × 7 : 25 × 6 : 24 × 6.....24 : 24 : 27.5 : 56 : 56 : 55 : 55 : 92 (W=5.5-5). Thorax with scutum and scutellum very pale ochreous, postscutellum, pleural and sternal sides brown; scutellum with 4 bristles. Legs with fore coxa pale ochreous, mid and hind coxae brown, all trochanters pale ochreous, fore and mid legs mainly yellow, mid femur very faintly fuscous, tibiae broadly white on middle parts, tarsi whitish, but last 2 segments pale brown, hind leg with femur dark, only yellowish on sub-basal part, tibia dark on both ends and middle part, yellow on sub-basal and preapical parts, tarsi as in other legs. In paratype, hind femur entirely brown, tibia without median dark band. Hind tibial comb with 7 apical bristles; claws as long as tarsal segments V, RL to small basal teeth and V 37 : 15 : 36 in fore, 40 : 17 : 39 in mid, 29 : 10 : 31 in hind; tarsal spur-like spines: in fore, V with 2 ventral; in mid, I-II each with 2 apical, I with 1 sub-basal, V with 2 ventral; hind without spines. TR and RL-L

2.34 and 48 : 48 : 25 : 10.7 : 3 : 3 : 9.5 in fore, 3.0 and 62.5 : 59 : 36 : 12 : 4 : 4 : 10.5 in mid, 2.43 and 58 : 56.5 : 28 : 11.5 : 3 : 2.8 : 8 in hind.

Wing with main veins pale brown, no macrotrichia, costa ending above or just before midway between tips of M_2 and M_{3+4} , CR 0.83, RL-V 51 : 51.5 : 66 : 12 : 44, RR about 4.6 (37 : 8), M_{1+2} 3.6 \times of r-m (16 : 4.5). Halter with stem yellow, knob brown. Abdomen with tergites dark brown, but I with yellow large oval spot and 9–13 setae on either side, hemisternites small, very pale, membranes white; cerci brown; spermathecae short-oval, very unequal, 1 large (29 \times 22.5), pale ochreous, 1 small (16 \times 13), colorless, pale punctures and vestigial one invisible.

DISTRIBUTION: New Guinea.

Holotype: ♀, Goldie Riva, nr. Port Moresby, NG, 25. IX. 1959, Ardley. *Paratype*: 1 ♀ with holotype.

This belongs to a special group including *tenebrosa* Macfie (Marquesas Is.), *bizonata* n. sp. (New Guinea and New Ireland), *hollandia* Tokunaga (New Guinea and New Britain), *unifasciata* n. sp. (New Guinea) and some other members, in possession of the following characters: wings without macrotrichia on membrane, radial wing cell I small and rhombic, ♀ with ventral spines of last tarsal segments at least on fore and mid legs and spermatheca often very unequal, aedeagal sclerites very slender and without hump-like lobes. The present new species is quite specific in the color of legs and differs from known members of the group.

41. *Stilobezzia subviridis* Macfie

Stilobezzia subviridis Mac., 1934, Tijdschr. Ent. 77: 218.—Tokunaga, 1962, Pacific Ins. 4: 210.

DISTRIBUTION: Micronesia, Sumatra, Ryukyu Is., New Guinea.

SPECIMEN EXAMINED: 1 ♂, Hollandia-Binnen, 100 m, NW NG, 1. XI. 1958, Gressitt.

42. *Stilobezzia postcervix* Tokunaga Fig. 8g.

Stilobezzia postcervix Tok., 1959, Pacific Ins. 1: 303.

This was reported only on ♀ and now the ♂ is newly noted.

Male: Body 1.79 mm long; wing 1.38 \times 0.43. General color and structure closely as in ♀. Palp with PR 2.4, RL-P 6 : 11 : 17 : 9 : 16, III with small sensory area bearing only several surface sensillae. Antenna with I yellow, other segments missing. Thorax with distinctive dark spot just behind head on yellow scutum as in ♀. Hind tibial comb with 6–7 apical bristles, claws cleft at apices; tarsal spur-like spines: in mid, I–III each with 2 apical, I with 1 sub-basal; in hind, I with 1 apical, II–III each with 2 apical; TR and RL-L 2.28 and 43 : 42 : 29 : 12.7 : 4.5 : 3 : 5 in mid, 1.97 and 43 : 44 : 23 : 11.7 : 4.5 : 3 : ? in hind; fore legs missing. Wing very pale brown entirely, with macrotrichia closely arranged along margin in single line between tips of R_s and M_2 , costa ending slightly beyond tip of M_{3+4} , CR 0.78, RL-V 41 : 41 : 44 : 10 : 31, RR 2.33 (21 : 9), M_{1+2} longer than r-m (7 : 5), fMCu under end of r-m. Abdomen very pale ochreous, tergite I with 8–9 lateral setae on either side. Hypopygium (fig. 8g) pale brown; sternite without distinct caudal concavity, tergite extending as much as coxites; style rather small, about 3/4 as long as coxite (34 : 44); aedeagal sclerite with pointed tip; paramere slightly longer than style (36 : 34), with caudal end flattened and round, basal sclerite elongate-subtriangular.

DISTRIBUTION: New Guinea, New Ireland.

SPECIMENS EXAMINED: 1 ♂, Gilingil Pl'n., 2 m, New Ireland (SW), 5. VII. 1956, Gressitt; 1 ♀, Sepik-Maprik, NG, I. 1959, Peters.

43. *Stilobezzia vittula* Tokunaga, n. sp.

Rather large, yellowish and brownish species, scutum with distinct fuscous median vittae on anterior 1/2, wings unmarked, with sparse macrotrichia on apical part, abdomen brown, legs mainly yellow, with knee parts dark, hind tarsal segments without distinct spur-like spines. General color as in New Guinea *postcervix* Tokunaga and Micronesia *unifascidorsalis* Tokunaga. Male unknown.

Female: Body 2.54 mm long; wing 1.76×0.61 . Head brown, with eyes bare and narrowly separated, mouth parts pale brown. Mandible with 7 teeth. Palp slender, III without sensory pore, PR 3.14, RL-P 6 : 15 : 22 : 12 : 14. Antenna with I yellow, II-IX very pale brown, X-XIV brown, cylindrical; AR 1.35, RL-A $22 \times 26 : 33 \times 8 : 21 \times 7 : 20 \times 6.5 \dots 21 : 24 : 25 : 46 : 46 : 47 : 49 : 75$ (W=6). Thorax largely yellow, scutum pale brown on anterior marginal part and caudoscutal area, with median vittae on anterior 1/2 distinct and fuscous, postscutellum pale brown, scutellum yellow, with 6 bristles. Legs with fore coxae brown, mid and hind coxae very pale brown, all trochanters pale brown, knee parts dark, hind tibial end dark, other parts entirely yellow or pale yellow; hind tibia with large bristles on extensor side, tibial comb with 6-7 apical bristles; tarsal spur-like spines: in mid, I-III each with 2 apical, I with 1 sub-basal; in hind, all segments without distinct spines; fore legs missing. TR and RL-L 2.6 and 55 : 54 : 33 : 12.7 : 4.5 : ? : ? in mid, 2.23 and 53 : 55 : 29 : 13 : 4.3 : 4 : 8 in hind.

Wing pale brown, with sparse macrotrichia on apical areas of cells R_5 and M_1 , costa ending above midway between ends of M_2 and M_{3+4} , CR 0.83, RL-V 51 : 52 : 54 : 15 : 48, RR about 2.9 (33 : 11.5), M_{1+2} as long as r-m, fMCu under end of r-m. Halter white. Abdomen with 7+1 or 7+2 bristles on tergite I, all tergites and cerci brown, sternites and pleural membranes white; spermathecae 2 dark brown, elongate-oval, unequal ($2+25 \times 15.5$ and $1.5+21 \times 14$), vestigial one ($1+6 \times 4.8$) pale brown, all spermathecae with hyaline punctures.

DISTRIBUTION: New Guinea.

Holotype: ♀, Wanuma, 800-1000 m, Adelbert Mts., NE NG, 25. X. 1958, Gressitt.

This is closely allied to *postcervix* Tokunaga and *unifascidorsalis* Tokunaga. In the 1st allied species, however, the scutal dark spot is very short, scutellum has only 4 bristles, spur-like spines of hind tarsal segments are distinct, wing vein R_s is 3.5 length of R_1 , radial cell II 2.5 of I, and abdomen is almost uniformly yellow, differing from the new species. In the 2nd allied species, wings are smaller, body is shorter, AR is a little larger, wing vein R_s is longer ($3.8 \times$ as long as R_1), and abdomen is far paler than in *vittula*.

44. *Stilobezzia armatibiae* Tokunaga, n. sp. Fig. 8 h-i.

Medium-sized, very pale ochreous species, fore femur with several ventral spines, fore tibia with strong undulate apical spur, hind tibia with several strong spines on extensor side of apical 1/2; ♀ with ventral spines on tarsal segments of fore and mid legs; ♂ hypopygium with aedeagal sclerites sharply pointed at caudal apices, parameres elongate,

longer than coxite, tape-like, with basal sclerites C-shaped.

Male: Body 1.95 mm long; wing 1.34×0.4 . Almost entirely very pale ochreous. Head with eyes bare, linearly separated. Palp slender, slightly fuscous, III with scattered sensillae on apical 1/2 of ventral side, PR 3.6, RL-P 6:10:18:9:19. Antenna pale brown, but I slightly fuscous yellow, II-X elongate-oval, XI-XIV cylindrical, CRL of II-XI to XII-XIV 152:176.5. Thorax uniformly pale ochreous, scutellum with 4 large and 1 small median setae. Legs uniformly very pale ochreous; fore femur with 7 (rarely 6) black ventral spines on basal 2/3 and several bristles on apical 1/3, fore tibial apical spur brown, stout, undulate; hind tibia with 5-7 black strong spines on apical 1/2 and 3 long bristles on basal 1/2 of extensor side, 7 apical bristles of comb; claws cleft at apices; tarsal spur-like spines: in fore, I-II each with 1 apical, III with 2 apical; in mid, I-III each with 2 apical, I with 1 sub-basal; hind as in fore. TR and RL-L 2.21-2.25 and 40:35.8:21.8:9.8:4:3.3:6 in fore, 2.33-2.58 and 48.3:45:29.5:12:4.1:3.5:5.4 in mid, 2.09-2.46 and 45.5:46:23.8:11.5:4.5:3.5:7 in hind.

Wing very pale brown, macrotrichia very sparsely spread along margin between tips of R_s and M_2 , costa ending slightly beyond tip of M_{3+4} , CR 0.8, RL-V 41.5:42.5:44:9:31, M_{1+2} longer than r-m (5.5:4), radial cell II 2.8 as long as I (21:7.5). Halter pale yellow. Abdomen very pale, tergite I with 9-11 setae on either side. Hypopygium (fig. 8h) ochreous, but apices of styles, parameres and aedeagal sclerites fuscous; sternite with caudal concavity very shallow; coxite strongly swollen on basal 1/2; style $0.85 \times$ as long as coxite (29:34), almost uniformly thickened; aedeagal sclerite with apical part sharply pointed; paramere tape-like, obliquely truncate apically, just longer than coxite (36:34), with basal sclerite C-shaped.

Female: Body 2.11 mm long; wing 1.51×0.48 . General color and structure as in ♂. Head and mouth parts slightly fuscous than in ♂. Palp with PR about 3.2, RL-P 5:11:20:8.5:18. Mandible with 7 teeth. Antenna with I fuscous yellow, other segments fuscous brown, cylindrical; AR 1.05, RL-13A $31 \times 8:25 \times 6.8:25 \times 6...26:27.5:29:44.5:43.5:42:44:60$ ($W=6$). Thorax with tergites pale brown, other parts pale ochreous, scutellum with 4 large bristles. Legs almost entirely pale ochreous, tarsi somewhat pale brownish; fore femur with 4-7 strong ventral spines, fore tibial spur stouter than in ♂, hind tibia (fig. 8i) with 3-5 apical spines, 6-7 apical bristles of comb; all claws with basal distinct teeth, which are a little shorter than 1/2 of claws, and almost as long as last tarsal segments (34:15:35 in fore, 37:17:40 in mid, 37:17:35 in hind); tarsal segments IV distinctly bilobate; tarsal spur-like spines: in fore, I-II each with 1 apical, III-IV each with 2 apical, V with 2 rather slender ventral; in mid, I-IV each with 2 apical, I with 1 sub-basal, V with 2 strong ventral; in hind, I-II each with 1 apical, III with 2 apical; spines of IV and V of all legs far slenderer. TR and RL-L 2.48 and 42:39:24.8:10:4:3.8:9 in fore, 2.48 and 50.5:50:31:12.5:4.5:4:11 in mid, 2.22 and 49:51:26:11.7:4.2:3.8:8 in hind.

Wing very pale, with veins pale brown, macrotrichia as in ♂, costa ending slightly beyond midportion between tips of M_2 and M_{3+4} , CR 0.84, RL-V 46:47:10:40, RR about 4 (30:7.5), M_{1+2} longer than r-m (7:5.5), fMCu before end of r-m. Halter very pale brown. Abdomen entirely yellow, cerci very pale brown, tergite I with 8 setae on either side; spermathecae brown, unequal, short-oval (21×16 and 15×12), with pale punctures, vestigial one invisible.

DISTRIBUTION: New Guinea, New Britain.

Holotype: ♂, Gazelle Pen., Malmalwan-Vunakanau, New Britain, 11–13. V. 1956, Gressitt. *Allotype*: ♀, Agr. Stat., Bubia, Lae, NG, 9. VII. 1957, Hardy. *Paratype*: 1 ♂ with holotype.

This is distinctively specific in both sexes in the possession of a short spine-like ventral black seta of fore yellow femur and long spine-like dorsal apical black bristles of hind yellow tibia, differing from the known members of the genus.

45. *Stilobezzia spinifemorata* Tokunaga, n. sp. Fig. 8 j–k.

Small, whitish species, thorax, legs and abdomen very pale, hyaline, almost colorless, palpal segment III with scattered surface sensillae on apical 1/3, legs setigerous with dark strong bristles, fore femur with about 8 spine-like small dark bristles on ventral side, ♂ hypopygium with styles slender, parameres knife-shaped. Female unknown.

Male: Body 2.02 mm long; wing 1.65×0.47 . Head entirely very pale brown, eyes bare, contiguous, clypeus with 4–5 setae on either lateral side. Palp pale brown, slender, III with scattered surface sensillae on apical 1/3, PR 4.0, RL-P 6 : 14 : 20 : 9 : 20. Antenna with I pale brown, II–XI almost colorless, XII–XIV and plumose hairs pale brown; CRL of II–XI to XII–XIV 211 : 187, RL-8A 18 : 18 : 19 : 19 : 22.5 : 41 : 64.5 : 77. Thorax entirely very pale ochreous, scutellum with only 5 long setae. Legs very pale, almost colorless, but with dark setae, fore femur (fig. 8j) with about 8 spine-like small ventral bristles arranged in a line, hind tibia with about 12 dark dorsal strong bristles, hind tibial comb with 6–7 apical dark bristles; TR and RL-L 2.13 and 56 : 53.5 : 33.5 : 15.7 : 6 : 3.8 : 6 in mid, 2.14 and 54 : 56 : 30 : 14 : ? : ? : ? in hind (tibia and tarsus of fore leg missing).

Wing (apical part broken) white, RL-V 55 : 55 : 56 : 12 : ?, fMCu just before r-m, M_{1+2} as long as r-m (6 : 6). Abdomen very pale, whitish, setigerous with short dark setae, tergite I with 11–13 setae on either side. Hypopygium (fig. 8k) brown; sternite probably with U-shaped caudal incision; style slender, as long as coxite (47 : 47), round at tip; aedeagal sclerite with hump-like lobe; paramere knife-like, colorless, 1.7× as long as aedeagal sclerite (40 : 24).

DISTRIBUTION: New Guinea.

Holotype: ♂, Bomberi, 700–900 m, Vogelkop, SW NG, 3. VI. 1959, Gressitt, at light.

This is very closely allied to *armatibiae* n. sp., but may be rather easily distinguished by the absence of black strong dorsal spine-like bristles of hind tibiae and the different structures of the styles and parameres of the ♂ hypopygium.

46. *Stilobezzia unifasciata* Tokunaga, n. sp. Fig. 8 l–m.

Minute, white species with 1 fuscous broad band on abdomen, wings without macrotrichia, with radial cell I very small; ♀ with claws of legs shorter than tarsal segments V, fore tarsal segment V with 2 ventral spines, V of other legs without spines; ♂ hypopygium with lateral sclerites of aedeagus very slender, parameres very large and strongly curved.

Male: Body 1.11 mm long; wing 0.88×0.27 . Head almost white, with vertex slightly fuscous, eyes separated linearly (in a paratype, as wide as 2 facets). Palp stout, III with only 2–3 sensillae on preapical part and without sensory pore, PR 2.2, RL-P 3 : 10 :

11 : 6.5 : 13.5. Antenna with I fuscous pale yellow, II–XI and plumose hairs white, XII–XIV fuscous; CRL of II–XI to XII–XIV 119 : 131, RL-8A 10.5 : 10.5 : 10 : 9 : 9.5 : 9 : 31.5 : 43 : 59.5. Thorax with tergites and pleural dorsal 1/2 slightly fuscous, other parts white; scutellum with 4 bristles. Legs almost entirely white, segmental articulations and last 2 segments very slightly dusky; hind tibial comb with 6 apical bristles, claws cleft at extreme apices; tarsal spur-like spines: in mid leg, I–II each with 2 apical, III with 1 apical; other legs without spines; TR and RL-L 3.13 and 23 : 21 : 12.5 : 4 : 2 : 1.7 : 2.8 in fore, 3.6 and 29 : 27.5 : 18 : 5 : 2 : 1.9 : 2.8 in mid, 2.36 and 25 : 25 : 13 : 5.5 : 2 : 1.8 : 2.7 in hind.

Wing entirely white, without macrotrichia; costa ending just before tip of M_{3+4} , CR 0.71, RL-V 22 : 22 : 30 : 5 : 20, radial cell I very small, oval, RR about 5, M_{1+2} long, about 3× as long as r-m (3 : 10), fMCu beyond tip of R_1 , Cu_1 meeting anal margin with angle 90 degrees. Halter with stem fuscous, knob white. Abdomen white, with broad fuscous band covering posterior 1/2 of tergite III and entire IV, I with 2 setae on either side. Hypopygium (fig. 81) white, with only parameres fuscous; tergite without anal points, style strong, slightly shorter than coxite (16 : 19); aedeagus with lateral sclerites very slender, not sharply pointed apically; parameres very large, tapered, sharply pointed, strongly arcuate, with basal arms small, Y-shaped.

Female: Body 1.04 mm long; wing 0.94×0.34. Color and general structure as in ♂. Head with eyes separated as wide as 1–2 facets. Mandible with 7 teeth. Palp with PR 1.5–1.8, RL-P 3.4 : 7.5 : 9.5 : 6.5 : 11.8. Antenna with I pale yellow, II–IX white, elongate-oval or fusiform, with apical margins fuscous, X–XIV fuscous, cylindrical; AR 1.66–1.76, RL-8A 11.3 : 11.8 : 12.3 : 28.8 : 27.5 : 30.5 : 30.8 : 52.3 (W=5.3–4.5). Thorax quite as in ♂. Legs with color as in ♂, hind tibial comb with 6–8 apical bristles, tarsal spur-like spines: in fore leg, III with 1 apical, V with 2 sub-basal; in mid, I–II each with 2 apical, III with 1 apical; hind segments without spines; claws rather stout, single, each with small basal tooth, shorter than last segments (13 : 16 in fore, 7 : 10 in mid and hind); TR and RL-L 2.88 and 22 : 22 : 11.5 : 4 : 2 : 2 : 4.5 in fore, 3.9 and 30 : 26.7 : 17.5 : 4.5 : 2.2 : 2 : 3 in mid, 2.5 and 26 : 26 : 12.5 : 5 : 2 : 2 : 3 in hind.

Wing (fig. 8m) with anal lobe obtuse, no macrotrichia; costa ending just beyond tip of M_{3+4} , CR 0.74, RL-V 22 : 22 : 32 : 4.5 : 25, RR about 5 (9.5 : 2), M_{1+2} about 2× as long as r-m (11 : 4), fMCu far beyond tip of R_1 and before fM, Cu_1 obliquely ending. Halter as in ♂. Abdomen also as in ♂; cerci white, spermathecae very pale, very unequal, larger one short-oval (19×15), smaller one subspherical (5×4), vestigial one invisible.

DISTRIBUTION: New Guinea.

Holotype: ♂, Kampong Landbouw, 40 m, 30 km NE of air strip, Biak, NG, 16–17. VII. 1957, Hardy. *Allotype*: ♀ with holotype. *Paratypes*: 4 ♀♀, 1 ♂, with types.

This species belongs to a special group together with the New Guinea species *longihata* n. sp., *bizonata* n. sp. and others, but is quite specific in the possession of a fuscous band on the pale abdomen. The ♂ hypopygium of the present species is closely similar to that of Japanese *alba* Tokunaga (Kyushu and Ryukyu Is.) except for many other important characters.

47. *Stilobezzia flavizonata* Tokunaga, n. sp. Fig. 9a.

Very small, yellowish pale ochreous species, but abdomen dark and with 2 basal seg-

ments pale yellow, general appearance and structures of ♂ hypopygium closely similar to those of *intermedia* de Meillon from S. Africa (N. Zululand). Female unknown.

Male: Body 1.39 mm long; wing 1.03×0.33 . Head pale ochreous, eyes bare, contiguous, mouth parts white. Palpal segment III subcylindrical, with only a few surface sensillae on apical part, PR 2.6, RL-P 4.5 : 8 : 13 : 9 : 13.5. Antenna with I pale brown, flagellum missing. Thorax with scutum pale brown, but humeral and lateral margins paler and caudoscuteal area almost white, scutellum pale yellow and with 4 bristles, postscutellum pale brown, pleura and sternum very pale or pale yellow. Legs entirely pale yellow, TR and RL-L 2.15 and 27 : 25.5 : 14 : 6.5 : 2 : 1.8 : 3 in fore, 2.86 and 35.5 : 32.5 : 22 : 7.7 : 2.5 : 1.8 : 3 in mid, 2.24 and 32 : 31.5 : 15.7 : 7 : 2 : 1.5 : ? in hind.

Wing very pale brown, without macrotrichia; costa ending above tip of M_{3+4} , CR 0.72, RL-V 28.5 : 28 : 37 : 5 : 23, M_{1+2} about $3 \times$ as long as r-m (10 : 3.5), fMCu slightly beyond tip of R_1 , Cu_1 very short, about $1/3$ of M_{3+4} (6.5 : 18), arcuate, meeting anal margin with right angle. Halter pale brown. Abdomen dark, but tergites I–II pale yellow, I with 2 setae on either side. Hypopygium (fig. 9a) yellowish pale ochreous, styles pale brown, basal sclerites of parameres brown; sternite with V-shaped caudal incision, tergite round on caudal margin; coxite rather slender, style arcuate, pointed at tip, slightly longer than $1/2$ of coxite (17 : 27); aedeagus elongate-triangular, as long as style (16 : 17), with lateral sclerites very slender, basal membrane spiculous on basal $1/2$; paramere very slender, cord-like, as long as coxite (25 : 27), with basal sclerite small.

DISTRIBUTION: New Guinea.

Holotype: ♂, Hollandia-Binnen, NW NG, 1. XI. 1958, Gressitt.

This is closely allied to *intermedia* de Meillon, but may be separated by the paler general color, not dark but pale yellow abdominal segment II and far longer parameres.

48. *Stilobezzia maai* Tokunaga, n. sp.

Medium-sized, pale brown to pale yellow species, palpal segment III with many surface sensillae scattered on apical $1/3$, scutellum with 4–6 large and a few small accessory setae, legs not very strongly setigerous, hind tibia with about 8 dark long dorsal bristles; ♂ hypopygium closely similar as in *crassiforceps* n. sp., with style strong, bluntly pointed at apex, paramere round at tip, sternite with large U-shaped caudal incision.

Male: Body 2.28 mm long; wing 1.51×0.47 . Head pale ochreous, eyes bare, just contiguous, clypeus with 3 setae on either side. Palp slender, very slightly fuscous, PR 3.7, RL-P 6.5 : 13.5 : 22 : 8 : 18, III with many surface sensillae on preapical part. Antenna with I ochreous, flagellum missing. Thorax entirely yellowish pale ochreous, scutellum with 4 large and 2 small setae. Legs pale yellow, not strongly setigerous, hind tibia with about 8 dark long dorsal setae and all femora each with several strong dark setae only on apical part, hind tibial comb with 6–7 apical bristles; TR and RL-L 2.2 and 43 : 39 : 23 : 10.5 : 4.2 : 3.8 : 7 in fore, 2.6 and 50 : 49 : 30 : 11.5 : 4.8 : 3.5 : 6.8 in mid, 2.17 and 49.5 : 50 : 26 : 12 : 4.5 : 3.4 : 8 in hind.

Wing almost colorless, macrotrichia present only very closely along wing margin of cell R_5 in a line, costa ending before tip of M_2 , fMCu slightly before r-m, Cu_1 ending under origin of r-m, CR 0.84, RL-V 51 : 50 : 50 : 9 : 33, RR about 4 (25 : 6), M_{1+2} as long as r-m (6 : 6). Abdomen very pale brown, with minute setae, tergite I with 10–12

setae on either side. Hypopygium very closely as in *crassiforceps* n. sp., sternite with large U-shaped caudal incision; style, 0.7 as long as coxite (32 : 47), bluntly pointed at apex; aedeagal sclerite with large hump; paramere large, far longer than style (38 : 32), with tip round, basal sclerite wing-like and large.

Female: Body 2.1 mm long; wing 1.43×0.52 . Head entirely very pale brown, eyes slightly separated, clypeus with 3–4 setae on either side, proboscis short, about 1/3 of head-capsule (11.5 : 31). Mandible with 7–8 teeth. Palp as in ♂, PR 2.7, RL-P 5 : 11 : 17 : 6 : 17. Antenna with I ochreous, II–IX white, X–XIV pale brown, AR 0.91–1.02, RL-13A $34.2 \times 7.5 : 24.9 \times 7.2 : 24.7 \times 7.2 \dots 25.3 : 26.3 : 26.7 : 39.6 : 41.5 : 41 : 40.2 : 53.3$ (W=6.3–5.5). Thorax very pale, scutellum with 4–6 large and 0–2 small setae. Legs very pale, with setae as in ♂, hind tibial comb with 8–9 apical bristles; TR 2.36 (2.21–2.44) in fore, 2.75 (2.62–2.88) in mid, 2.33 (2.18–2.38) in hind.

Wing entirely pale brown, macrotrichia closely along wing margin of cells R_5 and M_1 , costa ending slightly before tip of M_2 , CR 0.85, RL-V 45 : 42 : 42 : 11 : 37, RR 3.5 (28 : 8), M_{1+2} shorter than r-m (5 : 7.5), fMCu just before r-m. Halter white. Abdomen pale brown, tergite I with several setae on either side; cerci brown, spermathecae brown, oval, subequal (20×15 , 21×15), punctuate, no chitinized part of duct, vestigial one (6×4.5) pale.

DISTRIBUTION: New Guinea.

Holotype: ♂, Sarmi, NW NG, 20–23. VII. 1959, Maa, by light trap. *Allotype*: ♀, Waris, 450–500 m, S of Hollandia, NW NG, 24–31. VIII. 1959, Maa, at light. *Paratypes*: 1 ♀ with allotype; 1 ♂ at same place to allotype, 8–15. VIII. 1959, Maa, by light trap; 1 ♀, Kassam, 1350 m, 48 km E of Kainantu, NE NG, 7. XI. 1959, Maa.

This is closely allied to *Micronesia fulviscuta* Tokunaga and Murachi, but may be rather easily distinguished by the smaller AR which is about 0.91–1.02 instead of 1.4–1.7 in ♀ and by the rather slender parameres which are not distinctly dilated at apices in ♂.

49. *Stilobezzia eliptaminensis* Tokunaga, n. sp.

Rather large, pale brown to pale ochreous species, very closely similar to *crassiforceps* n. sp., but differing in the very pale and almost colorless legs.

Male: Body 2.05 mm long; wing $1.95\text{--}2.05 \times 0.59$. Head entirely very pale brown, eyes bare, just contiguous, clypeus with 3–4 lateral setae. Palp slightly fuscous or very pale brown, slender, III with many surface sensillae of preapical 1/3, PR 2.88, RL-P 8.8 : 16.5 : 23 : 10 : 21.3. Antenna with I ochreous, II–XI and plumose hairs almost white, XII–XIV brown, CRL of II–XI to XII–XIV 218.5 : 197, RL-8A 17.5 : 17.5 : 18 : 19 : 22.5 : 45 : 75.5 : 75.5. Thorax entirely very pale ochreous yellow, scutellum with 6–7 long and 0–2 small setae. Legs with many dark strong bristles, coxae very pale ochreous, other segments almost colorless, hind tibia with about 14 strong dark bristles on dorsal side, all femoral tips with several similar bristles, hind tibial comb with 7–10 apical bristles; TR 2.18–2.38 in fore, 2.3–2.43 in mid, 2.1–2.13 in hind.

Wing almost entirely white, with macrotrichia spread very closely along wing margin of cell R_5 , costa ending beyond tip of M_{3+4} , CR 0.82–0.83, RL-V 65.5 : 66 : 67 : 13.5 : 4.5, RR 3.2–4.0, M_{1+2} as long as r-m (7 : 7.5), fMCu slightly before r-m. Halter white. Abdomen with tergites pale brown, with many dark setae, tergite I with 14–19 setae on either side, hypopygium dark brown, quite similar to that of *crassiforceps* shown in figure; sternite

with V-shaped caudal incision, RL of coxite, style, aedeagus and paramere about 50 : 31.5 : 28 : 40.

Female: Body 2.37 mm long; wing 2.25×0.87 . Head very pale ochreous, almost colorless, eyes bare, linearly separated, proboscis about 0.44 as long as head-capsule, clypeus with 3-2 lateral setae. Mandible with 7 teeth. Palp with many surface sensillae scattered on apical 1/3, PR 4.0, RL-P 7 : 18 : 29 : 13 : 23. Antenna with I pale ochreous, II-X white, XI-XIV brown, AR 1.0, RL-13A $46 \times 9 : 35 \times 8 : 33 \times 7$33 : 35 : 36 : 58 : 64 : 51 : 49 : 66 ($W=7-6.8$). Thorax with color as in ♂, scutellum with 6 large and 5 small setae. Legs with color and setae as in ♂, hind tibial comb with 10 apical bristles; TR 2.2 in fore, 2.66 in mid, 2.36 in hind.

Wing almost white, macrotrichia spread only on apical marginal areas of cells R_5 and M_1 , costa ending before tip of M_2 , CR 0.84, RL-V 72 : 73 : 68 : 18 : 61, RR 3.2 (45 : 14), M_{1+2} 1/2 as long as r-m (6 : 12), fMCu far before r-m, Cu_1 ending under r-m. Halter white. Abdomen pale brown, with setae rather slender, tergite I almost colorless, with 16-17 dark strong bristles on either side; cerci pale brown, spermathecae brown, oval, unequal (29×20 , 24×16), punctuate, no chitinized part of duct, vestigial one (5×4.8) round.

DISTRIBUTION: New Guinea.

Holotype: ♂, Eliptamin Vall., 1200-1350 m, NE NG, 16-31. VII. 1959, Brandt. *Allotype*: ♀, same place, 1-15. VII. 1959, Brandt. *Paratype*: 1 ♂ with holotype.

This is very closely similar to *crassiforceps* and *setigeripes* (both n. spp. from New Guinea), but may be separated only by the almost colorless and less setigerous legs.

50. *Stilobezzia crassiforceps* Tokunaga, n. sp. Fig. 9b.

Large ochreous and setigerous species, palpal segment III with many surface sensillae on apical 1/3; legs highly setigerous with dark bristles, especially hind tibia with strong dorsal bristles, scutellum with 5-8 large and 0-2 small setae in ♂ and more bristles in ♀; AR probably about 1.0 in ♀; ♀ almost quite similar to that of *setigeripes* n. sp.

Male: Body 2.7 mm long; wing 1.9×0.61 . Head entirely pale ochreous, eyes narrowly separated. Palp fuscous, slender PR 3.3-3.8, RL-P 7 : 13.7 : 22.7 : 9.7 : 21.7. Antenna with I very pale, II-X white, XI-XIV pale brown, plumose hairs very pale ochreous, CRL of II-XI to XII-XIV 214 : 197, RL-8A 18 : 19 : 19 : 20 : 22 : 41 : 72 : 82 ($W=8-6.5$). Thorax entirely yellowish pale ochreous, scutellum with 5-8 large and 0-2 small setae. Legs highly setigerous, mainly yellow, last 2 tarsal segments pale ochreous; hind tibial comb with 8 apical bristles, hind tibia with about 15 strong dark dorsal bristles, tarsal spur-like spines: in fore, I-II each with 1 apical, III with 2 apical; in mid, I-III each with 2 apical, I with 1 sub-basal; in hind, I with 1 apical, II-III each with 2 apical; TR and RL-L 2.22 and 47.5 : 46 : 28.8 : 13 : 5 : 4 : 7 in fore, 2.32 and 58.5 : 58 : 36 : 15.5 : 6 : 4 : ? in mid, 2.0-2.06 and 58 : 59 : 33 : 16 : 6.5 : 4 : 8 in hind.

Wing very pale including veins, with macrotrichia very sparsely spread only along margin between tips of R_5 and M_1 , fMCu slightly before end of r-m, costa ending above middle of anal margin of cell M_2 , CR 0.82, RL-V 63 : 65 : 65 : 14 : 44, RR 3.44 (31 : 9), M_{1+2} almost as long as r-m (6 : 7). Halter white. Abdomen very pale brown, setigerous with dark setae, tergite I with 14-19 setae on either side. Hypopygium (fig. 9b) brown; sternite without distinct caudal incision; style very strong, bluntly pointed apically, 0.7 as

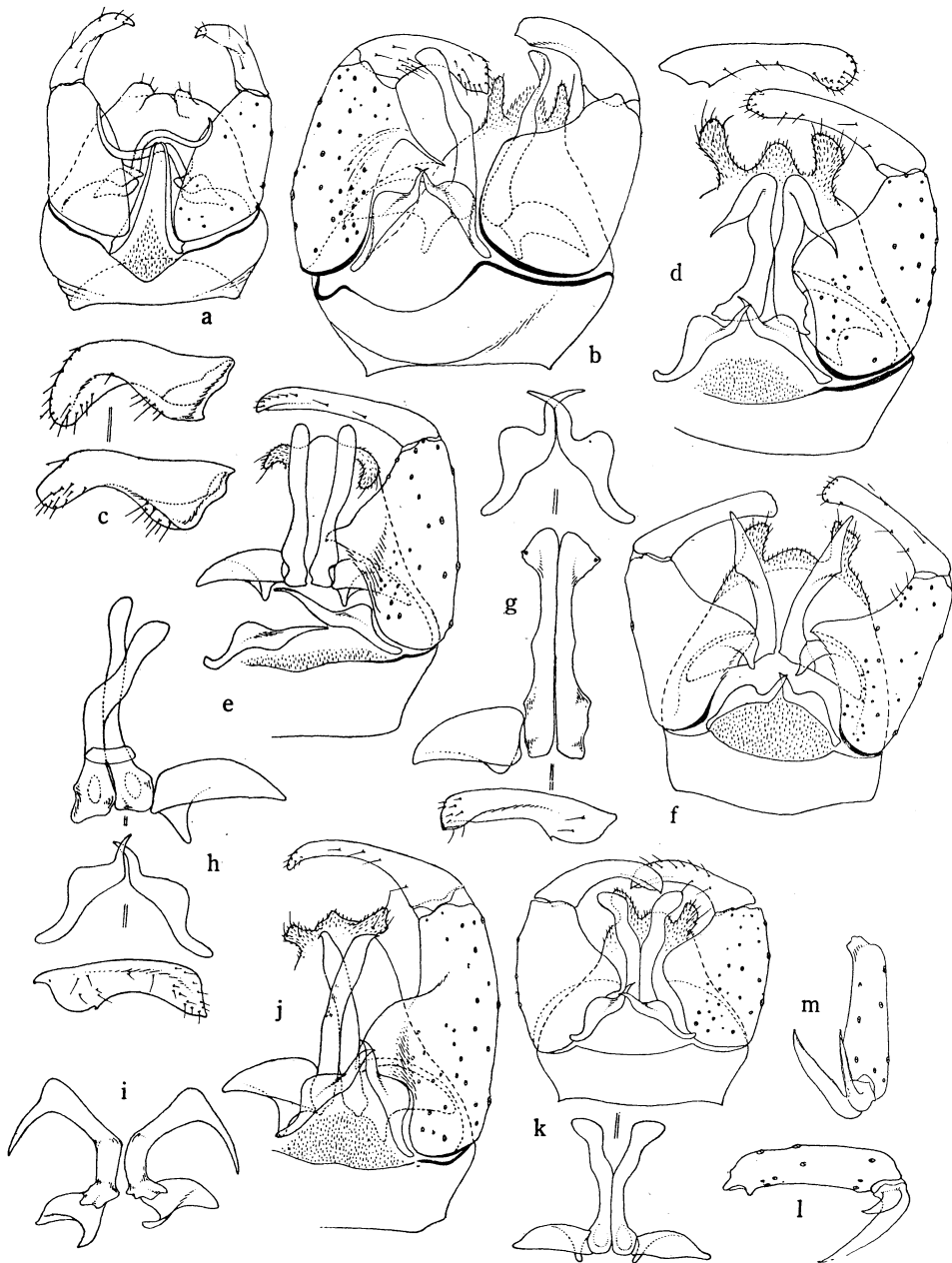


Fig. 9. *Stilobezzia* spp. a, *flavizonata*, ♂ hypopygium; b, *crassiforceps*, ♂ hypopygium; c, *setigeripes*, ♂ styles of different specimens; d, *reflexa*, ♂ hypopygium and style; e, *clavicula*, ♂ hypopygium; f, *papuae*, ♂ hypopygium; g, *thyridofera*, ♂ aedeagal sclerites, parameres and style; h, *similisegmenta*, ♂ parameres, aedeagal sclerites and style; i, *biangulata*, ♂ parameres; j, *nigriapicalis*, ♂ hypopygium. k-m, *brandti*: k, ♂ hypopygium and parameres; l, ♀ hind tarsal segment V with claw; m, ♀ fore tarsal segment V with claw.

long as coxite (32 : 45); aedeagus with lateral sclerites not strongly sinuous, with apical pointed parts about 1/4 as long as total length, basal membrane entirely spiculous; paramere slightly undulate, slender, oval at tip, far longer than style (40.5 : 32).

Female: Wing 2.83×0.96 mm. Head ochreous, eyes bare, slightly separated, proboscis about 1/2 as long as head-capsule (22 : 45), clypeus with 4 setae on either side. Palp fuscous, slender, III with many surface scattered sensillae, RL-P 10 : 22 : 41 : 13 : 33. Mandible with 7 teeth. Antenna with I ochreous, flagellum missing. Thorax with tergites yellowish ochreous, pleura and sternum pale brown, scutellum with 10 large and 5 small setae. Legs with color as in ♂, strongly setigerous with dark long setae, all femora with several strong apical bristles, hind tibial comb with 8–9 apical bristles, hind tibia with many dark strong dorsal bristles; TR 2.15 in fore, 2.37 in mid and hind.

Wing with veins brown, macrotrichia spread on marginal areas of cell R₅ and M₁ and and very few in cell M₂, costa ending just beyond middle between apices of M₂ and M₃₊₄, CR 0.85, RL-V 92 : 92 : 86 : 21 : 75, RR 3.6 (57 : 16), M₁₊₂ as long as r-m (13 : 13), fMCu before r-m, Cu₁ ending under origin of r-m. Halter white. Abdomen pale brown; cerci pale brown, spermathecae dark brown, oval, unequal (4+28×21, 5+25×19), punctuate, with chitinized part of duct, vestigial one (1+7×6) pale brown.

DISTRIBUTION: New Guinea, New Britain.

Holotype: ♂, Eliptamin Vall., 1200–1250 m, NE NG, 19–30. VI. 1959, Brandt. *Allotype*: ♀, Banz, 1500 m, Wahgi Vall., NE NG, 10. VI. 1955, Gressitt, by light trap. *Paratypes*: 1♂, Hollandia, 100 m, NG, 27. VII. 1955, Gressitt; 1♂, Bomberi, 700–900 m, Vogelkop, NG, 9. VI. 1959, Gressitt; 1♂, Korop, 1300 m, Upper Jimmi Vall., NG, 12. VII. 1955, Gressitt; 1♂, Feramin, 120–150 m, NG, 23–31. V. 1959, Brandt; 1♂, Volupai, 100 m, Wilaumez Pen., New Britain, 17. IV. 1956, Gressitt, by light trap; 1♂, Lowlands Agr. Stat., Keravat, New Britain, 13–17. VI. 1960, Smee, by light trap.

This species usually is collected together with *setigeripes* n. sp. and the both sexes are closely similar to those of *setigeripes*. The only difference being pointed out is the shape of the styles of the ♂ hypopygium. But in the ♀, it is very difficult to point out any specific difference between the 2 species, and there are several undetermined ♀ specimens which belong to *crassiforceps* or *setigeripes*.

51. *Stilobezzia setigeripes* Tokunaga, n. sp. Fig. 9c.

Large, pale brown to pale ochreous species which is very closely allied to *crassiforceps* in having many scattered surface sensillae on palpal segment III, highly setigerous abdomen and legs, strong styles and slender tape-like parameres of the ♂ hypopygium; but the ♂ is somewhat different in the shape of the styles as shown in figure. Female quite similar to allied species as almost impossible to separate it from *crassiforceps*.

Male: Wing 2.22–2.3×0.64–0.77 mm. Palp with PR 4.6, RL-P 8.5 : 18 : 32 : 13 : 28. Antenna with CRL of II–XI to XII–XIV 225 : 220.5, RL-8A 18 : 21 : 21 : 21 : 25 : 45 : 82 : 92. Scutellum with 6–10 strong and 0–4 small setae. Legs with TR 1.94 in fore, 2.11 in mid, 2.1 in hind. Wing with CR 0.82, RL-V 72 : 73 : 71 : 17 : 52, RR 3.4 (37 : 11), M₁₊₂ longer than r-m (10 : 7.5). Halter white. Abdominal tergite I with 19–27 dark setae on either side. Hypopygium dark brown; sternite with semicircular caudal concavity; style (fig. 9c) very stout, curved beyond middle, round at tip, 0.75 as long as coxite (38 : 51);

other structures as in *crassiforceps*.

Female: Wing 2.3×0.77 mm. Palp with PR 4.8, RL-P 9 : 22 : 29 : 12 : 27. Antenna with I ochreous, other segments brown, but bases of II–XIV very pale, AR 1.1, RL-13A 41 : 30 : 29 (W=7)...30 : 32 : 33 : 47 : 47 : 47 : 46 : 57 (W=6.5–6). Scutellum with 9 large and 2 small setae. Legs with TR 2.07 in fore, 2.54 in mid, 2.47 in hind. Wing with macrotrichia sparsely spread closely along wing margin between apices of Rs and M_2 and very few in cell M_2 , CR 0.85 RL-V 65 : 66 : 65 : 18 : 61, RR 3.7 (44 : 12), M_{1+2} as long as r-m (9 : 9). Abdominal tergite I with 18–20 dark setae on either side; cerci pale brown, spermathecae brown, unequal (3+25×17, 3+21×17), vestigial one (2+6×5) pale brown.

DISTRIBUTION: New Guinea, New Britain.

Holotype: ♂, Eliptamin Vall., 1665–2530 m, NE NG, 19. VI. 1959, Brandt. *Allotype*: ♀, same place, 1–15. IX. 1959, Brandt. *Paratypes*: 1 ♂, Hondugl, 1600 m, NG, 9. VIII. 1955, Gressitt; 1 ♂, Kamo Vill., 1500 m, Itouda, Wisselmeren, NG, 12. VIII. 1955, Gressitt; 1 ♂, Banz, 1500 m, Wahgi Vall., NG, 10. VII. 1955, Gressitt; 2 ♂♂, Linga Linga Pl'n., 1 m, W of Willaumez Pen., New Britain, 15. IV. 1956, Gressitt.

This is closely allied to *thyridofera* Tokunaga, but may be rather distinctly different in the widely scattered sensillae of the palpal segment III, strongly curved styles and round tips of the parameres of the ♂ hypopygium. Other more closely allied species is *crassiforceps*, but from which the ♂ may be separated by the differences of the hypopygium, but the ♀ is quite similar to each other and is hardly distinguished by the larger size and more setigerous appearance from the allied species.

52. *Stilobezzia reflexa* Tokunaga, n. sp. Fig. 9d.

Large, pale yellow species with sensory pore of palpal segment III rather large and and with many short sensillae, mid TR about 3.0 or more, wing longer than 2.0 mm; scutellum with 6–8 large bristles and 3–5 small setae; ♀ AR 0.9–1.0, antennal segment X 1.11–1.48 as long as IX; ♂ hypopygium with parameres strongly curved backwards, with apical parts sharply pointed.

Male: Body 2.94 mm long; wing 2.17×0.64 . Head very pale brown, with eyes contiguous. Palp slightly fuscous, PR 2.8, RL-P 9 : 18 : 28 : 15 : 25, III elongate-oval, with large sensory pore on preapical part. Antenna with I ochreous, II–X and plumose hairs very pale brown, other segments brown, CRL of II–XI to XII–XIV 191 : 328, RL-8A 17 : 17.5 : 18 : 18.5 : 21 : 63.5 : 115 : 113 (W=8–6.5). Thorax entirely very pale ochreous, scutellum with 7 large and 4 small setae. Legs entirely pale ochreous, hind tibial comb with 9 apical bristles, claws cleft at ends, tarsal spur-like spines: in fore and hind, I–II each with 1 apical, III with 2 apical; in mid, I–III each with 2 apical, I with 1 sub-basal; TR and RL-L 2.38 and 64.5 : 63 : 42.8 : 18 : 7 : 4 : 7 in fore, 3.09 and 78 : 70 : 51 : 16.5 : 7 : 4 : 7 in mid, 2.48 and 81 : 82 : 49.5 : 20 : 7.5 : 4.8 : 8.8 in hind.

Wing with main veins very pale ochreous, macrotrichia sparsely spread along apical margin between ends of Rs and M_2 , costa ending above middle between ends of M_2 and M_{3+4} , CR 0.83, RL-V 71 : 71 : 71 : 16 : 53, RR about 3.2, M_{1+2} longer than r-m (9 : 7), fMCu just before r-m. Halter white. Abdomen very pale ochreous, tergite I with 15–16 setae on either side. Hypopygium (fig. 9d) brown; sternite without distinct caudal incision; coxite inflated on basal 1/2; style rather large, slightly arcuate, round at tip in later-

al aspect, about 0.7 as long as coxite (51 : 74); aedeagal sclerites sinuous, sharply pointed apically, rather slender; parameres strongly curved backwards on apical 1/3 and sharply pointed, with basal sclerites somewhat V-shaped.

Female: Body 2.73 mm long; wing 2.37–2.64×0.81. General color as in ♂. Palpal segment III with large sensory pore bearing many small sensillae on preapical part, PR 2.8–3.17, RL-P 9.5 : 22 : 34.5 : 16 : 27.5. Antenna with I brown, II–IX pale brown to brown, X–XIV brown, AR 0.91–1.03, RL–13A 55.5×11 : 33.5×9.5 : 33.5×8.5 38.5 : 43 : 47.5 : 60.5 : 61 : 62.5 : 59 : 74.5 (W=8–7). Thorax entirely yellowish, scutellum with 6–8 large and 3–5 small setae. Legs entirely pale ochreous, TR and RL-L 2.45–2.5 and 70.5 : 70 : 43.5 : 17.6 : 6.3 : 6.3 : 13.8 in fore, 3.02–3.13 and 84.5 : 76.8 : 52.5 : 17.1 : 7 : 6.3 : 12.7 in mid, 2.6–2.74 and 89.5 : 87.7 : 52.5 : 19.7 : 7.3 : 5.8 : 13 in hind.

Wing with veins pale brown or ochreous, macrotrichia as in *bifurcata*, costa ending just or slightly before tip of M₂, CR 0.84–0.86, RL-V 81 : 81 : 78.5 : 19.5 : 72.5, RR 3.22–3.5 (53.5 : 16), M₁₊₂ as long as r-m (10.5 : 11), fMCu somewhat before r-m. Halter pale yellow. Abdomen brown to pale ochreous, tergite I with 17–23 setae on either side; cerci paler; spermathecae brown, oval, unequal (0.5+27×20, 0.5+21×16.5), with pale punctures, vestigial one 0.5+5.5×4.8.

DISTRIBUTION: New Guinea.

Holotype: ♂, Korop, 1300 m, Upper Jimmi Vall., NG, 12. VIII. 1955, Gressitt. *Allotype*: ♀ with holotype. *Paratype*: 1 ♀ with types.

This is somewhat similar to N. American *lutea* Malloch in general color, but may distinctly be separated by the different structures of the ♂ hypopygium. The ♂ hypopygium of this species closely resembles that of N. American *pruinosa* Wirth, except for other specific characters.

53. *Stilobezzia clavícula* Tokunaga, n. sp. Fig. 9e.

Medium-sized, pale brown to pale ochreous species with abdomen brown or fuscous, legs not strongly setigerous; palp with large sensory pore on III; TR 2.26–2.33 in fore, 2.75–2.96 in mid, 2.8 (in ♀) in hind; scutellum with 5 large bristles besides small setae; ♀ AR 1.04, antennal segment X 1.35× as long as IX; ♂ hypopygium with styles rather slender, aedeagal sclerites with long apical projection, parameres rod-like, with apical 1/2 uniform in thickness and round at tips.

Male: Body 2.11 mm long; wing 1.52×0.47. Head including mouth parts and antennae brown, eyes bare, just contiguous. Palp with PR 2.47, RL-P 6 : 10 : 21 : 9 : 18, III elongate-oval, with sensory pore large, with many short sensillae on preapical part. Antenna with CRL of II–XI to XII–XIV 184 : 157, RL-8A 15 : 15 : 15.5 : 15.5 : 21 : 36.5 : 54.5 : 67 (W=8–7.5). Thorax entirely pale fuscous, scutellum with 5 large and 2 minute setae. Legs entirely pale fuscous, with setae not very strong, claws cleft at tips, hind tibial comb with 7 apical bristles; TR and RL-L 2.26 and 41 : 41 : 26.7 : 11.8 : 4 : 3 : 4.5 in fore, 2.92 and 48 : 44 : 33 : 11.3 : 4.8 : 3 : 4.8 in mid, hind tarsi II–V missing.

Wing very pale, macrotrichia very sparsely spread only along apical margin of cell R₅, costa ending slightly beyond tip of M₃₊₄, CR 0.81, RL-V 49 : 49 : 52 : 10 : 36, RR 3.13 (25 : 8), M₁₊₂ longer than r-m (8.5 : 6), fMCu under end of r-m or tip of R. Halter white. Abdomen more fuscous than thorax, tergite I with 9–11 setae on either side. Hypopygium

(fig. 9e) with sternite only slightly concave on caudal margin; coxite subtriangular, large; style rather slender, slightly arcuate, not sharply pointed, a little shorter than coxite (44 : 49); aedeagus with sclerites strongly sinuate, rather slender, apical 1/3-1/2 very slender, basal membrane slightly spinulose; paramere shorter than style (36 : 44), almost straight, round at tip.

Female: Body 2.25 mm long; wing 1.83×0.65 . Head brown, eyes bare, linearly separated, proboscis slightly longer than 1/2 of head-capsule, clypeus with 3 setae on either side. Mandible with 10 rather irregular teeth. Palp pale brown, PR 2.5, RL-P 7 : 18 : 25 : 10 : 24, III with large sensory pore. Antenna with I ochreous, II-VII very pale brown, but browned apically, VIII-XIV brown; AR 1.04, RL-13A $38.5 \times 9 : 24 \times 7.5 : 23 \times 7 \dots \dots 26.5 : 29.5 : 30 : 40.5 : 43 : 45 : 45 : 61$. Thorax pale yellow, scutellum with 5 large and 5 small setae. Legs pale ochreous, not highly setigerous, hind tibia with about 7 large brown dorsal bristles, hind tibial comb with 8-9 apical bristles. TR and RL-L 2.33 and 49 : 49 : 28 : 12 : 5 : 4.7 : 11.5 in fore, 2.96 and 60 : 55 : 34 : 11.5 : 5.5 : 5 : 11.5 in mid, 2.8 and 63 : 62 : 33.4 : 12 : 5 : 4.5 : 11 in hind.

Wing very pale brown, macrotrichia spread only on apical marginal area of cell R_5 and in a line along margin between tips of M_1 and M_{3+4} , costa ending before end of vein M_2 , CR 0.86, RL-V 54 : 55 : 56 : 14 : 51, RR about 2.7 (35 : 12.8), M_{1+2} as long as r-m (9 : 8), fMCu just before r-m. Halter white. Abdominal tergites brown, rather slightly setigerous, I with 12-13 setae on either side and middle part pale yellow; cerci pale brown, spermathecae dark brown, equal (1+21×14, 1+20×13), vestigial one (5×3.5) paler.

DISTRIBUTION: New Guinea.

Holotype: ♂, Wum, 840 m, Upper Jimmi Vall., NE NG, 18.VII.1955, Gressitt, by light trap. *Allotype*: ♀, Eliptamin Vall., 1350-1665 m, NE NG, 23-30.VI.1959, Brandt.

This is closely related to *reflexa* n. sp. in general color and structures, but may be easily distinguished by the differences of the ♂ hypopygium and of TR of hind leg. The ♂ hypopygia of the present species and of N. American *lutea* Malloch are very closely similar to each other, but the shapes of the apical parts of the parameres are distinctly different from each other.

54. *Stilobezzia bifurcata* Tokunaga

Stilobezzia bifurcata Tok., 1959, Pacific Ins. 1: 307.

The original description is supplemented with the following points observed in 7 additional ♂ specimens collected at different places from the type.

Male: Scutellum with 4-6 large and 0-2 small setae. TR 2.0-2.09 in fore, 2.61-2.72 in mid, 2.0-2.15 in hind. Abdominal tergite I with 7-21 setae on either lateral side.

SPECIMENS EXAMINED: 1♂, Korop, 1300 m, Upper Jimmi Vall., NE NG, 12.VII.1955, Gressitt, at light; 1♂, Tsenga, 1200 m, Upper Jimmi Vall., NG, 14.VII.1935, Gressitt; 2♂♂, Mt. Hagen Area, 1650 m, NE NG, 28.VI.1957, Hardy; 1♂, Matoko, Finisterre Range Saidor, NE NG, 29.VIII-5.IX.1958, Brandt; 1♂, W. Ridge, 1900-2000 m, Swart Vall., NW NG, 19.XI.1958, Gressitt; 1♂, St. Paul's, 350 m, Bainings, Gazelle Pen., New Britain, 8.IX.1955, Gressitt, by light trap.

The main specific characters are shown in the key to the species.

55. *Stilobezzia papuae* Tokunaga, n. sp. Fig. 9f.

Rather small, pale yellow or ochreous species, without special color markings, TR of fore and hind legs far smaller than 3.0, but that of mid almost 3.0, palpal segment III with sensory pore large and with many short sensillae; scutellum with 4-6 large and 0-4 small setae, ♀ AR 0.97; ♂ hypopygium with styles slender, almost straight, slightly dilated apically, parameres obliquely truncate apically. Female abdomen almost white.

Male: Body 2.47 mm long; wing 1.72×0.51 . Almost uniformly pale yellow or ochreous. Head pale brown, eyes narrowly separated. Palp brown, III oval, with sensory area large, bearing short sensillae, PR 2.56, RL-P 5 : 14 : 21 : 10 : 19.5. Antenna with I slightly fuscous yellow, II-X and base of XI white, other segments pale brown, plumose hairs very pale brown, CRL of II-XI to XII-XIV 174 : 180, RL-8A 14.5 : 15 : 16 : 16 : 20 : 42 : 58 : 78 (W=6-5). Thorax entirely pale ochreous; scutellum with 5 large and 4 small setae. Legs entirely pale ochreous, with setae rather small; hind tibial comb with 7 apical bristles, claws cleft at tips; tarsal spur-like spines: in mid, I-III each with 2 apical, I with 1 sub-basal; in hind, I-III each with 1 apical; fore tarsal segments II-V missing. TR and RL-L 2.83 and 51.5 : 48 : 34 : 12 : 5 : 3 : 5 in mid, 2.33 and 55 : 54 : 31.5 : 13.5 : 5 : 3 : 5.5 in hind.

Wing entirely very pale brown, macrotrichia sparsely arranged closely along margin between ends of Rs and M₂, M₁ with several trichia on apical part, costal end slightly beyond tip of M₃₊₄, CR 0.81, RL-V 54 : 54 : 59 : 11 : 40, RR about 3 (28 : 9.5), M₁₊₂ longer than r-m (9 : 7), M₁₊₂ forked under middle of radial cell I, fMCu under end of r-m. Halter pale yellow. Abdomen entirely very pale brown, tergite I with 13-17 lateral setae. Hypopygium (fig. 9f) ochreous; sternite with caudal concavity very shallow; coxite subtriangular; style rather slender, almost straight, slightly dilated apically, about 0.8 as long as coxite (35 : 43); aedeagus with sclerites rather slender, basal membrane entirely spinulose; parameres fully as long as style (37 : 35), obliquely truncated apically, with basal sclerites semicircular.

Female: Body 2.2 mm long; wing $1.61-1.78 \times 0.65$. Head pale brown, eyes just separated or almost contiguous, clypeus with 3-4 setae on either side. Palp with rather large sensory pore on III, PR 3.13, RL-P 7 : 20 : 25 : 12 : 20. Mandible with 7-8 teeth. Antenna with I brown, but II-VI paler, AR about 0.97, RL-13A 38×7 : 26×6.5 : 24×6.5..... 26 : 29 : 29 : 37 : 39 : 40 : 41 : ? (W=6). Thorax mainly pale yellow, scutellum with 5-6 large and 2-4 minute setae. Legs very pale yellow or ochreous, not highly setigerous, hind tibia with several long brown dorsal setae, TR and RL-L 2.28-2.41 and 48 : 47 : 28 : 12.3 : 4.7 : 4.7 : 10.5 in fore, 2.83-3.09 and 56 : 51 : 34 : 12 : 5.5 : 5 : 11 in mid, 2.5-2.75 and 58 : 57 : 32.5 : 13 : 5 : 4.5 : 10 in hind.

Wing entirely white, macrotrichia on R, R₁, Rs, apical 2/5 of M₁, apical 1/6 of M₂ and apical marginal areas of cells R₅, M₁ and M₂, costa ending before tip of M₂, CR 0.85, RL-V 52 : 52 : 55 : 14 : 49, RR 3.4, M₁₊₂ as long as r-m (8 : 7), fMCu under end of r-m. Halter pale yellow to white. Abdomen almost white, with setae almost white, tergite I with 7-11 setae on either side, cerci very pale brown; spermathecae brown, oval, unequal (1+21×17, 1+20×15), vestigial one (6×4) very pale.

DISTRIBUTION: New Guinea.

Holotype: ♂, Matoko, Finisterre Range Saidor, NG, 29. VIII. 1958, Brandt. *Allotype*:

♀, Tsenga, 1200 m, Upper Jimmi Vall., NE NG, 13. VII. 1955, Gressitt. *Paratypes*: 2 ♀♀, same place to allotype, 15–16. VII. 1955, Gressitt.

This is closely allied to *bifurcata* Tokunaga, but may be easily distinguished only by the difference of the ♂ hypopygium.

56. *Stilobezzia thyridofera* Tokunaga Fig. 9g.

Stilobezzia thyridofera Tok., 1959, Pacific Ins. 1: 304.

Rather large, very pale ochreous to pale brown species, palp with only a few surface sensillae grouped in a small preapical area of III, scutellum with 4–6 large bristles and without small setae, legs strongly setigerous, all femora with several strong bristles on each apical part, in hind tibia with about 14 strong dark dorsal bristles.

Supplementary notes to the original descriptions with the observation on several new specimens are as follows:

Male: Wing 1.69–2.18 × 0.49–0.69 mm. Clypeus with 5–6 setae on either side. Palp with 1 small group of 4–5 surface sensillae on III, PR 3.13–3.95, RL-P 6.5 : 14.5 : 24.8 : 11 : 21.5. Antenna with I pale ochreous, II and XII–XIV brown, plumose hairs pale brown, III–XI very pale brown, CRL of II–XI to XII–XIV 217 : 220, RL-8A 18 : 18 : 17.5 : 17 : 18.5 : 40 : 79 : 100. Scutellum with only 4–6 large bristles. Legs highly and strongly setigerous, hind tibia with 13–14 long dark dorsal bristles, hind tibial comb with 6–7 apical bristles, all femora each with several dark strong apical bristles; TR 1.91–2.18 in fore, 2.66–2.81 in mid, 1.84–2.13 in hind. Wing venation: costa ending far before apex of M_2 , fMCu just before r-m, CR 0.83, RL-V 56 : 55 : 56 : 12 : 42, RR about 3.3 (30 : 9), M_{1+2} as long as r-m (6.5 : 6). Abdomen with 12–21 lateral setae on either side of tergite I. Hypopygium (fig. 9g) with caudal concavity of sternite sometimes rather shallow than in type being semicircular or crescent-like; style strong, slightly arcuate, bluntly pointed at apex; aedeagal sclerite with slender, sharply pointed apical part and semicircular hump-like lobe.

Female: Wing 2.0–2.24 mm. Mandible with 7 teeth. Legs strongly setigerous as in ♂, hind tibial comb with 7 apical bristles; TR 2.03–2.12 in fore, 2.44–2.65 in mid. Abdomen pale brown, tergite I with 13–14 setae on either side.

DISTRIBUTION: New Guinea.

SPECIMENS EXAMINED: 1 ♂, Hollandia-Binnen, 100 m, NW NG, 1. XI. 1958, Gressitt; 1 ♂, Daulo Pass, 2400 m, Asaro-Chimbu Div., NE NG, 12. VI. 1955, Gressitt, by light trap; 1 ♂, Bisianumu, 500 m, E of Port Moresby, NG, 24. IX. 1955, Gressitt, by light trap; 1 ♀, rain forest, 15 m, NW of Lae, NG, 9. VII. 1957, Hardy; 1 ♀, Kianbavi Vill., Finisterre Range Saidor, NE NG, 22–29. VII. 1958, Brandt; 1 ♀, Itouda, 1500 m, Wisselmeren, Kamo Vall., NW NG, 12. VIII. 1955, Gressitt.

The differences of the shapes of the aedeagus, styles and parameres of the ♂ hypopygium from the type are mainly due to the different aspects in drawings.

57. *Stilobezzia similisegmenta* Tokunaga Fig. 9h.

Stilobezzia similisegmenta Tok., 1959, Pacific Ins. 1: 306.

Rather large species very closely similar to *thyridofera* Tokunaga with only the following differences: scutellum usually with accessory small setae besides 6 or more large bris-

gles in both sexes and ♂ hypopygium with parameres round at apices and without any pointed part.

Male: Body 1.95–2.15 mm long; wing $1.61\text{--}2.39 \times 0.49\text{--}0.73$. Head yellowish pale ochreous, clypeus with 3–4 setae on either side, eyes bare, justcontiguous. Palp slender, brown, III with very small sensory pore on preapical part, PR 3.3–3.5, RL-P 7 : 14.5 : 20.5 : 7 : 24. Antenna with I ochreous, plumose hairs, II–X and base of XI pale yellow or almost white, other parts brown, CRL of II–XI to XII–XIV 207.5 : 178.3, RL-8A 16.8 : 17.5 : 18 : 19.3 : 23.5 : 39 : 63.3 : 73.5. Thorax pale ochreous, scutellum with 6–8 large bristles and 1–2 (rarely 0) small setae. Legs entirely yellow, highly setigerous with dark setae, hind tibia with 12–14 strong dark bristles, all femora with several similar bristles on end-parts, hind tibial comb with 7–8 apical bristles, TR and RL-L 2.11–2.25 and 44.5 : 42 : 24.9 : 11.2 : 4.2 : 3.5 : 7 in fore, 2.21–2.46 and 54.5 : 51.5 : 31.9 : 13.7 : 5.1 : 3.8 : 6.5 in mid, 2.0–2.15 and 53.3 : 54.3 : 28.3 : 13.3 : 5.4 : 4 : 8.5 in hind.

Wing very pale ochreous, macrotrichia very sparsely arranged closely along wing margin of cell R_5 , costa ending beyond tip of M_{3+4} , CR 0.81–0.86, RL-V 61.3 : 62 : 61.3 : 13 : 41, RR about 3 (28.3 : 9.3), M_{1+2} as long as r-m (6.8 : 6.7), fMCu slightly before r-m. Halter white. Abdomen pale ochreous, I with 13–24 setae on tergal lateral side. Hypopygium (fig. 9h) with sternite slightly concave or almost straight on caudal margin, tergite highly setigerous with dark bristles; style strong, slightly arcuate, bluntly pointed at tip; aedeagus with sclerites slender, hump-like lobe slightly developed; paramere with tip slightly dilated and round.

Female (supplementary notes): Wing $1.99\text{--}2.25 \times 0.73\text{--}0.83$ mm. Head with eyes slightly separated or almost contiguous. Palp slender, more or less fuscous, with single small group of 5–6 surface sensillae on preapical part, PR 3.7–3.86. Antenna with AR 0.93 (0.83–1.06), usually less than 1.0, segment X about 1.3 (1.05–1.61) as long as IX. Scutellum with 5–8 large bristles and sometimes 1–3 small accessory setae. Legs highly setigerous with dark bristles as in ♂, hind tibial comb with 7–9 apical bristles, TR 2.22 (2.06–2.33) in fore, 2.49 (2.43–2.64) in mid, 2.27 (2.19–2.33) in hind. Wing venation: CR 0.83–0.86, RL-V 67.5 : 67 : 65 : 17.5 : 58, RR 3.4–3.9. Abdomen pale brown, strongly setigerous.

DISTRIBUTION: New Guinea, New Britain.

SPECIMENS EXAMINED: 1 ♂, Sarmi, NW NG, 20–23. VII. 1959, Maa, by light trap; 1 ♂, Waris, 450–500 m, S of Hollandia, NG, 8–15. VIII. 1959, Gressitt, by light trap; 1 ♂, Banz, 1500 m, Wahgi Vall., NE NG, 10. VII. 1955, Gressitt; 1 ♂, 3 ♀ ♀, Matoko Vill., Finisterre Range Saidor, NE NG, 6–24. IX. 1958, Brandt; 1 ♀, Lae (sea level), NG, 24. VII. 1955, Gressitt; 1 ♀, Volupai, 100 m, Willaumez Pen., New Britain, 17. IV. 1956, Gressitt, by light trap; 1 ♀, Eliptamin Vall., 1665–2530 m, NG, 19. VI. 1959, Brandt.

58. *Stilobezzia biangulata* Tokunaga, n. sp. Fig. 9i.

Rather large, pale brown to pale ochreous species, palp with very small sensory pore on segment III, scutellum with 5–6 large and 0–4 small setae, legs not very strongly setigerous, femoral apical bristles rather slender, hind tibia with only about 8 large dorsal bristles, TR of all legs smaller than 3.0, ♀ AR 1.4, ♂ hypopygium with parameres fish-hook-like, bent at 2 points and ending into sharp tips.

Male: Wing 2.22×0.68 mm. Head pale brown, mouth parts pale ochreous, eyes bare,

narrowly separated, clypeus with 3 setae on either side. Palp pale brown, with only 4 sensillae in a small sensory pore on III, PR 3.0, RL-P ? : ? : 21 : 10 : 19. Antenna with I ochreous, flagellum missing. Thorax very pale ochreous, scutellum with only 6 large bristles. Legs pale yellow, not highly setigerous, hind tibia with about 8 dark long dorsal bristles, hind tibial comb with 8-9 apical bristles; TR and RL-L 1.92 and 54 : 52.5 : 33.6 : 17.5 : 5.6 : ? : ? in fore, 2.68 and ? : 59 : 43 : 16.4 : 5.8 : 3 : 5 in mid, hind leg losing apical 4 segments.

Wing with veins pale brown, macrotrichia sparsely spread closely along margin of cells R_5 and M_1 , costa ending beyond tip of M_{3+4} , fMCu under end of r-m, CR 0.81, RL-V 73 : 72 : 74 : 15 : 51, RR 3.3 (37.5 : 11.5), M_{1+2} about 1.5 as long as r-m (13 : 8.5). Halter very pale yellow. Abdomen probably brown, basal segments missing. Hypopygium dark brown, closely similar to that of *reflexa* n. sp. with only exception of parameres (fig. 9i), which are distinctly angulate at basal 1/5 and preapical 2/5 forming fish-hook.

Female: Wing 1.92×0.7 mm. General structure and color as in ♂. Head with palp dark brown, palpal III with a few sensillae in very small sensory pore. Antenna with I brown, II-VI pale brown, VII-XIV brown, flagellar segments cylindrical; AR 1.4, RL-13A 28×8 : 19 : 18.....22 : 24.5 : 25 : 46 : 46 : 45 : 48.5 : 71 (W=7-6). Thorax pale brown, scutellum with 5 large and 4 small setae. Legs pale yellowish ochreous, hind tibial comb with 6-8 apical bristles; TR and RL-L 2.08 and 48 : 47 : 27 : 13 : 4.7 : 4 : 10 in fore, 2.76 and 59 : 55 : 34.5 : 12.5 : 5 : 4.8 : 9.5 in mid, 2.37 and 63 : 60 : 32 : 13.5 : 4.5 : 4 : 9 in hind.

Wing pale brown, with veins brown, macrotrichia on veins R, R_1 , R_s , apical 1/2 of M_1 , apical 1/6 of M_2 and at tip of M_{3+4} , cells R_5 and M_1 with trichia on apical marginal areas and very few in cell M_2 ; costa ending above middle between tips of M_2 and M_{3+4} , fMCu just before r-m, CR 0.84, RL-V 58 : 58 : 61 : 15 : 54, RR about 3.2, M_{1+2} as long as r-m. Halter pale brown. Abdomen pale brown, caudal segments and cerci brown; spermatheca dark brown, short-oval (2+22×15, other one not ascertained, but probably unequal), vestigial one (6×4) oval.

DISTRIBUTION: New Guinea.

Holotype: ♂, Mt. Otto, 2200 m, NE NG, 24. VI. 1955, Gressitt. *Allotype*: ♀, Mt. Hagen area, 1650 m, NE NG, 28. VI, Hardy.

This is somewhat similar to *reflexa* n. sp. and *nigriapicalis* n. sp., but these 3 species are easily distinguished from each other by the differences of the ♂ hypopygia and by the characters shown in the key to the New Guinea species.

59. *Stilobezzia nigriapicalis* Tokunaga, n. sp. Fig. 9j.

Rather large, pale brown to pale ochreous species closely related to *reflexa* n. sp. in the possession of a very small palpal sensory pore and somewhat sparsely setigerous legs, but the ♂ is quite specific in the slender styles and elongate parameres, and the ♀ is distinguished by the rather widely distributed macrotrichia of the wing and smaller TR of the fore leg from the related species.

Male: Body 3.12 mm long; wing 2.31×0.66. Head brown, mouth parts yellow, eyes contiguous. Palp brown, PR 2.8, RL-P 7 : 13 : 17 : 11 : 21, III with small sensory pore on preapical part bearing few long sensillae. Antenna with I brown, other segments missing. Thorax with scutum pale ochreous bearing 4 faint fuscous vittae, caudo-scutal area pale

yellow, scutellum pale yellow, with 6 large bristles, post-scutellum pale brown, but anterior marginal area yellow, pleura and sternum very pale brown. Legs pale yellowish ochreous, but apical 2 tarsal segments of all legs pale brown; hind tibial comb with 9–11 apical bristles, claws cleft at tips; tarsal spur-like spines: in fore and hind, I–II each with 1 apical, III with 2 apical; in mid, I–III each with 2 apical, I with 1 sub-basal. TR and RL-L 1.73 and 55 : 54 : 35.5 : 20.5 : 6.5 : 4.5 : 6 in fore, 2.55 and 70.5 : 66 : 51 : 20 : 6.4 : 4 : 5.5 in mid, 1.98 and 67 : 70 : 42 : 22.5 : 7.5 : 3.9 in hind.

Wing veins mainly pale brown, macrotrichia sparsely spread as in ♀ wing of *simili-segmenta*, costa ending above midway between apices of M_2 and M_{3+4} , CR 0.82, RL-V 72 : 71 : 78 : 17 : 57, RR 3.8 (42 : 11), M_{1+2} far longer than r-m (16 : 7), fMCu under end of r-m. Halter white. Abdomen pale brown, tergite I with 16–17 setae on either side. Hypopygium (fig. 9j) brown; sternite without distinct caudal incision; coxite long, swollen on basal 1/2; style slender, arcuate, about 0.75 as long as coxite (49 : 65); aedeagal sclerite rather broad, with apical 1/3 sharply pointed, basal membrane spinulose; paramere slender, elongate, almost as long as style (46.5 : 49), only slightly curved, with minute point, apically darkened.

Female: Wing 2.08 mm long. Palpal segment III with small sensory pore bearing several long sensillae, PR 2.7, RL-P 7 : 15 : 19 : 10 : 11. Antenna with I brown, flagellum missing. Thorax uniformly pale yellow; scutellum with only 4 large setae. Legs pale yellowish ochreous, not strongly setigerous, hind tibial comb with 8–10 apical yellow bristles, hind tibia with 7 long dark brown bristles on dorsal side; TR 1.84 in fore, 2.56 in mid, 2.12 in hind, RL of fore tibia and tarsus 49 : 29.5 : 16 : 5.8 : 3.5 : 9.

Wing pale brown, with main veins brown, macrotrichia sparse but rather widely spread on apical part beyond level between apices of R_s and M_{3+4} , costa ending beyond end of M_2 , fMCu under end of r-m, CR 0.88, RL-V 65 : 66 : 69 : 17 : 54, RR 3.5 (39 : 11), M_{1+2} 1.8 as long as r-m (14 : 8). Halter pale brown. Abdomen pale brown, rather sparsely setigerous, tergite I with 8–11 setae on either side; cerci brown; spermathecae dark brown, oval, subequal.

DISTRIBUTION: New Guinea.

Holotype: ♂, Nondugl, 1600 m, NE NG, 8. VII. 1955, Gressitt. *Allotype*: ♀ with holotype.

This species somewhat resembles S. African *luteola* de Meillon in general color, but is quite distinctive in the following points: AR is only 0.78, wing is small being 1.0×0.4 mm and the macrotrichia of the wing are more sparsely spread on wing tip only.

60. *Stilobezzia brandti* Tokunaga, n. sp. Fig. 9 k–m.

Large to medium-sized, pale ochreous to brownish species closely similar to *nigriapicalis* n. sp., palp with very small sensory pore or only several sensillae on III, scutellum with 4 long bristles, legs not highly setigerous, hind tibia with 6–9 long brown bristles on dorsal side, abdomen sparsely setigerous; ♂ hypopygium very closely similar to that of *crassiforceps* n. sp. and ♀ differing from *nigriapicalis* in possession of larger fore TR, very narrowly spread macrotrichia of wing and quite specific structure of fore and hind tarsal claws.

Male: Body 2.43 mm long; wing 1.74×0.57. Head entirely fuscous, eyes just contiguous, mouth parts fuscous, clypeus with 3–4 setae on either side. Palp slender, III with

group of only 4–5 sensillae on preapical area, PR 3.0–3.5, RL-P 6 : 13.5 : 19.5 : 9 : 22.5. Antenna with I fuscous pale brown, II–XI very pale brown, short-oval to elongate-oval, with plumose hairs same color, XII–XIV pale brown; CRL of II–XI to XII–XIV 192 : 157, RL-8A 17 : 18 : 18 : 18 : 19 : 38 : 55 : 62. Thorax with tergites mainly pale ochreous, scutum slightly more brownish on anterior margin, with caudoscuteal area and lateral parts behind scutal sutures almost white, scutellum with 4 bristles. Legs with coxae and trochanters pale brown, fore femur with basal 1/2 slightly fuscous, other parts entirely pale ochreous; hind tibial comb with 7 (rarely 6) apical bristles; claws cleft at tips; tarsal spur-like spines: in fore, I–II each with 1 apical; in mid, I–III each with 2 apical, I with 1 (rarely 0) sub-basal; in hind, I–II each with 1 apical, III with 2 apical; TR and RL-L 2.1–2.26 and 43 : 40 : 27 : 12.5 : 5 : 3.5 : 4.5 in fore, 2.67–2.75 and 53 : 49 : 36 : 13.5 : 5 : 3 : 4.8 in mid, 1.94–2.17 and 54 : 53 : 29 : 14 : 5 : 3 : 6 in hind.

Wing very pale brown, macrotrichia very sparsely spread only along apical margin between ends of R_s and M_2 , costa ending above midway between ends of M_2 and M_{3+4} , CR 0.82, RL-V 55 : 55 : 57 : 13 : 43, RR about 3 (29 : 10), M_{1+2} longer than r-m (10 : 7), fMCu under end of r-m. Halter white. Abdomen white (in paratype ♂, very slightly fuscous on tergites), tergite I with 8–16 setae on either side. Hypopygium (fig. 9k) brown, styles, parameres and aedeagal sclerites dark; sternite without caudal incision; style rather stout, evenly arcuate, not distinctly tapered, slightly shorter than coxite (40 : 45); aedeagus with lateral sclerite 0.65 as long as style (26 : 40), with apical part sharply pointed; paramere very slightly sinuous, almost uniform in thickness, as long as style, with apex oval, basal sclerite elongate-triangular, about 1/2 as long as main part (21 : 40).

Female: Body 2.18 mm long; wing 1.4–1.46×0.51. General color more brownish than in ♂. Head brown, eyes bare, narrowly separated, proboscis about 1/2 of head length (13 : 28). Mandible with 7–8 teeth rather irregular. Palp pale brown, with small sensory pore bearing about 4 sensillae, PR 2.6, RL-P 6 : 13 : 17 : 8 : 19. Antenna with I brown, II–IX with pale bases, other parts and segments brown, AR 0.94, RL-13A 30×8 : 22×7 : 22.5×7.....26 : 27 : 29 : 38 : 37.5 : 37 : 36 : 48 (W=6–7). Thorax with tergites brown, other sides pale brown, scutellum with 4 long and 0–3 small bristles. Legs very pale ochreous, almost white, not strongly setigerous, hind tibia with 5 pale brown long dorsal setae, tibial comb with 7 pale ochreous apical bristles; TR and RL-L 2.1–2.2 and 42 : 41 : 27.5 : 12.5 : 4 : 3 : 5 in fore, 2.65–2.67 and 55 : 60.7 : 36.3 : 13.7 : ? : ? : ? in mid, 2.1–2.33 and 51 : 51 : 29 : 13.8 : 5 : 3 : 5 in hind; claw of fore leg (fig. 9l) with basal tooth very short and sharply pointed, RL to basal tooth and V 14 : 6 : 21, that of hind (fig. 9m) with basal tooth long, sharply pointed, slender, RL to basal tooth and V 13 : 10 : 19 (mid V and claw missing).

Wing pale brown, macrotrichia spread closely along wing margin of cells R_5 and M_1 , costa ending above middle between apices of M_2 and M_{3+4} , fMCu under end of r-m, CR 0.82, RL-V 48 : 48 : 50 : 12 : 42, RR about 3 (29 : 9), M_{1+2} as long as r-m (6 : 6). Halter white. Abdomen pale brown or brown, with sparse setae, tergite I with 6–7 setae on either side, cerci pale brown; spermathecae brown, oval, subequal (2+25×18, 2+23×16), each with very small curved chitinized part of duct, vestigial one (5×5) very pale.

DISTRIBUTION: New Guinea.

Holotype: ♂, Matoko, Finisterre Range, Saidor, NE NG, 29. VIII–5. IX. 1958, Brandt.
Allotype: ♀, Waris, 450–500 m, S of Hollandia, NW NG, 24–31. VIII. 1959, Maa, at light.

Paratypes: 1 ♂ with holotype; 1 ♂, Eliptamin Vall., 1665–2350 m, NE NG, 19.VI.1959, Brandt; 1 ♀, Nondugl, 1600 m, NE NG, 9.VII.1955, Gressitt, by light trap.

Besides the New Guinea species, this is allied to *samoana* Edwards in general color and structure; but in this Samoa species (only ♀ is known), antennal segments II–IX are only over 2× and X–XIV, only nearly 4× as long as broad, hind tibia is provided with dorsal setae not much longer than tibial diameter and claws are normal, differing from the new species.

61. *Stilobezzia* sp. NG No. 1 Fig. 3h.

Large species (wing 2.12×0.79 mm) with thorax pale yellowish ochreous, abdomen brown, palp fuscous, with large sensory pore, AR 1.13, scutellum with 5 large and 8 small setae, legs with TR 2.8 in fore, 3.22 in mid, 2.99 in hind, allied to *reflexa* n. sp. except for larger TR and specific claws each of which bears strongly curved and sharply pointed basal tooth, differing from allied species. Male unknown.

DISTRIBUTION: New Guinea.

SPECIMEN EXAMINED: 1 ♀, Mt. Otto, 2200 m, NG, 22.VI.1955, Gressitt.

62. *Stilobezzia* sp. NG. No. 2

Medium-sized (wing $1.67\text{--}1.69 \times 0.58$ mm) dark brown species somewhat related to *subviridis* Macfie, but distinctly differing in the mainly dark brown to brown femora and tibiae of all legs; AR 1.62, palp with small sensory pore on III, TR 2.0–2.13 in fore, 2.55 in mid, 2.38 in hind leg. Male unknown.

DISTRIBUTION: New Guinea.

SPECIMENS EXAMINED: 1 ♀, Kiambavi Vill., Finisterre Range, Saidor, NG, 22–29.VII.1958, Brandt; 1 ♀, Tsenga, 1200 m, Upper Jimmi Vall., NG, 14.VII.1955, Gressitt.

This is closely related to Marquesan *tenebrosa* Macfie, but the related species is somewhat different from NG No. 2 in the following points: wing is smaller ($1.0\text{--}1.2 \times 0.4$ mm) and without macrotrichia, scutellum bears only 4 bristles, hind TR is smaller (2.0) and larger 2 spermathecae are very unequal.

63. *Stilobezzia* sp. NG No. 3

Large (wing 2.33×0.73 mm) brown species, palp with many surface sensillae on apical 1/3 of III, closely allied to *crassiforceps* n. sp. and *setigeripes* n. sp., but distinctly differs by the dark apical bristles of hind tibial comb, less setigerous scutellum (with only 6 large bristles) and hind tibia (with 8–11 strong dark dorsal bristles), legs with TR 2.05 in fore, 2.67–2.72 in mid, 2.25–2.26 in hind. Male unknown.

DISTRIBUTION: New Guinea.

SPECIMENS EXAMINED: 1 ♀, Lae, 10 m, NG, 6.VII.1957, Hardy; 1 ♀, Wewak, 2–20 m, NG, 11.XI.1957, Gressitt.

General color is somewhat similar to that of *castanae* Macfie known from Sumatra; but the related species is quite different from the present species in the following points: last tarsal segments of all legs armed with 1–2 pairs of spines, wing smaller (1.58×0.58 mm), scutellum bears only 4 bristles and hind TR larger (2.5 instead of 2.26).

64. *Stilobezzia* sp. NG No. 4

Medium-sized (wing 1.43 mm long) very pale brown species, AR 0.99, legs white and with short dark stout setae, TR 1.95 in fore, 2.45 in mid, 2.24 in hind, somewhat related to *papuae* n. sp. and *bifurcata* Tokunaga both of which are provided with a larger mid TR usually being about 3.0 differing from the present species. Male unknown.

DISTRIBUTION: New Guinea.

SPECIMEN EXAMINED: 1 ♀, Kulumadau Hill, Woodlark (Murua) I., NG, 10. II. 1957, Brandt.

65. *Stilobezzia* sp. NG No. 5

Large (wing 2.22×0.85 mm) brown species, AR 1.23, palpal sensory pore large, scutellum with 5 large and 3 small setae, TR 2.14 in fore, 2.77 in mid, 2.4 in hind, closely allied to NG No. 1 which have larger TR of mid leg (3.22). Male unknown.

DISTRIBUTION: New Guinea.

SPECIMEN EXAMINED: 1 ♀, Main Finisterre Range, nr. Freyberg Pass, 2550 m, NG, 1-21. X. 1958, Brandt.

66. *Stilobezzia* sp. NG No. 6

Medium-sized (wing 1.64×0.51 mm) pale yellow species, AR 0.75, scutellum with only 4 large bristles, TR 2.25 in fore, 3.1 in mid, 2.12 in hind leg, allied to *papuae* n. sp. having large sensory pore of palpal segment III, but different from allied species in less setigerous scutellum. Male unknown.

DISTRIBUTION: New Britain.

SPECIMEN EXAMINED: 1 ♀, Lowlands Agr. Stat., Keravat, New Britain, 13-17. VI. 1960, Smee, at light.

RECENT LITERATURE ON PACIFIC INSECTS

DIPTERA

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