Some Phalangids from Thailand

By

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Some Phalangids from Thailand

By

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(With 15 Text-figures and 1 Plate)

The present article is concerned with the taxonomy of some Thai specimens of phalangids collected by Mr. Hiroyuki WATANABE of the Kyoto University. The collection, as listed below, contained eight species belonging to six genera under two suborders, including one new genus and five new species. It is very interesting that all five species of the Gonyleptomorphi (= Laniatores) were quite new to science. The descriptions of one new genus and five new species and some notes of already known forms will be given in the following pages.

The type-specimens are all deposited in the Zoological Laboratory, Faculty of Science, Hiroshima University.

Opiliones

Gonyleptomorphi

Phalangodidae

Phalangodinae

1. *Tithaeus watanabei* n. sp. Phu Kradung

Epedaninae

2. *Euepedanus chaiensis* n. sp. Paktong Chai

3. *Euepedanus dividuus* n. sp. Khao Chong

4. *Toccolus globitarsis* n. sp. Paktong Chai

Assamidae

Polycoryphinae

5. *Paktongius* (n. gen.) *distinctus* n. sp. Paktong Chai

Eupnoi

Leiobunidae

Gagrellinae

Gagrellini

6. *Gagrella spinulosa* THORELL Phu Kradung

7. *Gagrellula niveata* ROEWER Khao Chong

8. Undetermined species Phu Kradung

Suborder Gonyleptomorphi ŠILHAVÝ

Superfamily Gonyleptoidea ŠILHAVÝ

Family Phalangodidae SIMON

Subfamily Phalangodinae ROEWER

Genus *Tithaeus* THORELL

1. *Tithaeus watanabei* n. sp. (Text-figs. 1–2; Pl. I Figs. 1–2)
Male.—

Dorsum. Body nearly ellipsoidal in outline, sides of the dorsal scute only slightly narrowed opposite insertion of the third coxa and at the region of the third tergal area; anterior margin of the carapace strongly curved on each side, and the abdomen rounded behind. Eye tubercle is removed from the anterior margin of the carapace. It is oval, relatively high, with some small rounded tuberculations above on each side. A slight hump, lower than the eye tubercle, is situated between the eye tubercle and the anterior margin. Surface of the dorsum, namely, carapace, tergal region and free tergites are finely shagreened. Dorsal scute consisting of five areas, borders of areas parallel to each other; first area without a median line. First to fifth areas each with a transverse row of granules, granules becoming larger posteriorly, those on the fifth area giving an appearance of short conical tubercles. Regular rows of conical tubercles also across the entire width of free tergites, tubercles larger on the central area. A row of rounded granules is along the lateral margin of the scute.

Venter. Coxa I armed with a transverse row of 5-6 coarse conical tubercles on the middle. Surface of coxa II, III and IV unarmed except for a few scattered granules, and a definite row of small humps on the fore and rear margins of the third coxa. The dorsal portion of the fourth coxa has several tuberculations, two or three of them somewhat enlarged. Stigma clearly visible behind the retro-lateral surface of the fourth coxa. Free sternites unarmed aside from transverse rows of microscopic, hair-tipped granules. Anal plate with scattered granules.

Chelicera moderately enlarged; the first segment swollen distal-dorsally, and armed above with scattered fine denticles. The second segment armed on the dorso-medial surface with a longitudinal series of hair-tipped tubercles, tubercles larger toward tip, three on the distal half being fairly enlarged (Text-fig. 2 A). Fingers rather short but strong, inner edges are toothed as shown in Text-fig. 2 A.

Palpus. Segments of palpus remarkably widened and rather poorly spined. Dorsal surface of the coxa has a pointed tooth on the inner distal portion. Trochanters armed below with two broad conical tubercles, the second only a little larger than the first; unarmed above. Femur prominently enlarged, in the profile arched upward, from above somewhat flattened inward; ventral surface has two stumpy spine-bearing tubercles on the proximal portion, and one smaller tubercle near
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distal portion; medial-distally with a single spine-bearing tubercle. Patella strongly
enlarged distally, and armed with a single spine-bearing tubercle on the medial-
distal portion. Tibia and tarsus widened, arched above and flattened beneath. Ven-
tral surface of the tibia armed as follows: along the ectal side, two stout, spine-
bearing tubercles on the distal half, followed by two slight humps; along the medial
side, two spine-bearing tubercles, one proximal and the other distal, in addition two
much reduced tubercles, one at middle and one at tip. Tarsus armed with three or
four spine-bearing tubercles on either side of the ventral surface. Tarsal claw shorter
than tarsus.

Legs comparatively short but robust. Femur I, II, and III nearly straight, IV

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Fig. 2. *Tithaeus watanabei* n. sp. Male. A, dorsal view of the left, second cheliceral segment;
B, left palpus, lateral view; C, a part of right palpus, medial side; D-G, penises: D-E,
oblique, F, dorsal, and G, ventral views. (A × 50, B-D × 40, E-G × 200)
curved a little. Trochanters, femora and patellae clothed with sparse, hair-tipped granules, femora with a ventral row of only slightly enlarged granules; tibiae, metatarsi, and tarsi only hairy. Tarsal segmentations: 5: -- : 5: 6. (The segments of the distitarsus II were not counted because of the lack of the tarsus, but they are very probably two.) Double claws of tarsus III and IV simple, untoothed; no scopulae.

Color. Dorsum generally rusty red; surface of the carapace, including the eye tubercle, is reticulated with deep dark brown to black (Text-fig. 1; Pl. I Fig. 1). Tergal areas and free tergites banded with dark brown; lateral margin of the scute also darkened. A longitudinal series of light flecks is between the lateral margin and the tergal areas. Venter concolorous with the dorsum; 1-4 coxae slightly lighter, with faint reticulations; considerable dorsal portion of the fourth coxa is darkened; free sternites with deep dark brown bands. Chelicera and palpus rusty brown, reticulated above. Legs yellowish to rusty brown, patellae and tibiae with reticulations.

Penis. The penis is elongated, strongly enlarged distally. There are two prominent processes on either side of the distal margin. The distal portion is provided with seven pairs of very short setae. The setae are disposed as follows: five pairs on or near the lateral margins, and two pairs on the central area of the ventral surface. The glans possesses a large T-shaped process at tip.

Female.—Not known.

Measurements (mm): ♂: Dorsal scute, 1.63 wide at narrowest portion (anterior margin of carapace), 2.27 W at widest portion (hind margin of dorsal scute), 3.00 long. Total body-length, 3.65.

Chelicera: First segment, 0.45 wide, 0.71 long; second segment, 0.49 W, 1.26 L. Total length, 1.97.

Palpus: Trochanter, 0.31 wide, 0.31 long; femur, 0.41 W, 0.76 L; patella, 0.38 W, 0.54 L; tibia, 0.35 W, 0.55 L; tarsus, 0.20 W, 0.77 L. Total length, 2.93. Claw, 0.43 long.

Length of legs:

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Type: Holotype male, Phu Kradung, Thailand, 14-16 XII, 1963, collected by H. WATANABE.

Remarks: The present specimen very much resembles Titaeus siamensis Roewer from Thailand, however, the former is readily separated from the latter in the following points:

1. The legs are much shorter than those of T. siamensis, in spite of having larger body.
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(2) A slight hump is present between the eye tubercle and the anterior margin of the carapace.

(3) The tibia of the palpus has two instead of three spine-bearing tubercles on each side of the ventral surface.

Subfamily Epedaninae Roewer

Genus Euepedanus Roewer


Mimepedanus, Roewer 1923. Die Weberknechte der Erde (Jena), 208.


Members of the subfamily Epedaninae having a median spine on the eye tubercle, and with two spines on the central portion of the second tergal area. Palpus: Femur armed with 5–6 spines on the ventral side, and patella with two spines on the medial side and one spine on the ectal side of the ventral surface. The tarsus I–IV has always more than six segments; the distitarsus of the first tarsus with two segments; the second with either two or three segments. The double claws of the third and fourth tarsi are simple and untoothed.

Type-species: Euepedanus trispinosus Roewer

Notes: The genus Mimepedanus Roewer is synonymized here. This genus was originally separated from the genus Euepedanus Roewer by the fact that its members had two segments in the distitarsus of the second tarsus and possessed five ventral spines in the femur of the palpus. In the two new species, E. chaiensis and E. dioidus described here, some had two segments in the distitarsus II, although the majority had three. Also the number of the ventral spines of the palpus femur varied from 5–7 in E. chaiensis. Thus it is concluded that these two characters cannot be considered valid generic differences.

2. Euepedanus chaiensis n. sp.

(Text-figs. 3–5; Pl. I Figs. 3–4)

Male.—

Dorsum. Relatively small animal, more or less trapezoid in form; lateral margins of the dorsal scute only slightly curved opposite insertions of the third coxae and along the fourth coxae; body widest at the region of the fourth tergal area. Abdomen broadly rounded posteriorly. The anterior margin of the carapace slightly curved, armed on either side with a row of 5–6 small tubercles, tubercles larger toward the lateral angle. Eye tubercle low, long oval, provided with an elongated median spine; it is separated from the anterior margin of the carapace by its diameter. Abdominal portion of the scute with four well defined areas. The second area armed with two median spines. In addition, in the first to third areas there is a transverse row of small granulations, granulations are reduced in the first area; the fourth area and all free tergites with regular rows of numerous sharp pointed
tubercles along the full width, middle tubercles larger than others, almost spinose in character; lateral margin of the scute with a row of granulations. Anal plate has a few tubercles.

Venter. Coxa I armed with a ventral row of 4-5 coarse tubercles, of which one standing near proximally is prominently tall; also a few coarse tubercles present near the tip and at the middle portion of the anterior surface. Coxa II has two or three coarse tubercles near distally, and a row of granulations on the ventral surface. Coxa III with scattered granules, and with anterior and posterior rows of teeth. Coxa IV wider than remaining coxae, nearly smooth except for only a few scattered tubercles on the distal-dorsal surface. All free sternites unarmed, almost smooth apart from transverse rows of very fine hairs. Stigma clearly visible.

Fig. 3. *Euepedanus chaiensis* n. sp. A, lateral, and B, dorsal views of male. (A × 12, B × 15)

Chelicera well developed. The first segment swollen distal-dorsally and armed above with numerous spines or tubercles. Spines are disposed as follows: on the distal swollen portion, 1 conical spine at apical median, 1 largest spine posterior to it, and sometimes two smaller ones on the ectal and medial sides; on the proximal portion, 2-4 medium- or small-sized spines on the central area, 1 second largest spine on the ectal surface, and usually it is followed by a smaller one. The ventral surface armed with 2-3 small tubercles on both sides in addition to a few much smaller ones on the mid line. The second segment considerably widened, armed with two prominent bifid teeth on the middle of the dorso-medial surface, and a row of very small tubercles along the mid-dorsal line, of which one on the most apical portion is slightly enlarged; also a single blunt tubercle present subdistally on the retro-lateral surface. Fingers are toothed as shown in Text-fig. 4 C.

Palpus moderately long and strongly spined. Coxa armed with a single small
tubercle at base above and with a conical tubercle which has a smaller tubercle just at its base, near tip of the ventro-lateral side. Femur in the profile slightly narrowed at base, progressively wider distally; dorsal surface armed with two longitudinal rows of conical tubercles, tubercles slightly slant forward; ventral surface with a row of six long spines, the first spine is the longest, the rest decreasing in size distally (the number of these spines varies from 5-7 as stated in variations); medial-

![Image](image_url)

Fig. 4. *Euepedanus chaiensis* n. sp. A, male chelicera, left, lateral; B, same, left, medial; C, dorsal view of the second cheliceral segment, ♂; D, same, ♀; E, left, male palpus, medial. (A-D ×23, E ×17)

distally with two spines. Patella dorsally with a few scattered low tubercles and ventrally with one spine on the lateral margin and two on the medial. Tibia with three pro-lateral and four retro-lateral spines. Tarsus has three spines on both sides of the ventral surface, first, second and third spines progressively shorter. Tarsal claw longer than tarsus, strongly curved.

Legs relatively long; all leg-segments unarmed, almost smooth, 1-4 femora not curved, nearly straight. Third and fourth tarsi with simple double claws, no scopulae. Tarsal segments: I 7-8: II 16-22: III 7: IV 7-8. Distitarsus of first tarsus with two segments, second, with three, but rarely two.

Color. Body above and appendages beautiful rusty yellow. Carapace and segments of the chelicera and palpus with intricate reticulations of dark brown to black as shown in Text-fig. 3 B and Pl. I Fig. 3. The abdominal portion of the dorsal scute is marked with a narrow semicircular band of dark brown to blackish brown, which borders hind margin of the second scutal area and sides of the first and second areas. The third area with a wide slightly dark band, the fourth area margined posteriorly with dark brown, and with two dark patches at lateral angles; a dark
band also across each free tergite. A dark brown strip along the lateral margin. Venter concolorous with the dorsum, free sternites with dark brown bands.

Penis. The penis is long and slender but slightly widened distally, nearly ellipsoidal. This region is provided with 11 pairs of strong setae which are disposed as in Text-fig. 5.

Female. Similar to male but slightly larger and stouter and with the abdomen more bluntly rounded behind; the chelicerae slightly shorter than those of the male; the abdominal portion of the scute is without a semicircular band as seen in the male, and 1-3 areas uniformly banded with dark brown.

**Measurements (mm):** ♀: Dorsal scute, 1.92 wide at narrowest portion (anterior margin of carapace), 2.53 W at widest portion (posterior margin of scute), 2.61 long. Total body-length, 3.16.

Chelicera: Segment I, 0.44 wide at widest portion, 1.30 long; segment II, 0.66 W, 2.15 L. Total length, 3.45.

Palpus: Trochanter, 0.42 wide, 0.48 long; femur, 0.27 W, 1.53 L; patella, 0.28 W, 0.89 L; tibia, 0.31 W, 0.90 L; tarsus, 0.31 W, 0.77 L. Total length, 4.57. Claw, 0.89 long.

**Length of legs:**

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♀: Dorsal scute, 1.86 wide at narrowest portion, 2.64 W at widest portion, 2.53 long. Total body-length, 3.58.
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Chelicera: Segment I, 0.43 wide at widest portion, 1.02 long; segment II, 0.60 W, 1.95 L. Total length, 2.97.

Palpus: Trochanter, 0.41 wide, 0.41 long; femur, 0.28 W, 1.51 L; patella, 0.29 W, 0.90 L; tibia, 0.32 W, 0.93 L; tarsus, 0.31 W, 0.79 L. Total length, 4.54. Claw, 0.92 long.

Length of legs:

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<td>2.18</td>
<td>4.28</td>
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Types: Holotype male, and Paratypes: 2 ♂, 6 ♀♀ and 2 young, Pakton Chai, Thailand, 24 XI–10 XII, 1963. All specimens were collected by H. Watanabe.

Remarks: E. chaiensis n. sp. is similar to E. orientalis (Hirst) from Thailand in general appearance but may be readily separated from it by the following characteristics. (1) The majority has three segments in the distitarsus II. (2) The palpus femur is armed dorsally with two instead of three longitudinal rows of conical tubercles or spines. (3) The armatures on the dorsal surface of the first cheliceral segment utterly differ from those of the E. orientalis.

Variations: The number of segmentation and that of the ventral spines of the palpus femur were counted in 3 ♂♂ and 6 ♀♀. The tarsus III has 7 segments in all specimens. The number of segments in tarsus IV varies from 7 (18%)–8 (82%). The tarsus I has either 7 (50%) or 8 (50%) segments and in some specimens the segment differs in the corresponding tarsi of left and right sides. The number of segments in tarsus II shows considerable variation, ranging from 16 to 22. Disti-

tarsus I and II have 2 and 3 segments respectively, but one abnormal specimen having two instead of three segments in the distitarsus II was found. There is some variation also in the number of the ventral spines of the palpus femur. Although
femora with 6 spines are most usual (61%), some had 5 spines (33%) and others 7 (6%). Three specimens (33.3%) are asymmetrical in the number of spines occurring in femur on left and right sides of the body.

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3. *Euepedanus dividuus* n. sp.
(Text-figs. 6-8; Pl. I Fig. 7)

**Male.**

Dorsum. Moderate-sized animal, body distinctly trapezoid in outline, the widest portion of the body at the region of the fourth area; abdomen widely rounded behind. Anterior margin of the carapace sharply indented on either side and armed with three projections, one median and one at each side of the chelicerae. A row of small tubercles present along the anterior lateral margin above. Surface of the dorsum almost smooth. Eye tubercle distinctly removed from the anterior margin; it is long oval and armed with an elongated median spine. Posterior margin of the carapace strongly rounded; abdominal portion of the dorsal scute with four areas, the first area consisting of three well defined regions, one large main plate of usual form and two accessory plates on both sides. Second to fourth areas are quite

Fig. 6. *Euepedanus dividuus* n. sp. Lateral view of male, ×14.
normal. Second area with two median spines; first and third areas almost smooth except but a few obsolete granules on the third area; fourth area armed with numerous, small, conical tubercles forming a transverse row on the full width; similar rows of tubercles across all free tergites; lateral margin of the scute with a longitudinal series of very small granules. Anal plate unarmed.

Fig. 7. Euepedanus dividuus n. sp. Male. A, body, dorsal; B, right chelicera, lateral; C, same, medial; D, right, first cheliceral segment, above; E, left, second cheliceral segment, above; F, left palpus, medial. (A–E ×13, F ×10)

Venter. First coxa armed with a ventral row of considerably coarse tubercles, and with two further rows of smaller tubercles along the front and rear margins; also with two or three slightly enlarged tubercles near distal margin. Second coxa with very small tubercles forming a transverse row on the ventral surface, and with a few coarse tubercles at tip. Third coxa with a definite row of teeth along the front and hind margins. Fourth coxa widened, with two enlarged blunt tubercles near distally on the hind margin. Spiracles fully exposed. Free sternites each smooth apart from a row of very short hairs.

Chelicera fairly strong. Segment 1 elongated and swollen distal-dorsally; the dorsal surface armed with numerous spinations. Spinations are as follows: along the mid-dorsal line, 1 conical spine near tip, 1 largest spine posterior to it, and 1 medium-sized spine at about the middle of the length, which has two smaller spines behind; dorso-laterally with 2–3 spines on the median area, of which one just at the middle is considerably large; dorso-medially with a row of 3–5 conical spines or tubercles. In addition, two prominent tubercles present subdistally on the ventro-medial surface, and a few very small tubercles along the mid-ventral line. Second segment extremely enlarged, dorso-medially with a row of three very prominent
teeth on the distal half, usually these teeth are bifid, and tipped with a seta inserted between both denticles. A bifid tooth is also at the middle of distal portion, and a further blunt tooth at the subdistal portion of the dorso-lateral surface. Ventral surface with a single pointed tooth on the distal portion. Inner margin of the che-
lae are toothed as Text-fig. 7 E.

Palpus comparatively well developed and strongly spined. Coxa armed at tip of the ventro-lateral surface with a strong pointed tubercle, which has a very tiny tubercle at its base; and with a small conical tubercle above at the base. Trochan-
ter armed dorsally with 1 strong spine and 1 or 2 small conical tubercles, and ventrally with 1 strong spine, and 1 very small tubercle just anterior to it. Femur, viewed from above slightly curved inwardly, in the profile almost straight; dorsal surface with two longitudinal rows of short but strong conical tubercles which are tipped with a short hair, and usually slant a little before, one row along the mid-
line and the other medial; dorso-laterally with a further row of numerous coarse rounded tubercles. The ventral surface armed with a row of six long spines, here also, the first longest, and the remainder decreasing in size distally; medial-apically with two long spines. Patella relatively long, nearly as long as tibia; ventral sur-
face with two spines medially and one spine laterally; and with a few scattered, hair-tipped granules above and below. Tibia and tarsus are spined as in Text-fig. 7 F. Tarsal claw longer than tarsus and strongly curved.

Legs relatively long; 1-4 femora not curved, nearly straight. Trochanters unarmed except for one or two only slightly enlarged granulations arising distally on the ventral surface of the first and second. The remaining leg-segments unarmed, smooth, with but a few sparse hairs, tarsi with more numerous hairs. Tarsal arti-

Color. Body and appendages rusty yellow. Usually body somewhat bleached and faintly reticulated on the carapace and the first two scutal areas. Sacutal areas somewhat darkened, sides of the scute margined with yellowish brown; free tergites also banded with yellowish brown, darker laterally. Venter concolorous with the
Phalangids from Thailand

dorsum, free sternites with very narrow, deep yellowish brown bands, anal plate
darker throughout. Chelicera: First segment deep yellowish brown to dark brown
with intricate reticulations on the distal portion above; distal segment likewise reti-
culated above and on both sides. Palpus: Femur widely darkened at both ends
and light between; patella, tibia and tarsus almost darkened; dorsal surfaces of these
segments reticulated; tarsal claw also pigmented. Legs: Femora and tibiae darker
toward tip, patellae darkened throughout and reticulated above; metatarsi and tarsi
der.

Penis. The penis is slender and elongated. The distal portion is somewhat
widened, and truncated before. This region is provided with 11 pairs of strong
setae disposed as in Text-fig. 8. One pair of setae arising at the anterior lateral
angle is strikingly shorter than others.

Female.— Not known.

Measurements (mm): ♀: Dorsal scute, 2.61 wide at narrowest portion (anterior
margin of carapace), 3.41 wide at widest portion (hind margin of scute); 3.68 long.
Total body-length, 4.37.

Chelicera: First segment, 0.53 wide at narrowest portion, 0.74 W at widest por-
tion, 2.56 long; second segment, 1.37 W, 4.05 L. Total length, 6.61.

Palpus: Trochanter, 0.58 wide, 0.80 long; femur, 0.45 W, 2.64 L; patella, 0.41
W, 1.32 L; tibia, 0.43 W, 1.26 L; tarsus, 0.42 W, 1.05 L. Total length, 7.07.
Claw, 1.23 L.

Length of legs:

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Types: Holotype male, Khao Chong, Thailand, 30 XII, 1963-2 I, 1964. Para-
type: 1 ♀, same collection data as holotype. All collections made by H. WATANABE.

Remarks: On account of the prominent structure of the first scutal area the pre-
sent species is to be distinguished from other species of this genus.

Variations: Only two males were examined. The number of segments in tarsus
I, III and IV is constant, but that in tarsus II varies from 24-29. The distitarsus
I appears to be constant, but II exhibited some variation. Among only two speci-
mens one is abnormal, having two segments in the right tarsus II but three in the
left.

Genus *Toccolus* ROEWER

4. *Toccolus globitarsis* n. sp.

(Text-figs. 9-11; Pl. I Figs. 5-6)

Male.—

Dorsum. Tiny animal, body more or less trapezoid in form, with sides slightly
curved; abdomen broadly rounded behind. The anterior margin of the carapace curved on either side and armed with a row of about four sharp pointed tubercles on the upper portion of the anterior lateral margin. The eye tubercle separated by its diameter from the anterior margin. It is long oval, provided with a rather short median spine, and two or three small tuberculations above each eye. Hind margin of the carapace broadly rounded, first scutal area wider than the remaining areas. 1–3 areas armed with a row of small conical tubercles, two or three median tubercles are slightly larger than others. Fourth area and all free tergites with a transverse row of numerous sharp pointed tubercles on the total width, here also tubercles larger on the median portion. A longitudinal series of small rounded tubercles along the lateral margin of the scute. Anal plate with scattered small tubercles.

Venter. First coxa has a ventral row of 5–6 coarse pointed tubercles, and two or three but a little enlarged tubercles at tip. A transverse row of very small tubercles is on the second coxa. Surface of the third and fourth coxae unarmed except for a definite row of teeth on both ridges of the third. Stigma clearly visible. Free sternites smooth apart from very short hairs forming transverse rows.

Chelicera moderately developed. Proximal segment widened distal-dorsally, and armed with three long, curved spines on the swollen distal portion, 1 at apical median, 1, the largest posterior to it, and 1 at ectal side; and with one further medium-sized spine near the middle of the proximal half; ventrally with about six small conical tubercles, two or three of them situated on the inner subdistal portion slight-
Phalangids from Thailand

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ly larger. Distal segment fairly enlarged, armed dorsally with numerous tubercles, tubercles arranged more or less in two rows; those in the inner row are much larger than those in the outer; also, there is a single prominent tubercle at the subdistal portion of the dorso-lateral surface, in addition, a further smaller one on the distal portion; ventral surface with a single coarse tubercle followed by a smaller one, at the subdistal portion. Inner margins of the fingers are toothed as shown in Text-fig. 10 B.

Palpus considerably developed and strongly spined. Coxa armed dorsally with a short but robust spine which is acutely bent forward at the distal end, and with a smaller tubercle exterior to it, also a further blunt tubercle at the base; ventrally with two small tubercles near distally. Trochanter armed dorsally with two spine-

![Fig. 10. Toccolus globitarsis n. sp. A, right chelicera, ♂, lateral; B, right, second cheliceral segment, ♂, above; C, left palpus, ♂, lateral; D, right palpus, ♀, medial. (A, C-D ×15; B ×20)](image)

like tubercles, of which one is larger, and ventrally with two stout tubercles of uniform size. Femur from above somewhat compressed laterally, in the profile gradually wider toward tip, only slightly curved below; ventral surface armed with a row of five long spines, first spine longest, and the rest decreasing in size distally; dorsal surface with a row of 8–9 short, slightly curved spines along the mid-line, and with two or three pointed tubercles on the inner distal portion; lateral surface usually rugose, giving a roughened appearance; medial-apically with two long spines. Patella enlarged distally, armed ventrally with long spines, spines two on the medial margin and one on the ectal margin; dorsally with scattered low tubercles, a few of the median portion being but a little larger. Tibia spined laterally as in Text-fig. 10 C; medially with three spines; in addition, with some scattered small tubercles above and below. Tarsus remarkably swollen above, giving a globular appear-
ance; armed ventrally with three long spines on either side, first, second and third progressively shorter; tarsal claw elongated, longer than tarsus, and curved strongly.

Legs. Trochanters unarmed except but a few small tuberculations on the ventral surface. Femur I–III not curved, nearly straight, IV curved slightly. All femora smooth aside from a few sparse hairs, the rest of leg-segments smooth, only hairy, tarsi with more numerous hairs. Tarsal segmentations: I 6: II 14–16: III 6: IV 6–7. Distitarsus of both first and second legs with two segments. Double claws of third and fourth tarsi simple, untoothed.

Color. Body dorsal rusty yellow with dark brown to blackish blotches or mottlings. Carapace, including eye tubercle, reticulated with dark to blackish brown. Abdominal portion of the scute is marked with a broadly rounded, deep blackish brown band, which across the border of the first and second scutal areas and both sides of the first area; second and third areas with wide dark bands, and the fourth area has three large dark blotches; all free tergites darkened, with light hind margins; lateral ridges of the scute margined with dark brown. Ventor concolorous with the dorsum, coxae slightly darker toward tip, free sternites each have dark brown to blackish bands, bands somewhat paler on the central portion; anal plate darkened. Chelicera rusty yellow with intricate reticular markings on both segments above. Palpus likewise rusty yellow, femur broadly dark brown at extremities, pale between, patella darkened throughout, tibia also darkened at both ends, and all these segments usually reticulated above. Legs rusty yellow but femora, patellae, and tibiae generally darker.

Penis. The penis is slender and elongated. The distal portion is widened, rounded in outline, and provided with nine pairs of strong setae. Two pairs of spines located just at base of the glans are narrower than others. There are two prominent processes on either side of the distal margin.
Female.— Similar to the male in general pattern, but larger and with abdomen more rounded posteriorly; the abdominal portion of the scute is not marked with a rounded blackish band, but 1–3 areas uniformly banded with dark brown. Cheliceral segments, in particular, the distal segment is not so greatly enlarged as in the male; the segments of the palpus also less strong and the tarsus rather normal, although it is wider than usual.

Measurements (mm): ♂: Dorsal scute, 1.80 wide at narrowest portion, 2.25 W at widest portion, 2.30 long. Total body-length, 2.80.
Chelicera: Segment I, 0.46 wide, 1.15 long; segment II, 0.84 W, 2.24 L. Total length, 3.39.
Palpus: Trochanter, 0.38 wide, 0.48 long; femur, 0.33 W, 1.56 L; patella, 0.36 W, 0.90 L; tibia, 0.36 W, 0.94 L; tarsus, 0.46 W, 0.80 L. Total length, 4.68. Claw, 0.89 long.

Length of legs:

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♀: Dorsal scute, 1.52 wide at narrowest portion, 2.35 W at widest portion, 2.02 long. Total body-length, 3.21.
Chelicera: Segment I, 0.34 wide, 0.84 long; segment II, 0.51 W, 1.56 L. Total length, 2.40.
Palpus: Trochanter, 0.30 wide, 0.38 long; femur, 0.28 W, 1.35 L; patella, 0.30 W, 0.83 L; tibia, 0.32 W, 0.86 L; tarsus, 0.34 W, 0.82 L. Total length, 4.24. Claw, 0.88 long.

Length of legs:

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Types: Holotype male, Paktong Chai, Thailand, 24 XI–10 XII, 1963. Paratypes: 3 ♀♀, same collection data as holotype. All specimens were collected by H. Watanabe.

Remarks: This new species is closely related to Toccolus minimus Roewer from Tonking, but differs in having a globular tarsus of the palpus in the male and in having six instead of five segments in the tarsus I. Also the first cheliceral segment
has strong dorsal spines, and the body and appendages are much larger than in *T. minimus*.

**Variation:** Among four animals (1 ♂️, 3 ♀♀) examined one female had three rather than two spines on the medial-distal portion of the palpus femur.

**Family Assamiidae Soerensen**  
**Subfamily Polycoryphinae Roewer**  
**Genus Paktongius n. gen.**

Members of the subfamily Polycoryphinae having a normal eye tubercle which is low, rounded, and with a short median spine. The first area of the abdominal scute is without a median line. First to fourth areas unarmed, fifth area has two strong spines on the median region, and the lateral margin of the scute with a row of conical teeth along the fourth coxa. The femur of the palpus is unarmed on the medial-distal portion. Tarsal segmentations: I 4: II 7: III 5: IV 6. The distitarsus of the second tarsus with three segments.

**Type-species:** *Paktongius distinctus* n. sp.

**Notes:** The genus *Paktongius* is somewhat close to *Kodaika* Roewer and *Koyna* Roewer from Dekan. However, the armament of the eye tubercle and the spinations or teeth on the fifth tergal area and on the lateral margin of the scute are sufficient to separate the former from the latter genera.

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5. **Paktongius distinctus** n. sp.  
(Text-figs. 12–13; Pl. I Figs. 8–9)

**Female.**—

Dorsum. Very small animal, body more or less pyriform in outline, and slightly flattened dorso-ventrally. Carapace is very narrow, at most half of the widest portion of the abdominal region. Abdominal portion of the scute nearly quadrate, but little narrowed on sides at about the middle; body widest at the region of the hind margin of the first scutal area; abdomen squarely truncate behind. Carapace has 2-1-2 teeth along the anterior margin, which are located on the under portion of the cephalothorax. The median tooth is tiny and hidden by the large spine of the carapace; the lateral pairs enlarged, the outermost one longest, the penultimate one very stout and flattened apically. The large spine of the carapace arises at the median surface of the anterior margin above. There are several very small granulations or denticles along the anterior margin. Eye tubercle separated from the anterior margin by a distance of its diameter; it is low, rounded, armed with a short median spine, and one small granulation above on either side. Entire surface of the dorsum very finely shagreened. Scutal groove is well defined and bowed. Tergal areas faintly defined by shallow transverse grooves. First area wider than others, not divided by a median groove. First to fourth areas armed with very small tubercles, which are more or less arranged in a row; two median tubercles but
a little larger. Fifth area has a row of numerous prominent tubercles on the full width; tubercles larger on the median portion, particularly two median tubercles being enlarged into stout spines. There is a short row of tubercles on the lateral margin of the scute along the fourth coxa, one or two of them are considerably enlarged, giving an appearance of bluntly pointed tooth or spine. A transverse row of small tuberculations also across the three free tergites.

Fig. 12. *Paktongius distinctus* n. sp. Female. A, dorsal, and B, ventral views. (A–B × 23)

Venter. Surface of the venter, namely 1–4 coxae, genital operculum and sternites finely shagreened. First coxa has a row of coarse tubercles along the both fore and rear margins, in each row tubercles becoming larger toward tip, and there is a single greatly widened, irregular-shaped tubercle at about the middle of the anterior surface. Second coxa with an anterior row of tubercles, tubercles, contrary to those of the first coxa, decreasing in size distally, and with a single enlarged tubercle at tip of the anterior surface; retro-laterally with a few coarse tubercles. A row of lateral teeth along the fore and rear margins of the third coxa. Fourth coxa widened, armed with two fairly enlarged tubercles on the proximal portion of the dorsal surface; two further enlarged tubercles are also distally on the hind margin, which are touched with those arising on the sternal ridge. Stigma concealed in the furrow beneath these bridged tubercles. Free sternites each have a row of tiny tuberculations, tuberculations somewhat larger on the lateral portions.

Chelicera comparatively small; the proximal segment widened on the distal-dorsal surface; both segments unarmed.

Palpus rather weakly developed. Trochanter distended distally, armed distally on the ventral surface with a few fine tubercles. Femur characteristically flattened,
widest at the middle of its length, ventral surface with fine teeth, teeth are confined mainly to the proximal half. Patella, tibia, and tarsus remarkably flattened below. Patella comparatively long, widened distally, unarmed throughout. Distal portion of the tibia so strongly widened outward as to form a large triangular process, which tipped with a sharp spine; medially with two setose tubercles, one at the proximal portion and the other apical. Tarsus has two small setose tubercles on either side of the distal portion. Tarsal claw shorter than tarsus, strongly curved.

Fig. 13. *Paktongius distinctus* n. sp. Female. A, lateral view of body; B, left palpus, lateral; C, ovipositor. (A x 24, B x 45, C x 72)

Legs rather short, all leg-segments shagreened throughout. Trochanters with more or less coarse, setose granulations. Femur I and II nearly straight, III and IV curved. Femora, patellae and tibiae clothed throughout with numerous scattered granulations; metatarsi with only a few of them; tarsi unarmed, only hairy. Tarsal segmentations: I 4: II 7: III 5: IV 6. Distitarsus of first tarsus with 2 segments; of second, 3 segments. Double claws of third and fourth tarsi simple, unothyed.

Color. Ground color above beautiful yellow with dark brown to blackish mottlings or blotches. A greater part of carapace has dark brown reticulations and there are two narrow dark brown areas on each side back of the eye tubercle. The first to fourth scutal areas each are marked with two prominent, enlarged flecks of deep dark brown to black on either side. Fifth area with a broad dark posterior band, slightly lighter at median. Lateral margin of the scute with a dark brown strip, slightly lighter along the fourth coxae. All free tergites with dark bands, somewhat lighter at median. Venter concolorous with the dorsum, 1–3 coxae slightly darker toward tip; fourth coxa has a considerable area of dark brown on the
Phalangids from Thailand 99
dorsal surface, and with some reticular markings on the ventral surface. Genital operculum and free sternites rusty yellow, sternites with dark brown anterior bands, bands darker on both sides, lighter between. Chelicera, palpus and legs concolorous with the dorsum. All leg-segments other than trochanters are darkened.

Ovipositor: As shown in Text-fig. 13 C. The apical portion is provided with 4–5 pairs of long setae, setae are bifurcated at tip.

**Male.—** Not known.

**Measurements (mm):** ♀: Dorsal scute, 0.98 wide at narrowest portion, 1.88 W at widest portion, 2.30 long. Total body-length, 2.50.

Palpus: Trochanter, 0.08 wide, 0.19 long; femur, 0.20 W, 0.54 L; patella, 0.16 W, 0.41 L; tibia, 0.18 W, 0.30 L; tarsus, 0.18 W, 0.25 L. Total length, 1.69. Claw, 0.18 long.

**Length of legs:**

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Suborder Eupnoi (Hansen and Soerensen)
Family Leiobunidae Šilhavý
Subfamily Gagrellinae Thorell
Tribe Gagrellini Banks
Genus Gagrella Stoliczka

6. **Gagrella spinulosa Thorell**
   (Text-figs. 14–15)


[ petrol , Roewer 1923. Die Weberknechte der Erde (Jena), 961–962.]

The male and its genitalic structures are newly illustrated in Text-figs. 14–15.

**Specimens examined:** 2 ♂♂, Phu Kradung, Thailand, 14–16 XII, 1963, collected by H. Watanabe.

**Distribution:** Burma.
Fig. 14. *Gagrella spinulosa* Thorell. A, lateral, and B, dorsal views of male. (A–B ×8)

Fig. 15. *Gagrella spinulosa* Thorell. Penises. A, lateral, and B, ventral views. (A–B ×38)
Genus *Gagrellula* Roewer

7. *Gagrellula niveata* Roewer


Specimen examined: 1 ♂, Khao Chong, Thailand, 30 XII, 1963–2 I, 1964, collected by H. Watanabe.

Distribution: Burma, Thailand.

8. Undetermined species

Some specimens definitely belong to one species of the present tribe were encountered, but the specific name was not determined on account of their immature condition.

Specimens examined: 1 subadult, 6 young, Phu Kradung, Thailand, 14–16 XII, 1963, collected by H. Watanabe.

The author wishes to express his gratitudes to Mr. H. Watanabe for giving the privilege of studying the precious specimens and also to Dr. Takeo Yaginuma of the Ohtemon-Gakuin University, Osaka for his help in material.
Figs. 1-2. *Tithaeus watanabei* n. sp. 1, dorsal, and 2, ventral views of male, ×10.

Figs. 3-4. *Euepedanus chaiensis* n. sp. 3, male, dorsal, and 4, female, dorsal, ×8.

Figs. 5-6. *Toccolus globitarsis* n. sp. 5, male, dorsal, and 6, female, dorsal, ×8.

Fig. 7. *Euepedanus dividus* n. sp. Dorsal view of male, ×6.

Figs. 8-9. *Paktongius distinctus* n. sp. 8, dorsal, and 9, ventral views of female, ×13.