A synopsis of the Opiliones of Thailand (Arachnida) II. Palpatores

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This is the second and last part of a synopsis of the Opiliones of Thailand and deals with 50 species of the subfamily Gagrellinae, family Gagrellidae, suborder Palpatores. Keys to Thai genus groups, genera, and species are given. Two new genera and 21 new species are described, viz., Metahehoa (n.gen.) granulata, Pseudosystenocentrus (n. gen.) foveolatus, Gagrella pulca, G. modesta, G. alba, G. fumosa, Metagagrella curvispina, M. fusca, M. crassa, M. similis, M. punctata, Melanopula thailanda, Gagrella variegata, G. altimarginata, G. rutilla, Eugagrella granata, Gagrellula lateobiseriata, Zaleptus flavus, Verpulus fulvus, Hypsibunus aureomaculatus, and Metazaleptus striatus.


INTRODUCTION

The present paper is the second of two papers dealing with the Opiliones of Thailand. Part one (Suzuki 1985) dealt with the suborders Cyphophthalmi and Laniatores. Part two deals with the suborder Palpatores. All species of Palpatores presently known from Thailand belong to the family Gagrellidae, subfamily Gagrellinae.

In the descriptions, taxa new to the Thai fauna are indicated by an asterisk. Synonymies listed under the generic and specific names involve only post-Roewer (1923) papers.

The following abbreviations are used: BD = Birgit Degerbol, Fe = femur, L = left side, Mt = metatarsus, Pa = patella, Pl = plate, R = right side, Ta = tarsus, Ti = tibia, Tr = trochanter, ZMUC = Zoological Museum, University of Copenhagen. All measurements are in mm.

All material is deposited in ZMUC.

I wish to express my hearty thanks to Dr. H. Enghoff, ZMUC, for giving me a chance to study the collection from Thailand and helping me to publish this series of papers. I am also grateful to Mrs. B. Degerbol for providing much of the material.

SUBORDER PALPATORES THORELL, 1876

Family Gagrellidae Thorell, 1889

Subfamily Gagrellinae Thorell, 1889

Key to genus groups of Gagrellinae

1. Scutum with one or several median elevations in the form of slender spines, blunt cones, wide pointed cones or low bumps . - Gagrellinae, p. 210
   - Scutum unarmed, without any median elevations 
   - Zaleptinae, p. 250
Genus group Gagrellae

Key to Thai genera of Gagrellae

1. Scutum with a median longitudinal row of 3 low blunt humps or 4-5 spines ........ 2
   - Scutum with 3 or 4 median spines or blunt cones ........ 4

2. Scutum with a median longitudinal row of 3 low blunt humps .......... Metahehoa, p. 210
   - Scutum with a median longitudinal row of 4-5 spines ...... 3

3. Scutal areas I-V each with a median spine ......... Systemecentrus, p. 210
   - Scutal areas II-VI (6) or II-V (6) each with a median spine and free sternites not granular, hairy. All coxae anteriorly, and coxae I and IV posteriorly, with single pairs of teeth on both sides of the nodule formula; metatarsi and tarsi somewhat swollen. Femora I and III much shorter than body. Teeth on lateral part of trochanters and proximal part of femora, remaining part of femora, and tibiae, metatarsi, and tarsi, unarmed, hairy. Nodule formula 0:3:0:0. Coloration. Carapace whitish yellow and covered with thick white secretions; lateral margins rusty brown; dorsal side with two oblique rows of rusty brown flecks on each side, mid-front area with two short brown lines. Eye tubercle rusty brown throughout. Transverse ridge posterior to eye tubercle, last thoracic tergite, entire scutum including median humps, and free tergites uniformly rusty to dark brown. Venter rusty yellow. Appendages rusty brown; palpal tibia and tarsus slightly lighter. Trochanters of legs with two whitish yellow patches dorsally; femur II with three whitish yellow rings marking the nodules; metatarsi and tarsi somewhat lighter. Penis (Fig. 1 F-H). Shaft stout, widest at base, gradually narrower distally. Alate part well-developed, distally truncate and proximally tapering into shaft. Musculature limited to proximal 3/5 of shaft. Same to male but larger. Mid-front area of

<table>
<thead>
<tr>
<th>Scutal areas with median humps</th>
<th>Chebabius</th>
<th>Umbrogrella</th>
<th>Hehoa</th>
<th>Metahehoa</th>
</tr>
</thead>
<tbody>
<tr>
<td>with median humps</td>
<td>I-II</td>
<td>I-II</td>
<td>I-V</td>
<td>I-III</td>
</tr>
<tr>
<td>Armature of eye tubercle</td>
<td>2 pairs of enlarged spines</td>
<td>sometimes teeth; no enlarged spines</td>
<td>coarse granules; no enlarged spines</td>
<td>complete ring of teeth; no enlarged spines</td>
</tr>
<tr>
<td>Femora I &amp; III</td>
<td>as long as or shorter than body</td>
<td>much longer than body</td>
<td>shorter than body</td>
<td>shorter than body</td>
</tr>
<tr>
<td>Nodule formula</td>
<td>0:3:0:0</td>
<td>0:3:0:0</td>
<td>0:2:0:0</td>
<td>0:3:0:0</td>
</tr>
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</table>

Table 1. Diagnostic characters of 4 gagrellid genera.

5. Femur I and IV each with 1 nodule ......................................... 11
6. Eye tubercle with a pair of large spines; scutal areas II-VI each with a median spine and free sternites not granular, hairy. All coxae anteriorly, and coxae I and IV posteriorly, with single pairs of teeth on both sides of the nodule formula; metatarsi and tarsi somewhat swollen. Femora I and III much shorter than body. Teeth on lateral part of trochanters and proximal part of femora, remaining part of femora, and tibiae, metatarsi, and tarsi, unarmed, hairy. Nodule formula 0:3:0:0. Coloration. Carapace whitish yellow and covered with thick white secretions; lateral margins rusty brown; dorsal side with two oblique rows of rusty brown flecks on each side, mid-front area with two short brown lines. Eye tubercle rusty brown throughout. Transverse ridge posterior to eye tubercle, last thoracic tergite, entire scutum including median humps, and free tergites uniformly rusty to dark brown. Venter rusty yellow. Appendages rusty brown; palpal tibia and tarsus slightly lighter. Trochanters of legs with two whitish yellow patches dorsally; femur II with three whitish yellow rings marking the nodules; metatarsi and tarsi somewhat lighter. Penis (Fig. 1 F-H). Shaft stout, widest at base, gradually narrower distally. Alate part well-developed, distally truncate and proximally tapering into shaft. Musculature limited to proximal 3/5 of shaft. Similar to male but larger. Mid-front area of

Genus Systemecentrus Simon, 1886

Systemecentrus: Roewer 1923: 928; 1955a: 120.

Key to Thai species of Systemecentrus

1. Fifth scutal spine shorter than others; dorsal and venter uniformly black .......... 3
   - Fifth scutal spine with two longitudinal whitish yellow stripes on entire length of body. S. luteobiseriatus, p. 210

2. Scutal areas I-III each with a low blunt median hump. Eye tubercle with a complete ring of teeth, but without enlarged teeth or spines. Femora I and III cylindrical and shorter than twice as long as body. Teeth on lateral part of trochanters and proximal part of femora, remaining part of femora, and tibiae, metatarsi, and tarsi, unarmed, hairy. Nodule formula 0:3:0:0. Coloration. Carapace whitish yellow and covered with thick white secretions; lateral margins rusty brown; dorsal side with two oblique rows of rusty brown flecks on each side, mid-front area with two short brown lines. Eye tubercle rusty brown throughout. Transverse ridge posterior to eye tubercle, last thoracic tergite, entire scutum including median humps, and free tergites uniformly rusty to dark brown. Venter rusty yellow. Appendages rusty brown; palpal tibia and tarsus slightly lighter. Trochanters of legs with two whitish yellow patches dorsally; femur II with three whitish yellow rings marking the nodules; metatarsi and tarsi somewhat lighter. Penis (Fig. 1 F-H). Shaft stout, widest at base, gradually narrower distally. Alate part well-developed, distally truncate and proximally tapering into shaft. Musculature limited to proximal 3/5 of shaft. Similar to male but larger. Mid-front area of

Genus Systenocentrus Suzuki, 1982


Distribution: Thailand (Chantaburi Province: Chantaburi (= Chantoboune)), Burma.

*Systenocentrus quinquedentatus* Simon, 1886

Systenocentrus quinquedentatus: Roewer 1923: 928, fig. 1072; 1955a: 120.

Distribution: Thailand (Chantaburi Province: Chantaburi (= Chantoboune)), Burma.

*Systenocentrus luteobiseriatus* Suzuki, 1982


Distribution: Thailand (Chantaburi Province: Chantaburi (= Chantoboune)). 210

Type-species: *Metahehoa granulata* n. sp.

Distribution: Thailand.

Remarks

In the presence of strongly sclerotized integument and low blunt median humps on the abdominal scutum the present genus resembles *Chebabius* Roewer, 1935, *Umbrogrella* Roewer, 1935, and *Hehoa* Roewer, 1929. These three genera were separated by Roewer mainly on the number of median humps and partly on the armature of the eye tubercle and the relative lengths of femora I and III. In these respects *Metahehoa* seems to be closest to *Hehoa* but differs from it in the nodule formula. The important characters distinguishing these four genera are summarized in Table 1.

Genus *Metahehoa* n. gen.

Gagrellinae: Scutal areas I-III each with a low blunt median hump. Eye tubercle with a complete ring of teeth, but without enlarged teeth or spines. Femora I and III cylindrical and shorter than twice as long as body. Teeth on lateral part of trochanters and proximal part of femora, remaining part of femora, and tibiae, metatarsi, and tarsi, unarmed, hairy. Nodule formula 0:3:0:0. Coloration. Carapace whitish yellow and covered with thick white secretions; lateral margins rusty brown; dorsal side with two oblique rows of rusty brown flecks on each side, mid-front area with two short brown lines. Eye tubercle rusty brown throughout. Transverse ridge posterior to eye tubercle, last thoracic tergite, entire scutum including median humps, and free tergites uniformly rusty to dark brown. Venter rusty yellow. Appendages rusty brown; palpal tibia and tarsus slightly lighter. Trochanters of legs with two whitish yellow patches dorsally; femur II with three whitish yellow rings marking the nodules; metatarsi and tarsi somewhat lighter. Penis (Fig. 1 F-H). Shaft stout, widest at base, gradually narrower distally. Alate part well-developed, distally truncate and proximally tapering into shaft. Musculature limited to proximal 3/5 of shaft. Similar to male but larger. Mid-front area of

Systenocentrus quinquedentatus Simon, 1886

Systenocentrus quinquedentatus: Roewer 1923: 928, fig. 1072; 1955a: 120.
carapace with more teeth, and palpal tarsus without a definite row of teeth. Coloration much darker than in male; dorsum and venter dark brown to black except for a reddish brown carapace. Chelicerae and palpi rusty to dark brown, tarsus only slightly lighter. Legs blackish brown but metatarsi and tarsi yellowish brown; trochanters with two large rusty yellow patches above.

**Seminal receptacle** as shown in Fig. I I.

**Distribution**

Thailand (Chieng Mai Province: Doi Sutep).

*Genus Pseudosystenocentrus* n.gen.

Gagrellinae: Abdominal tergites I-VI united as an abdominal scutum; areas II-V (♂) or II-VI (♀) each with a stout median spine. Eye tubercle without enlarged spines. Femora I and III cylindrical and shorter than body. All femora without nodules.

Type-species: *Pseudosystenocentrus foveolatus* n.sp.

**Distribution**

Thailand.

**Remarks**

In the Gagrellinae, abdominal tergites I-V usually unite to form an abdominal scutum, and tergites VI-VIII remain free. The inclusion of tergite VI in the scutum of *Pseudosystenocentrus* distinguishes it from *Systenocentrus*, as does the position of the first abdominal spine: on area I in *Systenocentrus* and area II in *Pseudosystenocentrus*.

The new genus lacks distinct femoral nodules on all legs and therefore should be placed in the subfamily Leiobuninae, according to present systematic standards. I am, however, reluctant to do so because of its strong resemblance in general appearance to the Gagrellinae. The genus is provisionally assigned to the Gagrellinae, pending future studies.

*Pseudosystenocentrus foveolatus* n.sp.

**Fig. 2.**


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Measurements (in parentheses). Body 2.4 (3.4) long. Length of femora 1.4 (1.4) : 3.3 (3.1) : 1.6 (1.5) : 2.5 (2.0). Total length of legs 7.1 (7.1) : 15.7 (14.8) : 7.3 (7.3) : 10.5 (10.6). Penis 0.8 long.

**Female**

Small animal, its lateral view as shown in Fig. 2A. Abdomen strongly convex dorsally. Abdominal tergites I-VI united to form an abdominal scutum, tergites VII-VIII remaining free. Entire body (excepting soft connecting skin) very finely and uniformly granular. Thoracic tergites, abdominal scutum, and free tergites moreover covered with networks of small dimples (Fig. 2D). Areas II-VI each with a basally thickened median spine, last spine slightly shorter than others: one specimen with an obsolete prominence on area I. Mid-front area of carapace only slightly projecting forward and upward. Eye tubercle with a short but distinct blunt at front. Spine (Fig. 2 G-H). Palp stronger than in female, especially tibia (Fig. 21-J).

**Penis** (Fig. 2 K-M). Shaft thick and stout, distal 1/3 of shaft narrowed and its dorsal surface arched to form a distinct median keel. Glans narrow from above but of considerable height in profile, with two pairs of short setae at base of stylius. Musculature limited to proximal 2/3 of shaft.

**Distribution**

Thailand (Chiang Mai Province: Doi Sutep, Doi Inthanon).

**Genus Marthana Thorell, 1891**


**Eumarthana**: Roewer 1923: 997; 1955a: 89.

**Promarthana**: Roewer 1923: 1030; 1955a: 91.

**Promarthana##**: Roewer 1955a: 86.

**Marthanessa Roewer, 1955a: 95.

**Marthana Roewer, 1955a: 88.**

**Distribution**: Philippine Isl., Borneo, New Guinea, Indonesia, Malaysia, Thailand, India.

**Key to Thai species of Marthana**

1. Eye tubercle completely smooth; median spine of scutum considerably widened basally

   - [*M. ferruginea*, p. 215](#)

   - Eye tubercle with a ring of denticles around each eye; median cone of scutum thickened throughout

   - [*M. siamensis*, p. 215](#)

In accordance to the synonymy of *Marthana* with *Marthana* (cf. Suzuki 1977) this species is renamed as *Marthana siamensis*.

**Distribution**

Thailand (exact locality unknown).

**Genus Dentobunus Roewer, 1910**


**Dentobunus siamensis Roewer, 1955**

*Distribution*: Thailand (exact locality unknown).

**Genus Gagrella Thorell, 1889**


**Key to Thai species of Gagrella**

1. Scutal area I unarmed, area II with a median spine

   - Scutal areas I and II each with a median spine

   - Palpal patella with an apophysis

   - Eye tubercle entirely covered with pointed teeth

   - *G. spinulosa*, p. 216

   - Eye tubercle unarmed, completely smooth

   - Chelicerate segment 1 dorsally granulate or toothed

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\*Marthana ferruginea* (Roewer, 1911)

Fig. 3.


Recently the genus *Marthana* proved to be a synonym of *Marthana* (cf. Suzuki 1977). Accordingly, this species is renamed as *Marthana ferruginea*.

This species is new to the Thai fauna. The single female examined accords well with Roewer’s original description except for the minor difference that cheliceral segment 1 is armed with more than 1 dorsal granule (Fig. 3 C). Body length 6.7, body width 4.1. Length of femora 10.0 : 19.7 : 9.5 : 13.8. Total length of legs : 100.6 : 38.7 : 59.7.

**Oxipositor** consisting of 3 forceps + 29 normal segments, of which the first 21 with a whorl of 8 setae; seminal receptacles (Fig. 3 E) between segments 2 and 3.

**Distribution**

Burma, Thailand (Narathiwas Province: Narathiwat), Malaysia, Indonesia.

**Marthana siamensis** (Roewer, 1955)

*Marthana siamensis* Roewer, 1955a: 88, pl. 10, fig. 132.
Paratype: Sara Loei Province: Ban

1. Coxae and trochanters
2. All palpal segments of usual form, patella without
3. Dorsum with 6 large yellowish flecks: 2 on cephalic areas
4. Dorsum with 4 large yellowish flecks: 2 on cephalic areas
5. Dorsum with 4 or 6 distinct yellowish flecks
6. Scutum rusty brown, without a distinct central figure; penis shaft slender, with sides nearly parallel and straight
7. Chelicerae segment I dorsally toothed
8. Scutum dark brown, with a blackish central figure; penis shaft slender but proximally widened
9. Scutum dark brown, scutum with a wide reddish brown median band on dorsum; edges of small tubercles on front margin of coxa I straight
10. Coxae and trochanters IV-V blackish brown to black; ground colour of dorsal dark reddish brown scutum, with a wide reddish brown median band between dorsal spine and fore margin
11. Edge of small tubercles on front margin of coxa I three-pointed
12. All palpal segments of usual form, patella without an apophysis
13. All palpal segments slender, elongate, patella with an apophysis
14. Eye tubercle dorsally smooth; scutum dark brown, with a large yellowish white fleck on each side of area II
15. Dorsum with 4 or 6 distinct yellowish flecks
16. Dorsum without yellowish flecks
17. Dorsum with 4 large yellowish flecks: 2 on cephalothorax and 2 on abdomen
18. Dorsum with 6 large yellowish flecks: 2 on cephalothorax and 4 on abdomen

The specimens examined agree well with the descriptions so far published. However, the male palpars tarsus differs from the previous descriptions in completely lacking a definite row of denticles (Fig. 4 B). The seminal receptacle is illustrated for the first time (Fig. 4 A).

**Distribution**
Burma, Thailand (Chiang Mai Province: Doi Sutep).

**Gagrella spinulosa** Thorell, 1889

Fig. 4.


**Material**: Chiang Mai Province, Wang Dao, 11.vii. and 30.xii.1958, 5♂♂, 5♀; Chiang Mai Province, Hot, 450 m, 23.ix.1958, 1♂, 1♀; Chiang Mai Province, Doi Sutep, 2.x.1958, 1♂; Chiang Mai Province, Doi Saket, 4.xi.1959, 5♂♂, 9♀; Loei Province, Phu Kradung, 28.xi.1958, 1♂; Kamphaeng Phet Province, 50 km E Kamphaeng Phet, 19.i.1959, 3♂, 1♀ (BD). - Chiang Mai Province, Doi Inthanon N.P., Mae Klang, 3-400 m, 9.x.1981, 1♀ (ZMUC).

**Gagrella luteofrontalis** Roewer, 1910

**Gagrella luteofrontalis**: Roewer 1923: 971; 1954 a: 220.

**Distribution**: Thailand (Province: ? Bortong).

**Gagrella luteofrontalis**: Roewer 1923: 970; 1954 a: 220.

**Distribution**: Thailand (Bangkok Province: Bangkok).

**Gagrella coriacea** Roewer, 1919


**Material**: Chiang Mai Province, Doi Sutep, 8.x.1958 (BD). - Paratype: data as holotype, 1♂ (BD). - Additional material: not included in type-series: Chiang Mai Province, Doi Sutep N.P., Doi Pui road, 1000 m, 23.-26.x.1979, 1♂; same data, but on Doi Pui, summit, 1600 m, 27.x.1981, 1♀, same data, but on Doi Sutep, summit, 1600 m, 27.x.1981, 1♂, 2♀ (ZMUC).


**Male**
Dorsum as shown in Fig. 6 A. (In one specimen the free tergites are turned under and the abdomen hence broadly rounded posteriorly.) Sur-
face of dorsum smooth; abdominal scutum and free tergites with a cupreous lustre. Scutal area II with a relatively short, somewhat rugose but not granular median spine (Fig. 6 G). Eye tubercle (Fig. 6 H) in front view constricted basally, rounded above, canalicate; surface completely smooth, only with a few short hairs above. Surface of coxae I-IV sparsely granular; all coxae anteriorly, and coxae I, II, and IV posteriorly, with marginal tubercles (Fig. 6 J). Genital plate smooth; free sternites with a row of small hair-tipped granules.

Chelicerae (Fig. 6 I). Segment 1 dorsally with 3-4 teeth; segment 2 with a short row of small teeth medially at base of immovable finger. Suprachelicerol lamellae as shown in Fig. 6 F.

Palpi (Fig. 6 B-E). Patella widened distally, with a small or relatively long apophysis at tip. Tibia swollen throughout, with a slight ventromedial concavity provided with a thick covering
of long stiff hairs. Tarsus curved ventrad, distally somewhat thickened, with a ventromedial row of denticles.

**Legs** very slender and long. Trochanters, femora, patellae, and tibiae finely toothed. Nodule formula 0 : 1 : 0 : 0.

**Coloration.** Carapace with lateral margins and median area including eye tubercle dark brown, both sides snow-white and provided with two diagonal rows of brown flecks. Thoracic tergites, scutum, and free tergites rusty to dark brown with a cupreous lustre. Scutum with a blackish central figure interrupted segmentally by pale transverse lines; each division of central figure with two yellowish dots. Coxae I and IV snow-white, marginal humps dark to blackish brown; coxae II and III entirely dark brown.

Genital plate whitish with a wide rustry brown median line; free stemites pale brown, boundaries marked with dark brown. Chelicerae and palpi rusty brown, edges and tip of chelae black. Legs yellowish brown but trochanters and femoral bases darker.

**Penis** (Fig. 6 K-M). Shaft slender, widened proximally. Alate part well-developed, extending along distal half of shaft, much wider than shaft, tapering distally and proximally. Musculature limited to proximal 1/3 of shaft.

**Female**
Similar to male but much larger (Fig. 6 N). Palpi (Fig. 6 O-P) with tibia not thickened and without dense hairs on ventral surface; tarsus without a definite row of ventral teeth.

**Ovipositor** with 3 forceps + 25 normal segments, of which first 16 with a whorl of 8 (rarely 1) setae; seminal receptacles (Fig. 6 Q) between segments 2 and 3.

**Distribution**
Thailand (Chiang Mai Province: Doi Sutep).

**Remarks**
This new species closely resembles *G. aenescens* (see above) and *G. cyanargentea* Roewer, 1915 (Singapore). These three species differ from all known congeners in having the following combination of characters: (1) Scutum with one median spine; (2) Cheliceral segment 1 with a few dorsal teeth; (3) Palpal patella with an apophysis; (4) Eye tubercle completely smooth. *G. pulera* clearly differs from *G. aenescens* in the structure of the penis (compare Fig. 6 K-L with Fig. 5 K-L), and from *G. cyanargentea* in having a smaller body and in lacking three silvery white markings on each side of the abdominal scutum.

*Gagrella modesta n.sp.*

Fig. 7.


Measurements ♂ (in parentheses ♀): Body 5.8 (6.9) long. Length of femora 13.7 (12.5) : 23.7 (22.1) : 12.9 (11.3) : 17.2 (16.3). Total length of legs 66.5 (62.6) : 129.1 (119.5) : 62.2 (59.7) : 83.0 (77.2). Penis: shaft 3.08 long, 0.44 wide at base.

**Male**
Dorsum as shown in Fig. 7 A. Surface of dorsum uniformly and roughly granular. Front margin of carapace, and numerous scattered denticles. Scutal area with a long median spine (Fig. 7 D). Eye tubercle slanting lightly posteriorly, entirely unarmed (Fig. 7 C). Surface of coxae and genital plate densely and coarsely granular; free sternites smooth. All coxae anteriorly, and coxae I and IV posteriorly, with a row of marginal tubercles (Fig. 7 J); a lateral row of similar tubercles on each side of genital plate.

**Chelicerae** (Fig. 7 E). Segment 1 dorsally with 3-5 teeth. Supracheliceral lamellae as shown in Fig. 71.

**Palpi** (Fig. 7 F-G). Patella with small but distinct apophysis.

**Legs** slender and long. Trochanters toothed laterally, femora and patellae throughout, tibiae only proximally. Nodule formula 0 : 1 : 0 : 0.

**Coloration.** Dorsum golden yellow in ground colour. Carapace with rusty brown lateral margins, and with two diagonal rows of dark brown flecks on each side. Eye tubercle rusty brown, eye rings blackish. Scutum with a large, deep blackish brown, posteriorly widened median fleck on areas I-II, and two pale dots on each segment (Fig. 7 A). Venter rusty brown, all coxae with a golden yellow median patch. Chelicerae and palpi uniformly rusty brown. Trochanters of legs brownish, remaining leg-segments dark brown.

There is a great variation in coloration. In some specimens the scutum and the free tergites are yellowish brown in ground colour and a darker brown central figure is obscurely developed on the scutum (as Fig. 7 B). In others, the scutum and the free tergites are yellowish brown, with a large golden yellow or yellowish white patch on each side of areas I-II.
Penis (Fig. 7 K-M). Shaft wide and long, widest at base, gradually narrower distally. Alate part well-developed, much wider than shaft, distally truncate and proximally tapering into shaft. Glans in profile with dorsal side concave and ventral side convex. Musculature confined to proximal half of shaft.

**Female**

Similar to male but larger. Palpal tibia laterally with numerous teeth, palpal tarsus without a definite row of teeth.

**Distribution**

Thailand (Chiang Mai Province: Doi Sutep).

**Remarks**

This species closely resembles *G. tibialis* Roewer, 1931 (Sumatra) and *G. sulphurea* Roewer, 1912 (Burma). These three species differ from all known congeners in having the following combination of characters: (1) Abdominal scutum lacking a metallic lustre; (2) Cheliceral segment 1 dorsally toothed; (3) Palpal patella with a medioapical process; (4) Distal edge of coxal marginal tubercles evenly blunt. *G. modesta* differs from *G. tibialis* in having a palpus of usual form (that of *tibialis* is very slender and long), and from *G. sulphurea* in having a larger body, longer legs, and a completely different coloration.

*Gagrella alba* n.sp.

**Material:** Holotype ♀: Chiang Mai Province, Doi Sutep, 1000 m, 11.v.1959 (BD).

**Measurements:** Body 4.2 long. Length of femora: ♂: 10.3: 14.4. Total length of legs: ♂: 50.1: 64.3. Penis: shaft 2.45 long, 0.35 wide at base, 0.13 wide at middle.

**Male**

Dorsum as shown in Fig. 8 A. Surface of carapace, scutum, and free tergites uniformly granular. Scutal area II with a median spine (Fig. 8 E). Eye tubercle (Fig. 8 F) basally constricted, slanting slightly posteriorly, dorsally rounded, canaliculate, carinae unarmed or with two small teeth at frontal corner. Coxae I-IV uniformly granular; genital plate and free sternites not granular, hairy. All coxae anteriorly and coxae I and IV posteriorly with a row of small tubercles (Fig. 8 G); a lateral row of similar tubercles on each side of genital plate.

**Chelicerae** (Fig. 8 H). Segment 1 with 2 dorsal teeth; segment 2 with five denticles medially at base of immovable finger. Suprachelical lamellae as shown in Fig. 8 H.

**Palpi** (Fig. 8 B-D). Patella without an apophysis; tarsus with a ventromedial row of small tubercles not extending to distal end.

**Legs** slender and long. Trochanters, femora, patellae, and tibiae toothed. Nodule formula: 2: 0: 0.

**Coloration.** Dorsum and venter whitish (not because of secretions) in ground colour. Lateral margins of carapace rusty to dark brown; numerous small brown flecks present on each side of carapace. Eye tubercle rusty brown with a slivery white median line on top. Areas I-II with a faint brown median figure, figure broadened on area II; median spine and its basis dark brown. Sutures between segments marked by transverse lines of brown dots. Marginal coxal humps dark brown, contrasting with whitish coxae. Chelicerae pale whitish yellow, palpi dark brown but tibia distally, and tarsus entirely paler. Trochanters of legs dark brown with a pair of dorsal white dots; remaining leg segments yellowish brown but proximal part of femora, and all of patellae darker.

**Penis** (Fig. 8 I-L). Shaft slender but proximally thickened, widest at base; ventral side of basal opening deeply indented. Alate part wider than shaft, tapering distally and proximally. Musculature confined to proximal portion. Glans in dorsal view relatively wide (Fig. 8 J).

**Female**

Unknown.

Distances

- Scutum with only one spine; (2) Cheliceral segment 1 dorsally toothed; (3) Palpal patella without an apophysis; (4) Eye tubercle unarmed or with 1-2 small teeth on the carinae; (5) Coxae of legs whitish or rusty yellow; (6) Distal edge of coxal marginal tubercles evenly blunt. The main difference between *G. alba* and *G. pullata* lies in the coloration, viz., the body is almost entirely whitish in *alba* but uniformly blackish in *pullata*. *G. alba* resembles *G. lepida* in coloration but differs in having a brown median figure on areas I-II. Also, the palpal trochanter, femur, and patella are heavily toothed in *G. alba* but completely unarmed in *G. lepida*.

*Gagrella fumosa* n.sp.

**Material:** Holotype ♀: Chiang Mai Province, Doi Inthanon, 8.v.1958 (BD). - Paratypes: data as holotype, I
Measurements \( \sigma \) (in parentheses \( \varphi \)): Body 4.1 (7.0) long. Length of femora 13.2 (11.9): 21.9 (19.4): 11.8 (10.8): 16.2 (14.4). Total length of legs 61.2 (57.3): 99.9 (97.2): 57.3 (53.1): 78.1 (70.9). Penis: shaft 1.86 long, 0.28 wide at base; glans 0.5 long.

**Male**

Dorsum as shown in Fig. 9 A. Surface of carapace and abdominal scutum finely and uniformly granular. Scutal area I with a median rugose spine (Fig. 9 C). Eye tubercle (Fig. 9 G) slanting posteriorly, higher anteriorly than posteriorly, in front view basally constricted, deeply canalicate, with a row of about 10 small teeth on the carinae. Coxae I-IV sparsely and roughly granular; genital plate slightly granular; free sternites smooth. All coxae anteriorly, and coxae I and IV posteriorly, with a row of small tubercles (Fig. 9 D); a lateral row of similar tubercles on each side of genital plate.

Chelicerae, Segment I dorsally unarmed. Subchelical lamellae as shown in Fig. 9 B.

**Palpi** (Fig. 9 E-F). Femur medially with a row of basal teeth; patella without an apophysis; tarsus with a short row of small teeth ventromedially at base.

Legs slim and long. Trochanters, femora, patellae, and tibiae toothed. Nodule formula 0: 1: 0: 0.

**Coloration.** Ground colour of dorsum whitish yellow; carapace with rusty flecks on each side as shown in Fig. 9 A. Eye tubercle rusty yellow, eye rings black. Scutum dusky with a central figure of deep blackish brown obscurely developed on areas I-III. A transverse series of whitish dots across each scutal segment; median spine blackish brown. Coxae I-IV rusty yellow; genital plate and free sternites whitish to golden yellow. Chelicerae and palpi rusty yellow; trochanters of legs rusty yellow, remaining leg segments rusty to dark brown.

**Penis** (Fig. 9 H-K). Shaft elongate, of moderate width, straight, broadest at base, gradually narrower distally. Alate part very well-developed, extending to a point 0.8 mm from the distal end, much wider than shaft and tapering distally and proximally. Glans extremely long, compressed laterally, with 2 pairs of rather long sensory setae near tip. Musculature limited to proximal half of shaft.

**Female**

Similar to male but much larger. Palpal tarsus without a definite row of teeth.

**Seminal receptacle** as shown in Fig. 9 L.

**Distribution**

Thailand (Chieng Mai Province: Doi Inthanon – Tak Province: Ban Mussoe between Tak and Mae Sot).

**Remarks**

This new species closely resembles *G. fulva* Roewer, 1910, and *G. ochroleuca* Roewer, 1954 (the Shan States) in having the following combination of characters: (1) Scutum with one median spine; (2) Palpal patella without an apophysis; (3) Chelical segment I completely smooth; (4) Eye tubercle dorsally toothed but unarmed below eyes; (5) Distal edge of marginal coxal tubercles evenly blunt. *G. fumosa* differs from *G. ochroleuca* by having no enlarged milky flecks on each side of scutum, and from *G. fulva* as shown in the key above.

**Gagrella disticta** (Thorell, 1889)


**Distribution**

Burma, Thailand (precise locality unknown).

**Gagrella thaiensis** Suzuki, 1982

Fig. 10.

**Gagrella thaiensis** Suzuki, 1982: 171, fig. 3.

**Material.** Chieng Mai Province, Doi Sutep, 17.x.-25.x. 1958, 2 \( \sigma \), 2 \( \varphi \); Chieng Mai Province, Chiang Dao, 20.x.1958, 1 \( \sigma \); Loei Province, Phu Kradeung, 20.xi.1958, 1 \( \varphi \) (BD). – Chieng Mai Province, Doi Sutep, Konthathan, 6-700 m, 26.ix.1981, 1 \( \sigma \); Chieng Mai Province, Doi Inthanon N.P., Mae Ya, 6-700 m, 11.-12.x.1981, 4 \( \varphi \); Chiang Mai Province, Doi Inthanon N.P., Huai Sai Luang, 1000-1100 m, 14.x.1981, 1 \( \sigma \) (ZMUC). – Chieng Mai Province, Doi Sutep, Konthathan, ca. 600 m, 16.-28.x.1984, 1 \( \varphi \) (Karnholt, Lomholdt & Nielsen).

Two of the studied females differ from the original description in having the eye tubercles armed with numerous pointed teeth on the carinae (Fig. 10 A, C) and having the seminal receptacle consisting of a single elongate ampulla (Fig. 10 F). The other studied females have almost smooth eye tubercles with at most 3-4 teeth on the carinae (Fig. 10 D-E), and the seminal receptacle consisting of two distinct ampullae (Fig. 10 G).

There thus is some doubt about whether the two deviating specimens do in fact belong to *G. thaiensis*. Future studies of penis structure are required to resolve this problem.
**Distribution**

Thailand (Chieng Mai Province: Doi Sutep, Chiang Dao, Doi Inthanon - Loei Province: Phu Kradung - Chaiyaphum Province: Chulabhorn (Nam Prom) Dam).

*Gagrella quadrimaculata* Roewer, 1954

Figs. 11-12. *Gagrella quadrimaculata*. A-C: dorsal views of body; A Doi Inthanon, B Chiang Dao, C Doi Sutep. (A X25; B X19; C X23)

The species was originally described on the basis of a single female from Burma. The male is first described here. Also, variations of colour patterns and structure of palpi will be described, together with the female genitalia.

Measurements (in parentheses %): Total length of body 2.5 (3.7) (Doi Inthanon); 2.9 (4.2) (Doi Sutep); 3.3 (Chiang Dao). Length of femora 5.1 (4.3): 8.1 (7.2): 4.4 (3.7): 6.7 (5.7) (Doi Inthanon); 7.0 (5.6): 12.4 (10.0): 6.5 (4.9): 9.6 (7.7) (Doi Sutep); (? : 13.1 : 6.2 : 10.2) (Chiang Dao). Total length of legs 21.0 (18.2):

? (37.6) : 19.7 (15.9) : 37.8 (35.5) (Doi Inthanon); 28.9 (22.1) : 53.4 (50.0) : 26.5 (20.0) : 40.0 (41.2) (Doi Sutep); (? : 62.2 : 27.8 : 42.8) (Chiang Dao). Penis 1.6 long.

**Male**

Abdominal areas I and II each with a median spine, both spines of similar size (Fig. 12 A). Eye tubercle and chelicerae as shown in Fig. 12 A-B and D, respectively.

*Palpi* slender and very long, especially so femur and tibia; patella with a medial apophysis varying in size in different populations (Fig. 12 J and K); proximal half of tarsus with a ventromedial row of sparse small teeth.

**Legs** slim and long. Nodule formula 0:1:0.
Coloration. Dorsum dark to blackish brown, with two large rusty or golden yellow flecks on the carapace and scutum, see Fig. 11 A-B. One specimen from Doi Inthanon has a median longitudinal series of golden yellow spots on the abdomen (Fig. 11 A). One specimen from Doi Sutep has the two golden yellow flecks on the scutum conspicuously smaller than in other specimens (Fig. 11 C).

Penis (Fig. 12 L-Q). Shape of shaft differing slightly between populations, see Fig. 12 P-Q. Alate part well-developed, distally truncate and proximally tapering into shaft. Sensory setae relatively long. Musculature limited to about basal half of shaft.

Female
Similar to male but larger. Palpal patella with a longer apophysis than in male; length of apophysis varying greatly in different localities (Fig. 12 G-I). Palpal tibia also with a small apophysis, also somewhat variable.

Seminal receptacle as shown in Fig. 12 R-T.

Distribution
Thailand (Chiang Mai Province: Doi Inthanon, Chiang Dao, Doi Sutep).

Gagrella sexmaculata Suzuki, 1969
Fig. 13.
Gagrella sexmaculata Suzuki, 1969a: 59, fig. 32, pl. III, figs. 3-4.
Material: Chiang Mai Province, Doi Saket, 30.v1958 and 4.iii.1959, 2 9♂, 2 9♀; Chiang Mai Province, Doi Inthanon, 7.w. and 8.v1958, 2 9♀; Chiang Mai Province, Doi Sutep, 20.i. and 4.iii.1959, 1♂, 2 ♀; Chiang Mai Province, Wang Dao, 5.a.1959, 2 ♀; Chiang Mai Province, Samoeng, 13.ix.1958, 1 ♀ (BD). -- Chiang Mai Province, Doi Sutep, Khonthan and Mae Sa, 5-700 m, 26.-28.iii.1981, 1 ♀, 1 ♂; Chiang Mai Province, Fang Horticultural Experimental Station, 550-600 m, 21.a.1981, 1 ♀, 1 ♂ (ZMUC).

This species was originally described on the basis of a single female. The male is first described here.

Measurements ♀: Body 4.5 long. Length of femora 8.9 : 15.6 : 7.6 : 11.6. Total length of legs 37.8 : 79.1 : 34.0 : 51.9. Penis: shaft 3.68 long, 0.21 wide at base; glans 0.15 long.

Male
Surface of carapace, scutum, and free tergites uniformly granular. Scutal areas I and II each with a median spine (Fig. 13 G). Eye tubercle as shown in Fig. 13 H. Coxae I-IV, genital plate, and free sternites almost smooth. All coxae anteriorly, and coxae I and IV posteriorly, with a row of small tubercles.

Chelicerae (Fig. 13 E). Segment I dorsally with 2 to about 10 teeth. Suprapodal lamellae as shown in Fig. 13 F.

Pulpi (Fig. 13 B-C) very slender and elongated, especially tibia longer than usual; patella with a short but distinct apical medial apophysis; basal portion of tarsus with a short ventral row of denticles.

Coloration highly variable. One male from Samoeng is coloured almost like the female holotype (see Suzuki 1969a: fig. 32), but many specimens differ greatly from this. Dorsum varying from golden to rusty yellow in ground colour, with rusty brown flecks on each side of carapace, and with a dark brown median stripe on scutum; stripe somewhat obscured on areas III-IV, disappearing on the posterior segments (Fig. 13 A). Venter concordous with dorsum. Chelicerae and palpi rusty yellow, partly marmorated with silvery white. Legs rusty brown, trochanters with golden yellow dorsal patches.

Penis (Fig. 13 I-K). Shaft slender and fairly long, with sides nearly parallel, distally tapering. Alate part well-developed, much wider than shaft. Glans with two pairs of relatively long setae. Musculature confined to basal 1/3 of shaft.

Female
Seminal receptacle as shown in Fig. 13 L.

Distribution
Thailand (Chiang Mai Province: Doi Saket, Doi Inthanon, Doi Sutep, Wang Dao, Ping Kong, Fang, Samoeng).

Gagrella longipes Suzuki, 1982
Fig. 14.
Gagrella longipes Suzuki, 1982: 169, fig. 2.
Distribution: Thailand (Chaiyaphum Province: Chulabhorn (Nam Prom) Dam).

Genus Metagagrella Roewer, 1910
Distribution: Indo-Malayan region, Borneo, Celebes, Philippine Is., China, Japan.

Key to Thai Species of Metagagrella
1. Palpal patella with an apophysis
   - Palpal patella without an apophysis

2. Distal margin of anterior marginal tubercles of coxa I three-pointed
   - Distal margin of anterior marginal tubercles of coxa I without definite teeth, straightly blunted

3. Cheliceral segment I dorsally unarmed, smooth
   - Cheliceral segment I dorsally toothed or granulated

4. Cephalothorax golden yellow, scutum with distinct golden yellow stripe on each side; palpal tibia not distented
   - Cephalothorax dark brown or blackish; palpal tibia fairly distented

5. Cephalothorax uniformly golden to rusty yellow
   - Cephalothorax golden to rusty yellow

6. Scutum with distinct longitudinal rows of rusty yellow flecks
   - Scutum with such distinct longitudinal rows of flecks

7. Free tergites each with 2 distinct rusty yellow flecks
   - Free tergites each with 2 rusty yellow flecks
Scutum brown with numerous scattered golden yellow dots out golden yellow dots ......

Hitherto this species was known only from Burma. In order to supplement former descriptions some illustrations are given here, and the male and female genitalia are described for the first time.

Penis (Fig. 14 E-G). Shaft 2.05-2.25 long, 0.5 wide at base; glans 0.23 long. Shaft considerably widened proximally, distal half narrowed. Alate part well developed, much wider than shaft. Glans relatively short, dorsal side somewhat concave, ventral side convex, 2 pairs of short sensory setae near tip. Musculature limited to proximal half of shaft.

Fig. 14. Metagagrella sordidata. A: dorsal view of body, d. Scutum without a central figure; median spine strongly curved distally; penis shaft 4.8-5.0 mm long. M. curvispina, p. 232
B: dorsal view of chelicera. C: suprachelicerallamellae. D: tubercles from anterior margin of coxa I. E: eye tubercle, suprachelicerallamellae, and male palpal tarsus also interrupted segmentally. The male palpal tarsus also differs from the original description in being armed with a ventromedial row of small teeth on the outer side of the tibia. The male palp also differs from the original description in being armed with a ventromedial row of small teeth on the outer side of the tibia.

Metagagrella sordidata: Roewer 1923: 998; 1929: 131; 1954b: 244.
Material: Chieng Mai Province, Doi Suset, summit, 1000-1400 m, 27.v.1981, 1♂ (ZMUC).

*Metagagrella sordidata* (Thorell, 1889)

Fig. 14. Metagagrella sordidata: Roewer 1923: 998; 1929: 131; 1954b: 244.
Material: Chieng Mai Province, Doi Suset, 18.iv.-11.x. 1958, 9♂, 2♀, 1 pull. (one labelled with altitude 1000 m); Tak Province, Ban Mussoe between Tak and Mae Sot, 24.vii.1959, 1♀ (BD). - Chieng Mai Province, Doi Sutep, summit, 1600 m, 27.v.1981, 1♂ (ZMUC).

This species was previously only recorded from Malaysia. The specimen examined agrees well with Roewer’s description, but in the original report no figures were given, for which reason some are given here. The seminal receptacle (Fig. 15 I) is described for the first time.

Distribution: Malaysia, Thailand (Chieng Mai Province: Doi Sutep). 

Metagagrella luteomaculata Suzuki, 1969


Distribution: Thailand (Chieng Mai Province: Doi Sutep, Doi Inthanon). Distribution: Thailand (Chieng Mai Province: Doi Sutep, Doi Inthanon, Doi Pha Hom Pok NW of Fang).

This species was hitherto known only from Burma. The specimens examined agree well with Roewer’s descriptions except for minor differences. In particular, the two rows of triangular tubercles on the scutum were for which reason the 2 rows of triangular tubercles on the scutum were interrupted in the original description in being armed with a ventromedial row of small teeth in its proximal 1/3 (Fig. 16 D). Chelicerae, palpi, eye tubercle, suprachelicerallamellae, and male
and female genitalia are illustrated for the first time. Number of nodules on femur II as follows: $\sigma$: 2L/R, 1/2, 2/2; $\varphi$: 2/2.

**Penis** (Fig. 16 I-L). Shaft 2.66 long, 0.18 wide; glans 0.29 long. Shaft slender and long, flattened dorsoventrally, with parallel sides, distal portion narrowed. Alate part elongate, extending to a point 0.75 mm from distal end of shaft, distally truncate and proximally tapering into shaft. Glans relatively long, dorsal side straight, ventral side slightly concave. Musculature limited to proximal 2/3 of shaft.

**Seminal receptacle** (Fig. 16 M) of relatively simple form.

**Distribution**
Burma, Thailand (Tak Province: Ban Mussoe between Tak and Mae Sot).

*Metagagrella curvispina* n.sp.

Fig. 17.
Material: Holotype $\sigma$: Chiang Mai Province, Doi Sutep, 6.vii.1958 (BD). – Paratypes: locality as holotype, 6.vi.1958, 1 $\varphi$; 8.vi.1958, 2 $\varphi$s (some labelled with altitudes 1000-1100 m) (BD). – Chiang Mai Province, Doi Sutep, Konthathan, 6-700 m, 26.ix.1981, 2 $\varphi$s; Chiang Mai Province, Doi Saket, 950 m, 3.x.1981, 1 $\varphi$ (ZMUC).

Measurements $\sigma$ (in parentheses?): Body 6.3 (7.3) long. Length of femora 8.0 (8.2) : 15.9 (16.8) : 7.5 (8.1) : 11.3 (11.6). Total length of legs 39.1 (38.1) : 80.4 (81.3) : 37.2 (37.2) : 51.2 (49.1). Penis: shaft 4.75-5.0 long, 0.25
wide at base, 0.3 wide at widest portion; glans 0.26 long.

*Metagagrella fusca* n.sp. 3

**Male**

Surface of carapace, scutum, and free tergites uniformly granular. Scutal area II with a long, rugose median spine, its distal portion curved like a hook (Fig. 17 D). Eye tubercle (Fig. 17 I) laterally, femora to like a hook (Fig. 17 D). Eye tubercle (Fig. 17 I) rugose, distally curved a little anteriorly.

Surface of coxae roughly granular; all coxae anteriorly and coxae I and IV posteriorly with a row of subquadratic marginal tubercles (Fig. 18 C). Free sternites each with a row of small tubercles.

**Female**

Similar to male but slightly larger. Palpal tarsus (Fig. 17 C) not widened but normal, without a definite row of teeth; palpal tibia with numerous teeth.

**Seminal receptacle** (Fig. 17 O) well developed, both ampullae of similar size.

**Distribution**

Thailand (Chiang Mai Province: Doi Sutep, Doi Saket).

**Remarks**

In morphology of eye tubercle, chelicerae, and palp this species strongly resembles *M. bisetosa*, mentioned above. Furthermore, resemblance in the penis seems to confirm their close affinity. However, the size difference of the penis in the two species is remarkable (compare Fig. 17 N with Fig. 16 K). The seminal receptacles also differ greatly between the two species (compare Fig. 17 O with Fig. 16 M).

**Material**: Holotype d: Chiang Mai Province, Fang Horticultural Experimental Station, 550-600 m, 23.x. 1981 (ZMUC).


**Female**

Body as shown in Fig. 18 A. Surface of dorsum uniformly granular. Eye tubercle (Fig. 18 D) relatively high, slanting slightly posteriorly, dorsally. Chelicerae (Fig. 17 J) with a few pointed teeth. Suprachelicular lamellae as in Fig. 17 G.

**Distribution**

Thailand (Chiang Mai Province: Fang).


**Male**

Body as shown in Fig. 18 A. Surface of dorsum uniformly granular. Eye tubercle (Fig. 18 D) relatively high, slanting slightly posteriorly, dorsally.

*Metagagrella fusca* n.sp. 3

**Female**

Body dorsoventrally blackish, only mid-frontal area in front of eye tubercle rusty brown and clothed with whitish secretions; eye tubercle rusty brown with black eye rings; pleural membrane between scutum and free sternites pale to dark brown; all coxae blackish throughout, with whitish secretions. Chelicerae pale yellow, segment I partly smudged with dark brown. Palpi: trochanter brown, femur and patella blackish, tibia and tarsus pale yellow, tibia brown at base. Legs blackish but metatarsi and tarsi slightly paler.

**Remarks**

In morphology of eye tubercle, chelicerae, and palp this species strongly resembles *M. bisetosa*, mentioned above. Furthermore, resemblance in the penis seems to confirm their close affinity. However, the size difference of the penis in the two species is remarkable (compare Fig. 17 N with Fig. 16 K). The seminal receptacles also differ greatly between the two species (compare Fig. 17 O with Fig. 16 M).

**Material**: Holotype d: Chiang Mai Province, Fang Horticultural Experimental Station, 550-600 m, 23.x. 1981 (ZMUC).

In the general structure of penis, and in the form of eye tubercle, chelicerae, and palpi, the present species strongly resembles *M. biseriata* and *M. curvispina* (see above). These three species can be separated from each other by the characters shown in Table 2.

**Remarks**

In the form of eye tubercle, chelicerae, and palpi, the present species strongly resembles *M. biseriata* and *M. curvispina* (see above). These three species can be separated from each other by the characters shown in Table 2.

Table 2. Diagnostic characters of 3 *Metagagrella* species.

<table>
<thead>
<tr>
<th>Character</th>
<th><em>biseriata</em></th>
<th><em>curvispina</em></th>
<th><em>fusca</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Length/width of penis shaft (mm)</td>
<td>2.66/0.18</td>
<td>4.75-5.0/0.25-0.3</td>
<td>3.48/0.17</td>
</tr>
<tr>
<td>Tip of glans in dorsal view</td>
<td>tapering</td>
<td>truncate</td>
<td>gently rounded</td>
</tr>
<tr>
<td>Scutum</td>
<td>blackish with 2 longitudinal rows of rusty yellow flecks</td>
<td>dark brown with darker indistinct central figure</td>
<td>blackish without central figure</td>
</tr>
<tr>
<td>Coxae I-IV</td>
<td>black</td>
<td>dark brown with pale central patch</td>
<td>black</td>
</tr>
<tr>
<td>Ventral row of denticles on palpal tarsus (♂)</td>
<td>in proximal 1/3</td>
<td>in proximal 2/3</td>
<td>in proximal 2/3</td>
</tr>
</tbody>
</table>

*Metagagrella crassa* n.sp.

**Material**

Holotype ♀: Chieng Mai Province, Doi Inthanon, summit, 2500 m, 6.x.1981 (ZMUC).

**Measurements**

♂: Body 5.1 long. Length of femora 7.0 : 11.9 : 7.0 : 9.8. Total length of legs 34.6 : 61.1 : 45.7. Penis 2.2 long, glans 0.3 long.

**Distribution**

Thailand (Chieng Mai Province: Doi Inthanon).

**Remarks**

This new species closely resembles *M. conjugata* Roewer, 1954 (Celebes) in having the following combination of characters: (1) Scutum with median process only on area II; (2) Marginal tubercles of leg coxae evenly blunted; (3) Palpal patella with an apophysis; (4) Cheliceral segment 1 dorsally unarmored. However, the shape of the scutal process and the remarkably swollen palpal tibia are distinctive of the new species.

**Metagagrella similis** n.sp.

**Material**


**Measurements**

♂ (in parentheses ♀): Body 4.5 (5.7) long. Length of femora 9.8 (8.3) : 18.3 (15.2) : 9.2 (7.6) : 13.2 (11.0). Penis: shaft 2.35 long, 0.16 wide at base, 0.25 wide at widest portion; glans 0.23 long.

**Distribution**

Thailand.

**Remarks**

Carapace, thoracic tergite, abdominal scutum, and free tergites uniformly clothed with small granules, only a small median area in front of eye tubercle smooth. Scutal area II with a long straight, scabrous median spine (Fig. 20 E). Eye tubercle (Fig. 20 D) dorsally rounded, canaliculate, constricted at base, with 4-5 teeth on carinae and 1-2 teeth below each eye. All coxae with scattered coarse granules. All coxae anteriorly, and coxae I and IV posteriorly with a row of marginal tubercles (Fig. 19 E).

Chelicerae. Segment I dorsally unarmored. Supracheliceral lamellae (Fig. 19 D) bluntly protruding medially, unarmored.

Palpi (Fig. 19 B). Tarsus and especially tibia unusually swollen, club-shaped. Tibia with a few black ventral denticles. Tarsus with a ventral row of denticles in proximal 2/3. Patella with a short but distinct apophysis (Fig. 19 C).

Femur with sparse teeth ventrally. Legs slin and long. Femora I and III longer than body. Nodule formula 0 : 2 : 0 : 0.

Coloration. Dorso dorsal brown to blackish, only soft skin between thoracic tergites and sides of abdomen pale yellowish brown. All coxae uniformly dark brown like genital plate and median region of free sternites, other parts of sternites paler. Chelicerae pale yellow, fingers black-tipped. Palpi: femur and patella dark brown to black, other segments pale yellow but trochanters ventrally and tibia at base dark brown. Legs almost blackish.

Penis (Fig. 19 F-I). Shaft long, curved dorsally, basal part abruptly widened; dorsal side of basal opening deeply indented. Alate part well-developed, forming two pockets. Musculature limited to basal swelling.

with scattered granules and laterally with a marginal row of tubercles; free sternites each with a row of granules.

*Chelicerae* (Fig. 20 F), Segment I dorsally with 2-3 teeth. Supracheliceral lamellae as shown in Fig. 20 F.

*Palpi* (Fig. 20 B-C). Patella without an apophysis. Tibia with only a few denticles protruding laterally at base. Tarsus somewhat swollen, with scattered granules and laterally with a row of small tubercles. There is some resemblance in the penes of the two species but the alate part is much wider in *M. similis* than in *M. biseriata*. Also, the seminal receptacles differ greatly between them. From *M. curvispina* the present species is separated by the size of the penis, which is much shorter and narrower than in *M. curvispina*.

**Female**

Similar to male but larger. Palpal tarsus not swollen; tibia with more numerous denticles, tarsus without a definite row of denticles. Number of nodules on femur II: 2L/0R, 2/2, 2/2, 2/3.

*Seminal receptacle* (Fig. 20 K). Both ampullae relatively large.

**Distribution**

Thailand (Trat Province: Koh Kut).

**Remarks**

In general morphology the present species resembles *M. biseriata* and *M. curvispina* (see above). From *M. biseriata* it differs by having two rusty yellow flecks on each of the free tergites instead of two longitudinal rows of rusty yellow flecks on dorsum. There is some resemblance in the penes of the two species but the alate part is much wider in *M. similis* than in *M. biseriata*. Also, the seminal receptacles differ greatly between them. From *M. curvispina* the present species is separated by the size of the penis, which is much shorter and narrower than in *M. curvispina*.

*Metagagrella punctata* n.sp.

**Fig. 21.**


Measurements (in parentheses ‰): Body 6.0 (6.8) long. Length of femora 10.0 (10.5) : 17.3 (17.8) : 9.3 (9.9) : 13.2 (13.8). Total length of legs 44.2 (44.7) : ? (7) : 41.2 (42.6) : 54.9 (56.6). Penis: shaft 2.88 long, 0.28 wide; glans 0.3 long.

**Male**

Surface of dorsum uniformly clothed with small granules. Scutal area II with a long, erect, sparsely granular median spine (Fig. 21 D). Eye tubercle (Fig. 21 G) slanting slightly posteriorly, dorsally rounded, constricted at base, canali­cute, with a row of teeth on the carinae and a few teeth beneath each eye. All coxae anteriorly and coxae I and IV posteriorly with a row of small tubercles (Fig. 21 F). Genital plate with scattered granules and a row of small tubercles laterally; free sternites each with a row of small granules.

*Chelicerae* (Fig. 21 E). Segment I with some dorsal teeth. Supracheliceral lamellae as shown in Fig. 21 E.

*Palpi* (Fig. 21 B-C). Patella without an apophysis. Tibia with a ventromedial row of denticles in proximal 2/3.

*Legs* slender and long, femora I and III longer than body. Trochanters with small teeth on both sides; femora, patellae, and tibiae toothed throughout; metatarsi and tarsi only hairy.

Nodule formula 0 : 2 : 0 : 0.

**Coloration.** Dorsum dark to blackish brown with scattered granules, laterally with a row of tubercles; free sternites each with a row of granules.

**Female**

Similar to male but larger. Palpal tarsus not swollen; tibia with more numerous denticles, tarsus without a definite row of denticles. Number of nodules on femur II: 2L/0R, 2/2, 2/2, 2/3.

*Seminal receptacle* (Fig. 20 K). Both ampullae relatively large.

**Distribution**

Thailand (Trat Province: Koh Kut).

**Remarks**

In general morphology the present species resembles *M. biseriata* and *M. curvispina* (see above). From *M. biseriata* it differs by having two rusty yellow flecks on each of the free tergites instead of two longitudinal rows of rusty yellow flecks on dorsum. There is some resemblance in the penes of the two species but the alate part is much wider in *M. similis* than in *M. biseriata*. Also, the seminal receptacles differ greatly between them. From *M. curvispina* the present species is separated by the size of the penis, which is much shorter and narrower than in *M. curvispina*.

*Metagagrella punctata* n.sp.

**Fig. 21.**


Measurements (in parentheses ‰): Body 6.0 (6.8) long. Length of femora 10.0 (10.5) : 17.3 (17.8) : 9.3 (9.9) : 13.2 (13.8). Total length of legs 44.2 (44.7) : ? (7) : 41.2 (42.6) : 54.9 (56.6). Penis: shaft 2.88 long, 0.28 wide; glans 0.3 long.

**Male**

Surface of dorsum uniformly clothed with small granules. Scutal area II with a long, erect, sparsely granular median spine (Fig. 21 D). Eye tubercle (Fig. 21 G) slanting slightly posteriorly, dorsally rounded, constricted at base, canali­cute, with a row of teeth on the carinae and a few teeth beneath each eye. All coxae anteriorly and coxae I and IV posteriorly with a row of small tubercles (Fig. 21 F). Genital plate with scattered granules and a row of small tubercles laterally; free sternites each with a row of small granules.

*Chelicerae* (Fig. 21 E). Segment I with some dorsal teeth. Supracheliceral lamellae as shown in Fig. 21 E.

*Palpi* (Fig. 21 B-C). Patella without an apophysis. Tibia with a ventromedial row of denticles in proximal 2/3.

*Legs* slender and long, femora I and III longer than body. Trochanters with small teeth on both sides; femora, patellae, and tibiae toothed throughout; metatarsi and tarsi only hairy.

Nodule formula 0 : 2 : 0 : 0.

**Coloration.** Dorsum dark to blackish brown with scattered granules, laterally with a row of tubercles; free sternites each with a row of granules.

**Female**

Similar to male but larger. Palpal tarsus not swollen; tibia with more numerous denticles, tarsus without a definite row of denticles. Number of nodules on femur II: 2L/0R, 2/2, 2/2, 2/3.

*Seminal receptacle* (Fig. 20 K). Both ampullae relatively large.

**Distribution**

Thailand (Trat Province: Koh Kut).

**Remarks**

In general morphology the present species resembles *M. biseriata* and *M. curvispina* (see above). From *M. biseriata* it differs by having two rusty yellow flecks on each of the free tergites instead of two longitudinal rows of rusty yellow flecks on dorsum. There is some resemblance in the penes of the two species but the alate part is much wider in *M. similis* than in *M. biseriata*. Also, the seminal receptacles differ greatly between them. From *M. curvispina* the present species is separated by the size of the penis, which is much shorter and narrower than in *M. curvispina*.
Fig. 21. Metagagrella punctata. A: dorsal view of body, B: lateral view of palp, C: mesal view of palpal tarsus, D: scutal spine from the right, E: dorsal view of chelicerae and suprachelicerallamelae, F: tubercles from anterior margin of coxa I, G: eye tubercle from the right, H: ventral and I: lateral views of glans. J: ventral view of penis. K: seminal receptacle. (A, D X13; B-C X19; E, G X32; F, J X51; H-I X127; K X248)

***Melanopula thaiensis*** n. sp.
Fig. 22.

Measurements ♀: Body 5.8 long. Length of femora 5.3:9.5:5.3:7.7. Total length of legs 22.9:44.8:22.9:32.2.

**Distribution**
Thailand (Chiang Mai Province: Doi Sutep).

**Remarks**
In spite of complete difference in body coloration, the present species appears to be most similar to *M. biseriata* (see above) in penis structure (compare Fig. 21 K with Fig. 16 M). However, the penis shaft is much wider in *M. punctata* than in *M. biseriata* (compare Fig. 21 K with Fig. 16 M).

*Metagagrella rufoscuta* Suzuki, 1982
Metagagrella rufoscuta Suzuki, 1982: 173, fig. 4.

**Distribution:** Thailand (Chaiyaphum Province: Chulabhorn (Nam Prom) Dam).

**Genus Melanopula Roewer, 1929**
Melanopula Roewer, 1929: 130; 1955a: 105.

**Distribution:** India, Burma, Thailand, Lombok.

*Genus Melanopula Roewer, 1929*
Melanopula Roewer, 1929: 130; 1955a: 105.

**Distribution:** India, Burma, Thailand, Lombok.
plate slightly darker, sternites with a dark brown band. Chelicerae rusty yellow, segment 1 dorsally and segment 2 laterally marmored with brown. Palp rusty to dark brown, but tarsus distally lighter. Legs dark to rusty brown, tarsi lighter.

**Seminal receptacle** (Fig. 22 H). Both ampullae well developed.

**Distribution**
Thailand (Chieng Mai Province: Doi Sutep).

**Remarks**
The new species resembles *M. shanensis* Roe­wer, 1955 (the Shan States) in having two median spines on the abdominal scutum, but differs from it in having 3–4 distinct teeth below each eye. Furthermore, the distal edge of the tuberciles on the front margin of coxa I has 4–6 sharp points in *M. thailandis*; it is evenly blunt in *M. shanensis*.

**Genus Gagrellula** Roe­wer, 1910

**Key to Thai species of Gagrellula**
1. Palpal patella with an apophysis .... G. rutila, p. 246
   - Palpal patella without an apophysis .... 2

2. Palpal tarsus with a ventromedial row of teeth
   - Palpal tarsus without a ventromedial row of teeth .... G. albimarginata, p. 244

3. Entire dorsum deep black, uniformly covered with snow-white secrétions .... G. niveata, p. 242
   - Dorsum dark brown to blackish brown, with a large golden yellow area in front of eye tubercile, sometimes also with 2 large golden yellow flecks on scutum .... G. variegata, p. 242

**Gagrellula niveata** Roe­wer, 1954
Distribution: Burma, Thailand (Trang Province: Khao Chong – Chieng Mai Province: Doi Sutep).

*Gagrellula variegata* n.sp.
Figs. 23–24.


**Male**
Surface of dorsum uniformly and roughly granular; median frontal area of carapace with a few denticles. Scutal area II with an erect, scabrous, sparsely granular median spine (Fig. 24 F). Eye tubercile (Fig. 24 A–B) dorsally rounded, car­liculate, carinae unarmored or with but 1–5 fine teeth. Coxae I–IV and genital plate mostly granular; free stermites smooth, only with short hairs. All coxae anteriorly, and coxae I and IV posteriorly, with a row of small tuberciles. Distal edge of tuberciles evenly blunt (Fig. 24 C).

**Chelicerae** (Fig. 24 E). Segment 1 dorsally with 2–5 teeth; segment 2 with a few teeth medially at base of immovable finger. Supracheliceral lamellae as shown in Fig. 24 D.

**Palpi** (Fig. 24 G–I). Patella and tibia without...
an apophysis. Tarsus with a ventral median row of small teeth, sometimes only in proximal half.

Legs very slim and long. Femora I and III longer than body. Trochanters laterally, and femora throughout with fine teeth; patellae with pointed teeth at distal dorsal margin; tibiae only poorly toothed. Nodule formula 0:3:0:0. (Among numerous specimens studied one male had 4L/3R nodules, and another male 5L/4R on femur II.)

Coloration varies greatly. Some specimens with dorsum dark brown to blackish brown; carapace with a large golden yellow or rusty yellow fleck in front of eye; the two thoracic tergites each with a row of numerous pale dots; scutum with a large golden yellow fleck on each side of areas I-II (Fig. 23 A); all these flecks usually clothed with whitish secretions. Venter grayish white to yellowish brown; rarely, venter darker, especially coxae blackish brown and sternites rusty brown. Venter, especially coxae, usually clothed with thin secretions. Other specimens without large scutal flecks, uniformly brown to blackish brown (Fig. 23 B). Still others with dorsum much lighter, grayish white in ground colour; carapace with small brownish flecks on each side; scutum and free tergites marmorated with reddish brown; scutal areas I-II with a large median fleck of darker brown (Fig. 23 C). - Chelicerae yellowish white; palp darker brown but tarsus and larger portion of tibia paler. Trochanters, femora, and patellae of all legs dark brown to blackish brown, trochanters usually with 2 small whitish dorsal spots; remaining leg segments reddish brown.

Penis as shown in Fig. 24 J-N. Except for minor size differences, no differences were found between specimens.

**Female**

Similar to male but larger. Palpal tibia with more teeth than in male; tarsus without a definite row of teeth. Some females with dorsum almost golden yellow to rusty yellow, with rusty brown to dark brown markings on carapace, and a large median fleck of dark brown on scutal areas I-II.

**Seminai receptacle** as shown in Fig. 24 O-R.

**Distribution**

Thailand (Chiang Mai Province: Doi Sutep, Chiang Dao, Doi Inthanon, Doi Pha Hom Pok NW of Fang).

**Remarks**

In spite of great variation in coloration, all specimens here studied seem to be conspecific because of resemblance in general morphology, especially of the penis. The presence of 3 distinct golden yellow or rusty yellow flecks on the dorsum is unusual. In this respect, *G. varieta* resembles *Eugagrella trimaculata* Roewer (1910) and separated by a single character, i.e., that femur II has either 3 (*Gagrella*) or 4 (*Eugagrella*) nodules. As stated above, the number of nodules in *G. varieta* varies from 3-5, although 3 is considered typical of this species. The generic status of these two species must be confirmed by future comparative study of numerous specimens from many localities.

*Gagrella albimarginata* n. sp.

covered with grayish white secretions. Chelicerae and palp whitish yellow, only trochanter, femur, and base of patella darker. Legs: trochanters and bases of femora dark brown to blackish, other segments rusty brown.

**Penis** (Fig. 25 J-L). Shaft slender, rather abruptly widened proximally, compressed at middle and then wider again. Ventral side of basal opening very deeply indented. Alate part much wider than shaft, distally truncate and proximally tapering. Glans relatively long, blackish, other segments rusty brown.

**Remarks**

Female

**Distribution**

Thailand (Chieng Mai Province: Doi Sutep).


Measurements ♂ (in parentheses ♀): Body 5.3 (7.6) long. Length of femora 9.8 (10.3) : 18.9 (19.1) : 9.5 (9.6) : 13.3 (14.3). Total length of legs 44.1 : 95.1 : 42.8 : 59.2. Penis: shaft 2.84 long, 0.31 wide at base, 0.13 wide at middle.

**Male**

Dorsum as shown in Fig. 26 A, its entire surface uniformly granular. Scutal area II with an erect or slightly curved, scabrous median spine (Fig. 26 B). Eye tubercle (Fig. 26 I) dorsally rounded, canaliculate, almost smooth, only with sparse hairs. Coxae clothed with scattered coarse granules. All coxae anteriorly, and coxae I, II, and IV posteriorly, with a row of small tubercles (Fig. 26 C). Genital plate only hairy, with a lateral row of small tubercles; free sternites each with a transverse row of short hairs.

**Chelicerae** and supracheliceral lamellae (Fig. 26 D-E).

**Palpi** (Fig. 26 F-G) slightly wider than usual. Tibial proximally widened and ventrally concave. Patella with a short but distinct apophysis at apical corner.

**Legs** slender and long. Femora I and III longer than body. Trochanters to tibiae toothed, metatarsi and tarsi only hairy. Nodule formula: 0 : 3 : 0 : 0. (One out of 21 examined femora II had 4 instead of 3 nodules.)

**Coloration.** Ground colour of carapace golden yellow, with rusty brown flecks on each side of the thoracic tergites and at the anterior corner of the abdominal scutum. From *G. leucanta* it differs by having much longer legs and a different coloration, viz., scutum and free tergites never uniformly rusty yellow but dark brown.

**Gagrellula rutila** n.sp.

Fig. 26.

Material: Holotype ♂: Chieng Mai Province, Doi Sutep.

Fig. 26.


**Female**

Similar to male but larger. Palpal tibia not swollen as in male, and with more lateral and mesal teeth (Fig. 26 H).

**Seminal receptacle** as shown in Fig. 26 N.

**Distribution**

Thailand (Chieng Mai Province: Doi Sutep, Doi Pha Hom Pok NW of Fang).

**Remarks**

This species resembles *G. albicauxa* (Loman,
*Genus Eugagrella* Roewer, 1910

**Eugagrella**: Roewer 1923: 1023.

*Eugagrella grandis* n.sp.

Fig. 27 A-F.

Material: Holotype ♀: Chieng Mai Province, Doi Sutep, summit, 1600 m, 27.ix.1981 (ZMUC).


**Male**

Unknown.

**Female**

Body very large (Fig. 27 A). Surface of carapace, scutal areas, and free tergites finely granular. Scutal area II with a smooth, sharp-pointed median spine (Fig. 27 D). Eye tubercle dorsally rounded, canaliculate, almost smooth. Surface of coxae I-IV densely clothed with coarse granules; free sternites smooth. All coxae anteriorly, and coxae I, II, and IV posteriorly with a row of small marginal tubercles (Fig. 27 E).

Chelicerae. Segment I with only one dorsal tooth. Suprachelical lamellae tipped with 5-6 denticles.

Palpi (Fig. 27 B). Patella without an apophysis. Femur densely toothed ventrally, medially with a curved proximal row of teeth. Patella dorsally and tibia on both sides toothed.

Legs slender and long. Femora I and III longer than body. Nodule formula 0 : 4 : 0 : 0. Trochanters, femora, patellae, and tibiae clothed throughout with fine denticles, metatarsi with sparse fine spinules proximally.

**Coloration.** Dorsum rusty brown; carapace with dark brown flecks as shown in Fig. 27 A. Eye tubercle blackish, median furrow paler, scutal spine blackish. All coxae dark to blackish brown, free sternites rusty brown, each with a dark brown band. Chelicerae pale yellow, fingers tipped with black; palpi dark brown but tarsi paler. Legs: trochanters blackish brown with a golden yellow dorsal fleck on each side; remaining segments dark brown; caput and distal part of femora and all of patellae blackish; tibiae with numerous pale rings.

Ovipositor. 3 forceps + 36 normal segments, of which first 19 with a whorl of 8 (rarely 1-2) setae. Seminal receptacle (Fig. 27 F) within segment 2.

**Distribution**

Thailand (Chieng Mai Province: Doi Sutep).

**Remarks**

This new species closely resembles *E. fokiana* Roewer, 1954 (China) in having the following combination of characters: (1) Eye tubercle dorsally unarmèd; (2) Cheliceral segment I dorsally toothed; (3) Palpal patella without an apophysis; (4) Marginal coxal tubercles quadrato- reticulate; (5) Dorsal fringe of coxae I-II and I-II on coxae with marginal spinules. 

Genus *Heterogagrella* Roewer, 1954


**Heterogagrella biseriata** Suzuki, 1981

Heterogagrella biseriata Suzuki, 1981: 270, fig. 3.

Distribution: Thailand (Chaiyaphum Province: Chulabhorn (Nam Prom) Dam).

**Genus Heterogagrella** Roewer, 1954


Distribution: India, Thailand.

**Heterogagrella biseriata** Suzuki, 1981

Heterogagrella biseriata Suzuki, 1981: 270, fig. 3.

Distribution: Thailand (Chaiyaphum Province: Chulabhorn (Nam Prom) Dam).

**Genus Heterogagrella** Roewer, 1954


Heterogagrella biseriata Suzuki, 1981: 270, fig. 3.

Distribution: Thailand (Chaiyaphum Province: Chulabhorn (Nam Prom) Dam).

**Genus Gagrellissa** Roewer, 1931


**Gagrellissa luteobiseriata** n.sp.

Fig. 27 G-L.


**Male**

Unknown.

**Female**

Dorsum as shown in Fig. 27 G. Surface of dorsum, especially blackish parts clothed with small, low, rounded granules. Scutal area II...
with a basally broadened, rugose median spine, distal half of spine tapering (Fig. 27 J). Eye tubercle (Fig. 27 H) low, slanting slightly posteriorly, dorsally rounded, canaliculate, completely smooth, only with sparse hairs. Free sternites and genital plate smooth, only hairy. Surface of all coxae granular. All coxae anteriorly, and coxae I and IV posteriorly, with a row of small tubercles (Fig. 27 I).

Chelicerae. Segment 1 with a ventral spine, dorsally unarmed, only hairy like segment 2. Supracheliceral lamellae protruding medially, with 6-7 teeth.

Palpi as shown in Fig. 27 K. Femur ventrally toothed, medially with a short row of proximal teeth. Patella without an apophysis, dorsally with numerous spines. Tibia hairy, especially ventrally densely so; medially at proximal half with pointed spines. Tarsus slightly broadened distally, only hairy.

Legs slim and very long; femora I and III cylindrical and longer than body. Trochanters nearly smooth, femora poorly toothed, remaining segments only hairy. Nodule formula 1 : 3 : 6-7.

Coloration. Dorsum deep black spotted with fine yellow. Central area of carapace yellow with a short black, midfrontal line and some small blotches on either side. Eye tubercle blackish. Two thoracic segments black with two lateral yellow flecks. Abdomen with 2 longitudinal series of yellow flecks running anteriorly from scutal area I and posteriorly to second free tergite (Fig. 27 G). Free sternites yellowish, each with a dark brown band. Genital plate rusty brown, darker at median; coxae rusty brown, coxa IV with a yellowish patch at anterodistal area. All coxae, genital plate and free sternites uniformly covered with whitish secretions. Chelicerae dark brown to black, palp entirely dark brown. Legs: trochanters and capit of femora black; trochanters with 1-2 pale dorsal dots; remaining segments dark brown, femora proximally and patellae darker.

Ovipositor. 3 forceps + 32 normal segments, of which first 20 with a ring of 8 (rarely 2-4) setae. Seminal receptacles within second and third segments; of the form as shown in Fig. 27 L.

Distribution
Thailand (Nakhon Nayok Province: Khao Yai N.P.).

Remarks
The present species differs from the only known species of this genus, G. jacobi Roewer, 1931 (Sumatra) in having larger size of body and legs. Also, cheliceral segment I is completely smooth dorsally in luteobiseriata, whereas it has 5-6 dorsal teeth in jacobi.

Genus group Zaleptus

Key to Thai genera of Zaleptus

1. Femur II with 1 nodule ......... Zaleptus, p. 250
   - Femur II with 2 or more nodules ......... 2
   2. Femur II with 2, rarely 3 nodules ......... 3
   - Femur II with 4 nodules ......... Metalzteptus, p. 255
   3. Eye tubercle with one pair of large spines ......... Hypztetza, p. 254
   - Eye tubercle smooth or granulated but without large spines ......... Verpeltus, p. 252

Genus Zaleptus Thorell, 1876


Distribution:
India, Burma, Thailand, Malaysia, Philippine Is., Borneo, Sumatra, Java, China.

Key to Thai species of Zaleptus

1. Palpal patella with an apophysis ......... 2
   - Palpal patella without an apophysis ......... Z. javnus, p. 252
   2. Eye tubercle densely armed with sharp-pointed teeth throughout ......... Z. spinosus, p. 251
   - Eye tubercle not densely toothed ......... 3
   3. Dorsum dark rusty brown, with two longitudinal rows of golden yellow flecks on thoracic tergite, scutum, and free tergites ......... Z. biseriatus, p. 251
   - Dorsum uniformly golden yellow, without rows of flecks ......... 4
   4. Scutum uniformly reddish brown; palpai tibiae unarmeled ......... Z. siamensis, p. 251
   - Scutum uniformly golden yellow; palpai patella and tibia with numerous teeth ......... Z. aureolus, p. 251

Zaleptus spinosus Roewer, 1910


Distribution: Burma, Thailand (Bangkok Province: Bangkok).

Zaleptus biseriatus Roewer, 1910


Distribution: Thailand (Bangkok Province: Bangkok).

Zaleptus siamensis Roewer, 1955

Zaleptus siamensis: Roewer 1955b: 132, pl. 13, fig. 188.

Distribution: Thailand (Bangkok?).

Zaleptus aureolus Suzuki, 1969

Fig. 28.

Suzuki, 1969a: 74, figs. 40-41, pl. III, figs. 6-7.


- Chieng Mai Province, Doi Inthanon, 8.-9.v.1958, 2 $, 6 $2; Chieng Mai Province, Doi Suthep, 18.8.-18. xii.1958, 4 $, 12 $, 1 pup., Loei Province, Ban Si Than, 22.ii.1958, 1 $; Tak Province, Ban Masseoe between Tak and Mae Sot, 21.-24.vii.1959, 1 $, 1 $ (BD).

- Chiang Mai Province, Doi Suthep N.P., Mae Sa waterfall, 500 m, 28.x.1981, 2 $; Chieng Mai Province, Doi Saket, 950 m, 3.x.1981, 2 $; Chieng Mai Province, Fang Horticultural Experimental Station, 550-600 m, 20.x.1981, 1 $ (ZMUC).

This species was originally described on the basis of a single male. The female is described for the first time here.

Measurements: $ Body 3.7 long. Length of femora 9.5: 16.8: 8.7: 11.9. Total length of legs 46.5: 90.4: 43.1: 60.5.

Female
Similar to male but larger. Palpal tibia without a ventral hair tuft; tarsus not swollen as in male. One female with last thoracic tergite, scutal areas I and V, and first two free tergites each with a pair of white flecks (not secretions) (Fig. 28 A).

Distribution
Thailand (Chieng Mai Province: Ping Kong, Doi Inthanon, Doi Suthep, Doi Saket, Fang - Loei Province: Ban Si Than - Tak Province: Ban Muosoe between Tak and Mae Sot - Phra Province: environs of Nam Buh).

Fig. 28. Zaleptus aureolus. A: dorsal view of body, B: lateral view of palp, C: dorsal view of palpal patella and tibia, D: dorsal view of chelicerae and supracheliceral lamellae, E: seminal receptacle, F-J: eye tubercles from the right, showing the variation in dentition; F, H, I $, G, J $ (A X19; B-C, F-J X32; D X51; E X248).
Variations
In the original description the eye tuberclle was stated to have only one pair of low teeth at the frontal face (as Fig. 28 F), but the armaments vary greatly in the material examined here (Fig. 28 F-J).

Zaleptus flavus n.sp.
Fig. 29 A-I.
Material: Holotype ♂: Chiang Mai Province, Doi Sutep, 1000 m, 17.iv.1958 (BD).
Measurements ♂: Body 3.7 long. Length of femora : ? : 8.9 : 12.9. Total length of legs : ? : ? : 42.2 : 57.9. Penis: shaft 2.4 long, 0.35 wide at base, 0.13 wide at middle; glans 0.2 long.

Male
Dorsum as shown in Fig. 29 A. Entire dorsum covered with rather coarse rounded granules; some small tubercles present at middle of front margin of carapace. Eye tubercle (Fig. 29 E) slightly slanting posteriorly, constricted at base, dorsally canaliculate, with a few small teeth on the carinae. All coxae and genital plate with scattered granules; free sternites smooth. All coxae anteriorly and coxae I and IV posteriorly with a row of small tubercles (Fig. 29 F).
Chelicerae (Fig. 29 D). Segment 1 dorsally with about 8 teeth. Suprachelicerallamellae as shown in Fig. 29 C.

Palpi (Fig. 29 B). Femora medially with a proximal row of small teeth. Patella without an apophysis. Tibia with but few dorsal, proximal teeth. Tarsus with a ventral row of fine teeth.

Legs slender and long. Trochanters with a few small teeth on both sides. Femora with numerous pointed teeth; patellae, tibiae, and proximal part of metatarsi with sparse teeth. Femur III longer than body. Nodule formula : ? : 0 : 0.

Coloration. Dorsum rusty brown to dark brown. Carapace with a large median area of milky white (not secretions). Eye tubercle pale rusty brown. Numerous whitish yellow dots scattered on dorsum, forming a transverse series on each of the thoracic tergites. Scutum with a weakly developed central figure of dark brown, broadening on areas II-III and here delimited laterally by a series of whitish yellow flecks. Venter whitish throughout, only coxae with a number of small, light grayish yellow dots. Chelicerae light yellow; palpi yellowish brown, distal part of tibia and all of tarsus lighter. Legs: trochanters and bases of femora dark brown; remaining segments yellowish brown; patellae and tibiae darker.

Penis (Fig. 29 G-I). Shaft slender and long, proximally widened. Ventral side of basal opening deeply indented. Alate part well-developed, distally and proximally tapering. Musculature confined to proximal portion.

Female
Unknown.

Distribution
Thailand (Chiang Mai Province: Doi Sutep).

Remarks
As femora I and II are missing from the unique holotype, the nodules could not be examined and the new species is thus placed in the genus Zaleptus with reservation. The species resembles Z. scaber Roewer, 1935 (Burma), and Z. yodo Roewer, 1955 (Burma), in having the following combination of characters: (1) Palpal patella without an apophysis, palpal femur ventrally toothed; (2) Eye tubercle dorsally toothed; (3) Cheliceral segment 1 dorsally toothed. The new species differs from Z. yodo in lacking remarkable golden flecks on scutum, and from Z. scaber in having the dorsum rusty to dark brown with a darker brown central figure, instead of uniformly dark brown to blackish brown as in Z. scaber.

Genus Verpulus Simon, 1901


Key to Thai species of Verpulus
1. ?: Length of femora 14 : 25 : 14 : 18; eye tubercle
   - ?: Length of femora 6.5 : 12.6 : 6.2 : 8.4; eye tubercle with some dorsal teeth; all palpal segments unarmed; dorsum dark brown in ground colour ................. V. flavus, p. 254


\[\text{ Measurements: } \frac{V. flavus}{p. 254}\]
**Verpulus magnus** Roewer, 1955

Verpulus magnus Roewer, 1955b: 142.

Distribution: Thailand (precise locality unknown).

*Verpulus falvus* n. sp.

Fig. 29 I-U.


Measurements (in parentheses ♀): Body 3.0 (4.0) long. Length of femora 6.4-7.0 (6.5) : 12.7-12.9 (12.6) : 6.0-6.5 (6.2) : 8.5-9.1 (8.4). Total length of legs: 33.1: 68+: 31.9: 45.7. Penis: shaft 1.88-2.0 long, 0.23 wide at base, 0.53 wide at widest portion; glans 0.23 long.

**Male**

Dorsum as shown in Fig. 29 J. Surface of dorsum uniformly and roughly granular except for soft membrane between thoracic tergite and abdomen. Eye tubercle (Fig. 29 P-O) dorsally rounded, canaliculate, with some small teeth anteriorly and posteriorly on the carinae; number of teeth differing between specimens. All coxae coarsely granular; genital plate and free sternites smooth, clothed with rather long hairs. All coxae anteriorly and coxae I and IV posteriorly with a row of small tubercles (Fig. 29 N).

Chelicerae (Fig. 29 K). Segment I with a curved row of dorsal teeth. Suprachelicerall lamellae as shown in Fig. 29 O.

Palpi (Fig. 29 L-M). Patella with a distinct medial apophysis at tip. Ventral side of distal portion of tibia slightly concave and provided with a hair tuft, tibia also with a few basal teeth. Tarsus somewhat wider than usual, also with a hair tuft at base of ventral side but without a ventral row of teeth.

Legs slim and long. Femora I and III longer than body. Trochanters with small teeth on both sides; femora with scattered fine teeth proximally, smooth distally like all of remaining leg-segments. Nodule formula 0 : 2 : 0 : 0 (one male unilaterally with 3 nodules on femur II).

**Coloration.** Dorsum golden yellow; carapace usually covered with whitish secretions, excepting a small reddish brown median area. Soft membrane between thoracic tergite and abdomen rusty yellow. Eye tubercle reddish brown, basally lighter. Scutum and free tergites with a metallic lustre; scutum with a vaguely developed grayish central figure. All coxal golden yellow, clothed with white secretions; genital plate and free sternites whitish yellow. Chelicerae and palpi yellow. Legs: trochanters reddish brown, dorsally slightly lighter; remaining leg-segments yellowish brown.

The coloration is subject to variation. In some specimens the entire body, especially a large portion of carapace, all coxae, and genital plate, is darker, almost dark brown. In others, the entire body is blackish.

Penis (Fig. 29 R-T) resembling that of *Zaletus aureus* (cf. Suzuki 1969a: fig. 41 I-J).

**Female**

Similar to male but larger. Palpal tibia and tarsus without a hair tuft; tarsus slender.

**Seminal receptacle** as shown in Fig. 29 U.

**Distribution**

Thailand (Chiang Mai Province: Doi Sutep - Tak Province: Ban Musoo between Tak and Mae Sot).

**Remarks**

This species resembles *H. diadematus* Thorell, 1891 (India), *H. aurotransversalis* Roewer, 1955 (Burma), and *H. sumatranus* Roewer, 1955 (Sumatra) by having a medial apical apophysis in the palpal patella, but it differs from these species by having a pair of prominent horn-shaped spines on the eye tubercle. In this respect it resembles *H. bicorniger* (Roewer, 1911) (Burma) and *H. cupreus* (Roewer, 1912) (Burma) but differs from these species by having a distinct apophysis on the palpal patella.

*Genus Hypsibunus* Thorell, 1891

Hypsibunus: Roewer 1923: 1052; 1955b: 144.

Distribution: India, Nepal, Sumatra, Burma, Thailand, Vietnam.

*Hypsibunus aureocamalculus* n. sp.

Fig. 30 A-G.


Measurements ♀: Body 5.6 long. Length of femora 10.5 : 19.4 : 9.8 : 13.7. Total length of legs 46.1: 96.6: 44.7: 59.2.

**Male**

Unknown.

**Female**

Dorsum as shown in Fig. 30 A. Carapace, except for smooth median area, thoracic tergites, abdominal scutum, and free tergites covered with networks of small dimples. Eye tubercle (Fig. 30 C-D) basally constricted, slightly slanting posteriorly; in profile as high as long, dorsally at middle armed with a pair of prominent horn-shaped, scabrous spines and 2-3 accessory tubercules anteriorly and posteriorly; some small tubercles below each eye. Coxae and genital plate sparsely clothed with coarse granules; free sternites smooth. All coxae anteriorly and coxae I and IV posteriorly with a row of small tubercles with three-pointed distal edge (Fig. 30 E).

Chelicerae (Fig. 30 F). Segment I dorsally toothed; segment 2 smooth. Suprachelicerall lamellae as shown in Fig. 30 F.

Palpi (Fig. 30 B) slender and long. Patella with a short but distinct inner apophysis at tip. Proterolateral armature as shown in Fig. 30 B; prolateral armature as follows: femur with a curved proximal row of about 10 teeth; patella and tibia with numerous scattered teeth.

Legs slim and very long. Femora I and III much longer than body. Trochanters laterally and femora entirely toothed; patellae and proximal part of tibiae only poorly toothed. Nodule formula 0 : 2/3R : 0 : 0.

**Coloration.** Carapace blackish brown to black laterally; a large median interspace beautiful golden yellow with small grayish flecks (Fig. 30 A). Thoracic tergites, abdominal scutum and free tergites almost black, with a median longitudinal row of golden yellow flecks on abdomen; row sometimes interrupted and flecks larger on anterior areas. Posterior lateral comer of scutum largely grayish yellow. Eye tubercle blackish brown, frontally somewhat lighter; median furrow golden yellow. Coxae I-IV blackish brown, usually covered with white secretions. Genital plate and free sternites dark brown; sternites with a yellowish band; boundaries between sternites lighter. Chelicerae yellowish; palpi yellowish brown but tarsus lighter. Trochanters of legs blackish brown; remaining leg-segments dark brown; bases of femora lighter; tibiae with a wide distal white band; tarsi lighter.

**Seminal receptacle** (Fig. 30 G). Both ampullae elongated.

**Distribution**

Thailand (Chiang Mai Province: Doi Sutep - Tak Province: Ban Musoo between Tak and Mae Sot).

**Remarks**

This species resembles *H. diadematus* Thorell, 1891 (India), *H. aurotransversalis* Roewer, 1955 (Burma), and *H. sumatranus* Roewer, 1955 (Sumatra) by having a medial apical apophysis in the palpal patella, but it differs from these species by having a pair of prominent horn-shaped spines on the eye tubercle. In this respect it resembles *H. bicorniger* (Roewer, 1911) (Burma) and *H. cupreus* (Roewer, 1912) (Burma) but differs from these species by having a distinct apophysis on the palpal patella.

*Genus Metazaletus* Roewer, 1912


Distribution: India, Borneo, Thailand.

*Metazaletus strigatus* n. sp.

Fig. 30 H-P.


Measurements ♀: Body 4.3 long. Length of fem-
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(For other references see Suzuki 1985).