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## CONTRIBUTION TO THE KNOWLEDGE OF THE SOUTHEAST ASIAN SPIDERS OF THE FAMILIES PACULLIDAE AND TETRABLEMMIDAE

by

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With 35 text-figures

### INTRODUCTION

Among the spiders, obtained during our 1979 collecting trip to Borneo by sieving leaf-litter in various forest types, the armored spiders of the families Pacullidae and Tetrablemmidae were among the most numerous and diversified. The excellent paper by Shear (1978) treating these families exhaustively greatly facilitated a classification of these spiders.

Six new species are here described from Borneo, four in the Pacullidae and two in the Tetrablemmidae, in each of these families a new genus had to be erected for part of these species. Furthermore, this paper includes a description of a new Tetrablemmid, collected by Dr. L. van der Hammen in West Irian (New Guinea) in 1953/54 and a redescription of *Brignoliella bicornis* (Simon) from Luzon, Philippines.

The new material justifies Shear's division of the six-eyed armored spiders with abdominal rings into Pacullidae and Tetrablemmidae, as all taxa can easily be assigned to either of these two families and no intermediate forms were found. It is noteworthy that each of the species of the larger Pacullidae was found on a single locality only, whereas the Tetrablemmid *Ablemma* species was collected over a larger area.

Thanks are due to Dr. L. van der Hammen of the Leiden Museum of Natural History for making available to me the museum's material from West Irian, and to Dr. P. J. van Helsdingen of this museum for reading the manuscript and making useful comments.

### PACULLIDAE Simon

Of the eight species hitherto known, all from Southeast Asia, only one has been described adequately from both sexes: *Paculla kraui* Shear. The

present discovery of four new species in this family, three of which in both sexes, throws more light on this family and its delimitations.

Within the four species to be described here, the sexual organs fall apart into two rather disparate groups, which make the creation of a new genus necessary.

The material studied allows me to make the following amendments to the description of the family, given by Shear (1978: 39): cheliceral teeth absent, or with 2-3 small teeth on the inner margin near the base of the fang; no sexual dimorphism in the chelicerae in the species presently known. Thorax with or without a pair of dorsal spines or tubercles. Male palp with tibia enlarged and with a large, subspheroid bulb, with or without conductor and with an embolus of variable length. Female genitalia with a single opening leading through a partly sclerotized atrium into two receptacles. Contrary to Shear's observation (1978: 39) my species all have abdomina with the sclerotized spots united posteriorly into posterior strips between dorsal and ventral plates. As the genus *Perania* Thorell is included in this family, the characteristic sclerotizations on the abdomen, lacking in this genus, should be left out as a family character.

#### Key to the genera and species of Pacullidae

1. Abdomen soft or with only minor sclerotized spots . . . . . *Perania* Thorell
- Abdomen with dorsal and ventral scuta, separated by rings of sclerotized spots . . . . . 2
2. Embolus long and thread-like, coiled, at least twice as long as bulb; palpal tibia with apophysis; vulva with sclerotized parts (appearing through the tegument) occupying nearly the full width of the pulmonary plate . . . . . *Sabahya* nov. gen., Sabah, Borneo 3
- Embolus shorter than bulb or somewhat longer, but never thread-like and coiled; palpal tibia without apophysis; sclerotized parts of vulva not extended over full width of pulmonary plate . . . . . *Paculla* Simon 4
3. A pair of acuminate dorsal spines on the thorax; spider about 4.5 mm long; Sabah, Borneo . . . . . *S. bispinosa* nov. sp.
- A pair of conical tubercles on the thorax; spider 3-3.5 mm long; Sabah, Borneo . . . . . *S. kinabaluana* nov. sp.
4. Dorsal and ventral scuta about half the length of the abdomen . . . . . 5
- Dorsal and ventral scuta covering most of the abdomen . . . . . 6
5. Thorax with a pair of strong dorsal spines; length of spider 6 mm; Sumatra . . . . . *P. armata* (Thorell)
- Thorax without dorsal spines; length 7.5 mm; Birma . . . . . *P. birmanica* Thorell

6. Spider larger than 6 mm, embolus long and twisted with a diameter equal to that of metatarsus I . . . . . 7  
 — Spider 5-6 mm or smaller, embolus curved, straight or sickle-shaped 8
7. Large spider (9-9.5 mm), clypeus of ♂ with supramarginal tubercle; Sumatra . . . . . *P. picea* (Thorell)  
 — Spider 6.5-7 mm long, without tubercle on clypeus; Sumatra . . . . . *P. nigra* (Thorell)
8. No dorsal spines or tubercles on thorax . . . . . 9  
 — Thorax with a pair of dorsal spines or tubercles . . . . . 12
9. Embolus longer than bulb or as long as, whip-like . . . . . 10  
 — Embolus shorter than bulb . . . . . 11
10. Male metatarsus I sigmoid, with groups of spines ventrally; Peninsular Malaysia . . . . . *P. cameronensis* Shear  
 — Male metatarsus I straight, with rows of stout macrosetae ventrally; Peninsular Malaysia . . . . . *P. negara* Shear
11. A pair of large black teeth on the abdomen, anterior to the lung covers; male leg I unmodified; Peninsular Malaysia . . . . . *P. kraui* Shear  
 — No large black teeth anterior to the lung covers; male metatarsus I concave, without spines; Sabah, Borneo . . . . . *P. inornata* nov. sp.
12. Thorax dorsally with a pair of strong, erect spines; embolus straight, cylindrical; Kalimantan, Borneo . . . . . *P. bernhardi* nov. sp.  
 — Thorax dorsally with a pair of acuminate tubercles; embolus sickle-shaped; New Guinea . . . . . *P. granulosa* (Thorell)

### **Paculla** Simon

Type species: *P. granulosa* (Thorell).

Male palpal tibia without apophysis, bulb subspheroid without conductor and with short embolus, straight or curved, at most  $1\frac{1}{2}$ -2 times length of bulb. Female genital organ consisting of an atrium and two membranous sacks. Female postgenital plate shorter and less extended laterally than preanal plate. This genus comprises the species *P. granulosa* (Thorell), *P. picea* (Thorell), *P. nigra* (Thorell), *P. armata* (Thorell), *P. birmanica* Thorell, *P. kraui* Shear, *P. cameronensis* Shear, *P. negara* Shear, *P. bernhardi* nov. sp., and *P. inornata* nov. sp.

### **Sabahya** nov. gen.

Type species: *S. kinabaluana* nov. sp.

Male palpal organs with a projection on the tibia; bulb subspheroid, with or without conductor and with a long, thread-like, coiled embolus. Vulva composed of a wide atrium and two sclerotized ducts leading to curved

receptacles. Female postgenital plate in the known species scarcely shorter than preanal plate and wider. The genus comprises the species *S. kinabaluana* nov. sp. and *S. bispinosa* nov. sp.

### **Perania** Thorell

Type species: *P. pallida* Thorell.

Cephalothorax and appendages as *Paculla* and *Sabahya*. Abdomen soft. Genital organs not known. Included species: *P. pallida* Thorell, *P. korinchica* Hogg.

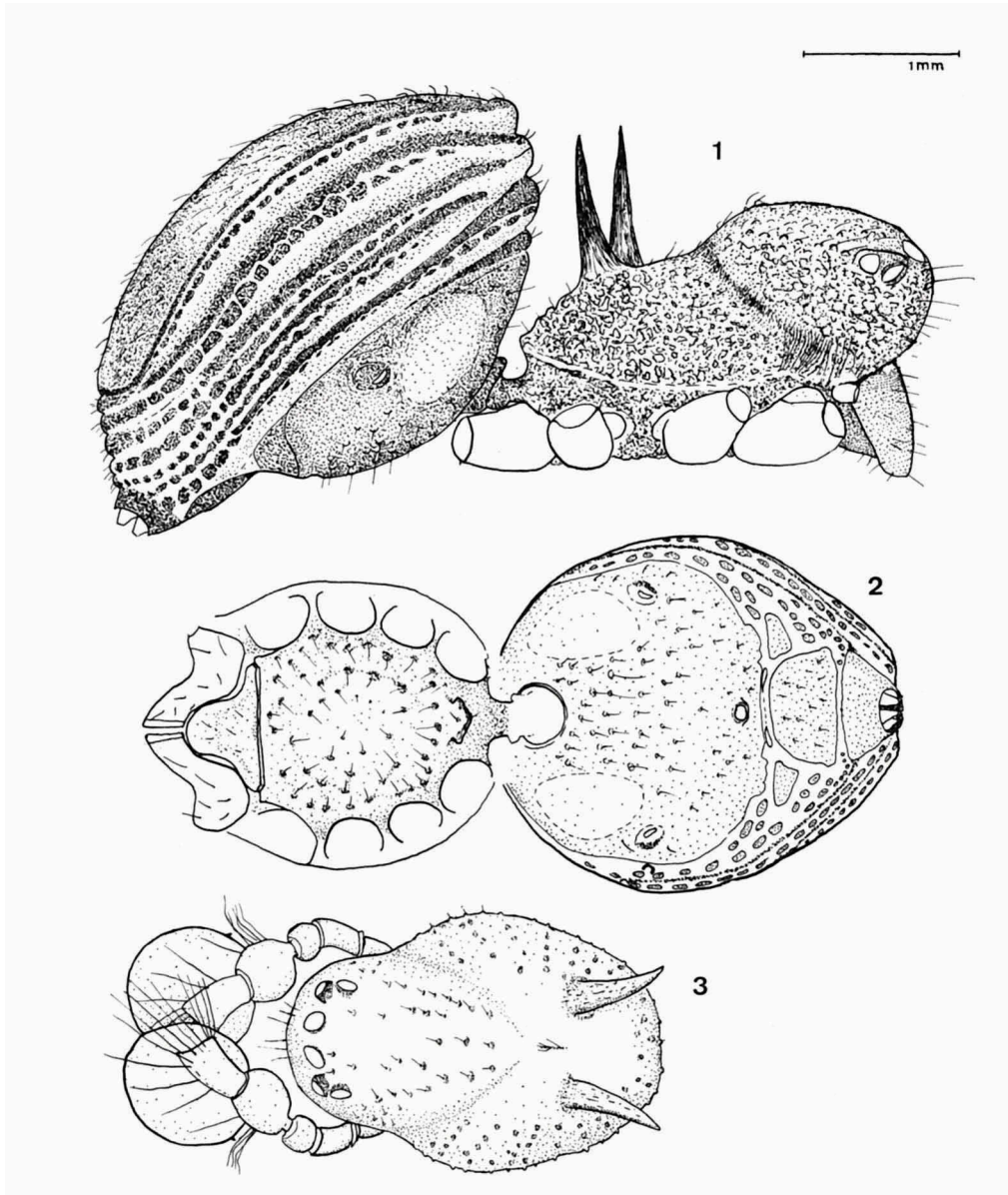
#### DESCRIPTION OF NEW SPECIES

### **Paculla bernhardi** nov. spec. (figs. 1-6)

Material. — 1 ♂, holotype, 2 ♀, paratypes from Sepaku, 40 km NE of Balikpapan, Kalimantan (Borneo), in litter of mixed tropical forest, 14/15.vii.1979, leg. P. R. Deeleman. Holotype and 1 ♀ paratype in RMNH Leiden.

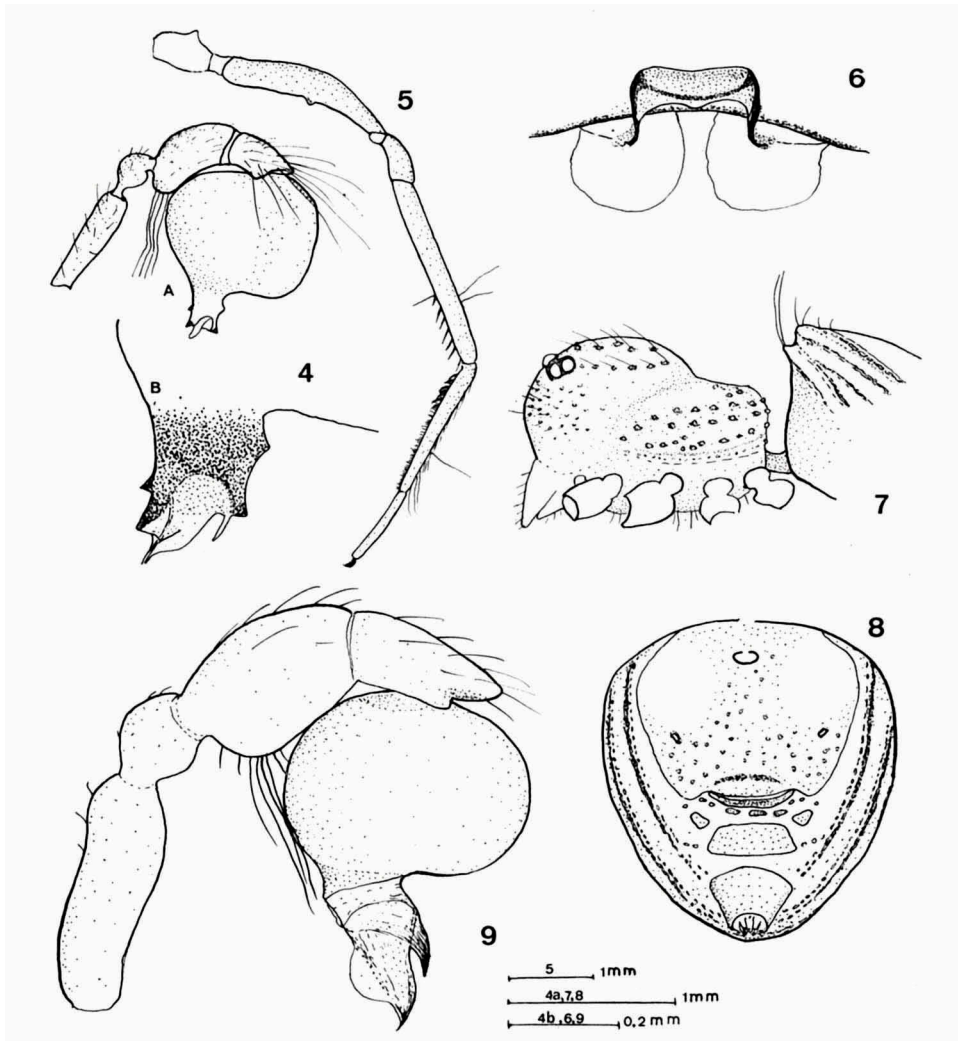
Diagnosis. — Characterized by the two strong dorsal spines on the thorax and the copulatory organs; coxae with dorsal projections.

Description. — ♀ (larger specimen, in mm): total length 6.00, cephalothorax 2.90 long, 1.92 wide, dorsal spine 1.06 long, clypeus 0.58; abdomen 3.89 long, 2.78 wide, dorsal scutum 3.36 long, ventral scutum (pulmonary plate) 2.40 long. Length of the other ♀: 5.28, cephalothorax 2.40 long and 1.78 wide. Sclerotized parts of the body very dark reddish brown, femora of the legs and tibiae and tarsi of the palps the same colour, other leg segments and palpal femora and patellae orange. Sculpture of cephalothorax, sternum and abdominal scuta typical for the family. Eyes as in fig. 3, anterior laterals prominent. Chelicerae with median lamina and three small, black, blunt teeth aligned medially around the base of the fang. Vertical sides of head with shallow striations. Spines on cephalothorax very strong and rigid, closer to each other than to the lateral margin of the thorax (figs. 1, 3). Leg I 10.58 mm long (0.82 - 0.24 - 2.89 - 0.82 - 2.64 - 2.16 - 1.01), leg II 8.92, leg III 7.73, leg IV 10.22, palp 1.97. Coxae of the four legs dorsally with a triangular projection (figs. 1, 5). Distal part of posterior metatarsi and tarsi densely clothed ventrally with plumose hairs. Postgenital plate as wide as preanal plate, but only one quarter of its length. Preanal plate as in the ♂ (fig. 2). Vulva (fig. 6) situated near the posterior margin of the pulmonary plate and opening behind the margin. It comprises an atrium, the ventral wall of which is lightly sclerotized and appears faintly through the tegument as a darker area. Dorso-posteriorly, the atrium is supported by an arched sclerite which is attached in its central part to the plate margin; on either side a partially sclerotized duct leads to a membranous sack.



Figs. 1-3. *Paculla bernhardi* n. sp. 1, ♀, lateral view; 2, ♂, ventral view; 3, ♂, cephalothorax and palps, dorsal view.

♂ holotype: total length 5.17 mm, cephalothorax 2.54 long, 1.92 wide, clypeus 0.62, dorsal spine 1.20; abdomen 3.26 long and 2.40 wide, dorsal scutum 3.07 long, ventral scutum (pulmonary plate) 2.40 long. Colour light greyish green (freshly moulted individual?); lung covers, patellae, tibiae, metatarsi, tarsi and bulb yellowish. Dorsal spines a little longer than in the ♀. Leg I modified (see fig. 5).



Figs. 4-6. *Paculla bernhardi* n. sp. 4, ♂, left palp, mesal view; 5, ♂, left leg I, mesal view; 6, ♀, vulva. Figs. 7-9. *Paculla inornata* n. sp. 7, ♂, lateral view; 8, ♀, abdomen, ventral view; 9, ♂, left palp, mesal view.

## Measurements of the legs (in mm)

	coxa	trochanter	femur	patella	tibia	meta- tarsus	tarsus	total
I	0.82	0.19	2.64	0.72	2.40	1.97	1.01	9.75
II	0.62	0.19	2.06	0.72	1.92	1.73	0.96	8.20
III	0.53	0.19	1.82	0.72	1.49	1.44	0.67	6.86
IV	0.62	0.24	2.54	0.72	2.40	2.21	0.82	9.55
palp			0.72	0.29	0.58		0.43	2.02

Palp: see fig. 4. Postgenital plate much smaller than in the ♀, divided in the middle (fig. 2).

With pleasure I dedicate this beautiful species to His Highness Prince Bernhard of the Netherlands, in recognition of his merits in Nature Conservancy.

***Paculla inornata*** nov. spec. (figs. 7-9)

Material. — 1 ♂, holotype, and 1 ♂ and 1 ♀ paratypes, Tuaran, Sabah (Malaysian Borneo), ca. 500 m, by sieving leaf-litter in *Hevea* plantation surrounded by secondary forest, 1.vii.1979, leg. P. R. Deeleman and C. L. Deeleman. Holotype and ♀ paratype deposited in RMNH Leiden.

Diagnosis. — A small species without spines or tubercles on the thorax.

♂: no teeth or spines on leg I, but metatarsus I concave; ♀ distinguishable by the small postgenital plate.

Description. — ♀: total length 3.84 mm, cephalothorax 1.68 long, 1.30 wide, clypeus 0.38; abdomen 2.16 long and 1.87 wide, dorsal scutum 2.16 long, ventral scutum 1.58. Sclerotized body parts and leg femora nearly black, other leg segments lighter, patellae lightest. Head moderately elevated, without prominent striations (fig. 7), in lateral view the thorax is almost straight dorsally, falling down behind almost vertically. Anterior median eyes 0.11 mm. Chelicerae and sculpture as in *P. bernhardi*. Leg I 6.27 mm (0.53 - 0.17 - 1.73 - 0.48 - 1.44 - 1.20 - 0.72), leg II 5.42, leg III 4.64, leg IV 6.06, palp 1.26. Postgenital plate rather narrow (fig. 8), not much wider than half the width of the pulmonary plate, between it and the preanal plate are three transverse, sclerotized spots. Vulva not examined, possibly of the type of *P. bernhardi* and *P. kraui*.

♂ holotype: total length 3.46 mm, cephalothorax 1.68 long and 1.15 wide, clypeus 0.38; abdomen 2.21 long and 1.58 wide, dorsal scutum 1.92 long, ventral scutum (pulmonary plate) 1.20 long. Non-genital characters as the ♀, but postgenital plate smaller, reduced to a narrow strip and sclerotized spots absent.

## Leg measurements (in mm)

	coxa	trochanter	femur	patella	tibia	meta-tarsus	tarsus	total
I	0.53	0.19	1.73	0.53	1.44	0.96	0.67	6.05
II	0.43	0.19	1.44	0.48	1.15	0.93	0.53	5.15
III	0.29	0.19	1.20	0.38	0.91	0.77	0.58	4.32
IV	0.41	0.19	1.70	0.47	1.44	1.20	0.67	6.08
palp			0.38	0.24	0.34		0.35	1.31

Palp, see fig. 9. First pair of legs devoid of spines and teeth, metatarsus I concave, ventrally densely clothed with very short thin hairs with flexed tips.

Note. — A field note was made, saying that the ♀, when captured, was carrying an egg-sack in her chelicerae. The sack contains 5 eggs with an average diameter of 0.80 mm.

**Sabahya kinabaluana** nov. spec. (figs. 10-13)

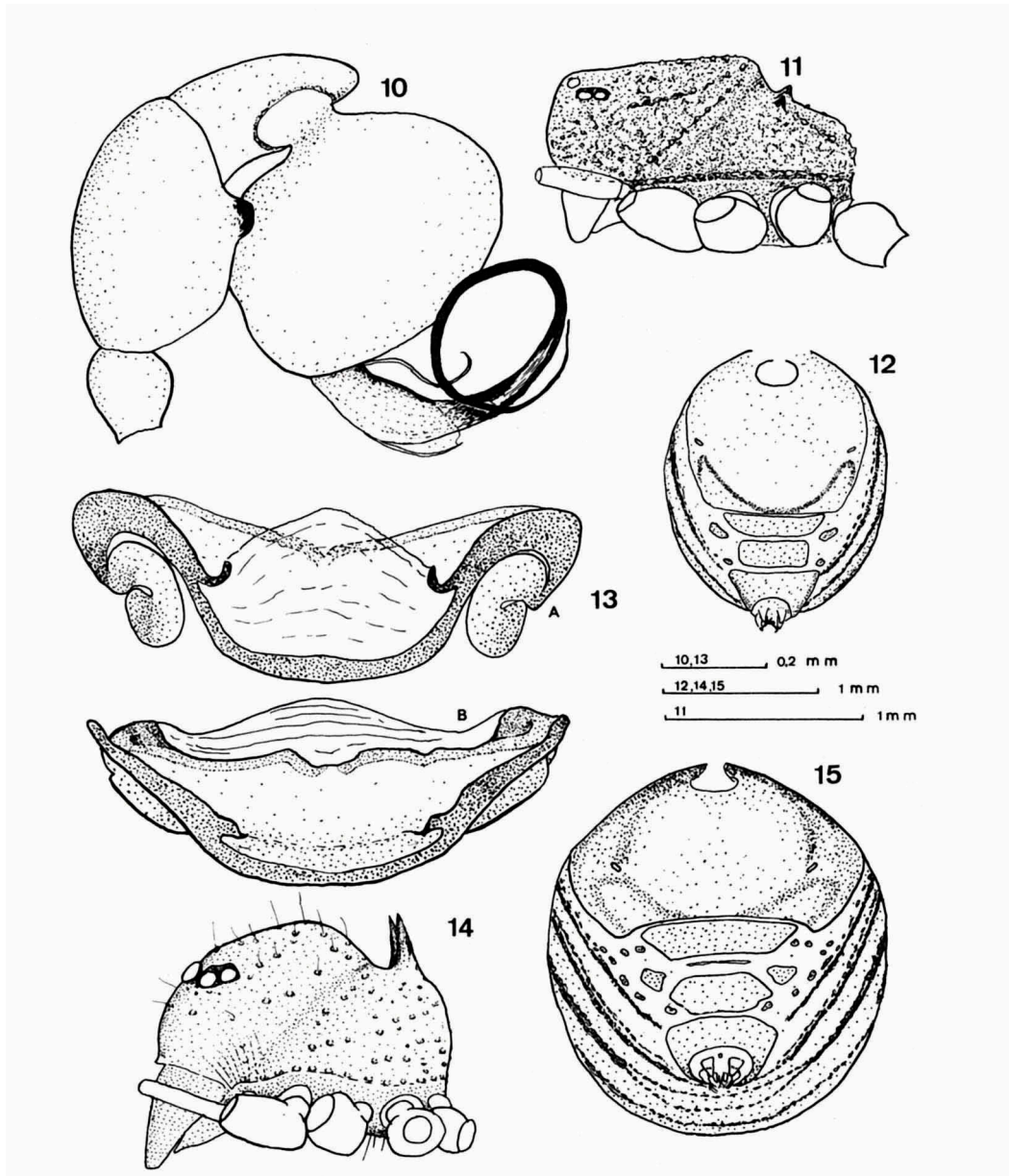
Material. — 1 ♂, holotype, 1 ♂ and 8 ♀ paratypes from National Park Kinabalu, Sabah (Malaysian Borneo), Head Quarters at 1550 m, in litter of mixed tropical rain-forest, 26/30.vi.1979, leg. P. R. Deeleman and C. L. Deeleman; 1 subad. ♂, id., 1600 m, 29.vi.1979, leg. G. Perrault. ♂ holotype and 2 ♀ paratypes in RMNH Leiden.

Diagnosis. — A small species with a paired conical protuberance on the thorax. Male with long coiled embolus, vulva large, in the shape of a wide V.

Description. — ♀: total length 3.46 mm, cephalothorax 1.68 long and 1.25 wide, clypeus 0.50; abdomen 2.16 long and 1.68 wide, dorsal scutum 1.92 long, ventral scutum (pulmonary plate) 1.34 long. Sclerotized parts of the body dark reddish brown — some specimens are nearly black — legs the same colour but for the much lighter patellae; tibiae somewhat lighter toward their apex; femur and palpal patella also light. Head dorsally flattened (fig. 11), eyes about by one quarter smaller than in *inornata*, no distinct ridges on the sides of the head. In lateral view, the thorax slopes steeply down behind. Chelicerae as in *bernhardi*. Leg I 5.61 mm long (0.53 - 0.19 - 1.68 - 0.48 - 1.20 - 0.91 - 0.62), leg II 4.70, leg III 3.94, leg IV 5.28, palp 1.34. Distal parts of posterior metatarsi and tarsi ventrally clothed with partly plumose hairs. Preanal plate clearly narrower than anal plate and a little more than half the width of the postgenital plate (fig. 12). Genital area bulging, vulva (figs. 13a and b) very large, occupying nearly the full breadth of the pulmonary plate, appearing through the tegument as a dark, paired sling, the height of which is at least twice that of the postgenital plate. It consists of a wide atrium and a pair of sclerotized ducts leading to coiled receptacula.

♂ holotype: total length 2.98 mm, cephalothorax 1.45 long and 1.20 wide, clypeus 0.38; abdomen 1.78 long and 1.34 wide. Nonsexual characters as in the ♀.





Figs. 10-13. *Sabahya kinabaluana* n. sp. 10, ♂, left palp, mesal view; 11, ♂, cephalothorax, lateral view; 12, ♀, abdomen, ventral view; 13, a, ♀, vulva, ventral view; b, id., antero-ventral view. Figs. 14-15. *Sabahya bispinosa* n. sp. 14, ♀, cephalothorax, lateral view; 15, ♀, abdomen, ventral view.

## Leg measurements (in mm)

	coxa	trochanter	femur	patella	tibia	meta-tarsus	tarsus	total
I	0.48	0.17	1.44	0.48	1.10	0.77	0.62	5.06
II	0.34	0.17	1.10	0.38	0.91	0.72	0.53	4.15
III	0.29	0.17	0.96	0.33	0.72	0.72	0.48	3.67
IV	0.34	0.17	1.25	0.38	1.10	0.96	0.48	4.68
palp			0.48	0.24	0.43		0.29	1.44

Femur I slightly inflated, tibia I with 8-10 procline teeth on the distal part of the ventral surface, metatarsus I proximo-ventrally with 8-12 spines, distalwards diminishing gradually in size. Palp, fig. 10; tibia bearing mesally a black knob. The embolus consists of a broad basal segment, partly membranous, partly sclerotized, from whose base emerges a small, thread-like, flexible "conductor", and a distal, circularly coiled part. The postgenital plate is much reduced, constricted in the middle or divided into two small strips; preanal plate as in the ♀.

**Sabahya bispinosa** nov. spec. (figs. 14, 15)

Material. — 1 ♀ holotype from National Park Kinabalu, Sabah (Malaysian Borneo), Head Quarters at 1550 m, by sieving leaf-litter on side of road, 27.vi.1979, leg. P. R. Deeleman and C. L. Deeleman. Holotype in the RMNH Leiden.

Diagnosis. — Medium-sized species with a pair of moderately long spines on the thorax. Vulva sclerotized, as wide as the pulmonary plate, in the shape of a wide, rounded V.

Description. — ♀: total length 4.70 mm, cephalothorax 2.16 long, 1.68 wide, clypeus 0.48, dorsal spine 0.34; abdomen 2.90 long and 2.20 wide, dorsal scutum 2.64 long, ventral scutum (pulmonary plate) 2.06 long. Sclerotized bodyparts and appendages dark reddish brown, patellae and tibiae of legs and palpal femora and patellae lighter. Lateral eyes prominent, of about equal size as anterior median eyes, 0.15 mm in diameter. Head moderately arched (fig. 14), thorax in lateral view sloping steeply down behind; faint ridges present on the sides of the head. Dorsal spines straight, slightly procline.

## Leg measurements (in mm)

	coxa	trochanter	femur	patella	tibia	meta-tarsus	tarsus	total
I	0.72	0.19	2.02	0.62	1.68	1.39	0.72	7.34
II	0.58	0.19	1.73	0.62	1.39	1.20	0.67	6.38
III	0.48	0.19	1.44	0.53	1.10	1.15	0.62	5.51
IV	0.62	0.19	1.92	0.58	1.63	1.63	0.67	6.64
palp			0.62	0.19			0.67	1.82

Preanal plate hexangular (fig. 15), not much narrower than postgenital plate. Vulva not examined, probably similar to that of *S. kinabaluana*.

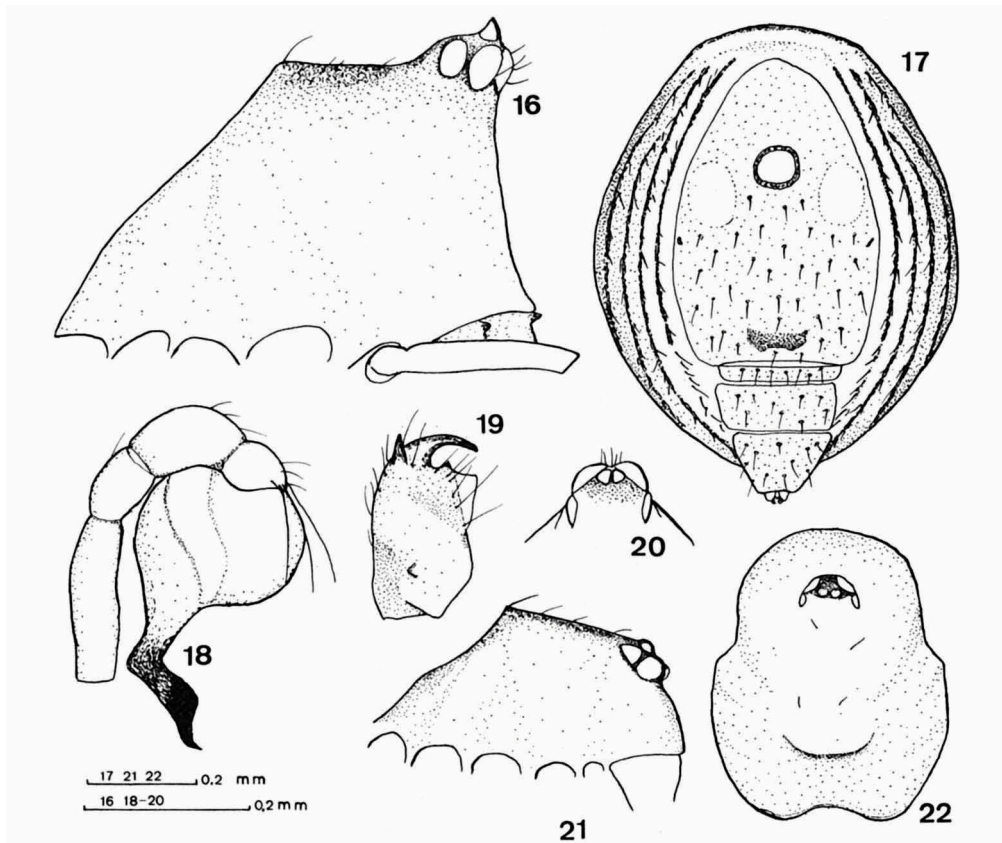
## TETRABLEMMIDAE O. Pickard-Cambridge

## BRIGNOLIELLINAE Shear

***Ablemma circumspectans* nov. spec.** (figs. 16-22)

**Material.** — 1 ♂, holotype, 2 ♂, 2 ♀ paratypes from National Park Kinabalu, Sabah (Malaysian Borneo), Head Quarters at 1550 m, by sieving leaf-litter of rainforest, 26-29.vi.1979, leg. P. R. Deeleman and C. L. Deeleman; 1 ♀, id., by sieving leaf-litter from grass, adjacent to the forest; 1 ♂, 1 ♀, id., 1700 m, from soil, 29.vi.1979, leg. G. Perrault. 2 ♂, 4 ♀, east of Tamparuli, Sabah, ca. 600 m, from *Hevea* plantation litter, surrounded by forest, 25 and 30.vi.1979, leg. P. R. Deeleman and C. L. Deeleman. 1 ♂, holotype, 2 ♀, paratypes in RMNH, Leiden.

**Diagnosis.** — ♂ cephalothorax raised to a flat plateau over which are towering six eyes in a compact group; ♀ with six eyes, the four larger ones arranged in an U-shaped arch, two smaller ones enclosed in the U. Male



Figs. 16-22. *Ablemma circumspectans* n. sp. 16, ♂, cephalothorax, lateral view; 17, ♀, abdomen, ventral view; 18, ♂, left palp, mesal view; 19, ♂, chelicera, anterior view; 20, ♀, eye region, dorsal view; 21, ♀, cephalothorax, lateral view; 22, ♀, id., dorsal view.

chelicerae with an apophysis on the lateral margin, near the base of the fang.

Description. — ♀ paratype: total length 1.23 mm, cephalothorax 0.55 long, 0.44 wide, clypeus 0.14; abdomen 0.70 long and 0.62 wide. Colour of sclerotized parts of the body bright orange, appendages yellow-orange, patellae light yellow. Cephalothorax and sternum finely granulated, dorsal and ventral abdominal plates with round, seta-bearing punctations. Six eyes, the four larger ones are arranged in a strongly backward curved arch (fig. 22), surrounding two smaller eyes. Head moderately raised with flat top (fig. 21). Leg I 1.39 mm long (0.14 - 0.05 - 0.38 - 0.15 - 0.27 - 0.19 - 0.21), leg II 1.32, leg III 1.16, leg IV 1.55, palp 0.31. Metatarsi I slightly shortened, shorter than tarsi I and metatarsi II. Ventral plates and genital region, see fig. 17.

♂ holotype: total length 1.16 mm, cephalothorax 0.55 long, 0.48 wide, clypeus 0.27, abdomen 0.64 long and 0.56 wide. Colour and sculpture as in the ♀, cephalothorax considerably higher than in the ♀, eyes six in a compact group situated on a bulge on the anterior edge of the cephalic plateau (figs. 16, 20); anterior eyes the largest, posterior medians the smallest; anterior medians compose with the laterals a U-shaped arch, the posterior medians contiguous, triangular and projected upward, closely set between and above the anterior medians. Chelicerae modified (fig. 19) with a bulge in front bearing a small tooth; an apophysis projects on the lateral margin near the base of the fang.

Leg measurements of the ♂ holotype (in mm)

	coxa	trochanter	femur	patella	tibia	meta- tarsus	tarsus	total
I	0.14	0.04	0.43	0.14	0.34	0.21	0.22	1.52
II	0.12	0.04	0.41	0.12	0.27	0.21	0.21	1.38
III	0.10	0.04	0.37	0.12	0.21	0.22	0.21	1.27
IV	0.14	0.04	0.41	0.14	0.34	0.26	0.21	1.54
palp			0.21	0.07	0.14		0.06	0.48

Tarsi I inflated proximally, ventral surface densely clothed with short setae. Palp typical for the genus (fig. 18). Postgenital plate as in the ♀ or slightly shorter.

Note. — The specimens taken at the lower locality, at the foot of Mount Kinabalu (Tamparuli), differ in size from those of the type locality. A ♂ from Tamparuli has a total length of 0.87 mm, cephalothorax 0.41 mm long and 0.28 mm wide, clypeus 0.19 mm, abdomen 0.45 mm long and 0.45 mm wide; a ♀ measures 0.96 mm, cephalothorax 0.43 mm long and 0.34 mm wide, clypeus 0.10 mm, abdomen 0.53 mm long and 0.48 mm wide. In other respects they conform with the specimens from the Head Quarters of the National Park Kinabalu.

**Borneomma** nov. gen.

Type species: *Borneomma roberti* nov. spec.

Diagnosis. — Near *Brignoliella* Shear and *Pahanga* Shear, but cephalothorax more elevated in both sexes. Male palp: bulb with both embolus and apophysis; clypeus without apophysis. Female genital organ opening through the pulmonary plate by a transverse slit; depressions on preanal plate present.

Description. — Surface of cephalothorax, sternum and chelicerae as in *Brignoliella*. Cephalothorax in both sexes raised into a plateau, which posteriorly falls down vertically. Eyes six in three pairs in a recurved row at the front of the cephalothorax. No apophyses on the male clypeus, though there may be a hump or boss. Male palp: femora with parallel sides, bulb provided with an apophysis, arising some distance from the embolus. Females with depressions on the preanal plate, which may be bordered by a ridge; genital pore opening through a slit in the pulmonary plate.

The genus differs from all the presently known Brignoliellinae by the possession of an apophysis on the bulb of the male palp and in the females by the slit-like pore in the pulmonary plate. It shares with *Brignoliella* and *Pahanga* the round punctations on the sternum and the pulmonary plate; equally, the cephalothorax is adorned with two parallel rows of seta-bearing nodules on top and a series of pustules on the lateral margins.

**Borneomma roberti** nov. spec. (figs. 23-27)

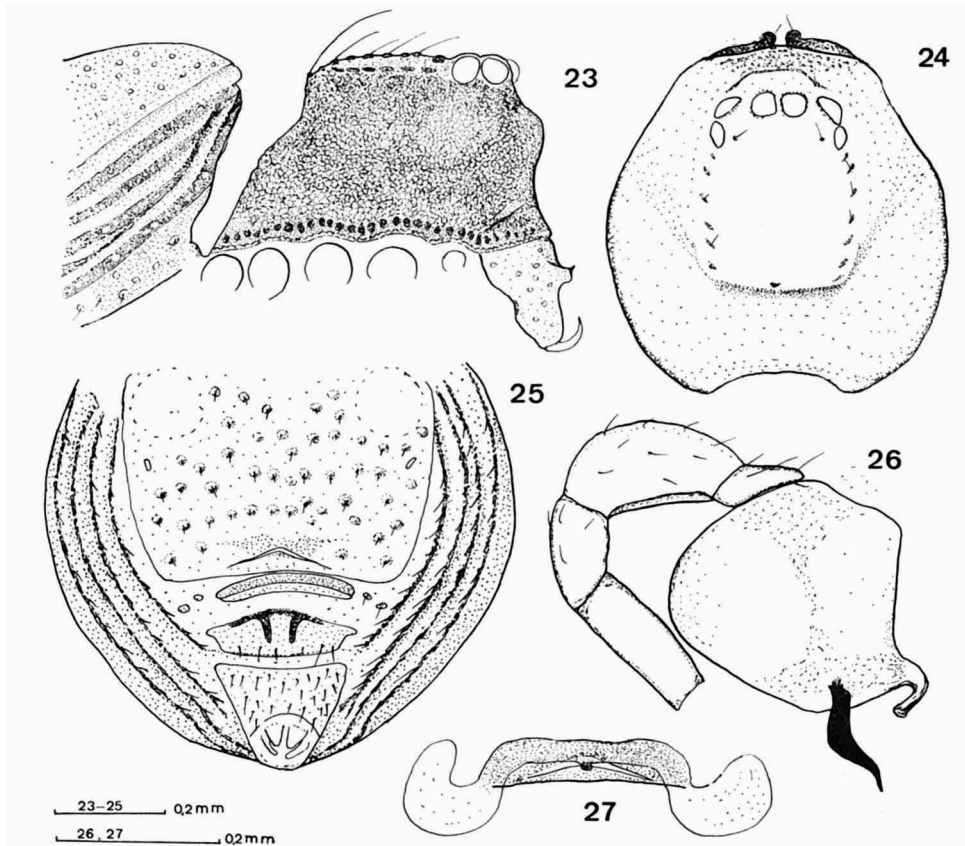
Material. — 1 ♂, holotype, 3 ♂, 3 ♀ paratypes from National Park Kinabalu, Sabah (Malaysian Borneo), Head Quarters at 1550 m, by sieving leaf-litter of rainforest, 26-29.vi.1979, leg. P. R. Deeleman and C. L. Deeleman. Holotype and 1 ♂ and 1 ♀ paratypes in RMNH Leiden.

Diagnosis. — Male clypeus with central bulge, palp with rounded-pentagonal bulb, embolus tubiform, flexed, a little smaller than the bulbal apophysis. Preanal plate in ♀ of characteristic shape and sculpture.

Description. — ♀: total length 1.40 mm, cephalothorax 0.64 long and 0.55 wide, clypeus 0.21; abdomen 0.82 long and 0.73 wide. Colour of sclerotized parts and legs dark reddish brown, patellae lighter. Ocular area at least half the width of the head, anterior median eyes slightly larger than the laterals. Leg I 1.65 mm (0.15 - 0.05 - 0.48 - 0.15 - 0.36 - 0.23 - 0.23), leg II 1.49, leg III 1.40, leg IV 1.74, palp 0.39. Ventral plates and vulva, figs. 25 and 27. In the middle of the vulva there is a conspicuous, dark-coloured little knob.

♂ holotype: total length 1.23 mm, cephalothorax 0.62 long, 0.59 wide, clypeus 0.27; abdomen 0.77 long, 0.68 wide. Colour and nonsexual charac-

ters as in the ♀; cephalothorax raised higher than in ♀; clypeus with a hump (figs. 23 and 24), chelicerae with a small, medially directed apophysis on the inner margin near the base.



Figs. 23-27. *Borneomma roberti* n. sp. 23, ♂, lateral view; 24, ♂, cephalothorax, dorsal view; 25, ♀, abdomen, ventral view; 26, ♂, left palp, mesal view; 27, ♀, vulva, dorsal view.

#### Leg measurements (in mm)

	coxa	trochanter	femur	patella	tibia	meta-tarsus	tarsus	total
I	0.17	0.04	0.48	0.15	0.36	0.21	0.23	1.64
II	0.16	0.04	0.41	0.15	0.27	0.22	0.23	1.48
III	0.12	0.04	0.34	0.15	0.26	0.23	0.18	1.32
IV	0.14	0.04	0.48	0.15	0.38	0.29	0.22	1.70
palp			0.21	0.14	0.21		0.10	0.66

Anterior metatarsi shortened, anterior tarsi inflated, particularly tarsi I. Palp, fig. 26; femora cylindrical, straight. Postgenital plate straight, not

arched as in the ♀, anterior margin of preanal plate nearly straight, impressions and ridges lacking.

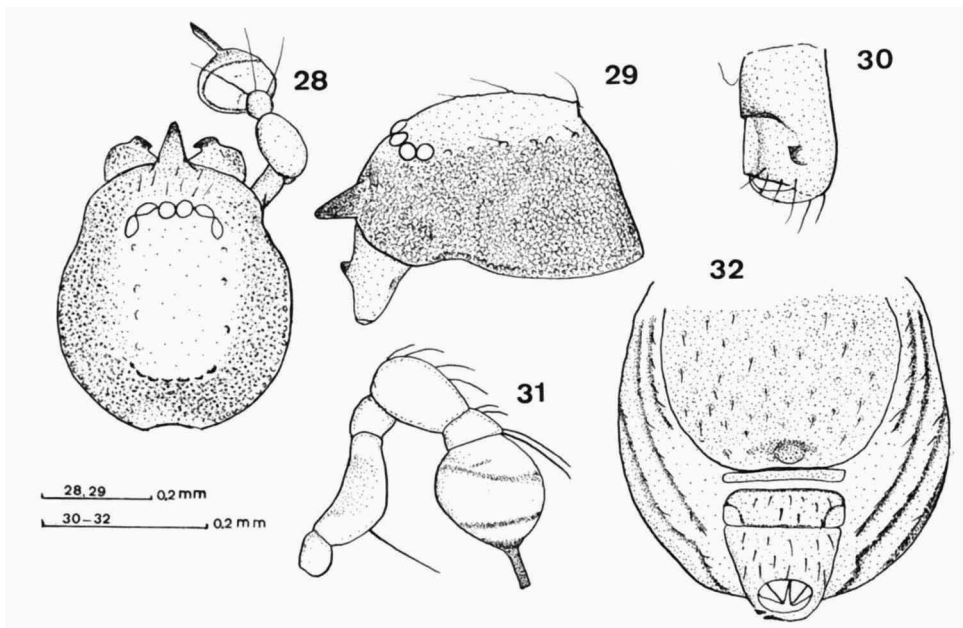
I dedicate this species to my husband, devoted and expert collector of spiders and organiser of family expeditions.

Through the courtesy of Dr. L. van der Hammen of the Leiden Museum of Natural History, who held at my disposal the material he collected during his New Guinea trip 1953/54, the following description of a new species of *Brignoliella* can be given below.

***Brignoliella delphina* nov. spec. (figs. 28-32)**

Material. — 1 ♂, holotype, 2 ♀, paratypes from Jayapura (formerly Hollandia), West Irian (New Guinea), in litter behind dock V on serpentine, 6.i.1954 (L17); 1 ♂ paratype, id., in litter in small forest on laterite, 15.xii.1953 (L2); 2 ♀, 1 juv., in forest litter behind camp by river Nubai on serpentine, 2.ii.1954 (L39 and L40), all leg. L. van der Hammen. All material in RMNH Leiden.

Diagnosis. — ♀ paratype (L17): total length 1.04 mm, cephalothorax 0.52 long and 0.41 wide, clypeus 0.08; abdomen 0.62 long and 0.52 wide. Colour dark orange, legs yellow, patellae lightest. Sternum and dorsal and



Figs. 28-32. *Brignoliella delphina* n. sp. 28, ♂, cephalothorax and right palp, dorsal view; 29, ♂, cephalothorax, lateral view; 30, ♂, left chelicer, anterior view; 31, ♂, left palp, mesal view; 32, ♀, abdomen, ventral view.

ventral scuta with round punctations. Leg I 1.10 mm (0.11 - 0.04 - 0.29 - 0.12 - 0.21 - 0.15 - 0.18), leg II 1.03, leg III 0.94, leg IV 1.20, palp 0.25. Metatarsi I and II shortened, tarsi slightly inflated. Depressions on preanal plate rimmed with chitinous ridges (fig. 32), genital area fig. 32, genital pore opening into an ill-defined round area.

♂ holotype: (L17): total length 1.08 mm, cephalothorax 0.55 long, 0.44 wide, clypeus 0.14; abdomen 0.66 long and 0.51 wide. Differences with the ♀ are the presence of a single triangular horn on the clypeus, inserted near the lower margin of the clypeus (figs. 28, 29), the more elevated cephalothorax and the small apophysis on the anterior surface of the chelicerae (fig. 30).

Leg measurements (in mm)

	coxa	trochanter	femur	patella	tibia	meta-tarsus	tarsus	total
I	0.11	0.05	0.34	0.14	0.22	0.15	0.18	1.19
II	0.10	0.05	0.30	0.12	0.24	0.21	0.18	1.20
III	0.09	0.05	0.24	0.11	0.17	0.17	0.15	0.98
IV	0.10	0.05	0.30	0.12	0.24	0.21	0.18	1.20
palp			0.14	0.06	0.12		0.05	0.37

Palp, fig. 31; bulb longer than wide. Postgenital plate longer than in the ♀, about the same size as the preanal plate.

Note. — The ♀ from localities L39 and L40 by the Nubai river (about 5 km from the type locality) differ from the typical ♀ in that the depressions on the preanal plate are larger and closer to each other.

**Brignoliella bicornis** (Simon) (figs. 33-35)

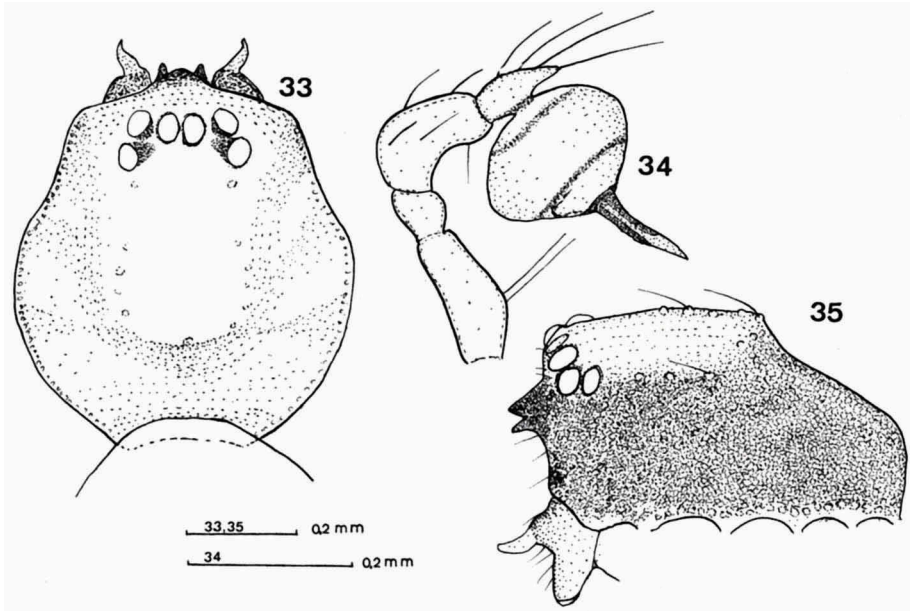
*Paculla bicornis* Simon, 1893: 26.

This species, described from Manila, as far as I know has never been figured. Below are given some figures and measurements of a ♂, collected in the Quezon National Park, Lucena, Luzon, about 160 km by road from Manila. I compared it with material from the Simon collection and found no differences, except in colour, which might be attributed to the different age of the material.

Material. — 1 ♂, Quezon National Park, Philippines, by sieving leaf-litter between 50 and 100 m, 12.x.1979, leg. P. R. Deeleman.

Description. — Total length 1.37 mm, cephalothorax 0.68 long, 0.54 wide, clypeus 0.14; abdomen 0.82 long, 0.66 wide. Sclerotized parts of body and legs orange brown, patellae and palps lighter. Cephalothorax, sternum and





Figs. 33-35. *Brignoliella bicornis* (Simon). 33, ♂, cephalothorax, dorsal view; 34, ♂, left palp, mesal view; 35, ♂, cephalothorax, lateral view.

abdominal plates with round punctations. Two little horns arise from the clypeus about halfway between the eyes and the lower margin. Chelicerae with a spurlike, transparent and flexible apophysis on top of the cheliceral boss (figs. 33, 35).

#### Leg measurements (in mm)

	coxa	trochanter	femur	patella	tibia	meta-tarsus	tarsus	total
I	0.18	0.04	0.51	0.17	0.36	0.27	0.23	1.76
II	0.15	0.04	0.41	0.15	0.33	0.25	0.22	1.55
III	0.11	0.04	0.36	0.14	0.27	0.24	0.21	1.31
IV	0.14	0.04	0.44	0.17	0.38	0.33	0.24	1.74
palp			0.17	0.08	0.15		0.24	0.64

Tarsi scarcely inflated, metatarsi not shortened. Preanal plate twice as long as the postgenital plate and a little wider. Palp, see fig. 34.

#### SUMMARY

Four new species of Pacullidae are described from Borneo, two of which are assigned to the new genus *Sabahya*. Descriptions are given of *Paculla bernhardi* (♂ and ♀), *P. inornata* (♂ and ♀), *Sabahya kinabaluana* (♂ and ♀).

♀) and *S. bispinosa* (♀). *Sabahya* differs from *Paculla* mainly in the genital organs: the male palpal tibia bears an apophysis, the embolus is long and coiled, the vulva is wide and sclerotized, the ♀ postgenital plate is large.

In the Tetrablemmidae, three new species are described, for one of which the new genus *Borneomma* is erected. *Borneomma* is distinguished from *Brignoliella* Shear and *Pahanga* Shear by the possession of a strong apophysis on the bulb; the female genital organ opens through a transverse slit in the pulmonary plate. Descriptions are given of *Ablemma circumspectans* (♂ and ♀) and *Borneomma roberti* (♂ and ♀) from Sabah, Borneo, *Brignoliella delphina* (♂ and ♀) from West Irian (New Guinea) and *Brignoliella bicornis* (Simon) (♂) from the Philippines.

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