

THE GENERA *GUNTHERIA* AND *ORNITHOGASTIA* (ACARI: TROMBICULIDAE) IN PAPUA NEW GUINEA¹

By M. Lee Goff²

Abstract. The genus *Guntheria* is defined along with its 3 subgenera: *Guntheria*, *Derrickiella* and *Domrowana*. *Ophthalmophila* is synonymized with *Domrowana*. The 22 known species of *Guntheria* occurring in Papua New Guinea are diagnosed and illustrated and *Guntheria wauensis*, n. sp. is described from the Moss-forest Rat, *Rattus niobe*. *Ornithogastia* is raised to generic status and the 1 species reported from Papua New Guinea, *Ornithogastia riversi*, is diagnosed and illustrated. A key to the species in both genera from Papua New Guinea is given.

Womersley (1939) proposed the monotypic genus *Guntheria* to accommodate *Neoschoengastia kallipygos* Gunther, 1939. Womersley & Heaslip (1943) proposed the nomen novum *Guntherana* to replace *Guntheria* Womersley, 1939, on the grounds that this name was preoccupied by *Güntheria* Bleeker, 1862 (Pisces). Domrow (1960) redefined the genus under the name *Guntherana* and transferred 26 species to this genus from other schoengastiine genera. Four new species were also described in the work which, along with the 3 species already in the genus (*G. kallipygos*, *G. tindalei* and *G. transluscens*), gave a total of 33 species, all from Australia and New Guinea. Under this interpretation, 2 subgenera were recognized: *Guntherana* Womersley & Heaslip, 1943, and *Derrickiella* Audy & Domrow, 1957. Vercammen-Grandjean & Langston (1971) monographed the genus, then totaling 63 species, and proposed 5 subgeneric categories: *Guntherana*, *Derrickiella*, *Domrowana*, *Ophthalmophila* and *Ornithogastia*. Domrow (1971) resurrected the generic name *Guntheria* Womersley, 1939 on the grounds that *Güntheria* Bleeker, 1862 was originally spelled with an umlaut and, therefore, is not a homonym of *Guntheria* Womersley, since Bleeker's taxon is currently spelled *Guentheria*.

Studies of chiggers collected by workers for Bishop Museum in Papua New Guinea have resulted in the recognition of 22 species of *Guntheria*, 1 described as new here. These studies have also indicated the necessity for reconsideration of the subgeneric status of taxa proposed by Vercammen-Grandjean (1960) and Vercammen-Grandjean & Langston (1971) (*Ornithogastia* and *Ophthalmophila*) and redefinition of other subgenera. Due to the somewhat confused taxonomic histories of the 23 species treated here from Papua New Guinea, brief diagnoses and synonymies are presented here for these species. Due to frequently incomplete illustrations of species in early de-

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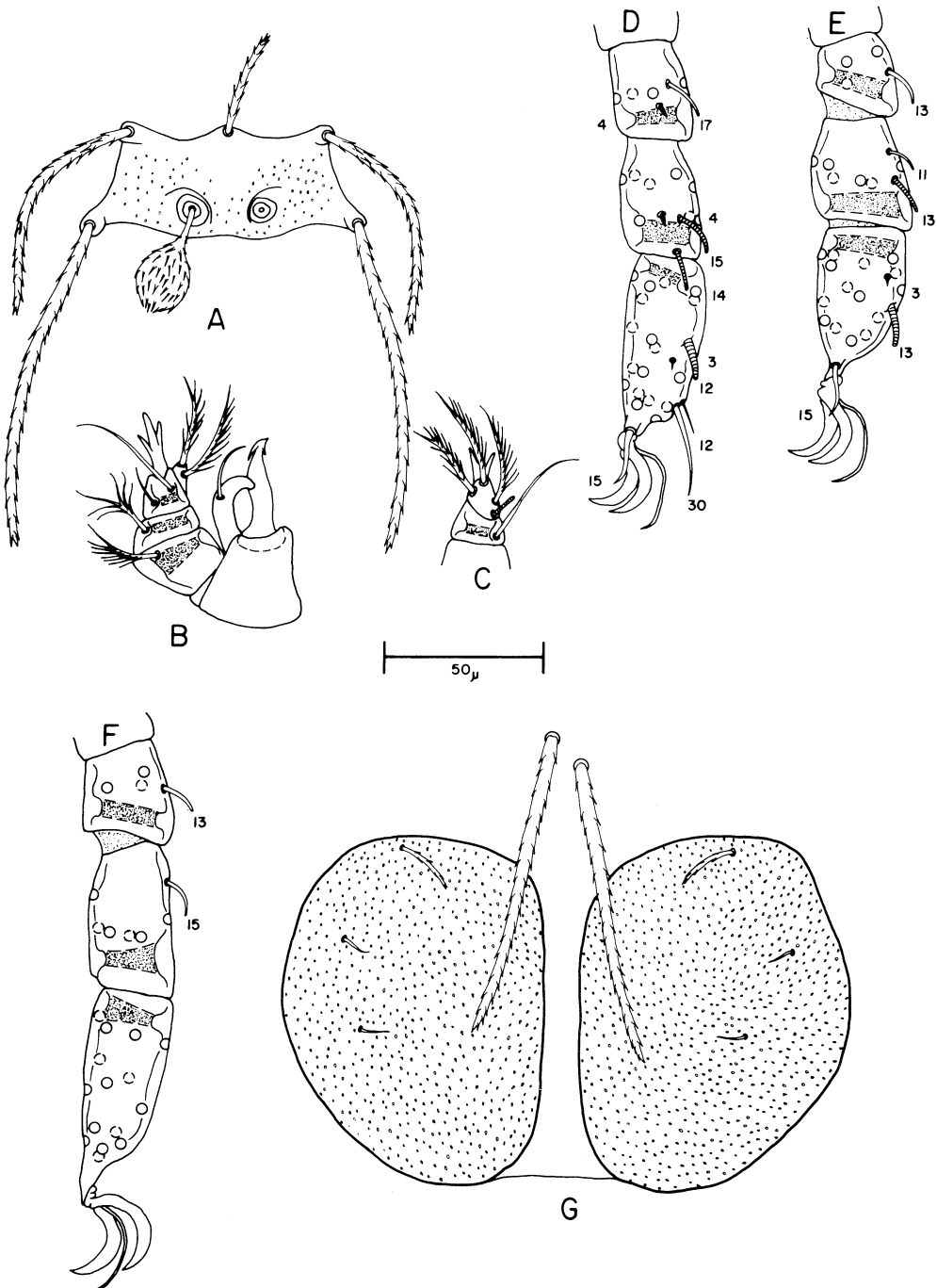


FIG. 1. Larva of *Guntheria* (*G.*) *hoxieae*: A, scutum; B, dorsal aspect of gnathosoma; C, ventral aspect of palpal tibia and tarsus; D, leg I distal 3 segments showing specialized setae (measurements given in micrometres) and bases of branched setae; E, leg II as above; F, leg III as above; G, pygosomal plates.

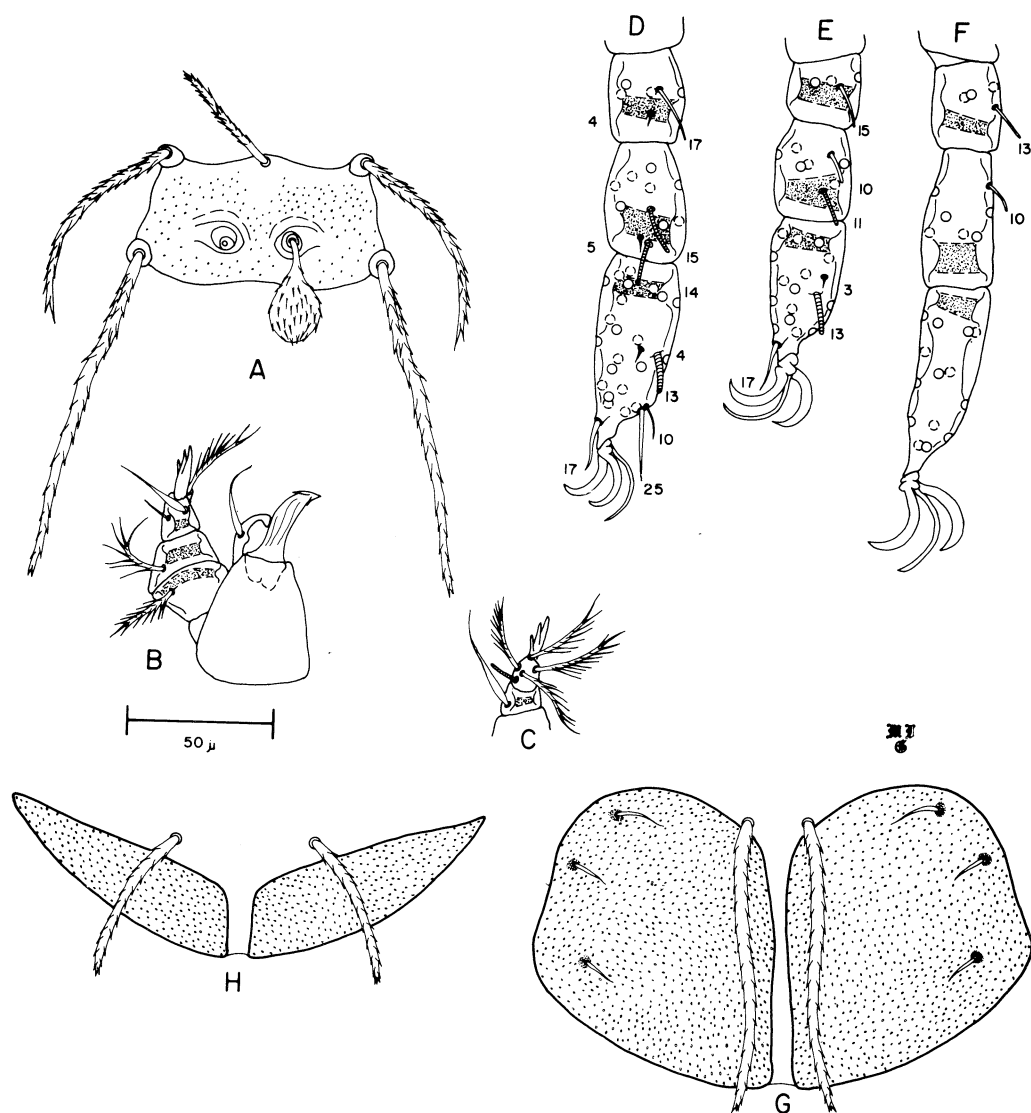


FIG. 2. Larva of *Guntheria (G.) inflata*: A, scutum; B, dorsal aspect of gnathosoma; C, ventral aspect of palpal tibia and tarsus; D, leg I distal 3 segments showing specialized setae (measurements given in micrometres) and bases of branched setae; E, leg II as above; F, leg III as above; G, dorsal aspect of pygosomal plates; H, ventral aspect of pygosomal plates.

scriptions, illustrations of the species are also provided. Holotypes in the collection of Bishop Museum are indicated in synonymies by Bishop type numbers. Holotypes deposited in other institutions are indicated as follows: U.S. National Museum of Natural History (USNM) (chigger collection currently housed at Bishop Museum); South Australian Museum, Adelaide, Australia (SAM); School of Public Health and Tropical Medicine, Sydney, Australia (SPHTM). Type data for species recently de-

scribed by Goff are presented in abbreviated form. Data for other species are presented as completely as possible. All measurements are given in micrometres. Terminology follows Brennan & Goff (1977).

Genus **Guntheria** Womersley

Guntheria Womersley, 1939; 157.—Domrow, 1971.—Goff, 1978.

Guntherana Womersley & Heaslip, 1943: 132 (nomen novum for *Guntheria* Womersley, 1939).—Domrow, 1960.—Nadchatram & Traub, 1969.—Vercammen-Grandjean & Langston, 1971.

Type-species. *Neoschoengastia kallipygos* Gunther, 1939.

Diagnosis. Palpal tarsus 5B or 5BS; palpal claw 3-pronged; chela with tricuspid cap; scutum quadrate-trapezoidal; sensilla clavate or globose; eyes 2/2, anterior larger, on ocular plate; pygosomal plates present or absent; legs all 7-segmented; 1-3 genualae I, genualae II and III; tibiala III; subterminala I, parasubterminala I present or absent; no mastisetae III.

Remarks. Species of *Guntheria* are the predominant mammal-infesting chiggers in Papua New Guinea (Goff 1979a). Although Domrow (1974, 1978) listed birds as hosts for several species and Brennan (1965) described *G. domrowi* from a migratory sea bird, mammals appear to be the major hosts for *Guntheria* species and birds are minor hosts. Idiosomal color for *Guntheria* species ranges from orange to red. Distribution for the genus is primarily Australia and New Guinea with some species reported from Asia. Bird-infesting species, such as *G. domrowi*, have a wider range but appear restricted to the Pacific islands.

Subgenus **Guntheria**

Guntheria Womersley, 1939.—Goff, 1978.

Guntherana Domrow, 1960 (in part).—Vercammen-Grandjean & Langston, 1971.—Goff, 1978.

Type-species. *Neoschoengastia kallipygos* Gunther, 1939.

Diagnosis. Palpal setal formula B/B/NNN/5B; galeala N; 1 genuala I; paired or single pygosomal plates present.

Guntheria hoxieae Goff

FIG. 1

Guntheria (*Guntheria*) *hoxieae* Goff, 1978: 24. Holotype (BISHOP 11,141) and 17 paratypes, Papua New Guinea, ex *Peroryctes longicauda*.

Diagnosis. Palpal setal formula B/B/NNN/5B; galeala N; 1 pair of humeral setae (58-65); 18 dorsal body setae (55-85), arranged 6-4-4-2-2; 12 preanal setae (32-36); 18 postanal setae (41-50); posterior idiosoma with a pair of pygosomal plates, each bearing 3 setae (anterior seta branched, posterior 2 setae nude); sensilla clavate, head with fine setules; genuala I; tarsala I (11-12); tarsala II (13); parasubterminala I; IP 775.

Scutal measurements of holotype followed by means and ranges of type-series in parentheses: AW 65 (63, 55-74); PW 85 (90, 79-107); SB 22 (23, 22-27); ASB 30 (28, 26-31); PSB 10 (10, 10-12); AP 35 (34, 30-37); AM 36 (37, 35-38); AL 83 (78, 72-85); PL 105 (105, 100-115); Sens. 35 × 7; PW/SD = 2.13-2.81.

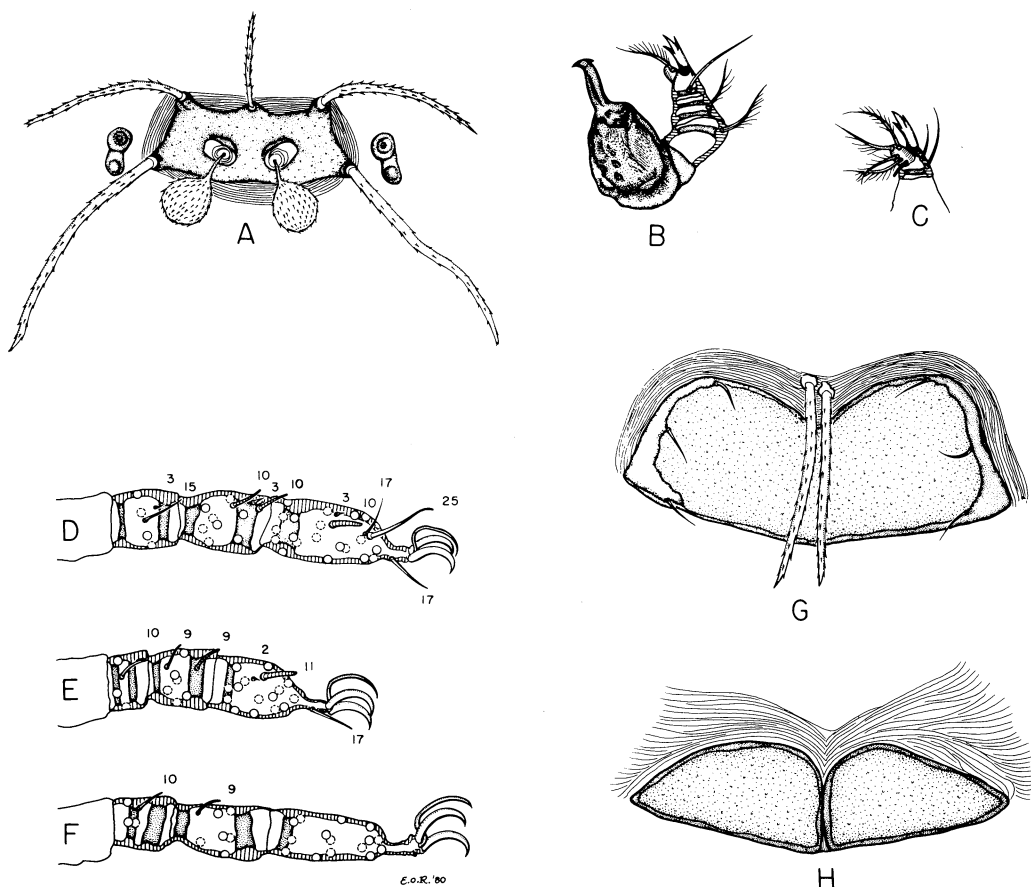


FIG. 3. Larva of *Guntheria* (*G.*) *kallipygos*: A, scutum; B, dorsal aspect of gnathosoma; C, ventral aspect of palpal tibia and tarsus; D, leg I distal 3 segments showing specialized setae (measurements given in micrometres) and bases of branched setae; E, leg II as above; F, leg III as above; G, pygosomal plates.

Remarks. *Guntheria hoxieae* may be separated from both *G. kallipygos* and *G. inflata* by having microtibiala I at the level of the proximal tibiala I (at level of distal tibiala I in both *G. kallipygos* and *G. inflata*). This species is known only from the type-series.

***Guntheria* (*Guntheria*) *inflata* Goff**

FIG. 2

Guntheria (*Guntheria*) *inflata* Goff, 1978: 21. Holotype (BISHOP 11,140) from Papua New Guinea, ex *Rattus niobe*; 1 paratype, same data except ex *Rattus ruber*.

Diagnosis. Palpal setal formula B/B/NNN/5B; galeala N; dorsal and ventral palpotibial setae and galeala inflated basally; 1 pair of humeral setae (69); 18 dorsal body setae (75–100), arranged 6-6-4-2; 10 preanal setae (29–32); 12 postanal setae (52–57); posterior idiosoma with a pair of pygosomal plates, each bearing 3 weak, nude setae; sensilla clavate, head with fine setules; genuala I; tarsala I (13); tarsala II (13); parasubterminala I; IP 790.

Scutal measurements of holotype followed by paratype in parentheses: AW 65 (67); PW 80 (92); SB 22 (25); ASB 31 (31); PSB 13 (15); AP 33 (37); AM 41 (broken); AL 88 (83); PL 113 (125); Sens. 35×17 (35×17); PW/SD = 1.8-2.0.

Remarks. *Guntheria inflata* is similar to *G. kallipygos* from which it may be separated by having dorsal body setae arranged 6-6-4-2 (6-4-6-2 in *G. kallipygos*), lengths of AL and PL setae (AL 83-88, PL 113-125 in *G. inflata* and AL 60-68, PL 80-89 in *G. kallipygos*) and the basally inflated dorsal and ventral palpotibial and galeal setae. Lack of reticulations on the pygosomal plate serves to separate *G. inflata* from *G. ornamentata*. In having paired pygosomal plates *G. inflata* may be separated from *G. parana*, which has a single plate.

Guntheria (Guntheria) kallipygos (Gunther)

FIG. 3

Neoschoengastia callipygea Gunther, 1938: 202. Nomen nudum.

Neoschoengastia kallipygos Gunther, 1939a: 83. Type-series from [Papua] New Guinea, [Morobe Distr], Bulolo, ex "rats and bandicoots," in SPHTM.

Neoschoengastia bipygalis Gunther, 1939b (nomen novum for *N. kallipygos*).

Guntheria bipygalis: Womersley, 1939.

Guntherana bipygalis: Womersley & Heaslip, 1943.—Womersley, 1952.

Guntherana (Guntherana) kallipygos: Domrow, 1960.—Nadchatram & Traub, 1969.—Vercammen-Grandjean & Langston, 1971.

Guntheria (Guntheria) kallipygos: Goff, 1978.

Diagnosis. Palpal setal formula B/B/NNN/5B; galeala N; 1 pair of humeral setae (55-60); 26 dorsal body setae (43-78), arranged 6-6-6-6-2; pair of pygosomal plates lacking ornamentation bearing 3 pairs of setae; 6 preanal setae (23); 18 postanal setae (38-40); 1 genuala I; tarsala I (11); tarsala II (10); paraterminala I; IP 640-650.

Scutal measurements of a paratype of *Neoschoengastia kallipygos*: AW 55; PW 67; SB 20; ASB 20; PSB 15; AP 27; AM 28; AL 57; PL 80; Sens. not present on specimen; PW/SD 1.91.

Remarks. The name *Neoschoengastia bipygalis* Gunther (1939c) was proposed as nomen novum for *N. kallipygos* Gunther (1939a). As noted by Domrow (1960), this action was unnecessary as the preoccupying name, *kallipygos* Derrick, Smith, Brown & Freeman, 1939, was a nomen nudum.

Gunther (1939b) included, along with the larval description, the description of differentiated and undifferentiated "ova" of this species attached to the hairs of hosts. On this basis, he postulated a closer host-parasite relationship for *G. kallipygos* than commonly observed in chiggers, with both the nymphal and adult stages living on or in close association with the host. Based on this relationship and the presence of paired caudal plates, he proposed a new subfamily, Guntheraninae (1952). Domrow (1960) observed structures similar to Gunther's "ova" from the anterior aspect of the hind legs of a Brindled Bandicoot, *Isodon macrourus*, from near Brisbane, Australia, and determined that these structures were modified stylostomes or feeding tubes. These stylostomes formed capsules embedded in the skin of the host. Larval structures were observed in some of the capsules, while others remained deserted. The life cycle of this species thus appears to follow the normal pattern for the family.

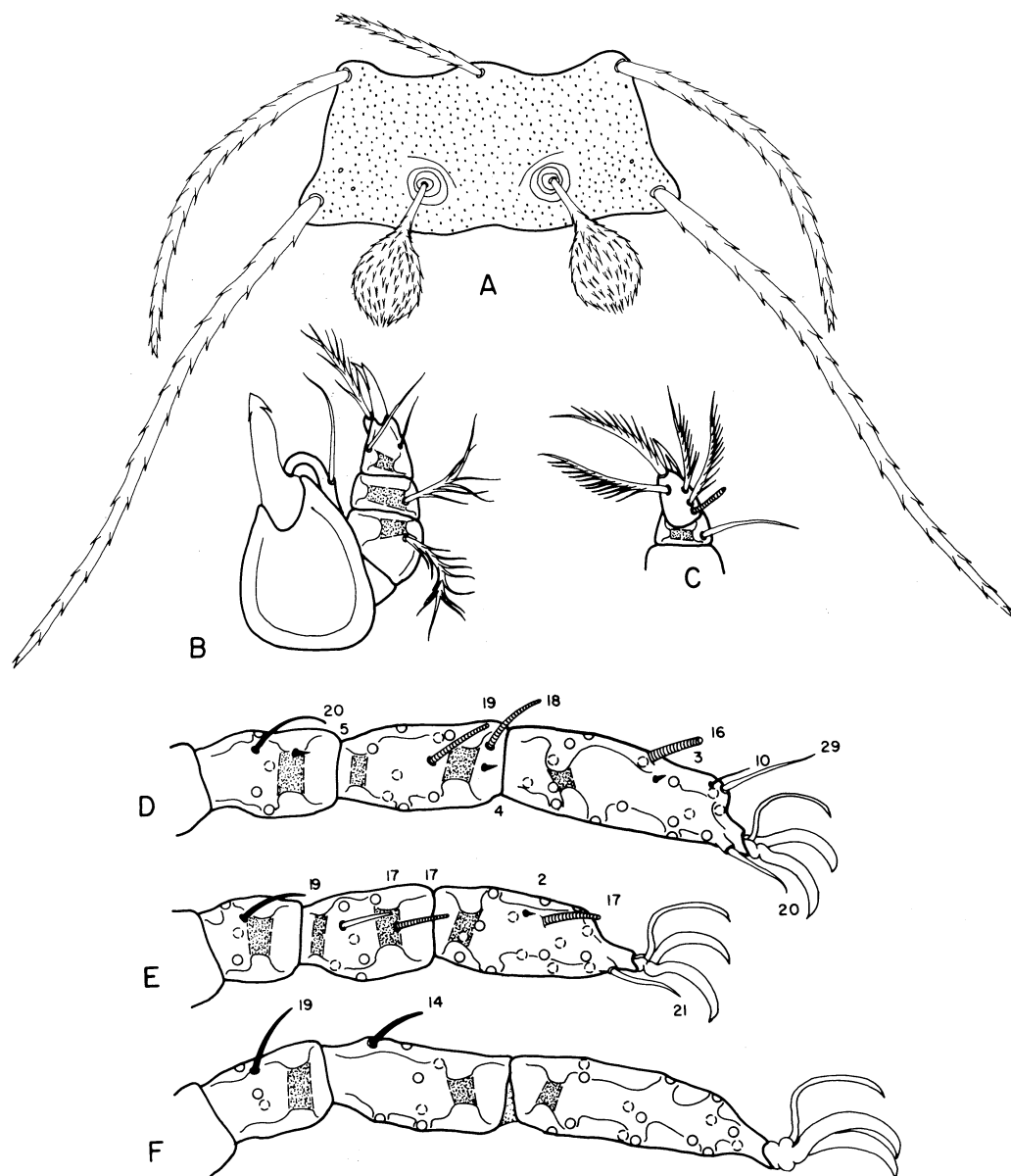


FIG. 4. Larva of *Guntheria* (*G.*) *mirzai*: A, scutum; B, dorsal aspect of gnathosoma; C, ventral aspect of palpal tibia and tarsus; D, leg I distal 3 segments showing specialized setae (measurements given in micrometres) and bases of branched setae; E, leg II as above; F, leg III as above.

Specimens examined (20). PAPUA NEW GUINEA. Morobe Distr, Bulolo, date and host unknown (slide label states that specimen is "a paratype of *Guntheria bipygalis* determined by Gunther"; specimen in USNM). Northern Distr, Dobodura, 12–30.XI.1943, "on boots" (4), same locality, 19.XII.1943, *Uromys caudimaculatus* (3), same

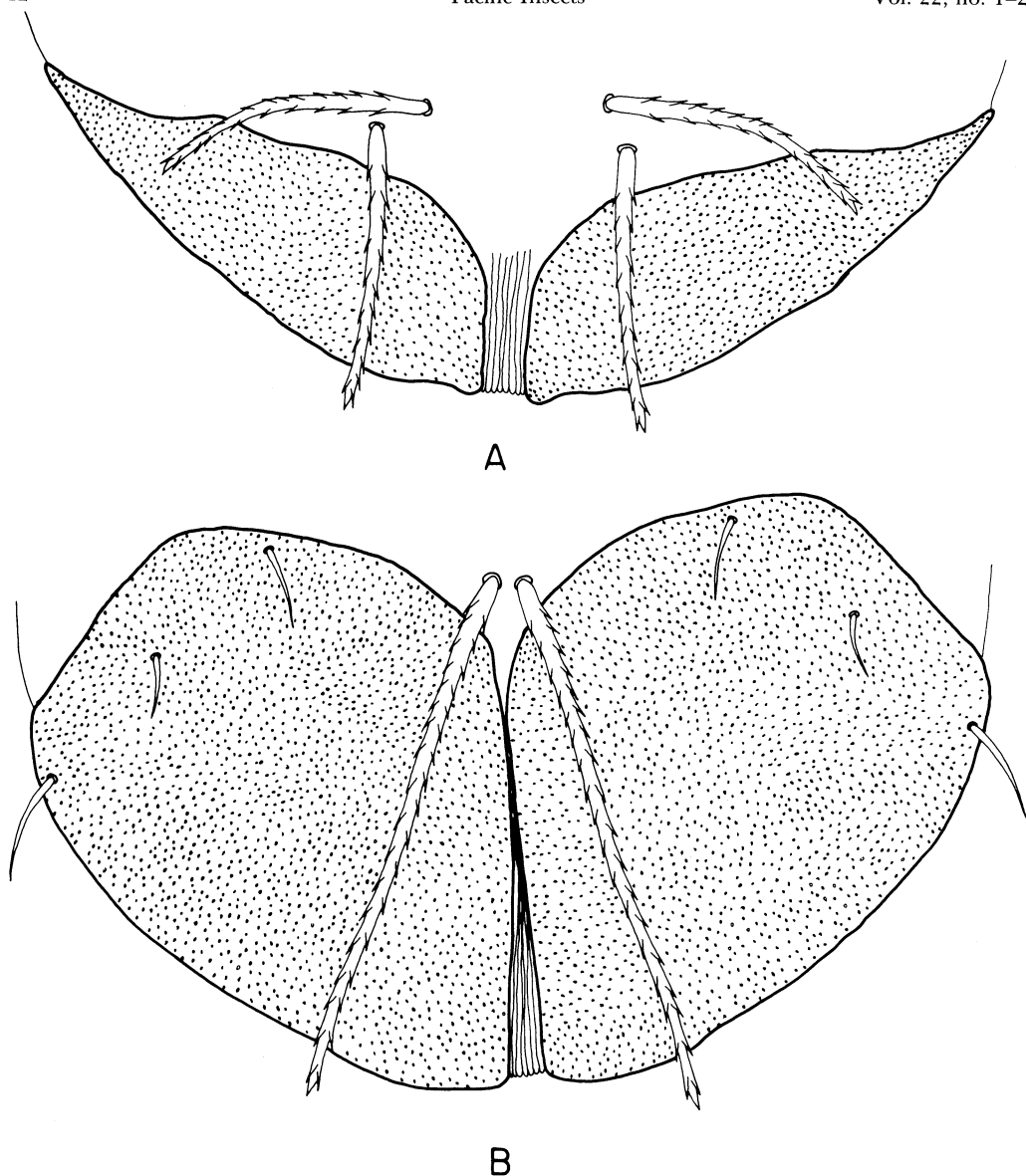


FIG. 5. Larva of *Guntheria* (*G.*) *mirzai*: A, ventral aspect of pygosomal plates; B, dorsal aspect of pygosomal plates.

locality, 15-16.VI.1944, 2 *U. caudimaculatus* (8), same locality, 3.XII.1944, *Rattus ruber* (3). AUSTRALIA. Queensland, ex "bandicoot" (1).

***Guntheria* (*Guntheria*) *mirzai* Goff**

FIG. 4-5

Guntheria (*Guntheria*) *mirzai* Goff, 1979a: 112. Holotype (BISHOP 11,408) and 7 paratypes, Papua New Guinea, ex *Melomys rubex* ♂.

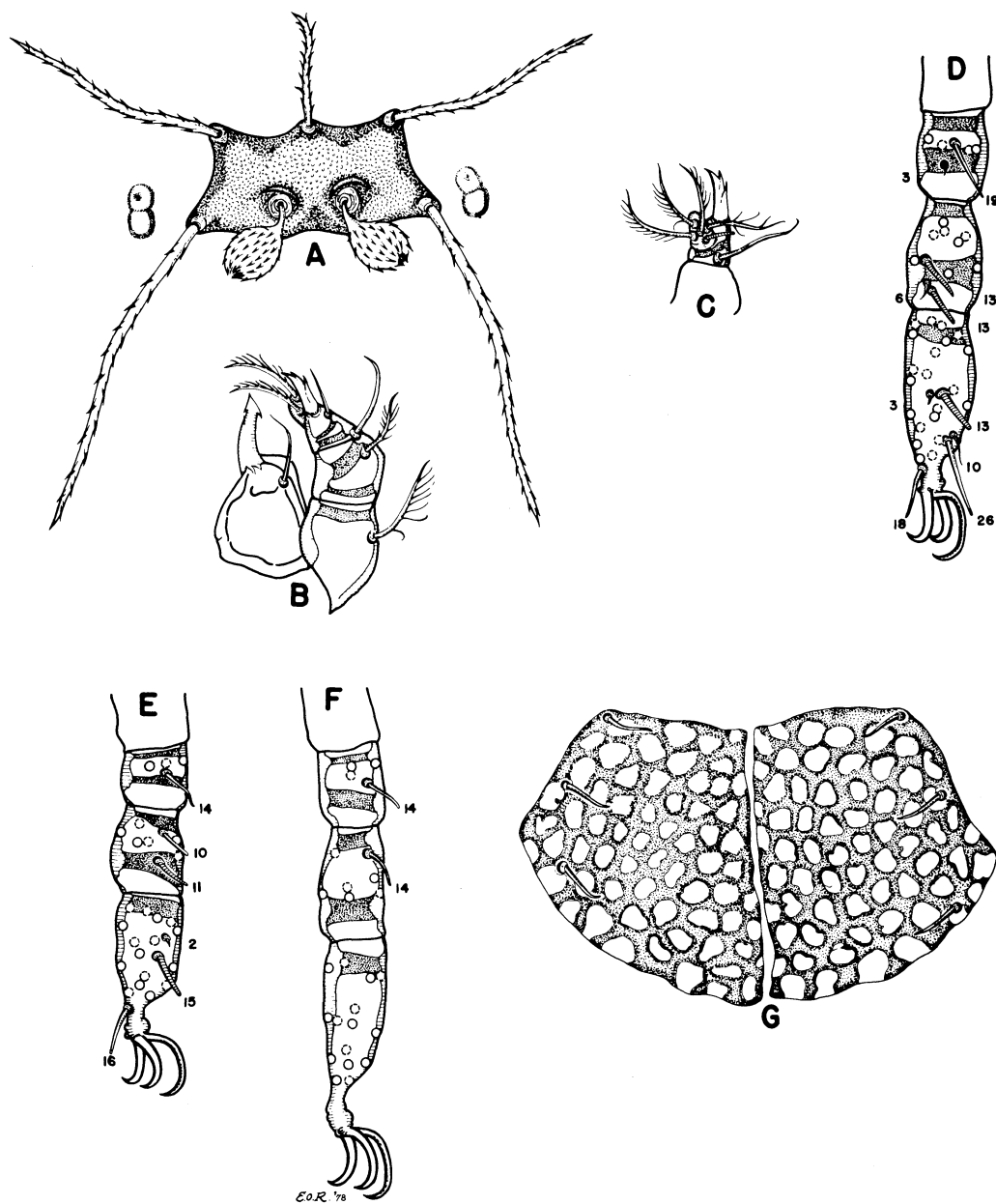


FIG. 6. Larva of *Guntheria* (*G.*) *ornamentata*: A, scutum; B, dorsal aspect of gnathosoma; C, ventral aspect of palpal tibia and tarsus; D, leg I distal 3 segments showing specialized setae (measurements given in micrometres) and bases of branched setae; E, leg II as above; F, leg III as above; G, pygosomal plates.

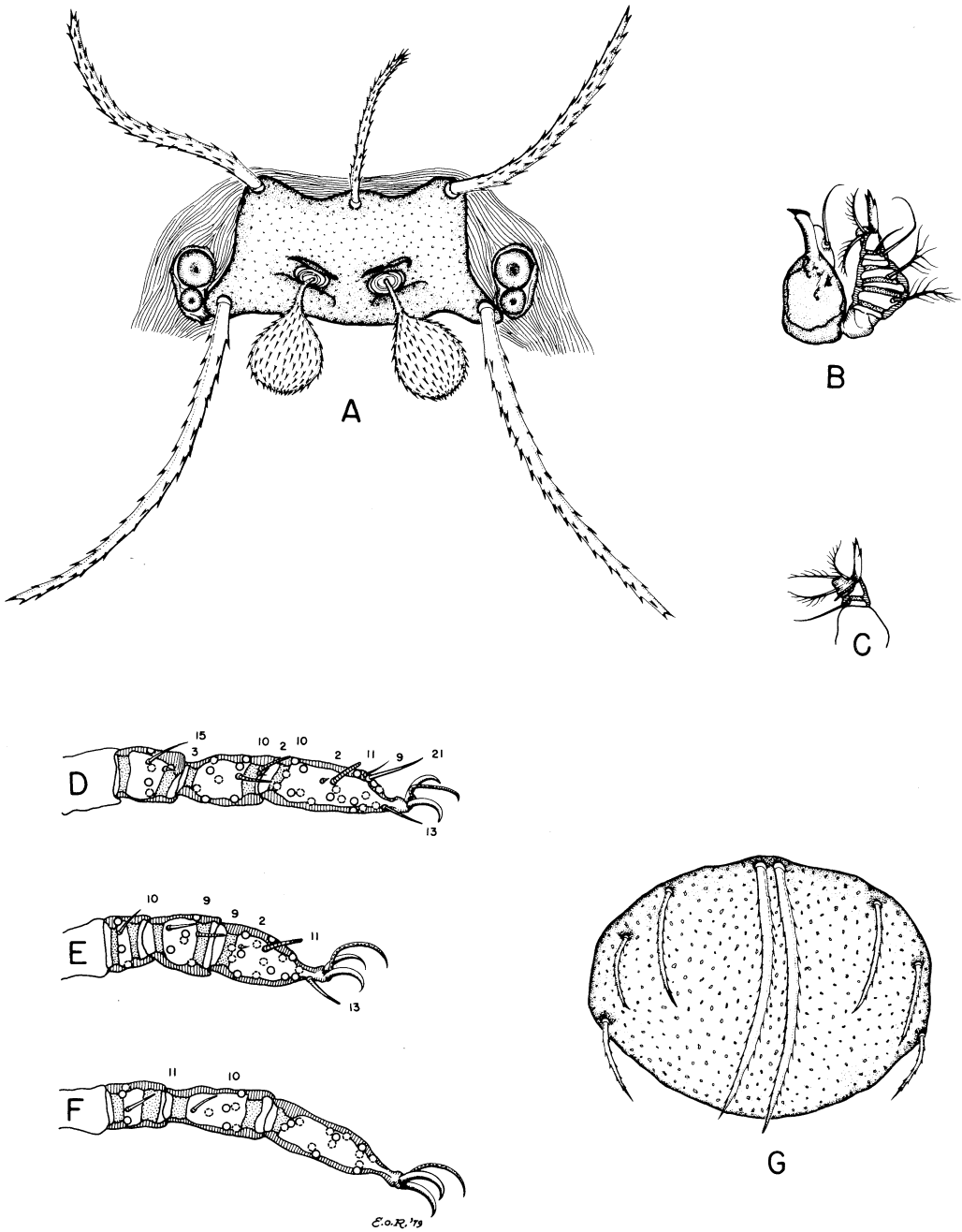


FIG. 7. Larva of *Guntheria* (*G.*) *parana*: A, scutum; B, dorsal aspect of gnathosoma; C, ventral aspect of palpal tibia and tarsus; D, leg I distal 3 segments showing specialized setae (measurements given in micrometres) and bases of branched setae; E, leg II as above; F, leg III as above; G, pygosomal plate.

Diagnosis. Palpal setal formula B/B/NNN/5B; galeala N; 1 pair of humeral setae (84–87); 20 dorsal body setae (101–122), arranged 8-6-4-2; 22 preanal setae (32–46); 8 postanal setae (60–65); posterior idiosoma with a pair of punctate pygosomal plates, each bearing 3 weak, nude setae; sensilla capitate, head with fine setules; genuala I; tarsala I (16); tarsala II (17); parasubterminala I; IP 944–980.

Scutal measurements of holotype followed by means and ranges of type-series in parentheses: AW 72 (75, 72–78); PW 91 (96, 91–100); SB 26 (27, 25–29); ASB 37 (35, 32–39); PSB 13 (14, 11–16); AP 37 (38, 35–40); AM 51 (49, 45–51); AL 99 (98, 92–101); PL 149 (140–153); Sens. 39 × 20 (40 × 20, 39–41 × 20); PW/SD = 1.82–2.13.

Remarks. *Guntheria mirzai* may be easily separated from all other members of the subgenus with punctate pygosomal plates by having 8 setae in the 1st posthumeral row of dorsal body setae (6 in other species). *Guntheria scrobiculata* also has 8 setae in the 1st posthumeral row, but differs from *G. mirzai* in having scrobiculate pygosomal plates.

***Guntheria (Guntheria) ornamentata* (Nadchatram & Traub)**

FIG. 6

Guntherana ornamentata Nadchatram & Traub, 1969: 263. Holotype (BISHOP 8206), Papua New Guinea, Morobe Distr, Edie Creek, Mt Kaindi, 2300 m, ex *Melomys* sp. (B 80823–25), 4.XI.1966, R. Traub.

Diagnosis. Palpal setal formula B/B/NNN/5B; galeala N; 1 pair of humeral setae (88–92); 18 dorsal body setae (95–116), arranged 6-6-4-2; 2 honey-combed caudal plates bearing 3 short (15–19) nude setae anteriorly on each plate; 12–14 preanal setae (30); 8 postanal setae (57–62); 1 genuala I, tarsala I (13–15); tarsala II (15–16); parasubterminala I; IP 780–830.

Scutal measurements of holotype followed by means and ranges of type-series in parentheses: AW 69 (65, 59–69); PW 97 (87, 78–97); SB 28 (24, 22–28); ASB 29 (30, 29–31); PSB 11 (11, 10–12); AP 34 (34, 32–36); AM 40 (40, 38–30); AL 80 (80, 80–82); PL 125 (127, 122–130); Sens. missing from holotype (34, 34–35), head 25 × 18 with setules; PW/SD = 2.1.

Remarks. In having a pair of ornamented pygosomal plates, *G. ornamentata* is similar to *G. scrobiculata*, but differs in having 6 setae in the 1st posthumeral row (8 in *G. scrobiculata*), ventral palpal tibial seta nude (B in *G. scrobiculata*) and oval pygosomal plates (roughly rectangular in *G. scrobiculata*). *G. ornamentata* has been recovered from the ears and posterior dorsal body surface of hosts. Idiosomal color is unknown.

Specimens examined (57). PAPUA NEW GUINEA. S Highlands Distr: 5 km W of Mendi, 2000 m, moss forest, 6–8.XII.1967, 1 *Antechinus naso* (2), 2 *Peroryctes longicauda* (24); Duna Subdistr, fringe of Lavani Val, 2450 m, moss forest, 14.I.1968, 1 *Pseudoechirus cupreus* (2). Chimbu Distr: Arabori, 23 km SE of Chuave, 2300 m stream, 25.XI.1967, 1 *Anisomys imitator* (1). E Highlands Distr: Kassam Pass, 1400 m, forest, 14.XI.1967, 1 *Murexia longicauda* (20). Morobe Distr: Bulldog Rd, 20 km from Edie Creek, 2500 m, moss forest 1.XI.1967, 1 *P. cupreus* (4), 5.XI.1967, 1 *Melomys* sp. (1); Mt Kaindi, 1900 m, scrub in dry creek, 10–12.X.1967, 2 *Rattus ruber* (3).

***Guntheria (Guntheria) parana* (Womersley)**

FIG. 7

Guntherana parana Womersley, 1944: 100. Type-series from New Guinea, Abidari, collected unattached on boots, 28.VII.1943, R.N. McCulloch in SAM.—Blake et

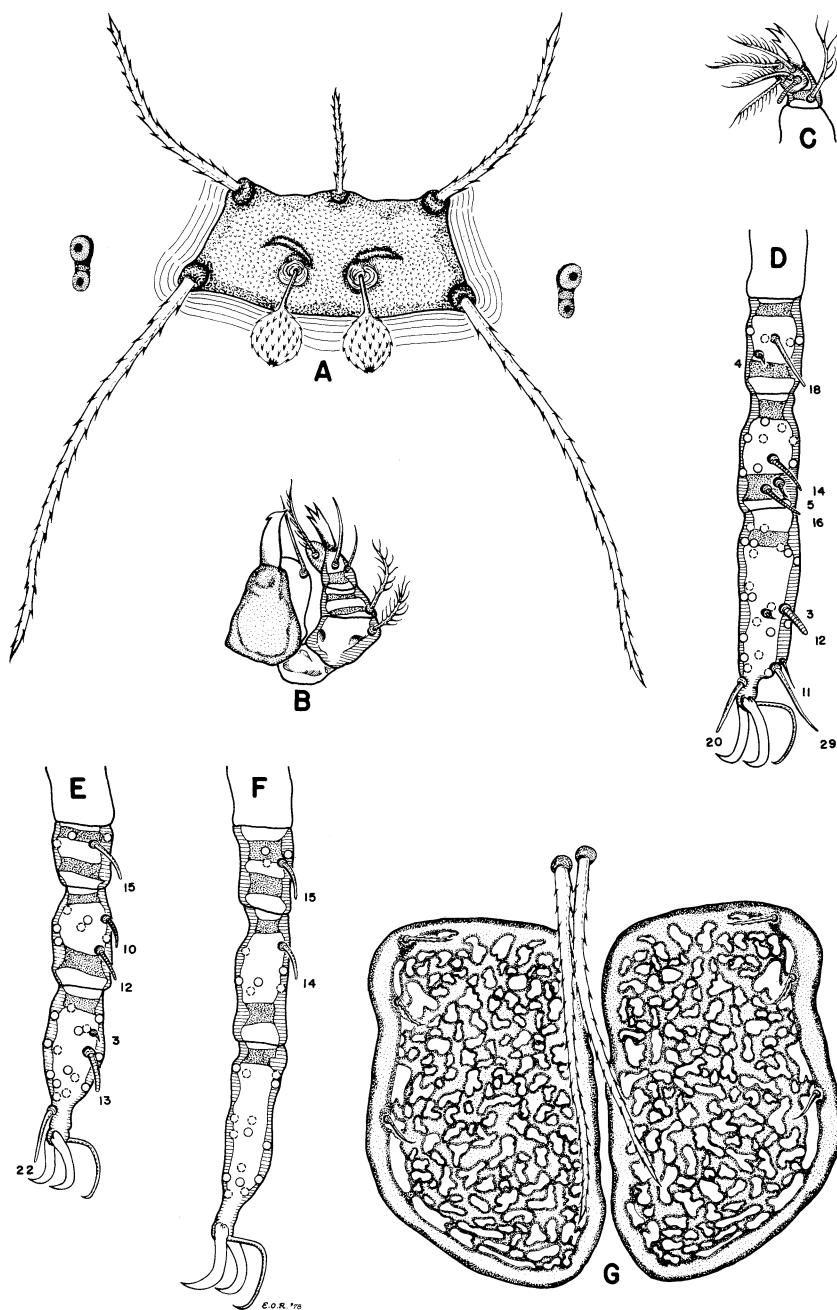


FIG. 8. Larva of *Guntheria* (*G.*) *scrobiculata*: A, scutum; B, dorsal aspect of gnathosoma; C, ventral aspect of palpal tibia and tarsus; D, leg I distal 3 segments showing specialized setae (measurements given in micrometres) and bases of branched setae; E, leg II as above; F, leg III as above; G, pygosomal plates.

al., 1945.—McCulloch, 1946.—Taylor & Murray, 1946.—Gunther, 1952.—Whar-
ton & Fuller, 1952.

Guntherana (*Guntherana*) *parana*: Vercammen-Grandjean & Langston, 1971.

Guntheria (*Guntheria*) *parana*: Goff, 1978.

Diagnosis. Palpal setal formula B/B/NNN/5B; galeala N; 1 pair of humeral setae (53–55); 24 dorsal body setae (62–100), arranged 6-4-6-2; 6 preanal setae (24–26); 18 postanal setae (33–39); posterior idiosoma with a single heavily punctate pygosomal plate, bearing 3 pairs of setae; sensilla globose, head with fine setules; genuala I; tarsala I (10–11); tarsala II (11–12); parasubterminala I; IP 647–684.

Scutal measurements (means and ranges of 7 specimens examined): AW 45, 43–48; PW 62, 58–66; SB 15, 14–17; ASB 21, 18–24; PSB 13, 10–16; AP 26, 24–28; AM 38, 37–41; AL 67, 63–70; PL 90, 83–97; Sens. 31 × 16, 29–33 × 15–18; PW/SD = 1.74–1.94.

Remarks. *Guntheria parana* may be distinguished from all other species in the subgenus in having a single pygosomal plate. Although originally described from unattached larvae, Vercammen-Grandjean & Langston (1971) list the Giant Brindled Bandicoot, *Isoodon torosus*, and the Marsupial Bandicoot, *Echymipera cockerelli* (= *E. kalubu*), as hosts.

Specimens examined (7). PAPUA NEW GUINEA: Abidari, 28.VII.1943, unattached on boots (1 paratype); Northern Distr, Dobodura, 30.X.1943–12.VIII.1944, unattached on boots (6).

***Guntheria* (*Guntheria*) *scrobiculata* Goff**

FIG. 8

Guntheria scrobiculata Goff, 1979b: 246. Holotype (BISHOP 11,432), Papua New Guinea, ex *Peroryctes raffranus*.

Diagnosis. Palpal setal formula B/B/NNB/5B; galeala N; cheliceral blade (34) with tricuspid cap; 1 pair of humeral setae (29); 22 dorsal body setae (42–74), arranged 8-6-2-4-2; 2 pairs of sternal setae (anterior 53–57, posterior 55–57); 18 preanal setae (35–37); 14–16 postanal setae (46–48); posterior idiosoma with a pair of roughly rectangular pygosomal plates bearing irregularly shaped cells (FIG. 7G), each plate with 3 setae, anterior 2 barbed, posterior nude; scutum with biconcave anterior margin; posterior margin biconvex; PL > AL > AM; sensilla capitate, head with fine setules; 1 genuala I; tarsala I (15), tarsala II (14); IP 940–950.

Scutal measurements of holotype followed by means and ranges of 11 paratypes in parentheses: AW 68 (71, 65–79); PW 95 (102, 95–112); SB 24 (24, 23–26); ASB 35 (34, 30–36); PSB 17 (16, 14–17); AP 40 (40, 38–43); AM 37 (39, 37–41); AL 91 (95, 90–101); PL 160 (166, 154–176); Sens. 37 × 19 (37 × 19, 36–40 × 18–19); PW/SD = 1.82 (2.02, 1.79–2.15).

Remarks. In having ornamented pygosomal plates, *G. scrobiculata* is similar to *G. ornamentata*, but it differs in having the ventral palpal tibial seta branched (nude in *G. ornamentata*), 8 branched setae in the 1st posthumeral row (6 in *G. ornamentata*), anterior 2 pairs of setae on the pygosomal plates barbed (nude in *G. ornamentata*) and longer PL setae (PL 163–176 in *G. scrobiculata*, 122–130 in *G. ornamentata*). In addition the pygosomal plates are roughly rectangular in *G. scrobiculata* (oval in *G. ornamentata*) and lack the distinctly “honey-combed” appearance of *G. ornamentata*.

Specimens examined. Holotype + 11 paratypes, same data as holotype.

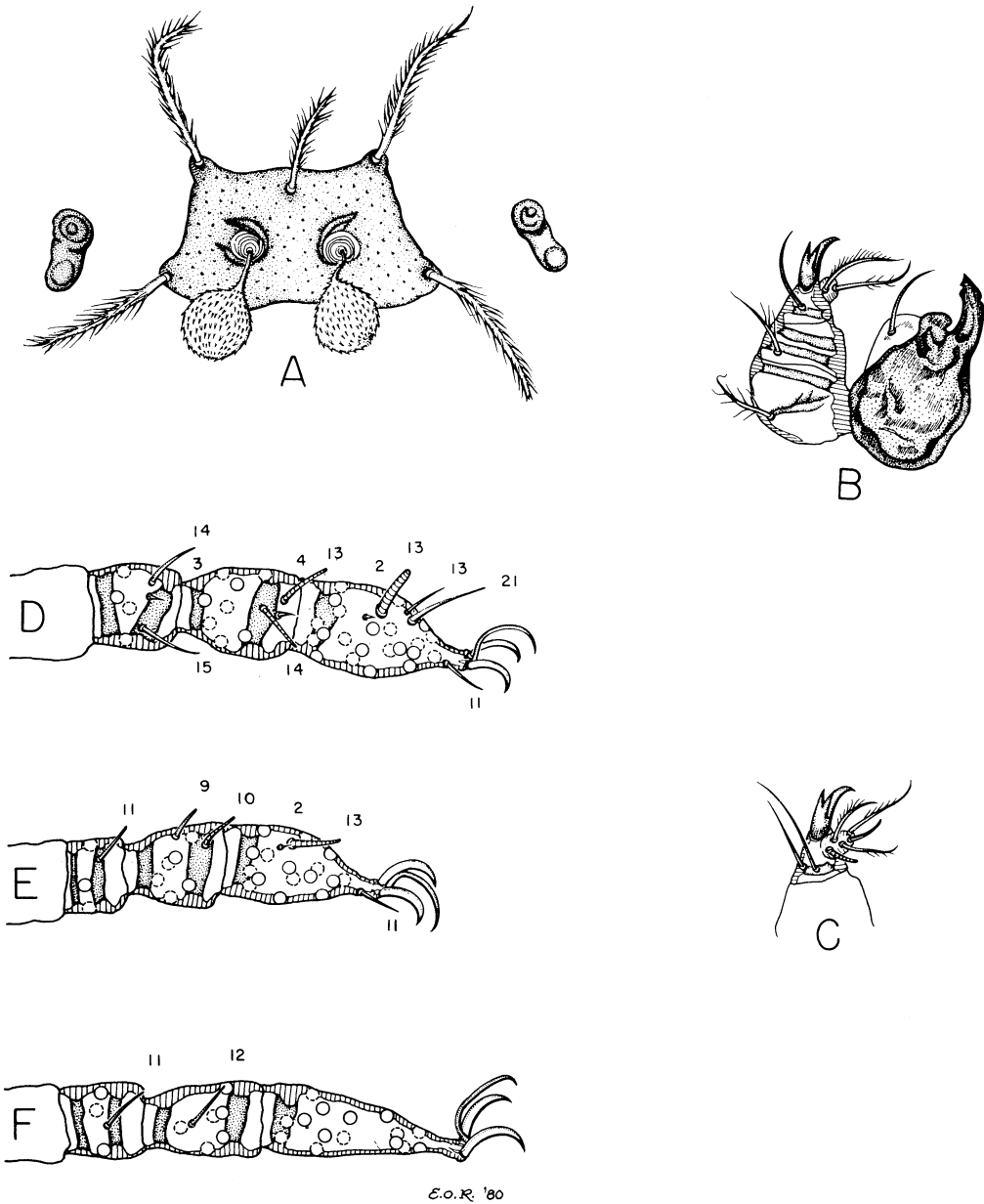


FIG. 9. Larva of *Guntheria* (D.) *echymipera*: A, scutum; B, dorsal aspect of gnathosoma; C, ventral aspect of palpal tibia and tarsus; D, leg I distal 3 segments showing specialized setae (measurements given in micrometres) and bases of branched setae; E, leg II as above; F, leg III as above.

Subgenus **Derrickiella** Audy & Domrow

Euschoengastia (*Derrickiella*) Audy & Domrow, 1957: 129.

Guntherana (*Derrickiella*): Domrow, 1960: 200.—Vercammen-Grandjean & Langston, 1971.

Type-species. *Neoschoengastia smithi* Womersley, 1939.

Diagnosis. Palpal tarsus 5BS; galeala nude or branched; 2 or 3 genualae I; pygosomal plates absent.

Guntheria (**Derrickiella**) **echymipera** (Womersley & Kohls)

FIG. 9

Ascoschoengastia echymipera Womersley & Kohls, 1947: 11. Holotype and 12 paratypes, Papua New Guinea, Northern Distr, Dobodura, ex *Echymipera cockerelli* (= *Echymipera kalubu*), 29.XI.1943, in SAM.

Euschoengastia echymipera: Wharton & Fuller, 1952.

Schoengastia (*Ascoschoengastia*) *echymipera*: Womersley, 1952.

Guntherana (*Guntherana*) *echymipera*: Domrow, 1960.

Guntherana (*Derrickiella*) *echymipera*: Vercammen-Grandjean & Langston, 1971.

Diagnosis. Palpal setal formula B/B/NNN/5BS; galeala N; 1 pair of humeral setae (34–36); 34 dorsal body setae (30–32), arranged 8-6-6-6-2-4-2; 26 preanal setae (23–25); 18 postanal setae (28–31); 2 genualae I, tarsala I (13); tarsala II (12–13); subterminala, and parasubterminala I; IP 625–630.

Scutal measurements of 5 paratypes (means followed by extremes): AW 46, 43–48; PW 61, 59–65; SB 22, 20–25; ASB 24, 22–25; PSB 16, 15–18; AP 31, 30–31; AM 27, 25–30; AL 45, 41–48; PL 41, 35–45; Sens. 23–25 (head 17 × 15); PW/SD = 1.52.

Remarks. Among Papua New Guinea species of *Guntheria*, *G. echymipera* appears similar to *G. womersleyi* and *G. strandtmanni*, but it may be distinguished from both by possession of 8 setae in the 1st posthumeral row as well as the presence of a palpal subterminala. *G. echymipera* is the only species of *Derrickiella* reported from outside Australia.

According to Domrow (1960), the correct host identification for the type-series is the Spiny Bandicoot, *Echymipera kalubu kalubu*. Color in life and parasitope for this species are unknown.

Specimens examined. 5 paratypes, same data as holotype.

Subgenus **Domrowana** Vercammen-Grandjean & Langston

Guntherana (*Domrowana*) Vercammen-Grandjean & Langston, 1971: 23.

Guntherana (*Ophthalmophila*) Vercammen-Grandjean & Langston, 1971: 88. **New synonymy.**

Type-species. *Neoschoengastia womersleyi* Gunther, 1940.

Diagnosis. Palpal tarsus 5B; galeala nude or branched; 1–3 genualae I; pygosomal plates absent.

Remarks. Vercammen-Grandjean & Langston (1971) proposed the monotypic subgenus *Ophthalmophila* to accommodate *Ascoschoengastia (Oculicola) scaevola* Domrow, 1960. The placement of this species into *Guntheria* appears correct, as *Ascoschoengastia*

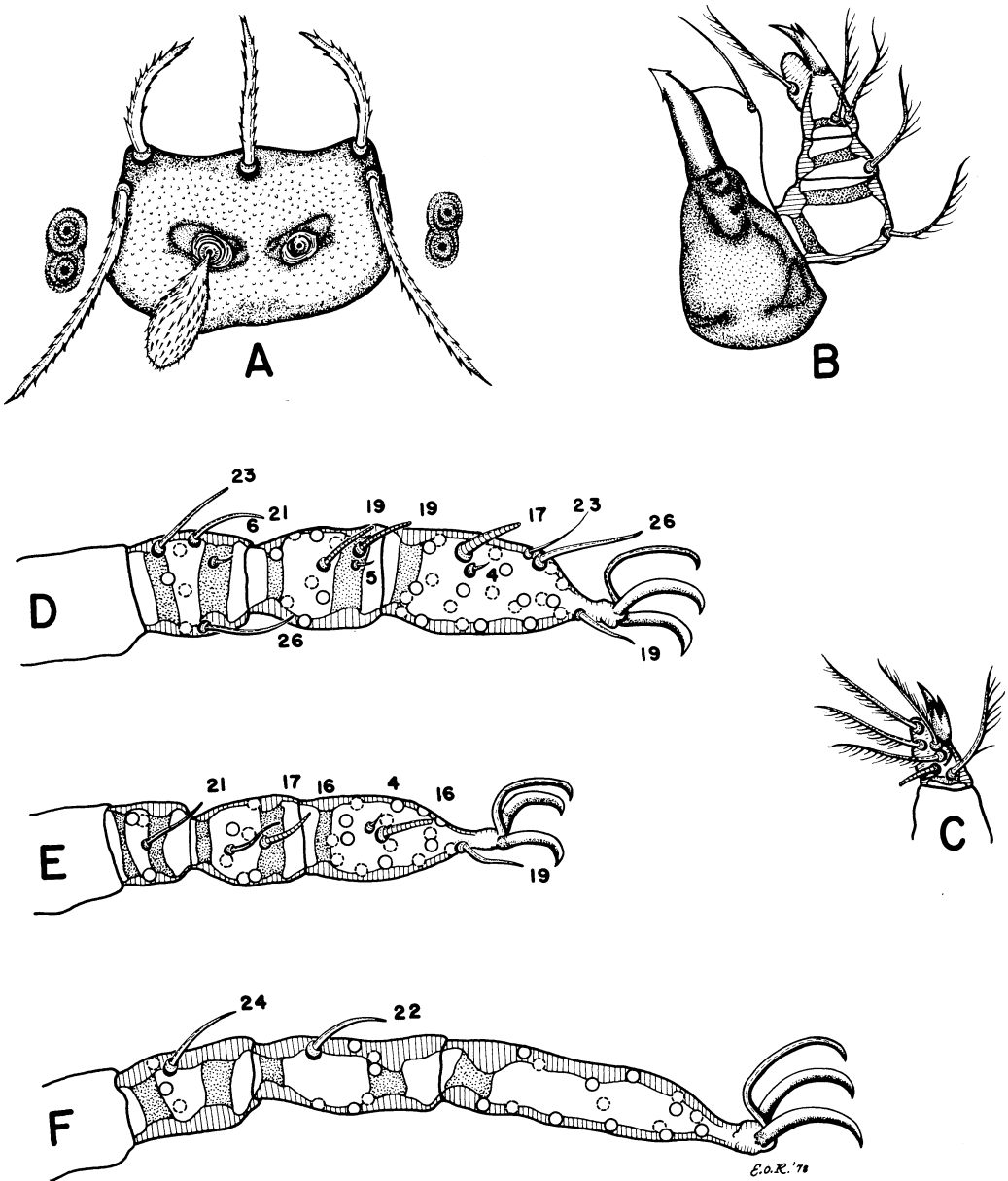


FIG. 10. Larva of *Guntheria* (*D.*) *crinita*: A, scutum; B, dorsal aspect of gnathosoma; C, ventral aspect of palpal tibia and tarsus; D, leg I distal 3 segments showing specialized setae (measurements given in micrometres) and bases of branched setae; E, leg II as above; F, leg III as above.

species uniformly have 6B on the palpal tarsus while *G. scaevola* has 5B. Rationale for proposal of a subgeneric designation based on nude palpal femoral and genual setae appears questionable, as these characters are generally considered only of specific value. Other characters cited (prominent tooth on tricuspid cap and large, 3-

pronged palpal claw) differ only in degree rather than kind from *Domrowana*. Thus it appears that *G. scaevola* should be placed in *Domrowana* and that *Ophthalmophila* is a junior synonym of *Domrowana*, based on page priority.

***Guntheria (Domrowana) crinita* (Womersley)**

FIG. 10

Schoengastia (Ascoschoengastia) crinita Womersley, 1952: 185. Holotype and 2 paratypes, Dutch New Guinea [Irian Jaya], Sansapor, ex *Echymipera doreyana* (= *E. kalubu*), 1945, W. D. Fitzwater.—Wharton & Fuller, 1952.—Domrow, 1960.

Euschoengastia crinita: Audy, 1954; 1957.—Audy & Domrow, 1957.—Womersley & Audy, 1957.

Guntherana (Domrowana) crinita: Vercammen-Grandjean & Langston, 1971.

Diagnosis. Palpal setal formula B/B/BBB/5B; galeala N; 1 pair of humeral setae (57); 102 dorsal body setae (37–44), arranged 10-10-4-14-10-12-8-12-8-6-4-4; 2 pairs of sternal setae; 70 preanal setae (27–29); 20 postanal setae (36–37); AL and PL bases approximated; PL bases anterior to SB; 3 genualae I; tarsala I (17); tarsala II (15–16); parasubterminala I; IP 890–971.

Scutal measurements [means and ranges of type-series after Womersley (1952)]: AW 84, 80–87; PW 92, 90–97; SB 31, 30–32; ASB 33, 32–36; PSB 30, no variation recorded; AP 17, 15–18; AM 54, only 1 determination; AL 46, 43–47; PL 90, no variation recorded; Sens. missing from all specimens.

Remarks. Domrow (1960) proposed that *G. crinita* and *G. mohri* be considered junior synonyms of *G. perameles* on the basis that the only difference between the species was in the number of setae in the 1st posthumeral row. There is, however, a distinct difference in the total setation of the idiosoma (*G. crinita* total body setae 198; *G. mohri* 102; *G. perameles* 132). Vercammen-Grandjean & Langston (1971), who did not accept the proposed synonymy, further note that *G. mohri* has a branched galeala, while both *G. crinita* and *G. perameles* have nude galealae. Although studies of post-larval stages may prove the synonymy of these 3 species to be correct, there appears to be sufficient basis for retaining their status as separate species for the present. *G. crinita* is also similar to *G. omega*, but differs in having only 198 body setae (total body setae 346–350 for *G. omega*).

The holotype of *G. crinita* is stated to be in the collection of the South Australian Museum (Domrow 1960; Vercammen-Grandjean & Langston 1971) but could not be located there at this time.

***Guntheria (Domrowana) foliata* (Gunther)**

FIG. 11

Neoschoengastia foliata Gunther, 1940: 251. Type, Papua New Guinea, Morobe Distr, Bulolo, ex *Macropus coxeni* (= *Thylogale stigmatica*), in SPHTM.—Womersley & Heaslip, 1943.—Taylor & Murray, 1946.

Ascoschoengastia foliata: Womersley & Kohls, 1947.

Euschoengastia foliata: Wharton & Fuller, 1952.

Guntherana (Guntherana) foliata: Domrow, 1960.

Guntherana (Domrowana) foliata: Vercammen-Grandjean & Langston, 1971.

Diagnosis. Palpal setal formula B/B/NNB/5B; galeala N; 1 pair of humeral setae (75–87); 24 dorsal body setae (51–75, anterior rows longest), arranged 6-6-6-4-2, setae expanded narrowly; 16 preanal setae (28–

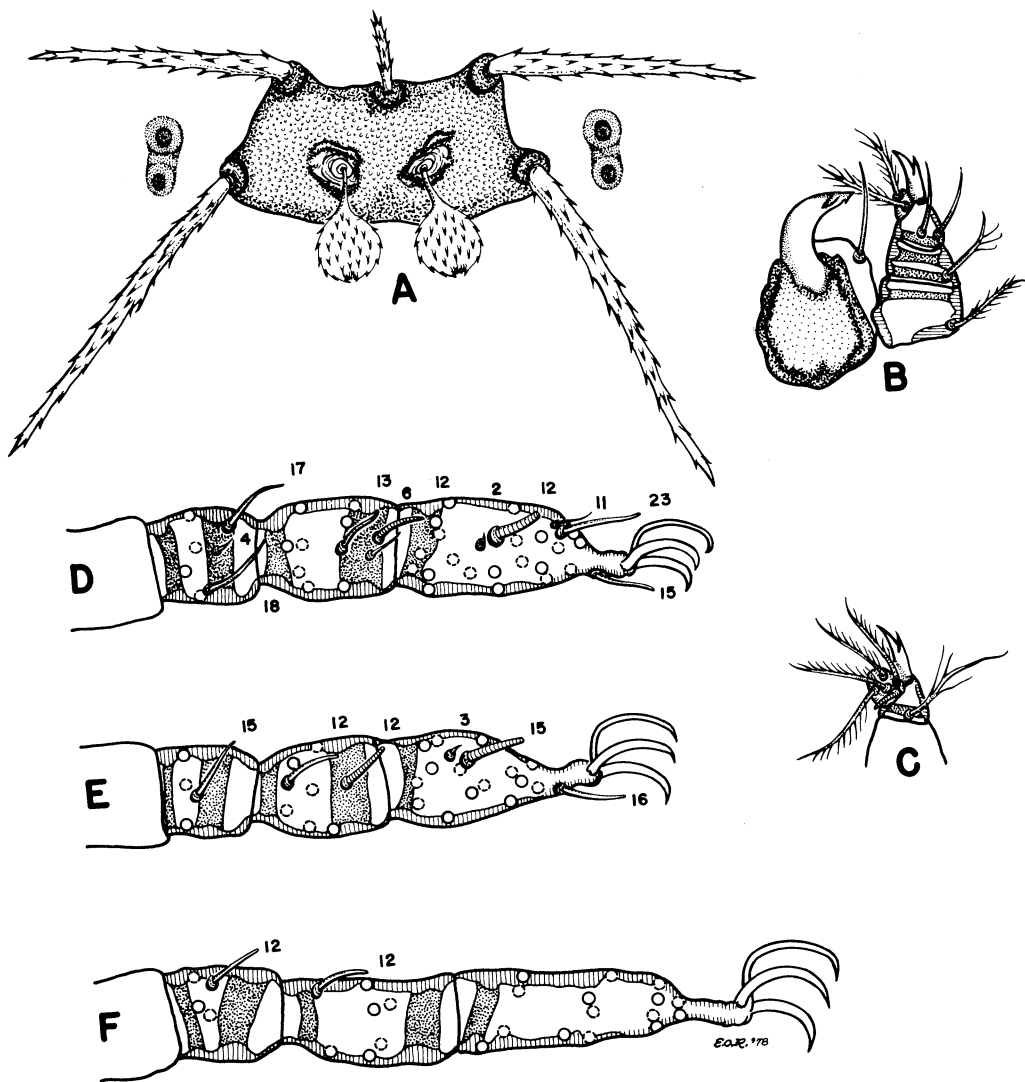


FIG. 11. Larva of *Guntheria* (D.) *foliata*: A, scutum; B, dorsal aspect of gnathosoma; C, ventral aspect of palpal tibia and tarsus; D, leg I distal 3 segments showing specialized setae (measurements given in micrometres) and bases of branched setae; E, leg II as above; F, leg III as above.

33); 16 narrowly expanded postanal setae (40–43); sensilla globose, head with fine setules; AL and PL setae narrowly expanded, AM seta normal; ventral body setae normal, cylindrical; 2 genualae I; tarsala I (12–14); tarsala II (16–18); parasubterminala I; IP 360.

Scutal measurements (means and extremes of specimens examined): AW 57, 55–60; PW 72, 70–75; SB 21, 20–22; ASB 25, 24–26; PSB 20, 20; AP 27, 25–30; AM 22, 20–25; AL 66, no variation recorded; PL 92, 90–95; Sens. 30 (head 20 × 18); PW/SD = 1.6.

Remarks. Specimens of *Guntheria foliata* seen conform to the diagnosis and descriptions given in Womersley & Heaslip (1943) and Womersley (1952) in all respects

except number and arrangement of dorsal body setae. Womersley (1952) listed 32 dorsal body setae arranged 2-6-6-6-4-2. Specimens in the current collection have 26 dorsal body setae arranged 2-6-6-6-4-2. This is not believed to be a major taxonomic difference and the specimens currently treated are *G. foliata*.

The type of *G. foliata* is recorded as being from a macropod, originally identified by Womersley (1952) as *Macropus (Thylogale) coxeni* Gray, the Red-legged Wallaby. Domrow (1960) listed the type host as *Thylogale coxeni*, currently known as *Thylogale stigmatica*. Dr A. C. Ziegler of Bishop Museum (pers. commun.) stated that *T. stigmatica* occurs only on the south coast of New Guinea and thus could not be the host listed for the Bulolo area. Three similar-appearing species are recorded from the Bulolo area: *Thylogale bruijnii*, *Dorcopsis veterum* and *Dorcopsulus vanheurni*. One of these 3 species was probably the host involved. In the current collections, 2 marsupial species were recorded as hosts: the Long-nosed Marsupial Mouse, *Antechinus naso*, and the Striped Bandicoot, *Peroryctes longicauda*. Attachment sites were recorded for 10 of the hosts: in 7 instances, the ear and ear fringes were involved, in 2 the chin and in 1 the perianal region. Color in life was not recorded.

Specimens examined (36). PAPUA NEW GUINEA. S Highlands Distr: 5 km W of Mendi, 2000 m, pandanus/moss forest, 6–8.XII.1967, 1 *Antechinus naso* (13), 1 *Peroryctes longicauda* (1). E Highlands Distr: Kassam Pass, 1400 m, forest, 17.XI.1967, 1 *Leptomys elegans* (1), 1 *Uromys caudimaculatus* (1). Morobe Distr: Bulldog Rd, 20 km from Edie Creek, 2500 m, moss forest, 31.X–1.XI.1967, 3 *Rattus niobe* (8); NE of Wau, base of Mt Missim, 1200 m, secondary forest, 21–25.X.1967, 5 *Rattus ruber* (11); Mt Kaindi, 1900 m, 10.X.1967, 1 *R. ruber* (1).

***Guntheria (Domrowana) lavaniensis* Goff**

FIG. 12

Guntheria lavaniensis Goff, 1977a: 41. Holotype (BISHOP 10,471) and 39 paratypes, Papua New Guinea, ex *Pseudocheirus cupreus*.

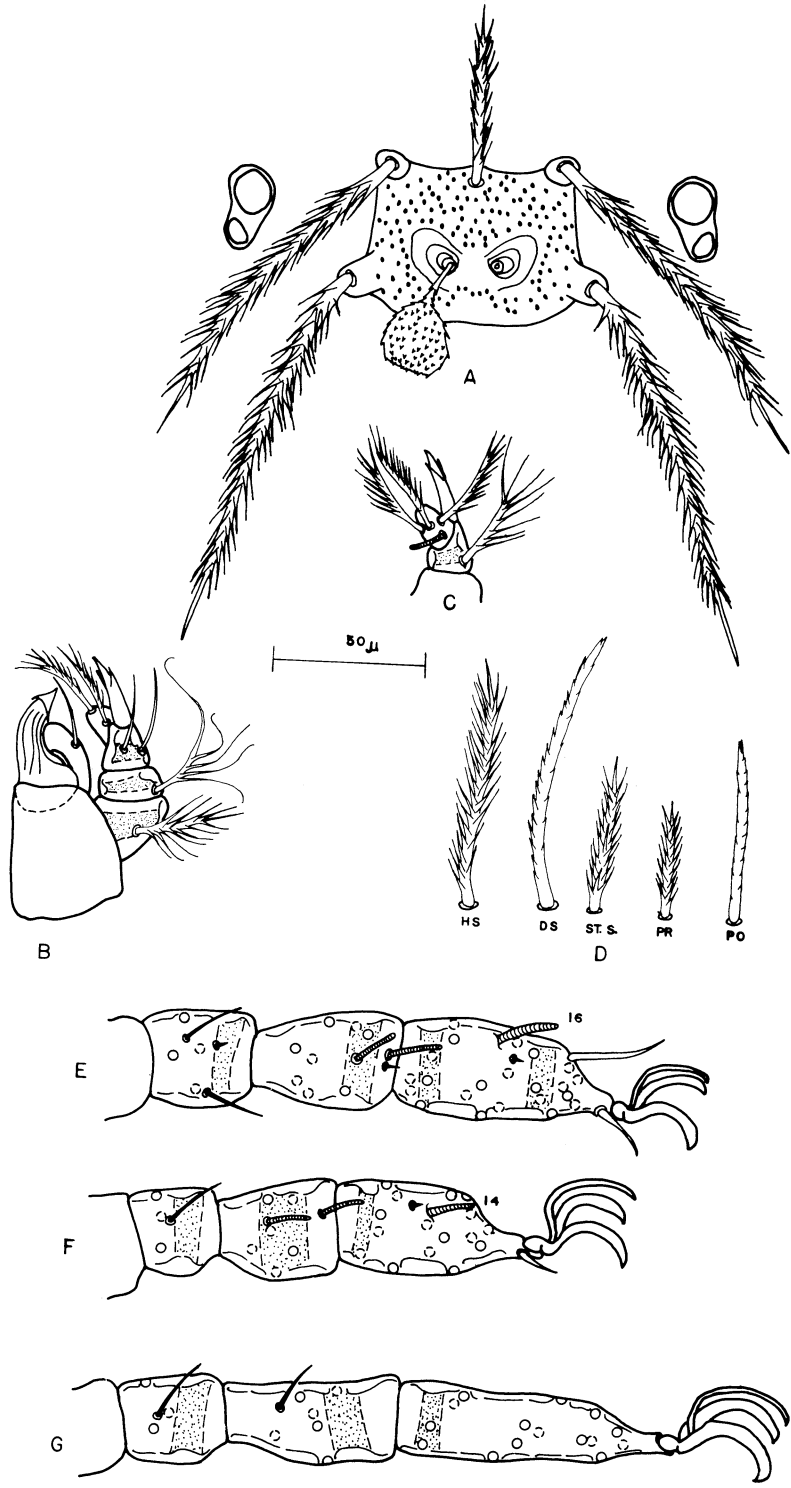
Diagnosis. Palpal setal formula B/B/NNB/5B; galeala N; 1 pair of humeral setae (68); 32 dorsal body setae (50–72), arranged 6-6-2-6-6-4-2; 24 preanal setae (36–42); 16 postanal setae (48–58); 2 genualae I, tarsala I (16); tarsala II (14); parasubterminala I; IP 850–910.

Scutal measurements of holotype followed by means and ranges of type-series in parentheses: AW 54 (53, 50–54); PW 77 (76, 72–78); SB 19 (17, 16–19); ASB 31 (32, 30–35); PSB 19 (18, 17–20); AP 38 (38, 32–40); AM 60 (58, 55–72); AL 90 (102, 90–120); PL 132 (127, 113–138); Sens. 40 (37, 35–40); head 22–24 × 20 with setules; PW/SD = 1.5.

Remarks. *Guntheria lavaniensis* is similar to *G. strandtmanni* but differs in the length of the scutal setae (AL 90–120, PL 113–138 for *G. lavaniensis* and AL 70–90, PL 72–84 in *G. strandtmanni*) as well as the number and arrangement of dorsal body setae. Number and arrangement of dorsal body setae also serve to separate this species from *G. womersleyi*. Palpal tibial setation of NNB serves to separate this species from *G. cassiope* with palpal tibia NNN.

This chigger was collected from the ears of 2 specimens of the Coppery Ring-tail, *Pseudocheirus cupreus*.

Specimens examined. Holotype, 39 paratypes and 24 additional specimens, all same data as holotype.



***Guntheria* (Domrowana) minima** (Nadchatram & Traub)

FIG. 14

Guntherana minima Nadchatram & Traub, 1969: 265. Holotype (BISHOP 8207) and 10 paratypes, Papua New Guinea, ex *Rattus* sp.

Diagnosis. Palpal setal formula B/B/NNB/5B; galeala N; 1 pair of humeral setae (40–41); 20–22 dorsal body setae (37), arranged 6-6-4(6)-4; 22 preanal setae (16); 16 postanal setae (21); 2 genualae I; tarsala I (11–12); tarsala II (10–11); parasubterminala I; SB close together (10); IP 490–520.

Scutal measurements of holotype followed by means and ranges of type-series in parentheses: AW 32 (29, 27–32); PW 48 (47, 46–48); SB 10 (10, 10–11); ASB 18 (18, 17–20); PSB 11 (10, 10–11); AP 29 (29, 27–30); AM 18 (17, 16–20); AL 27 (31, 27–35); PL 31 (34, 31–35); Sens. 19 (20, 17–20) head 11 × 13 with fine setules; PW/SD = 1.6.

Remarks. The small scutum and closeness of the sensillary bases serve to separate this species from other New Guinea species in *Guntheria*. The approximation of SB and general shape of the scutum in this species are similar to those of *Helenicula* species. Recorded attachment sites for *G. minima* are primarily ear and ear tragus (Goff 1979c). A dorsal body parasitope is recorded for 48 specimens on a single *Murexia longicauda* (BBM-NG: 55075).

Specimens examined (219). PAPUA NEW GUINEA. S Highlands Distr: 5 km W of Mendi, 2000 m, moss forest, 8–15.XII.1967, 3 *Rattus niobe* (45); 1 *Rattus ruber* (37). E Highlands Distr: Kassam Pass, 1400 m, 14–17.XI.1967, 1 *Melomys* sp. (1), 2 *Murexia longicauda* (90). Morobe Distr: Mt Kaindi, 1900 m, scrub in dry creek, 10–19.X.1967, 1 *Antechinus* sp. (7), 4 *R. ruber* (8). W Sepik Distr: Oksapmin nr Strickland Riv, 1700 m, 13–27.X.1968, 12 *Rattus* sp. (31).

***Guntheria* (Domrowana) mccullochi** (Womersley)

FIG. 13

Neoschoengastia mccullochi Womersley, 1944: 100. Type-series, Papua New Guinea, Northern Distr, Adibari, 1944, collected free-living on boots, in SAM.

Ascoschoengastia uromys Womersley & Kohls, 1947: 10. Type-series, Papua New Guinea, Northern Distr, Dobodura, ex *Uromys caudimaculatus*.

Schoengastia (*Ascoschoengastia*) *mccullochi*: Womersley, 1952.

Euschoengastia mccullochi: Wharton & Fuller, 1952.

Euschoengastia uromys: Wharton & Fuller, 1952.

Guntherana (*Guntherana*) *mccullochi*: Domrow, 1960.

Diagnosis. Palpal setal formula N/N/NNN/5B; galeala N; 1 pair of humeral setae (46–52); 26 dorsal body setae (43–62), expanded, lanceolate with prominent lateral barbs, arranged 6-6-6-6-2; 8 preanal setae (14–18); 14 postanal setae (25–29); sensilla globose, head with fine setules; AM, AL and PL setae expanded, preanal setae unexpanded, postanal setae expanded; 2 genualae I; tarsala I (10–11); tarsala II (13–14); parasubterminala I; IP 760.

Scutal measurements of 3 paratypes (means followed by extremes): AW 49, 46–52; PW 69, 68–70; SB

←

FIG. 12. Larva of *Guntheria* (*D.*) *lavaniensis*: A, scutum; B, dorsal aspect of gnathosoma; C, ventral aspect of palpal tibia and tarsus; D, leg I distal 3 segments showing specialized setae (measurements given in micrometres) and bases of branched setae; E, leg II as above; F, leg III as above.

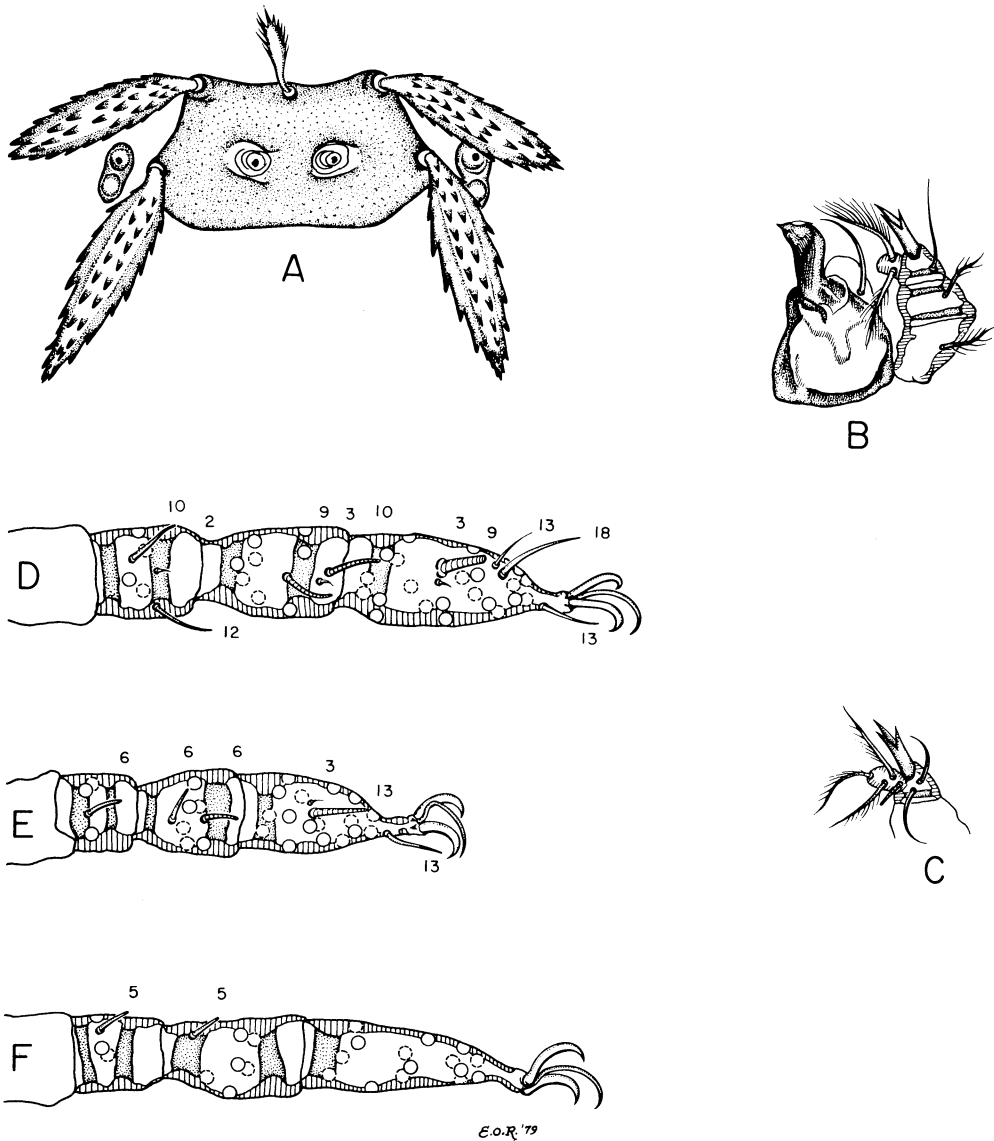


FIG. 13. Larva of *Guntheria* (D.) *mccullochi*: A, scutum; B, dorsal aspect of gnathosoma; C, ventral aspect of palpal tibia and tarsus; D, leg I distal 3 segments showing specialized setae (measurements given in micrometres) and bases of branched setae; E, leg II as above; F, leg III as above.

19, 18-20; ASB 21, 20-21; PSB 18, 18-19; AP 23, 22-25; AM 19, 18-20; AL 56, 49-62; PL 58, 55-61; Sens. [after Womersley (1952)] 28 (head 17×17); PW/SD = 1.8.

Remarks. *Guntheria mccullochi* was described by Womersley (1944) from a single free-living specimen collected on boots. Womersley & Kohls (1947) subsequently described *Ascoschoengastia uromys* from the Mottle-tailed Tree Rat, *Uromys caudimaculatus*.

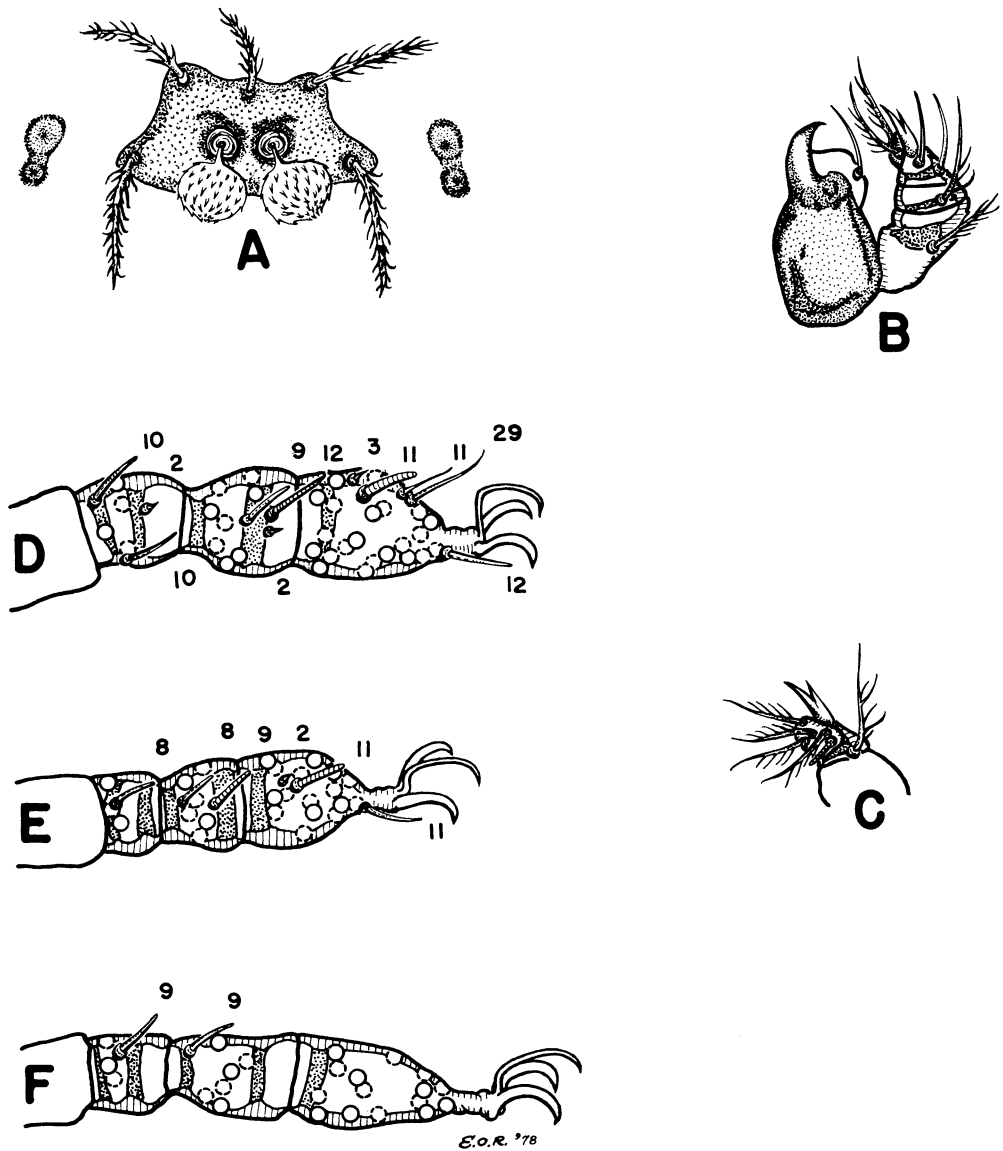


FIG. 14. Larva of *Guntheria* (*D.*) *minima*: A, scutum; B, dorsal aspect of gnathosoma; C, ventral aspect of palpal tibia and tarsus; D, leg I distal 3 segments showing specialized setae (measurements given in micrometres) and bases of branched setae; E, leg II as above; F, leg III as above.

Domrow (1960) proposed the synonymy of *G. mccullochi* with *Ascoschoengastia uromys*, based on a reexamination of the unique type of *G. mccullochi* and the type-series of *A. uromys*. In having expanded dorsal body setae and PL setae, *G. mccullochi* is similar to *G. foliata*. The AL setae in *G. foliata* are unexpanded, while in *G. mccullochi* these setae are expanded. In the original descriptions of both *G. mccullochi* and *A. uromys*,

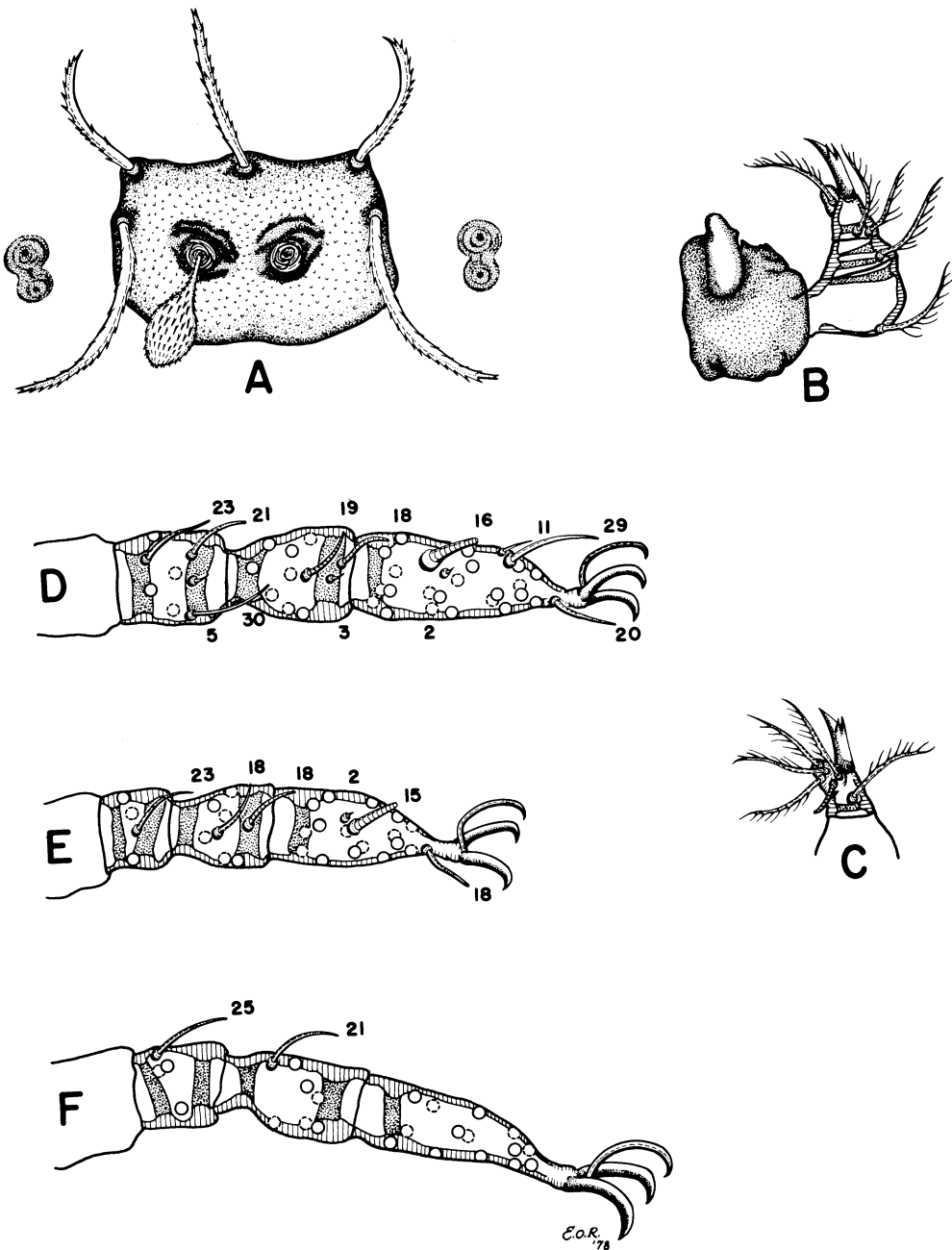


FIG. 15. Larva of *Guntheria (D.) mohri*: A, scutum; B, dorsal aspect of gnathosoma; C, ventral aspect of palpal tibia and tarsus; D, leg I distal 3 segments showing specialized setae (measurements given in micrometres) and bases of branched setae; E, leg II as above; F, leg III as above.

the AM setae are stated to be unexpanded and cylindrical. Examination of 3 paratypes of *A. uromys* in connection with this work showed these setae to be expanded. In all 3 specimens examined, the AM setae are shorter (19) than the AL (56) and PL (58) setae, but of the same basic form. All scutal setae have distinct barbs on the lateral margins and 2 rows of barbs on the dorsal surface.

Aside from the original collections of *G. mccullochi* and *A. uromys*, no material of this species has been recovered. Color in life and parasitope are unknown for this species.

Specimens examined. 3 paratypes of *Ascoschoengastia uromys*.

***Guntheria (Domrowana) mohri* (Womersley)**

FIG. 15

Schoengastia (Ascoschoengastia) mohri Womersley, 1952: 184. Holotype and 5 paratypes, Dutch New Guinea [Irian Jaya], Sansapor, ex *Echymipera doreyana* (= *E. kalubu*), 16.XI.1944, C. Mohr, in Sam.—Wharton & Fuller, 1952.—Domrow, 1960.

Euschoengastia mohri: Audy, 1954; 1957.—Audy & Domrow, 1957.—Womersley & Audy, 1957.

Schoengastia mohri: Mohr, 1967.

Guntherana (Domrowana) mohri: Vercammen-Grandjean & Langston, 1971.

Diagnosis. Palpal setal formula B/B/BBB/5B; galeala B; 1 pair of humeral setae (62–68); 40 dorsal body setae (50–60), arranged 8-8-8-8-4-4; 38 preanal setae (32–33); 18 postanal setae (32–36); AL and PL bases approximated; PL bases anterior to SB; sensilla capitate; 3 genualae I; tarsala I (16–17); tarsala II (14–16); parasubterminala I; IP 934–950.

Scutal measurements of holotype followed by means and ranges of type-series in parentheses: AW 69 (74, 69–77); PW 83 (87, 83–91); SB 27 (28, 27–30); ASB 30 (29, 27–30); PSB 30 (30, no variation recorded); AP 22 (22, 21–24); AM 56 (56, 56–58); AL 43 (46, 42–48); PL 75 (78, 75–80); Sens. 36 × 18; PW/SD = 1.46–1.51.

Remarks. Domrow (1960) proposed the synonymy of *G. mohri* and *G. crinita* (Womersley, 1952) with *G. perameles* (Womersley, 1939) on the basis that the only difference between the species was the number of setae in the 1st posthumeral row. As noted by Vercammen-Grandjean & Langston (1971), there is a difference in the total numbers of dorsal body setae, with *G. mohri* having only 40 (70 for *G. perameles* and 102 for *G. crinita*). In addition the galeala is branched in *G. mohri* (nude in both other species). While the proposed synonymy of Domrow (1960) may be proven correct by postlarval studies, at present there appears to be sufficient basis for treating these species separately. *Guntheria mohri* is also similar to *G. omega*, from which it may be separated in having fewer dorsal body setae (132–136 in *G. omega*) and a branched galeala (nude in *G. omega*).

Specimens examined. Holotype and 3 paratypes.

***Guntheria (Domrowana) niobiensis* Goff**

FIG. 16

Guntheria niobiensis Goff, 1977a: 38. Holotype (BISHOP 10,470) and 16 paratypes, Papua New Guinea, ex *Rattus niobe*.

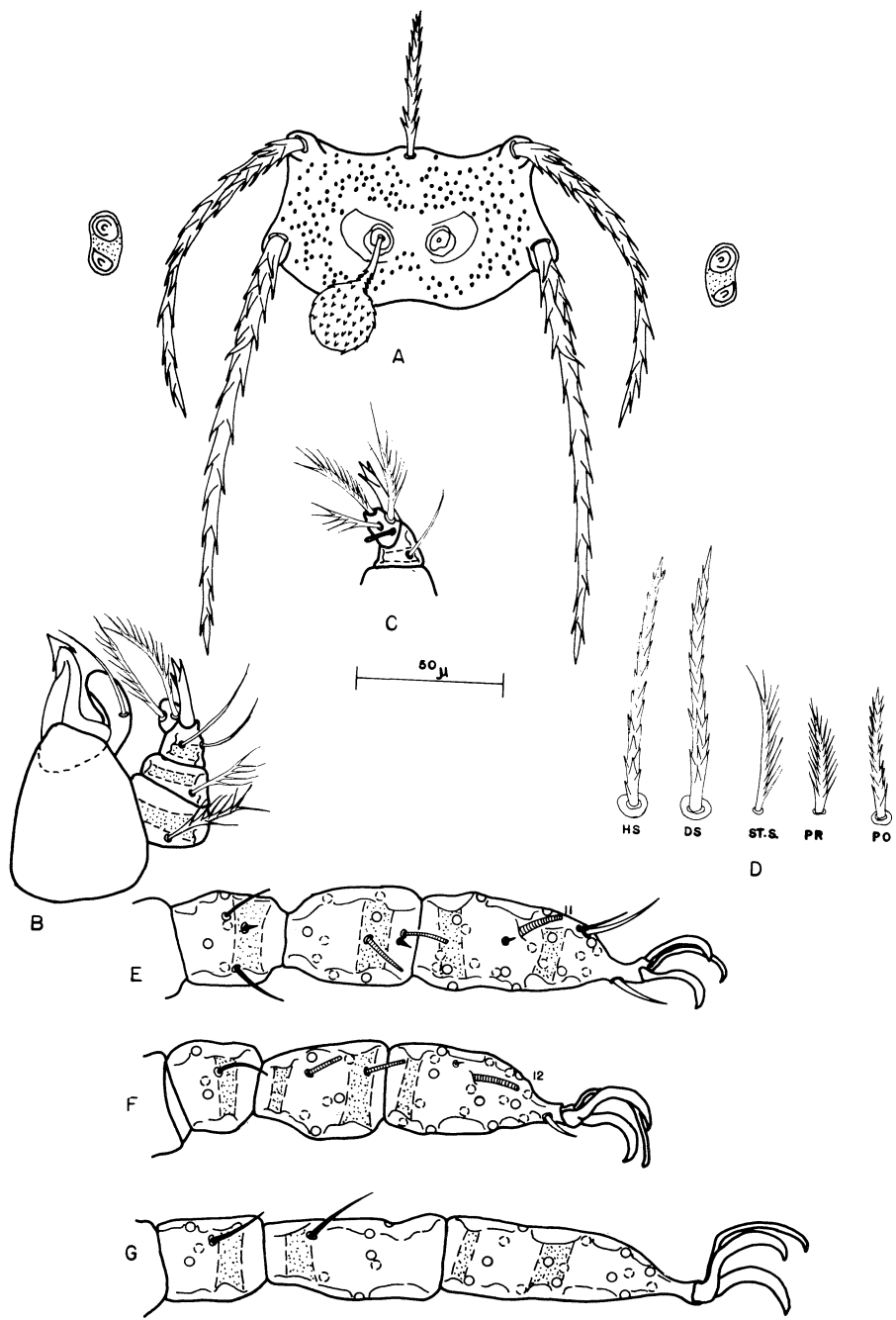


FIG. 16. Larva of *Guntheria* (*D.*) *niobiensis*: A, scutum; B, dorsal aspect of gnathosoma; C, ventral aspect of palpal tibia and tarsus; D, leg I distal 3 segments showing specialized setae (measurements given in micrometres) and bases of branched setae; E, leg II as above; F, leg III as above.

Diagnosis. Palpal setal formula B/B/NNN/5B; galeala N; 1 pair of humeral setae (58); 26 dorsal body setae (50–82) inserted on plates, arranged 6-6-6-2-4-2; 18 preanal setae (25–28); 12 postanal setae (30–35); 2 genualae I, tarsala I (11); tarsala II (12); parasubterminala I; IP 757.

Scutal measurements of holotype followed by means and ranges of type-series in parentheses: AW 67 (66, 55–75); PW 82 (78, 70–82); SB 20 (22, 20–25); ASB 32 (30, 25–34); PSB 20 (19, 15–20); AP 30 (30, 27–35); AM 46 (31, 23–46); AL 102 (90, 76–107); PL 127 (121, 110–135); Sens. (35, 32–39), head 20 × 23 with setules; PW/SD = 1.7.

Remarks. *G. niobiensis* appears most similar to *G. womersleyi* from which it may be separated by having a palpal setal formula of B/B/NNN and dorsal body setae inserted on individual plates. *G. niobiensis* may be distinguished from *G. strandtmanni* by the palpal setal formula and having fewer dorsal body setae.

This red chigger was found attached to the ear fringe and ear tragus of rodents and marsupial mice. The most common host for this species was the Moss Forest Rat, *Rattus niobe*. Two collections were made from the perianal region of *R. niobe* and 1 from the Narrow-striped Marsupial Mouse, *Phascosorex dorsalis*. A single specimen was reported from the Ribbon-tailed Astrapia, *Astrapia mayeri*. This record is unusual for a species of a genus which infests mammals almost exclusively. *G. domrowi* (Brennan 1965) was described from the Ruddy Turnstone, *Arenaria interpres*, taken on Lisianski I, Hawaii. This represents another instance of a *Guntheria* species on an avian host.

Specimens examined (370). PAPUA NEW GUINEA. S Highlands Distr: Kagaba, base of Mt Giluwe, 40 km N of Mendi, 2800 m, moss forest, 16.XII.1967, 1 *Neophascogale lorentzi* (4); 24.XII.1967, 1 *Astrapia mayeri* (1). Morobe Distr: Bulldog Rd, 20 km from Edie Creek, 2500 m, moss forest, 21.X–4.XI.1967, 82 *Rattus niobe* (359), 2 *Phascosorex dorsalis* (2), 1 *Anisomys imitator* (4).

***Guntheria* (*Domrowana*) *omega* Goff**

FIG. 17

Guntheria (*Derrickiella*) *omega* Goff, 1977b: 916. Holotype (BISHOP 10,812) and 16 paratypes, Papua New Guinea, ex *Peroryctes longicauda* (BBM-NG: 25236), 6.XII.1967, M. Nadchatram.

Diagnosis. Palpal setal formula B/B/BBB/5B; galeala N, 1 pair of humeral setae (55); 132–136 dorsal body setae (40–50) arranged in irregular rows; 122 preanal setae (26–30); 88 postanal setae (40–45); AL and PL bases approximated; PL bases anterior to SB; 3 genualae I; tarsala I (20); tarsala II (19); parasubterminala I; IP 895–915.

Scutal measurements of holotype followed by means and ranges of type-series in parentheses: AW 84 (82, 80–85), PW 91 (91, 88–95); SB 35 (34, 30–35); ASB 36 (35, 35–38); PSB 23 (26, 23–30); AP 15 (15, 14–18); AM 60 (59, 57–60); AL 48 (46, 44–50); PL 72 (73, 70–76); Sens. 40 × 16 (40 × 15, 40–42 × 15–17); PW/SD = 1.39–1.54.

Remarks. *Guntheria omega* is similar to *G. perameles* and *G. taylora*. It may be separated from *G. perameles* in having more body setae (total body setae = 346–350 for *G. omega* and 132 for *G. perameles*) as well as the scutal measurements. The presence of a subterminala and parasubterminala I serve to separate *G. omega* from *G. taylora*.

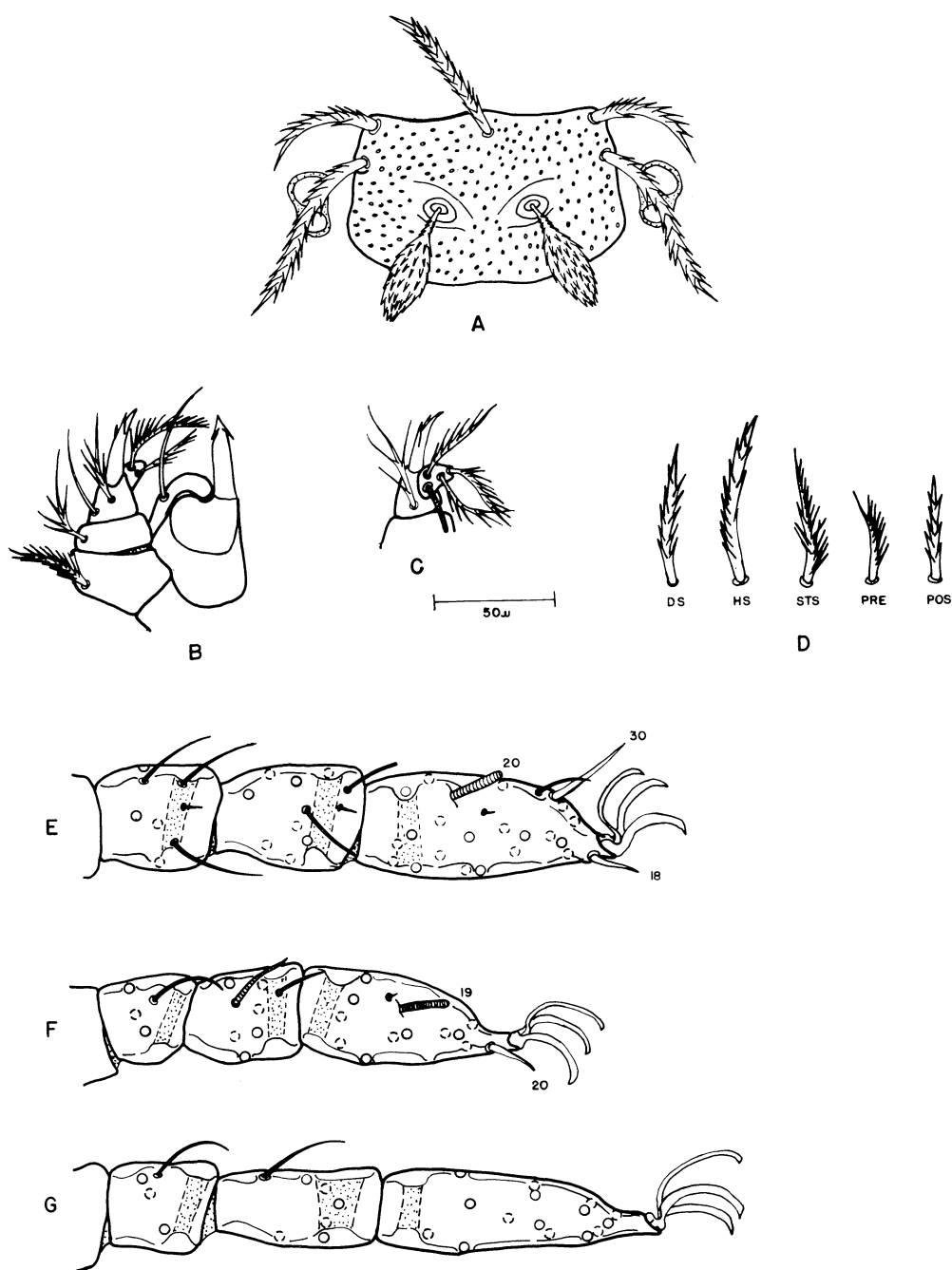


FIG. 17. Larva of *Gu.theria* (D.) *omega*: A, scutum; B, dorsal aspect of gnathosoma; C, ventral aspect of palpal tibia and tarsus; D, leg I distal 3 segments showing specialized setae (measurements given in micrometres) and bases of branched setae; E, leg II as above; F, leg III as above.

G. omega was recovered from the ear fringe of most murid hosts, but was recovered from only the legs and dorsal body surfaces of peramelids (Goff 1979c).

***Guntheria* (*Domrowana*) *perameles* (Womersley)**

FIG. 18

Neoschoengastia perameles Womersley, 1939: 160. Holotype and 10 paratypes, Australia, Queensland, Kjamba, "from bandicoots," 6–23.VI.1938 and 10.VIII.1938, D.J.W. Smith, in SAM.—Womersley & Heaslip, 1943.—Taylor & Murray, 1946.—Gunther, 1952.

Neoschoengastia isoodon Derrick, Brown, Smith & Freeman, 1939.—Womersley, 1939 (nomen nudum).

Schoengastia (*Ascoschoengastia*) *perameles*: Womersley, 1952.

Euschoengastia perameles: Wharton & Fuller, 1952.—Audy, 1954.—Domrow, 1955a; 1955b; 1956.—Audy & Domrow, 1957.

Euschoengastia (*Derrickiella*) *perameles*: Audy, 1957.—Audy & Domrow, 1957.—Womersley & Audy, 1957.

Guntherana (*Derrickiella*) *perameles*: Domrow, 1960.

Guntherana (*Domrowana*) *perameles*: Vercammen-Grandjean & Langston, 1971.

Diagnosis. Palpal setal formula B/B/BBB/5B; galeala N; 1 pair of humeral setae (53); 78 dorsal body setae (39–48), arranged 10-8-12-16-10-10-8-4; 1 pair of sternal setae; 70 preanal setae (25–29); 18 postanal setae (35–39) AL and PL bases approximated; PL bases anterior to SB; sensilla clavate; 3 genualae I; tarsala I (17); tarsala II (15); parasubterminala I; IP 1156.

Scutal measurements (means and ranges of specimens examined): AW 82, 75–89; PW 92, 90–94; SB 32, 32–33; ASB 43, 40–45; PSB 28, no variations recorded; AP 16, no variation recorded; AM 61, 59–63; AL 54, 52–55; PL 103, 95–110; Sens. 44 × 16; PW/SD = 1.28–1.32.

Remarks. Domrow (1960) proposed the synonymy of *Schoengastia crinita* Womersley, 1952 and *Schoengastia mohri* Womersley, 1952 with *Guntheria perameles* (Womersley, 1939), as there were no distinguishing characters except for the number of body setae (ranging from 40 in *S. mohri* to 104 in *S. crinita*). This proposal was rejected by Vercammen-Grandjean & Langston (1971) and all were treated as distinct species. The latter course is followed here. Scutal measurements for specimens of *G. perameles* examined from Papua New Guinea were somewhat larger than those given for the original description [AW 64–70; PW 84–90 by Womersley (1952)].

Specimens examined (8). AUSTRALIA. Queensland, Kjamba, 21.VII.1938, "bandicoot" (1 paratype), 10.VIII.1938, "bandicoot" (holotype); Yanduni, 5.V.1938, *Isoodon torosus* (2). PAPUA NEW GUINEA. Morobe Distr, Bulldog Rd, 20 km S of Edie Creek, 9.VII.1966, *Peroryctes longicauda* (4).

***Guntheria* (*Domrowana*) *serrata* Goff**

FIG. 19

Guntheria serrata Goff, 1980: 85. Holotype (BISHOP 11,559) and 5 paratypes, Papua New Guinea, ex 11 *Rattus niobe*.

Diagnosis. Palpal setal formula B/B/NNB/5B; galeala N; 1 pair of humeral setae (73–75), heavily serrate; 40 heavily serrate dorsal body setae (46–77), arranged 6(9)-6(7)-6-6(8)-4(6)-2(4); 16–18 preanal setae (27–

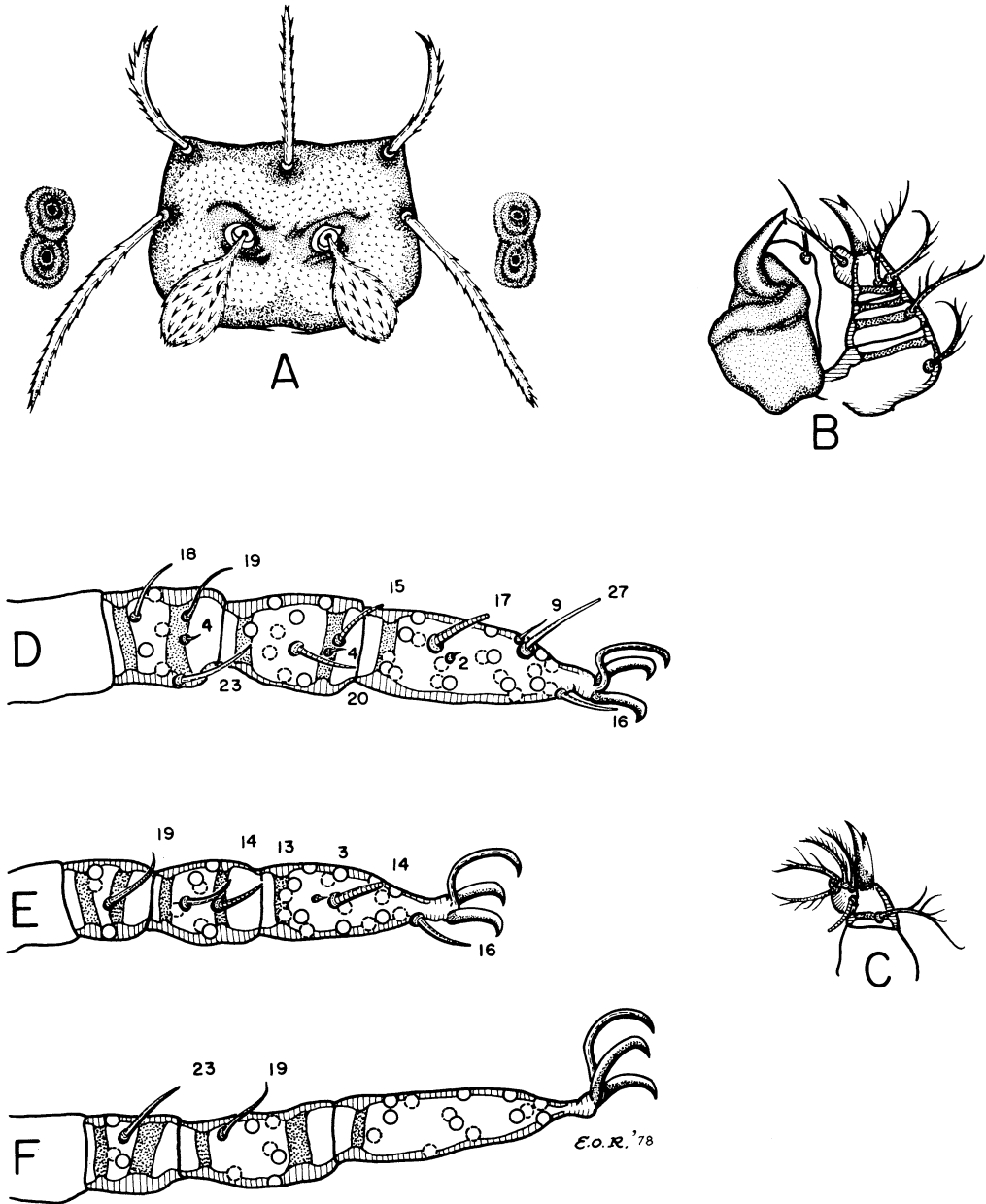


FIG. 18. Larva of *Guntheria* (*D.*) *perameles*: A, scutum; B, dorsal aspect of gnathosoma; C, ventral aspect of palpal tibia and tarsus; D, leg I distal 3 segments showing specialized setae (measurements given in micrometres) and bases of branched setae; E, leg II as above; F, leg III as above.

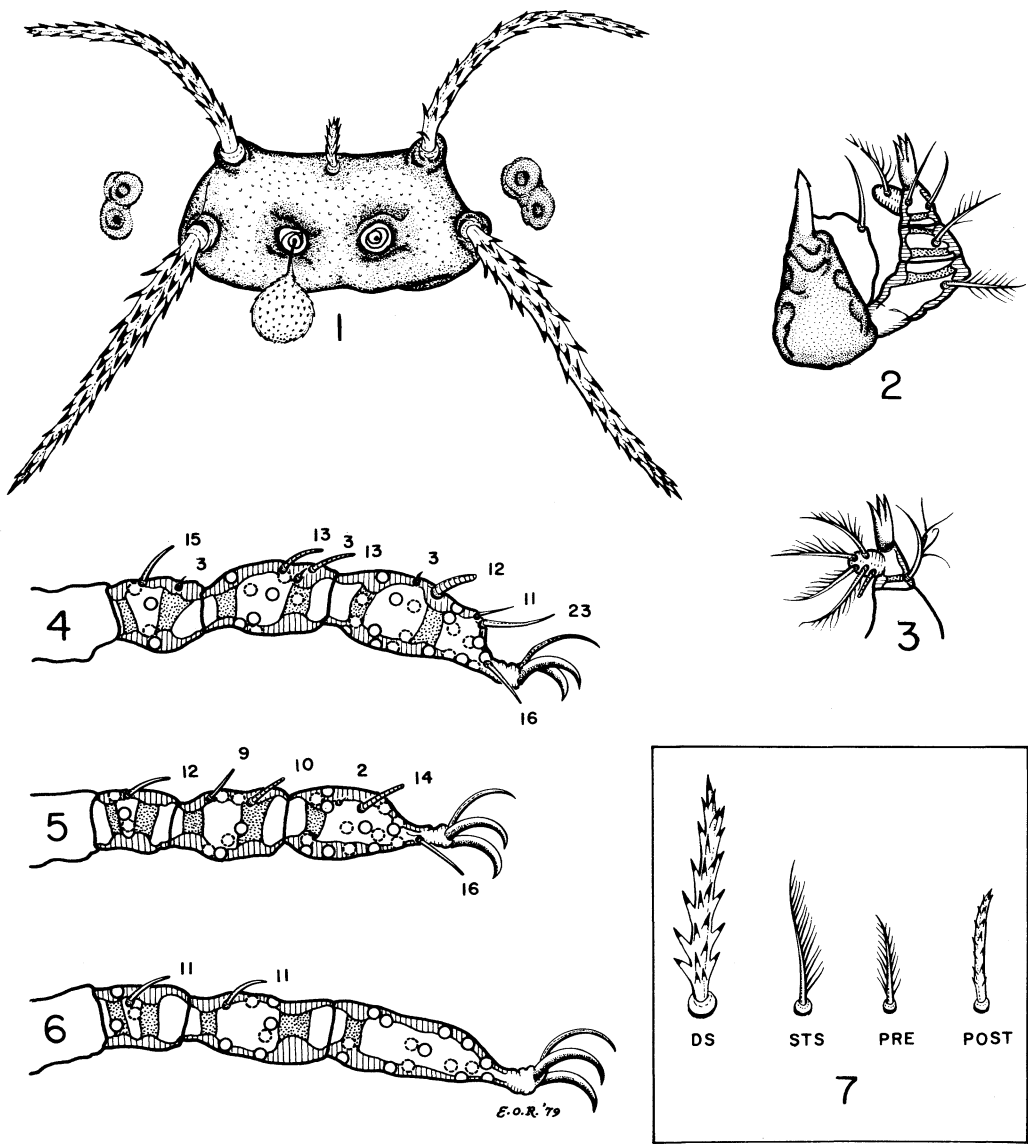


FIG. 19. Larva of *Guntheria (D.) serrata*: A, scutum; B, dorsal aspect of gnathosoma; C, ventral aspect of palpal tibia and tarsus; D, leg I distal 3 segments showing specialized setae (measurements given in micrometres) and bases of branched setae; E, leg II as above; F, leg III as above; G, selected body setae; DS, dorsal body seta; STS, sternal seta; PRE, preanal seta; POST, postanal seta.

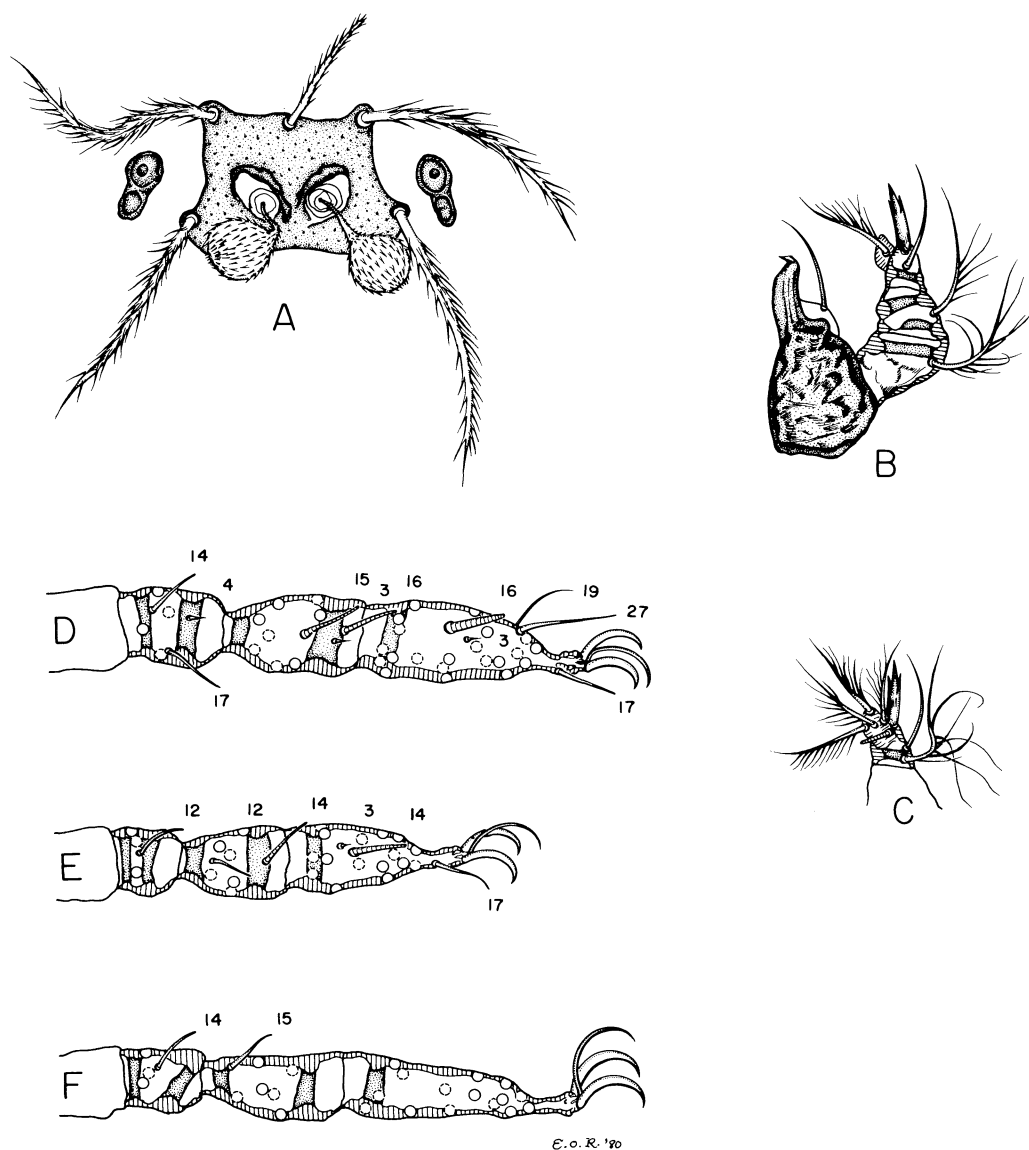


FIG. 20. Larva of *Guntheria (D.) strandtmanni*: A, scutum; B, dorsal aspect of gnathosoma; C, ventral aspect of palpal tibia and tarsus; D, leg I distal 3 segments showing specialized setae (measurements given in micrometres) and bases of branched setae; E, leg II as above; F, leg III as above.

32); 18 postanal setae (32-35); sensilla clavate, head with fine setules; genuala I; tarsala I (12); tarsala II (14); parasubterminala I; IP 752-783.

Scutal measurements of holotype followed by means and ranges of type-series in parentheses: AW 64 (62, 60-64); PW 79 (80, 77-81); SB 25 (25, 22-26); ASB 30 (30, 27-33); PSB 19 (18, 17-19); AP 25 (28, 25-29); AM 22 (21, 18-23); AL 81 (83, 79-90); PL 89 (95, 89-99); Sens. missing from holotype (30 × 18, 28-32 × 18-19).

Remarks. *Guntheria serrata* is placed in the *cassiope* group of *Domrowana*, as defined by Vercammen-Grandjean & Langston (1971). Within this group, it is similar to *G. cassiope* (Womersley, 1952) in having a single genuala I, but differs in having a branched ventral palpal tibial seta (nude in *G. cassiope*) and dorsal body setae serrate (unexpanded in *G. cassiope*). Expanded dorsal body setae and scutal setae are present in 2 other species of the *cassiope* group: *Guntheria foliata* (Gunther, 1940) and *Guntheria mccullochi* (Womersley, 1944). *G. serrata* may be separated from both species in having a single genuala I (2 genualae I in both *G. foliata* and *G. mccullochi*) as well as in form of dorsal body seta. *G. serrata* may be further separated from *G. mccullochi* in having ventral palpal tibial seta branched (nude in *G. mccullochi*). Other species of *Guntheria* having a single genuala I are all in the nominate subgenus *Guntheria*, characterized by presence of single or paired pygosomal plates (absent in *G. serrata*).

All specimens of *G. serrata* were recovered from the ear tragus of Moss-forest Rats, *R. niobe*.

Specimens examined. Holotype and 5 paratypes.

***Guntheria (Domrowana) shieldsi* (Gunther)**

Neoschoengastia shieldsi Gunther, 1941: 158. Type-series, Papua New Guinea, Morobe Distr, Bulolo, ex *Melomys rubex*, in SPHTM.

Neoschoengastia hirsti Womersley & Heaslip, 1943: 123. Holotype and 3 paratypes, Australia, Imbil, ex *Melomys cervinipes*, 1938, D.J.W. Smith, in SAM.—Domrow, 1960.

Schoengastia (Ascoschoengastia) hirsti: Womersley, 1952.

Guntherana (Derrickiella) shieldsi: Domrow, 1960.

Guntherana (Domrowana) shieldsi: Vercammen-Grandjean & Langston, 1971.

Diagnosis. Palpal setal formula B/B/BBB/5B; galeala B; palpal claw 3-pronged; chelicera with tricuspid cap; 1 pair of humeral setae (46–57); 32 dorsal body setae (40–59), arranged 8-6-6-6-4-2; 24 preanal setae (21–23); 24 postanal setae (34–36); AL and PL bases approximated, PL bases anterior to SB; posterior scutal margin deep, smoothly rounded; eyes 2/2, free on cuticle; sensilla clavate, head with fine setules; 2 genualae I, parasubterminala I; IP = 550–600.

Scutal measurements (means and extremes of specimens examined): AW 51, 49–54; PW 59, 57–61; SB 21, no variation recorded; ASB 26, 26–27; PSB 18, 17–20; AP 14, 13–15; AM 36, 35–37; AL 23, 21–25; PL 55, 52–60; Sens. not present; PW/SD = 1.34.

Remarks. *Neoschoengastia shieldsi* was described by Gunther (1941) from a host identified as the Highland Melomys, *Melomys rubex*, taken in Bulolo, Papua New Guinea. The host identification was probably in error, according to Dr A. C. Ziegler, Bishop Museum (pers. commun.), as the elevation at Bulolo is too low for this species of Melomys. The synonymy of *N. shieldsi* with *Neoschoengastia westralis* var. *trichosuri* Womersley, 1939, was proposed by Womersley (1952) under the name *N. trichosuri* Womersley & Heaslip, 1943. This synonymy was proposed without examination of specimens of *N. shieldsi* Gunther, 1941. In the same publication these species were placed in the subgenus *Ascoschoengastia* of the genus *Schoengastia*. The close similarity

between these species was noted by Womersley (1952) and the possibility of conspecificity mentioned by Audy & Domrow (1957). Domrow (1960) noted that *Neoschoengastia shieldsi* was not conspecific with *Neoschoengastia trichosuri* and at the same time transferred both species to the subgenus *Derrickiella* of *Guntherana*. Vercammen-Grandjean & Langston (1971) redefined the subgenera of *Guntherana* and placed *G. shieldsi* in the subgenus *Domrowana*.

Specimens examined (4). PAPUA NEW GUINEA: Central Distr, Karema, Brown River Forest Station, 38 km NW of Port Moresby, 100 m, 21.X.1968, 1 *Melomys* sp. (4).

***Guntheria (Domrowana) strandtmanni* (Nadchatram & Traub)**

FIG. 20

Guntherana strandtmanni Nadchatram & Traub, 1969: 265. Holotype (BISHOP 8208) and 3 paratypes, Papua New Guinea, Morobe Distr, Bulldog Rd, Edie Creek, 2150 m, ex *Rattus* sp. (B 80810-51), 3.XI.1966, R. Traub.

Diagnosis. Palpal setal formula B/B/NNB/5B; galeala N; 1 pair of humeral setae (63-68); 28-30 dorsal body setae (68-80), arranged 6-6-6-6-2(4)-2; 22-26 preanal setae (28-32); 16-20 postanal setae (45-50); 2 genualae I; tarsala I (15-17); tarsala II (14-15); parasubterminala I; IP 830-850.

Scutal measurements of holotype followed by means and ranges of type-series in parentheses: AW 46 (44, 38-47); PW 66 (65, 60-70); AB 16 (15, 15-17); ASB 27 (28, 25-30); PSB 17 (16, 15-17); AP 32 (33, 29-35); AM 40 (43, 35-48); AL 75 (79, 70-90); PL 80 (80, 72-84); Sens. 35 (33, 31-35), head 21×18 with fine setules; PW/SD = 1.5.

Remarks. *G. strandtmanni* appears most closely similar to *G. womersleyi* from which it may be separated in having AL and PL setae subequal in length. *G. strandtmanni* may be separated from *G. cassiope* in having the ventral palpal tibial seta branched as well as having a greater number of preanal and postanal setae. Recorded parasitopes for this species were ear and ear tragus (Goff 1979c).

Specimens examined (2190). PAPUA NEW GUINEA. S Highlands Distr: Duna Subdistr, fringe of Lavani Val, 2450 m, moss forest, 11-14.I.1968, 1 *Phalanger vestitus* (1), 1 *Pseudoechirus cupreus* (2); 5 km W of Mendi, pandanus/moss forest, 7-15.XII.1967, 1 *Peroryctes longicauda* (2), 1 *Rattus niobe* (5), 2 *Rattus ruber* (25), 6.XII.1968, 1 *R. ruber* (12), 17.XII.1968, *R. ruber* (8); Kagaba, Mt Giluwe, 40 km NE of Mendi, 2800 m, moss forest, 14-20.XII.1967, 67 *R. niobe* (303), 17-26.IX.1968, 1 *R. niobe* (1), 2 *R. ruber* (92), 3 *Rattus* sp. (125); N slope of Mt Giluwe, 3 km from Kagaba Camp, 3000 m, moss forest, 25.XII.1965, 1 *Antechinus* sp. (1), 21-23.XII.1967, 24 *R. niobe* (134). Chimbu Distr: 23 km SE of Chuave, 2300 m, 25-28.XI.1967, 2 *Anisomys imitator* (26), 1 *Pogonomys* sp. (1), 3 *Rattus exulans* (40), 2 *R. ruber* (50), 3 *Rattus verecundus* (26), 1 "rodent" (32). E Highlands Distr: Goroka Subdistr, Marafunga, Fatima Riv, 5 km W of Collin's sawmill, 2400 m, montane forest, 10.XI.1968, 1 *Rattus* sp. (6); Kassam Pass, 1400 m, forest, 19.XI.1967, 1 *R. ruber* (1). Morobe Distr: Bulldog Rd, 20 km from Edie Creek, 2500 m, moss forest, 31.X.1967, 2 *R. niobe* (5), 2.XI.1968, 1 *R. ruber* (8), 23.V.1968, 1 *R. ruber* (36); Mt Kaindi, 1900 m, scrub in dry creek, 10-19.X.1967, 1 *Antechinus* sp. (8), 1 *Phascosorex* sp. (9), 12 *R. ruber* (403); Wau Subdistr, NE slope of Mt Kaindi, 1400 m, 28-29.V.1968, 9 *R.*

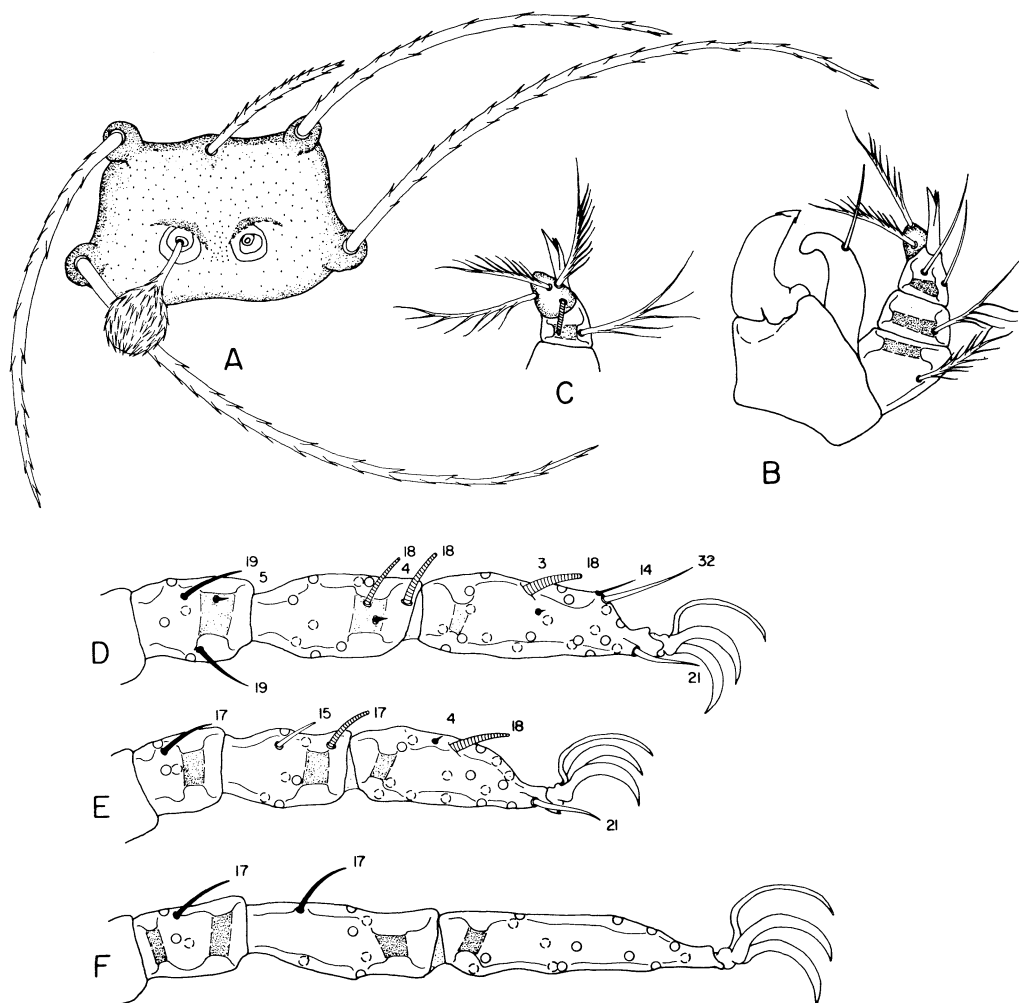


FIG. 21. Larva of *Guntheria* (*D.*) *wauensis*: A, scutum; B, dorsal aspect of gnathosoma; C, ventral aspect of palpal tibia and tarsus; D, leg I distal 3 segments showing specialized setae (measurements given in micrometres) and bases of branched setae; E, leg II as above; F, leg III as above.

ruber (60). W Sepik Distr: Oksapmin, nr Strickland Riv, 1645 m, 13–27.X.1968, 15 *Rattus* sp. (605). W Highlands Distr: Hagen Subdistr, Mur Mur Pass, 2700 m, moss forest, 26.IX.1968, 5 *Rattus* sp. (33); Tambul, Mur Mur Pass, 2800 m, moss forest, 2–4.I.1968, 1 *Hydromys chrysogaster* (4), 1 *Melomys* sp. (14), 4 *R. niobe* (58), 2 *Dasyurus albopunctatus* (44); 9 km E of Lake Kopiago, 1450 m, swamp margin, 2.XI.1968, 1 *Rattus* sp. (15).

***Guntheria* (*Domrowana*) *wauensis* Goff, new species**

FIG. 21

Description of species. Larvae. *Idiosoma*. Measuring 345×240 in partially engorged specimen. Eyes $2/2$, anterior larger, on ocular plate; 1 pair of humeral setae, measuring 92–97; 36 dorsal body setae, measuring

92-97, arranged 6-6-8-8-4-4; 2 pairs of sternal setae, anterior 50-55, posterior 57-61; 30-32 preanal setae, 37-47; 20 postanal setae, 59-63; total body setae 92-94. *Gnathosoma*. Palpal setal formula B/B/NNB/5B; palpal claw 3-pronged; galeala N; cheliceral blade (36-39) with tricuspid cap; gnathobase moderately punctate, bearing a pair of branched setae. *Scutum*. Moderately punctate, with biconcave anterior margin; posterior margin biconvex; AM base in line with AL bases; SB slightly anterior to PL bases; $PL > AL > AM$; $PL/AL = 1.52-1.88$; $PW/SD = 1.35-1.51$; sensilla capitate, head with fine setules. Scutal measurements: AW 57 (56, 51-62); PW 82 (81, 78-85); SB 20 (20, 18-22); ASB 38 (39, 35-42); PSB 19 (18, 17-19); AP 39 (39, 37-40); AM 46 (45, 42-48); AL 110 (114, 108-127); PL 198 (193, 185-207); Sens. 34×21 (37×19 , $34-39 \times 18-21$). *Legs*. All 7-segmented, terminating in a pair of claws and a clawlike empodium. Onychotriches absent. IP 997-1055. *Leg I*. 350-366; coxa with 1 branched seta (1B); trochanter 1B; basifemur 1B; telofemur 5B; genu 4B, 2 genualae, microgenuala; tibia 8B, 2 tibialae, microtibialae; tarsus (78×26) 20B, tarsala (18-19), microtarsala, subterminala, parasubterminala, pretarsala. *Leg II*. 290-307; coxa 1B; trochanter 1B; basifemur 2B; telofemur 4B; genu 3B, genuala; tibia 6B, 2 tibialae; tarsus (67×24) 16B, tarsala (18), microtarsala, pretarsala. *Leg III*. 357-382; coxa 1B; trochanter 1B; basifemur 2B; telofemur 3B; genu 3B, genuala; tibia 6B, tibiala; tarsus (89×21) 14B.

Type data. Holotype (BISHOP 11,561), 8 paratypes, PAPUA NEW GUINEA: Morobe Distr, Wau, Bulldog Rd, 2500 m, moss forest, ex Moss-forest Rat, *Rattus niobe* ♂ (BBM-NG 100563), 9.VIII.1972, A.B. Mirza; 10 paratypes same data as holotype, but ex *R. niobe* ♀ (BBM-NG 100568). Holotype in BISHOP; paratypes there and in USNM.

Remarks. *Guntheria wauensis* is placed in the *cassiope* group of the subgenus *Domrowana* as defined by Vercammen-Grandjean & Langston (1971). Within this group, *G. wauensis* is similar to *Guntheria womersleyi* (Gunther, 1940), *Guntheria strandtmanni* (Nadchatram & Traub, 1969), *Guntheria lavaniensis* Goff, 1977, and *Guntheria niobiensis* Goff, 1977, in having 2 genualae I and shape of scutum. *G. wauensis* differs from *G. strandtmanni* in having both AL and PL setae greater than $100 \mu\text{m}$ (both less than $90 \mu\text{m}$ in *G. strandtmanni*) and PL setae longer than AL setae (subequal in *G. strandtmanni*). *G. wauensis* may be separated from *G. niobiensis* in having ventral palpotibial seta branched (nude in *G. niobiensis*), longer AL and PL setae and lacking plates surrounding dorsal body setae (present in *G. niobiensis*). Arrangement of dorsal body setae, number of preanal and postanal setae (24 preanal and 16 postanal setae in *G. lavaniensis*) and lengths of AL and PL setae (AL 90-120, PL 113-138 for *G. lavaniensis*) serve to separate *G. wauensis* from *G. lavaniensis*. *G. womersleyi* has AL and PL setae of similar form and relative proportions as *G. wauensis* ($PL/AL = 1.40-1.79$ in *G. womersleyi*, $1.52-1.88$ in *G. wauensis*), but differs in length of setae (AL 84-90, PL 138-158 for *G. womersleyi*; AL 108-114, PL 185-207 for *G. wauensis*), having scutal setae heavier in *G. womersleyi*, total number of body setae (64 for *G. womersleyi* and 92-94 for *G. wauensis*) and lengths of legs (IP 710-748 for *G. womersleyi* and 997-1055 for *G. wauensis*).

Parasitope was given in field notes as "ear tragus" and idiosomal color as orange. The species name is derived from the general type-locality, Wau Subdistrict.

***Guntheria (Domrowana) womersleyi* (Gunther)**

FIG. 22

Neoschoengastia womersleyi Gunther, 1940: 251. Type, [Papua] New Guinea, [Morobe Distr], Bulolo, ex *Thylogale coxeni* (= *Thylogale stigmatica*), in SPHTM.—Womersley & Heaslip, 1943.—Blake et al., 1945.

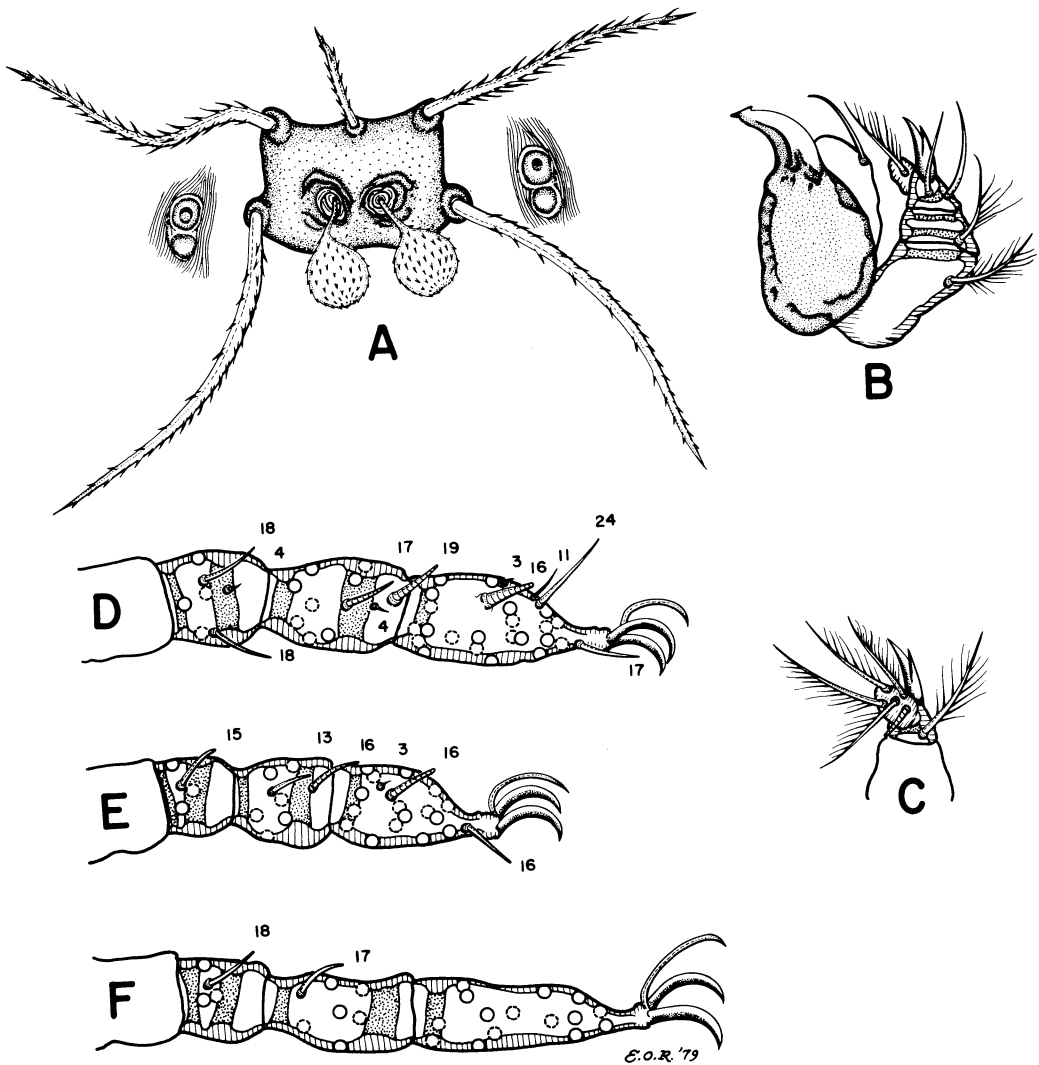


FIG. 22. Larva of *Guntheria* (D.) *womersleyi*: A, scutum; B, dorsal aspect of gnathosoma; C, ventral aspect of palpal tibia and tarsus; D, leg I distal 3 segments showing specialized setae (measurements given in micrometres) and bases of branched setae; E, leg II as above; F, leg III as above.

Ascoschoengastia womersleyi: Womersley, 1952.

Euschoengastia womersleyi: Wharton & Fuller, 1952.

Guntherana (*Guntherana*) *womersleyi*: Domrow, 1960.

Diagnosis. Palpal setal formula B/B/NNB/5B; galeala N; 1 pair of humeral setae (68–71); 24 dorsal body setae (59–83), arranged 6-6-2-4-4-2; 10–13 preanal setae (31–37); 8–10 postanal setae (42–45); sensilla globose, head with fine setules; PL setae longer than AL setae (PL/AL 1.4); 2 genualae I; tarsala I (16–17); tarsala II (16); parasubterminala I; IP 816–870.

Scutal measurements (means and extremes of specimens examined): AW 48, 45–50; PW 69, 65–76; SB 17, 14–20; ASB 31, 27–35; PSB 17, 16–20; AP 31, 28–35; AM 38, 35–40; AL 86, 80–90; PL 120, 110–130; Sens. 32, 32–33 (head 20 × 18); PW/SD = 1.44.

Remarks. As noted by Domrow (1960), *Guntheria womersleyi* appears morphologically very similar to *Guntheria cassiope*. The distinctive ratio of PL to AL scutal setae (PL/AL 1.4) serves to separate these 2 species. *G. womersleyi* may be further distinguished from the similar species, *Guntheria strandtmanni*, in the ratio of PL to AL setae as well as the numbers of ventral body setae.

This species was described by Gunther from a host identified as *Thylogale coxenii* (Gray), the Red-legged Wallaby. As noted in the discussion of *G. foliata*, this host identification is in error and the actual type-host was either *Thylogale bruijnii*, *Dorcopsis veterum* or *Dorcopsulus vanheurni*, as *T. coxenii* (= *Thylogale stigmatica*) has not been recorded from the Bulolo area. In the present collections there was only a single wallaby listed as a host. This specimen was discarded in the field following processing, thus making even generic identification impossible. However, it was probably 1 of the same 3 species just mentioned. The majority of hosts for this species of chigger were murid rodents, most notably the Moss Forest Rat, *Rattus niobe*. Color in life was listed in field notes as orange to red. In 62 of the 63 hosts for which parasitope data were recorded, the attachment site for this species was the ears. In a single individual of *R. niobe*, this species was recovered from the dorsal body surface.

Specimens examined (1153). PAPUA NEW GUINEA. Central Distr: Karema, Brown River Forest Station, 38 km NW of Port Moresby, 13-22.X.1968, 6 *Rattus* sp. (18), 1 "wallaby" (15). S Highlands Distr: 5 km W of Mendi, 2000 m, 11.XII.1967, 1 *Rattus ruber* (1). Chimbu Distr: Arabori, 20 km SE of Chuave, 2300 m, 26-28.XI.1967, 3 *Rattus verecundus* (30), 1 *Rattus exulans* (15). E Highlands Distr: Kassam Pass, 1400 m, forest fringe, 14-21.XI.1967, 1 *Murexia longicauda* (22), 1 *R. exulans* (4), 2 *Rattus leucopus* (13), 3 *R. ruber* (10), 1 *Uromys caudimaculatus* (25). Morobe Distr: Bulldog Rd, 20 km from Edie Creek, 2500 m, moss forest, 18-26.X.1967, 5 *R. ruber* (12), 1 *U. caudimaculatus* (3), 31.X.1967, 1 *Antechinus wilhelmina* (29), 1 *Melomys* sp. (50), 27 *Rattus niobe* (317), 1-6.XI.1967, 1 *Anisomys imitator* (15), 1 *Melomys* sp. (5), 2 *Phascolosorex dorsalis* (100), 59 *R. niobe* (443), 1 *R. ruber* (11); NE of Wau, base of Mt Missim, 1200 m, secondary forest, 24.XI.1967, 1 *Melomys rufescens* (2); Wau, Big Wau Creek Ridge, 1700 m, 19.X.1967, 1 *M. rufescens* (2); Mt Kaindi, 1900 m, scrub in dry creek, 18.X.1968, 1 *Antechinus* sp. (1). W Highlands Distr: 9 km E of Lake Kapiago, 1450 m, swamp margin, 2.XI.1968, 1 *R. ruber* (10).

Genus **Ornithogastia** Vercammen-Grandjean, **new status**

Paraschoengastia (*Ornithogastia*) Vercammen-Grandjean, 1960 (unpaginated table).

Guntherana (*Ornithogastia*): Vercammen-Grandjean et al., 1970.—Vercammen-Grandjean & Langston, 1971.

Type-species. *Neoschoengastia paenitens* Brennan, 1952.

Referred species. *Guntherana* (*Ornithogastia*) *merops* Vercammen-Grandjean et al., 1970; *Guntherana* (*Ornithogastia*) *oenanthe* Vercammen-Grandjean et al., 1970; *Neoschoengastia ornata* Schluger, 1961; *Neoschoengastia pastoriana* Taufflieb, 1958; *Neoschoengastia riversi* Wharton & Hardcastle, 1946.

Diagnosis. Trombiculinae larvae with palpal setal formula B/B/NNB/5B; galeala N; palpal claw 2- or 3-pronged; eyes 2/2, anterior larger; scutum trapezoidal with posterior $\frac{2}{3}$ covered by cuticular striations; sensilla globose; 2-3 genualae I, genuala II and III; tibiala III; 1-3 mastitibialae III, subterminala and nude parasubterminala I; 1-4 mastitarsalae III.

Remarks. *Ornithogastia* is similar to *Guntheria*, but differs in the presence of cuticular striations on the scutum and mastisetæ on tibia and tarsus of legs III (both absent from *Guntheria* species). Primary host species for *Ornithogastia* species appear to be birds and reptiles, while mammals are the primary hosts for *Guntheria*. *Ornithogastia* is similar to *Neoschoengastia* in having cuticular striations on the scutum, globose sensilla, and mastitarsalae on legs III in addition to being primarily bird ectoparasites, but differs in having 5B on palpal tarsus (7B or 7BS in *Neoschoengastia*), 1-3 mastitibialae III (absent in *Neoschoengastia*) and a nude parasubterminala I (generally branched in *Neoschoengastia*). In the light of these differences, it appears that separate generic status is warranted for *Ornithogastia*. As expected from association with birds, *Ornithogastia* species are more widely distributed than *Guntheria* species. Although Domrow (1978) has listed several species of *Guntheria* from birds, these appear to be minor hosts and distribution of the genus remains confined primarily to Australia and New Guinea.

***Ornithogastia riversi* (Wharton & Hardcastle), new combination**

FIG. 23

Neoschoengastia riversi Wharton & Hardcastle, 1946: 299. Holotype, Solomon Is [PNG], Bougainville, Cape Torokina, ex *Eurystomus orientalis*, 27.VII.1944, in USNM.—Philip & Woodward, 1946.—Brennan, 1951.—Wharton & Fuller, 1952.—Womersley, 1952.—Audy, 1957.—Domrow & Nadchatram, 1960.—Nadchatram, 1970.

Diagnosis of species. Palpal setal formula B/B/NNB/5B; galeala N; palpal claw 2-pronged; cheliceral blade (27-29) with tricuspid cap; 1 pair of humeral setae (30-35); 26 dorsal body setae (18-37, anterior rows longest), arranged 8-6-2-4-4-2; 3 pairs of sternal setae (anterior 17-26, median 17-22, posterior 18-22); 10 preanal setae (21-31); 6 postanal setae (18-21); scutum with anterolateral shoulders; posterior $\frac{2}{3}$ covered by cuticular striations; AL > PL > AM, sensilla capitate, head with fine setules; 3 genualae I; tarsala I (13-14); tarsala II (13-14); tibiala and mastitibiala (36-38) III; 3 mastitarsalae III (40-50); IP 581-605.

Scutal measurements of holotype followed in parentheses by means and ranges of 10 specimens examined: AW 35 (39, 35-41); PW 53 (57, 53-60); SB 16 (19, 16-21); ASB 22 (24, 22-26); PSB 16 (17, 15-22); AP 23 (23-26); AM 40 (42, 39-45); AL 55 (52, 48-59); PL 49 (45, 39-50); Sens. 27 × 13 (29 × 14, 27-31 × 13-18); PW/SD = 1.39 (1.39, 1.28-1.47).

Remarks. *Ornithogastia riversi* was originally described in the genus *Neoschoengastia* based on the cuticular striations covering the posterior $\frac{2}{3}$ of the scutum. It differs from *Neoschoengastia* species in having only 5B on the palpal tarsus (7BS in *Neoschoengastia*) and the presence of mastisetæ on tibia and tarsus III (absent in *Neoschoengastia*). Cuticular striations over the posterior portion of the scutum, 5B on the palpal tarsus and mastisetæ on tibia and tarsus III serve to place this species in the genus *Ornithogastia*. Domrow & Nadchatram (1960) redescribed the larva of *O. riversi*, but illustrated the setation of the palpal tibia as BNN and did not show mastitibiala III,

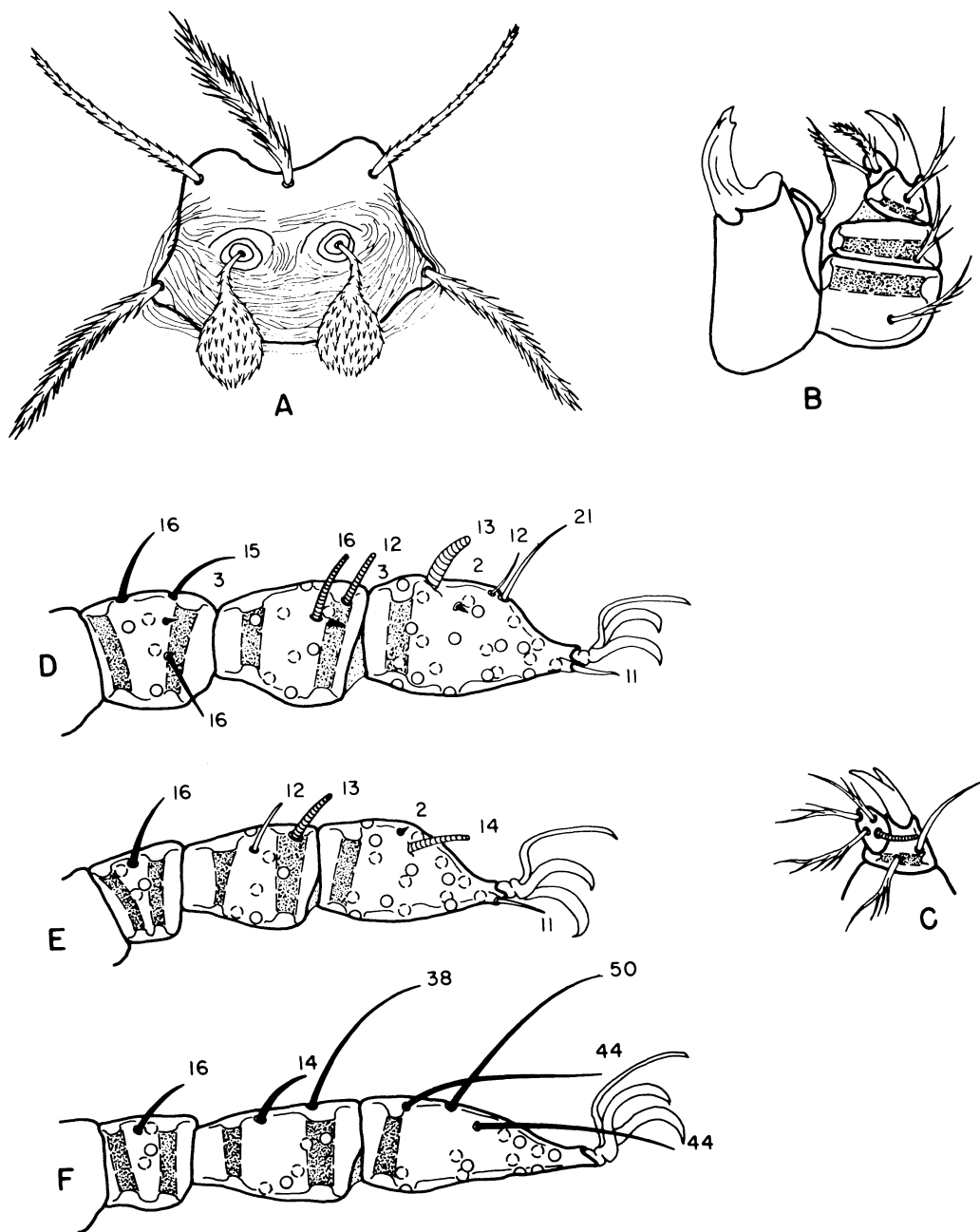


FIG. 23. Larva of *Ornithogastia riversi*: A, scutum; B, dorsal aspect of gnathosoma; C, ventral aspect of palpal tibia and tarsus; D, leg I distal 3 segments showing specialized setae (measurements given in micrometres) and bases of branched setae; E, leg II as above; F, leg III as above.

although they stated that it probably occurs. The holotype and other specimens examined clearly have a mastitibiala III and palpal tibial setation NNB. In the same paper, Domrow & Nadchatram described a nymph of *O. riversi* reared from a flying lizard, *Draco maximus*, from Malaysia. *O. riversi* is the only species of *Ornithogastia* recorded from Papua New Guinea.

Specimens examined (61). PAPUA NEW GUINEA, Bougainville, Cape Torokina, 3–27.VII.1944, *Eurystomus orientalis* (holotype + 38), *Haliaeetus sanfordi* (5), *Hirundo taluticu* (1), 18.X.1944, *Falco sererus* (8). PHILIPPINE IS, Guivan, Somor, 1.III.1945, *Halcyon chloris* (1), *E. orientalis* (7).

KEY TO SUBGENERA AND SPECIES OF LARVAL *Guntheria* AND *Ornithogastia* IN PAPUA NEW GUINEA

1. Pygosomal plate or plates present ... (subgenus *Guntheria*) 2
Pygosomal plates absent 8
2. Single pygosomal plate **parana**
Paired pygosomal plates 3
3. Pygosomal plates reticulated 4
Pygosomal plates punctate 5
4. Palpal tibial setation NNN; 6 setae in 1st posthumeral row **ornamentata**
Palpal tibial setation NNB; 8 setae in 1st posthumeral row **scrobiculata**
5. 8 or more setae in 1st posthumeral row **mirzai**
6 setae in 1st posthumeral row 6
6. Galeala, dorsal and ventral palpal tibial setae inflated basally **inflata**
Galeala and palpal tibial setae normal 7
7. Microtarsala I distad of base of tarsala I; anterior seta on pygosomal plate barbed **hoxieae**
Microtarsala I proximad of base of tarsala I; anterior seta on pygosomal plate nude ... **kallipygos**
8. Palpal tarsus 5BS ... (subgenus *Derrickiella*) **echymipera**
Palpal tarsus 5B 9
9. Posterior $\frac{2}{3}$ of scutum with cuticular striations, palpal claw 2-pronged ... (genus *Ornithogastia*) **riversi**, new comb.
Scutum lacking cuticular striations; palpal claw 3-pronged ... (subgenus *Domrowana*) 10
10. Dorsal body seta expanded 11
Dorsal body setae unexpanded 13
11. 1 genuala I **serrata**
2 genualae I 12
12. Palpal setal formula B/B/NBB/5B **foliata**
Palpal setal formula N/N/NNN/5B **mccullochi**
13. PL bases anterior to SB 14
PL bases in line with or posterior to SB 18
14. Galeala branched 15
Galeala nude 16
15. 3 genualae I **mohri**
2 genualae I **shieldsi**
16. Fewer than 80 dorsal body setae **perameles**
More than 100 dorsal body setae 17
17. Fewer than 200 total body setae **crinita**
More than 340 total body setae **omega**
18. Palpal tibial setation NNN **niobiensis**
Palpal tibial setation NNB 19

19. PL and AL setae subequal 20
 PL setae > AL setae 21
20. PL setae shorter than 40 μm ; omorostigmal scutum, SB 10 μm **minima**
 PL setae longer than 70 μm ; scutum with SB greater than 15 μm **strandtmanni**
21. Scutal setae finely ciliated, nude distally **lavaniensis**
 Scutal setae with heavy setules to tip 22
22. 24 dorsal body setae, measuring 59-83; PL setae shorter than 140 μm **womersleyi**
 36 dorsal body setae, measuring 92-97; PL setae longer than 180 μm **wauensis, n. sp.**

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