

New Neotropical pseudoscorpions (Pseudoscorpiones) from Aruba, Trinidad and Saba (Lesser Antilles), with some new localities of pseudoscorpions from Aruba and Bonaire

D. van den Tooren

Tooren, D. van den. New Neotropical pseudoscorpions (Pseudoscorpiones) from Aruba, Trinidad and Saba (Lesser Antilles), with some new localities of pseudoscorpions from Aruba and Bonaire.

Zool. Med., Leiden 82 (40), 20.vi.2008: 423-440, figs 1-8. — ISSN 0024-0672.

D. van den Tooren, Van de Geerstraat 6, 4021 BX Maurik, Netherlands.

Key words: Pseudoscorpions; Olpiidae; *Pachyolpium arubense arubense*; *Pachyolpium arubense variabile*; *Aphelolpium scitulum*; Chernetidae; *Pachychernes corticalis* spec. nov.; *Corticochernes sabae* gen. et spec. nov.; Atemnidae; *Trinidademnus separatus* gen. et spec. nov.; Aruba; Bonaire; Trinidad; Saba.

Three new species are described: *Pachychernes corticalis* spec. nov. from Aruba, *Corticochernes sabae* gen. et spec. nov. from Saba and *Trinidademnus separatus* gen. et spec. nov. from Trinidad. Some new localities are reported of *Pachyolpium arubense arubense* Beier, 1936, *Pachyolpium arubense variabile* van den Tooren, 2002 and *Aphelolpium scitulum* Hoff, 1964.

Introduction

This paper deals with an interesting collection of pseudoscorpions from Aruba, Bonaire, Trinidad and Saba, gathered by Dr R.H. Cobben in 1957, consigned to the late Dr P. Wagnenaar Hummelinck and now deposited in the National Museum of Natural History (Naturalis), Leiden.

Methods

Unfortunately, the material collected in 1957 by Dr R.H. Cobben was partly in a very poor condition because of the provisional mounting on slides of the entire specimens in a water dissolved medium that did not entirely hold on. Therefore, the specimens are soaked off in aqua destillata, dissected and, as the material was not good enough for KOH treatment, first studied from temporary mounts in glycerine and after transferred to alcohol 70% and then remounted in Canada balsam.

Measurements are in mm, ratios and counts with mean values in italics, specimen/slide numbers and aberrant data in parentheses. L = length, W = width, D = depth, T = tactile seta, PT = pseudo-tactile seta (on body), pt = pseudo-tactile seta (on palpal segments) Abbreviations used to indicate trichobothria on palpal fingers (Chamberlin, 1931: 138): movable finger (exterior surface): *t* = terminal, *st* = subterminal, *sb* = subbasal, *b* = basal; fixed finger (exterior surface): *et* = exterior terminal, *est* = exterior subterminal, *esb* = exterior subbasal, *eb* = exterior basal; fixed finger (interior surface): *it* = interior terminal, *ist* = interior subterminal, *isb* = interior subbasal, *ib* = interior basal.

Systematics

Family Olpiidae Chamberlin, 1930

Diagnosis (emended by Harvey, 1992: 1397-1398).— Carapace and abdomen sub-

rectangular; eyes situated near anterior margin of carapace; pseudosternum absent; movable cheliceral finger with 1-2 subapical teeth; *gs* (galeal seta) subdistal; serrula exterior attached entire length; chelicera with velum and lamina exterior (lost in some ophiids); one or both chelal fingers with venom apparatus; trichobothrium *xs* (subdistal accessory tactile seta on palpal fixed finger) absent; palpal femur with 1-2 trichobothria, usually in basal half; spermathecae absent.

Pachyolpium arubense arubense Beier, 1936

Material. — **Bonaire** (alc.): Rooi Hoeba, 22.v.1957, 2 ♂♂ (7, 10); Lake Goto, 26.v.1957, 4 ♂♂ (15-18), behind bark of *Capparis cynophallofera*.

Pachyolpium arubense variabile van den Tooren, 2002

Material. — **Aruba** (alc.): Palm Beach, 17.v.1957, 1 specimen, behind bark of *Prosopis juliflora*; Jatoe Bacón (slide), 11.v.1957, 1 ♂ (6), behind bark of fence-pole.

Aphelolpium scitulum Hoff, 1964

Material. — **Bonaire**, Rooi Hoeba (alc.), 22.v.1957, 1 ♂ + 1 ♀ (8-9); Dos Poos, Lake Goto (slide), 26.v.1957, 2 ♂♂ + 1 ♀ (11-13), underneath stones; Lake Goto (slide), 26.v.1957, 1 ♂ (14), underneath stone just along water-side.

Family Chernetidae Menge, 1855

Diagnosis (emended by Harvey, 1992: 1397-1398). — Carapace and abdomen subrectangular; eyes situated near anterior margin of carapace; pseudosternum absent; movable cheliceral finger with 1-2 subapical teeth; *gs* (galeal seta) subdistal; serrula exterior attached entire length; chelicera without velum or lamina exterior; venom apparatus generally present in palpal movable finger only; chelal fingers normally with at least one accessory tooth; trichobothrium *xs* (subdistal accessory tactile seta on fixed palpal finger) absent; palpal femur without trichobothria in basal half; femur/patella I and II junction oblique; tarse with proximal raised slit sensillum; male sternites without discrete patches of sensory setae; males without coxal sacs or ram's horn organs; spermathecae present.

Subfamily Chernetinae Beier, 1932

Diagnosis (after Beier, 1932: 81). — Posterior margin of carapax straight or a little rounded, not protruding angular around midline. Chetae on body and pedipalp short, dentate or clavate. No pseudo-tactile setae on palpal femur, tibia and hand. Tactile seta on tarsus IV near midpoint, either proximal or distal to midpoint.

Genus *Pachychernes* Beier, 1932

Diagnosis (after Beier, 1932: 106-107). — Carapace longer than wide, finely granulated and without transverse furrows. Eye-spots present. Flagellum on chelicera con-

sists of three setae. Pedipalps very thick-set. Male palpal hand medially weakly excavated. Tergites divided, finely granulated. Trichobothria *isb*, *ib*, *ist* and *it* on palpal fixed finger joined in a group near finger base and not associated with remaining trichobothria. Venom apparatus in palpal movable finger only (nodus ramosus somewhat distad of trichobothrium *t*). Both palpal fingers with several lateral accessory teeth and 2 or more medial accessory teeth. Exterior side of male tibia and tarsus of leg I supplied with a row of closely together inserted long setae forming a brush. Tactile seta on tarsus IV a little proximal to midpoint. Spermathecae H-shaped with 4 lobes.

Pachychernes corticalis spec. nov.
(figs 1-4)

Material. — **Aruba**, Hofje San José, Palmbeach, behind bark of *Prosopis juliflora*, 17.iv.1957: 1 ♂ (3) + 1 ♀ (4); same, 18.iv.1957: 2 ♀♀ (1, 2 (body lost)).

Diagnosis. — This species is characterized by the ratio palpal hand length (without pedicel) / patella length (in ♂: 1.01, in ♀: 1.01-1.09); the length/width ratio of palpal femur (in ♂: 1.96, in ♀: 2.02-2.12); and the length/width ratio of palpal patella (in ♂: 1.96, in ♀: 1.83-1.94).

Description: ♂ (description based on the holotype (3)).

Body. — Light scarlet orange, pedipalps dark scarlet orange, and legs and chelicera palish orange, L. 3.42.

Carapace. — Moderately granulated; L 1.07, greatest W 1.08, L/W 0.98; anterior margin with 2, posterior margin with about 6 setae on both sides of median line. Abdomen: dermal structure of tergal scuta consists of closely together standing transversal rugose ridges; chaetotaxy of tergites and sternites not ascertainable.

Chelicera (figs 1a-b). — 0.35/0.18, L/W 1.99; movable finger L 0.245; galea L 0.06, with 5 lateral rami of different length in distal half; apical tooth of fixed finger with 3 marginal minute knobs, followed by 4 retroconical teeth on inner margin of finger; lamina exterior present; movable finger with a flat subapical lobe; serrula exterior with 23 ligulate blades, posterior one longest, more acute and of thorny shape; flagellum consisting of 3 spiny setae, anterior most one longest (0.09) with 8 small thorns along anterior margin in distal two-third, length continuous ones respectively 0.08 and 0.07. Chaetotaxy: 5 setae on exterior surface of hand and 1 near tip of movable finger.

Pedipalp (fig. 2a). — Very thick-set; granulated; medial side of palpal hand not excavated and not closely packed with long setae, but supplied with distinct scattered tooth-shaped granules; trochanter 0.57/0.40, L/W 1.44; femur 0.97/0.495, L/W 1.96; patella 1.05/0.54, L/W 1.96; chela without pedicel 1.66/0.86, L/W 1.93; chela with pedicel 1.75/0.86, L/W 2.0; hand without pedicel 1.06/0.86, L/W 1.23; ratio hand without pedicel L / patella L 1.0; hand with pedicel 1.17/0.86, L/W 1.35; ratio hand with pedicel L / patella L 1.11; movable finger L 0.82, 0.77 × L hand without pedicel, and 0.74 × L hand with pedicel. Number of marginal teeth on palpal fingers not well-countable, but probably at least 60 teeth in both fixed - and movable finger. Fixed finger with 13 lateral accessory teeth, movable finger with 10 lateral accessory teeth. Medial accessory teeth are absent.

Fixed finger with all trichobothria except *et* within proximal half of finger L (arbitrarily considered equal to movable finger L). Distance trichobothria from base apical tooth on outside curve: *et* 0.27, *est* 0.57, *esb* 0.72, *eb* 0.74, *it* 0.48, *ist* 0.56, *isb* 0.64, and *ib* 0.665.

Movable finger with nodus ramosus somewhat distad of trichobothrium *t*, i.e. 0.36 from base apical tooth on outside curve; movable finger L 2.29 × venom duct L. Trichobothrium *t* about half-way finger L, remaining trichobothria within two-third finger L: *t* 0.41, *st* 0.63, *sb* 0.71 and *b* 0.73 from base apical tooth on outside curve.

First leg (figs 2b-c).— Ventral side of femur near proximal end and close to external margin with a long tactile seta; anterior side of patella closely packed with about 25 notable long setae forming a brush; also basal part of tarsus with a number of long setae on the anterior side; trochanter 0.19/0.175, L/D 1.10; femur 0.29/0.175, L/D 1.65; patella 0.52/0.23, L/D 2.31; femur + patella 0.67/0.23; L/D 2.98; tibia 0.42/0.09, L/D 4.46; tarsus 0.36/0.09, L/D 3.84; L claws 0.08, arolium L from base 0.06, and 0.75 × L claws.

Third leg (fourth leg missing) (fig. 2d, tarsus).— Trochanter 0.32/0.21, L/D 1.52; femur 0.34/0.21, L/D 1.63; patella 0.70/0.34, L/D 2.06; femur + patella 0.78/0.34, L/D 2.33; tibia 0.63/0.20, L/D 3.18; tarsus 0.40/0.12, L/D 3.29; distance tarsal tactile seta from base 0.18, i.e. a little proximad of midpoint tarsus length; ratio tarsus L / distance insertion of tactile sea to base tarsus: 2.24; L tarsal tactile seta 0.32; L claws 0.12; arolium L from base claws 0.09, and 0.76 × L claws.

Chaetotaxy and internal structure of male genital area (fig. 3a).— Counting of setae on anterior - and posterior operculum not practicable; along anterior lip of aperture 4 or 6 marginal setae and on face about 25 scattered setae on each side of median line; no setae perceptible on posterior lip of aperture with the exception of a median pair of short strongly curved thorny setae near the ultimate posterior part of the lip; a prominent cuticular almost circular frame with a deep open wedge-shaped anterior median sinus fading into a central apodeme on each side of median line, which expanded as a wing-like weakly sclerotized continuation to the lateral sides is present, as also a big dorsal long-armed apodeme reaching from the posterior side of the cuticular frame till the posterior part of the anterior operculum, and next a median solid rod with a bulb-shaped swollen base and on each side of top downwards bent to a broad spiny appendage.

Female: description based on 3 paratypes (1-2, 4).

Colour about as in male.

Body L 4.38 (2.93-6.14).

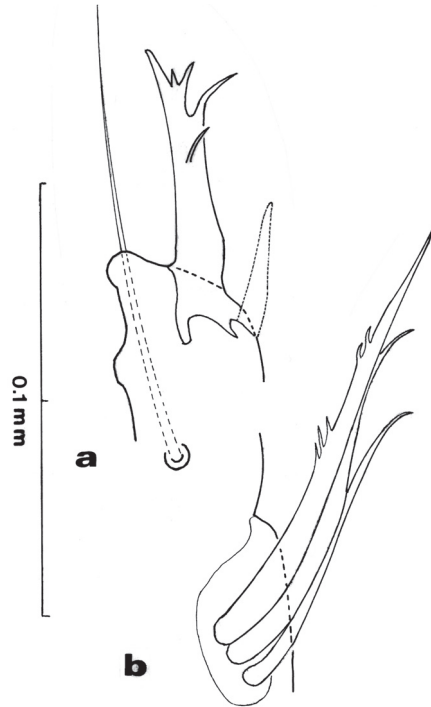


Fig. 1. *Pachychernes corticalis* spec. nov., holotype ♂ from Aruba (no. 3): (a-b). (a) Outer aspect of tip of right cheliceral movable finger showing sub-apical lobe, galeal seta, galea and anterior most blade of serrula exterior; (b) outer aspect of flagellum of right chelicera.

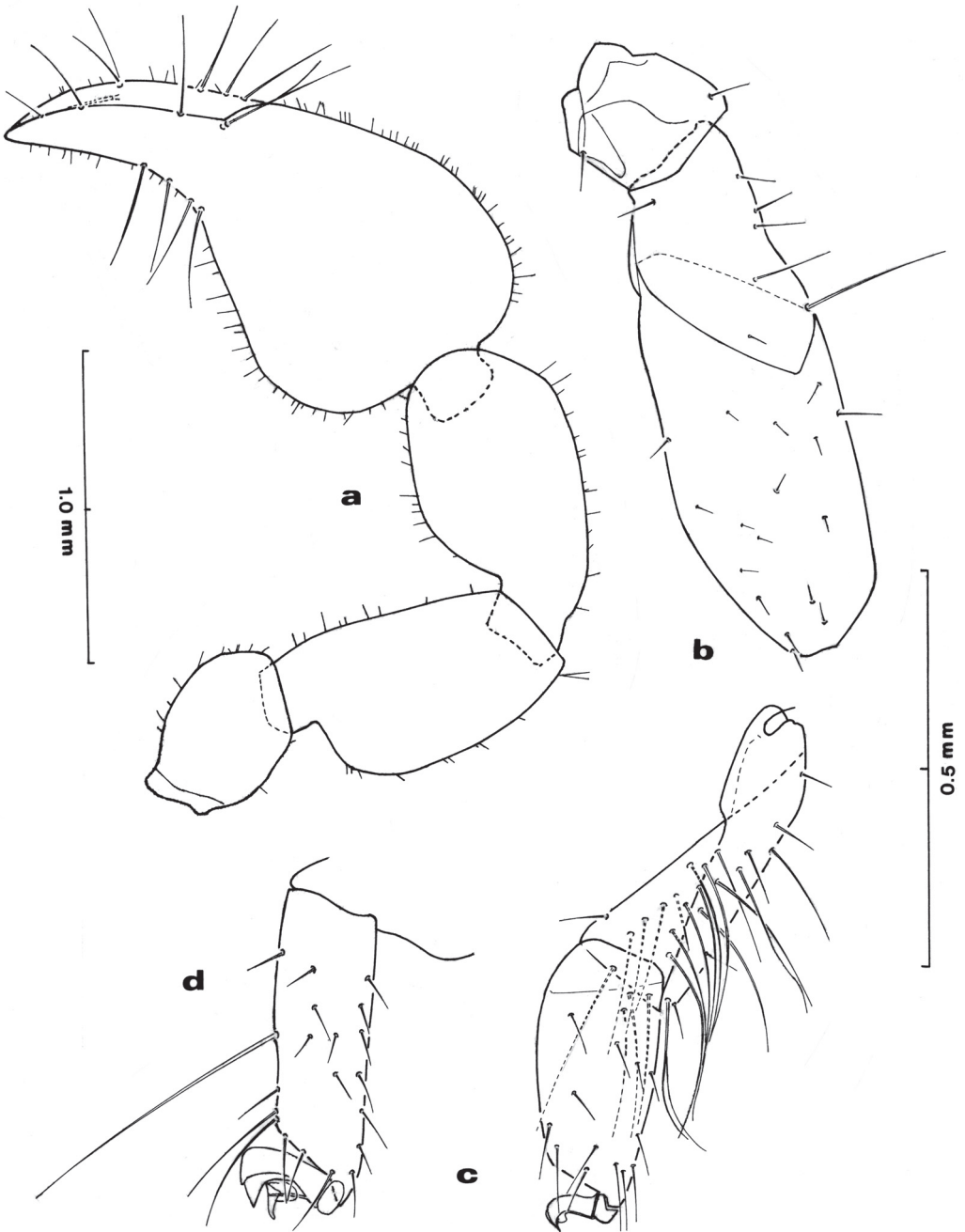


Fig. 2. *Pachychernes corticalis* spec. nov., holotype ♂ from Aruba (no. 3): (a-d). (a) Dorsal aspect of right pedipalp; (b) posterior aspect of trochanter and femur + patella of left leg I; (c) ventral aspect of tibia and tarsus of right leg I (part of tibia and entire tarsus turned 180°); (d) anterior aspect of tarsus of left leg III.

Carapace.— Granulation as in male, 1.24 (1.175-1.36) / greatest width 1.45 (1.28-1.725), L/W 0.86 (0.79-0.93); anterior margin with 3 setae and posterior margin with 6 setae on each side of midline.

Abdomen.— Dermal structure of tergal scuta about as in male; setae of tergites short, top slightly clavate, i.e. top more or less longitudinally ribbed; setae of sternites of different length, not clavated but with acuminate top; tergal chaetotaxy on each side of median line (I-XI) (1): 6/6: 6/6: 6/6: 6/6: 6/6: 8/7: 7/7: 7/7: 7/7: 5/7: PT5/PT5; sternal chaetotaxy on each side of midline (IV-XI) (1): 2/2: 8/8: 6/8: 8/9: 10/8: 8/9: 8/8: PT4PT3/3PT4PT.

Chelicera.— 0.37 (0.34-0.40)/0.19 (0.18-0.20), L/W 1.96 (1.87-2.07); movable finger L 0.27 (0.26-0.29); galea L 0.08 (0.07-0.09), with 6 or 7 finger-shaped lateral rami within distal half of finger L; apical tooth of fixed finger sclerotic with 3 very small saw-shaped knobs along the inner margin, followed by a very strong marginal non-sclerotic tooth and 4 small flattened marginal non-sclerotic teeth; movable finger without subapical lobe; serrula exterior with 26 blades, 24 of these of ligulate shape, anterior - and posterior most ones longer and of thorny shape; flagellum of 3 spiny setae, anterior most one 0.105-0.13 long with 8 small thorns along anterior margin in distal 2/3, continuous setae respectively 0.095, 0.10 and 0.09 long; chaetotaxy as in male.

Pedipalp.— Very thick-set, granulated: trochanter 0.62 (0.61-0.63)/0.40 (0.39-0.40), L/W 1.58 (1.57-1.59); femur 1.03 (1.03-1.045) /0.50 (0.49-0.52), L/W 2.07 (2.02-2.12); patella 1.01 (1.0-1.02)/0.54 (0.52-0.55), L/W 1.89 (1.83-1.94); chela without pedicel 1.72 (1.69-1.735)/0.71 (0.68-0.74), L/W 2.42 (2.35-2.51); chela with pedicel 1.79 (1.77-1.83)/0.71 (0.68-0.74), L/W 2.54 (2.48-2.61); hand without pedicel 1.05 (1.0-1.10)/0.71 (0.68-0.74), L/W 1.52 (1.48-1.56); ratio hand without pedicel L / patella L 1.06 (1.02-1.09); hand with pedicel 1.21 (1.20-1.23)/0.71 (0.68-0.74), L/W 1.69 (1.62-1.76); ratio hand with pedicel L / patella L 1.20 (1.18-1.22); movable finger L 0.80 (0.79-0.81), 0.74 (0.72-0.76) × L hand without pedicel and 0.66 (0.66-0.67) × L hand with pedicel. Fixed finger with about 66 marginal teeth, 11 or 12 lateral - and no medial accessory teeth, movable finger

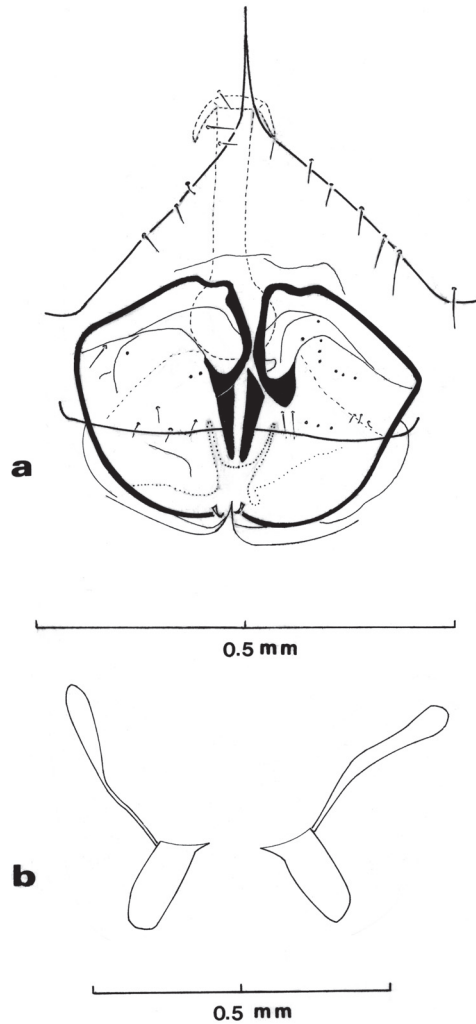


Fig. 3. *Pachychernes corticalis* spec. nov. from Aruba (a-b). (a) Ventral aspect of male genital area (no. 3); (b) female spermathecae of allotype (no. 1).

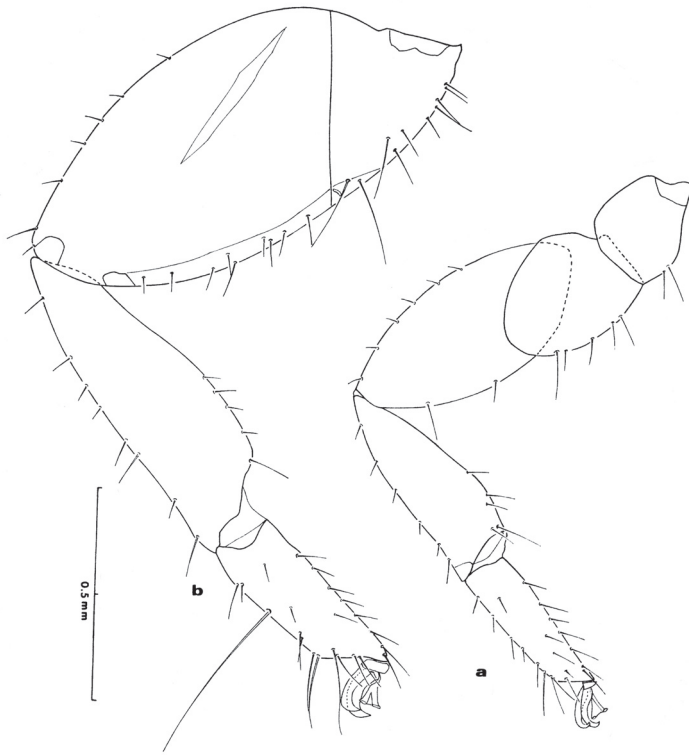


Fig. 4. *Pachychernes corticalis* sp. nov., paratype ♀ from Aruba (no. 4): (a-b). (a) Posterior aspect of left leg I; (b) anterior aspect of right leg IV (trochanter lost).

with about 55 marginal -, 14 lateral - and no medial accessory teeth.

Fixed finger without venom apparatus. Position of trichobothria about as in male: *et* 0.275 (0.25-0.30)(2), *est* 0.58 (2), *esb* 0.73 (0.72-0.75), *eb* 0.75 (0.74-0.76), *it* 0.50 (0.485-0.51), *ist* 0.56 (0.56-0.57), *isb* 0.64-0.65 (2), and *ib* 0.66-0.67 (2) from base apical tooth on outside curve.

Movable finger with venom apparatus, nodus ramosus 0.40 (0.385-0.43) from base apical tooth on outside curve; movable finger L 1.96 (1.86-2.10) × venom duct L. Position of trichobothria about as in male: *t* 0.425 (0.40-0.45), *st* 0.63 (0.62-0.63), *sb* 0.70 (0.69-0.70), and *b* 0.72 from base apical tooth on outside curve.

First leg (fig. 4a): trochanter 0.24 (0.23-0.26)/0.19 (0.19-0.20), L/D 1.25 (1.21-1.30); femur 0.31 (0.28-0.35)/0.25 (0.24-0.25), L/D 1.24 (1.11-1.37); patella 0.56 (0.42-0.59)/0.27 (0.26-0.28), L/D 2.10 (1.92-2.23); femur + patella 0.66 (0.63-0.69)/0.275 (0.27-0.285), L/D 2.39 (2.21-2.55); tibia 0.47 (0.45-0.49)/0.16, L/D 2.96 (2.86-3.01); tarsus 0.37 (0.35-0.40)/0.11, L/D 3.30 (3.08-3.51); L claws 0.105 (0.10-0.11); arolium L from base claws 0.08 (0.07-0.09), and 0.815 (0.72-0.89) × L claws.

Fourth leg (2) (fig. 4b).— Trochanter 0.39/0.27, L/D 1.41 (1); femur 0.44-0.48/0.34, L/D 1.29-1.40; patella 0.90-0.94/0.50, L/D 1.80-1.89; femur + patella 1.065-1.135/0.50, L/D 2.14-2.29; tibia 0.785-0.80/0.24, L/D 3.33-3.34; tarsus 0.47-0.49/0.16, L/D 2.97-3.13; dis-

tance tarsal tactile seta from tarsal base 0.175-0.20, i.e. proximad of midpoint tarsal L; ratio tarsus L / distance insertion of tarsal tactile seta to base tarsus: 2.43-2.67; L. tarsal tactile seta 0.45-0.46; L. claws 0.12-0.13; arolium L from base claws 0.09, and 0.73-0.775 × L claws.

Chaetotaxy and internal structure of female genital area.— A cluster of about 25 acute setae and (probably) a big medial cribriform plate are present; the shape of the spermathecae of the proposed new species shows separated identical parts on both sides of the median line, consisting of a long slender tubular lobe swelling up towards the distal end a basal much shorter and wider proximal lobe (fig. 3b).

Discussion.— *Pachychernes corticalis* sp. nov. differs from *P. gracilis* (Ellingson, 1902) from Ecuador by the ratio palpal hand length (without pedicel) / patella length : 1.01-1.09 versus 1.5; from the related *P. robustus* (Balzan, 1890) from Brasil and Paraguay by the length / width ratio of palpal femur: 1.96-2.12 versus 2.7, and the length / width ratio of palpal tibia: 1.83-1.96 versus 2.3. *Pachychernes subgracilis* (Ellingson, 1902) and *P. baileyi* Feio, 1945 from Brasil, and *P. subrobustus* (Balzan, 1891) from Venezuela, New-Granada and Paraguay, differ also by the length / width ratio of palpal femur: 1.96-2.12 versus 2.4, and the length / width ratio of palpal patella: 1.83-1.96 versus 2.1; from *P. zehorum* Muchmore, 1997 from Panama and Mexico, by the structure of tarsus I in the latter: modified setae on the tibia and a depression on the dorsum of the tarsus; and from *P. taumalipensis* Villegas-Guzman & Pérez, 2006 (2007) from Mexico, by the lacking of a series of long setae on tibia and tarsus of leg I in male. Comparison with the figured spermathecae of following other species of the genus *Pachychernes* as stated below, shows differences with respect to *P. corticalis*: *P. shelfordi* Hoff, 1946 from Mexico (Muchmore, 1975: 18, fig. 9), *P. taumalipensis* Villegas-Guzman & Pérez, 2006, from Mexico (same, 2006: 580, fig. 5) and *P. zehorum* Muchmore, 1997, from Panama and Mexico (Muchmore, 1997: 21, fig. 1).

Etymology.— The specific epithet (*corticalis* (Latin) - belonging to the bark) refers to the location where the species is found.

Genus *Corticochernes* gen. nov.

Type species: *Corticochernes sabae* spec. nov. Terra typica: Saba.

Diagnosis.— Chelal fixed finger with 8 -, movable finger with 4 trichobothria; no pseudo tactile setae present on palpal segments and walking legs; setae on palpal segments and vestitural setae short and slender, terminally incised or weakly dentate, somewhat longer on dorsal side of chelal palm; 5 setae on cheliceral palm; interior aspect of male genitalia of arrowy shape with parallel lateral rods narrowed to the basic end where 2 small stalked leaf-like diverticula on both sides of median line are inserted.

Discussion.— The new genus is characterized with respect to the related genus *Neochernes* Beier, 1932, by the number of accessory teeth on chelal fixed finger: lateral 10 (versus 3), medial 8 (versus 6), on chelal movable finger lateral 13 (versus 2), medial 2 (versus 3); and by the number of blades of the serrula exterior on cheliceral movable finger: 22 (versus 18/19). A point of difference between the new genus and the genera: *Pseudophilanus* and *Sphenochernes* from the Amazon drainage basin (Mahnert & Adis, 2002: 375), applies to the length / depth ratio of the tibia of leg IV 4.39 versus respectively 3.6 and 4.8.

Corticochernes sabae spec. nov.
(figs 5a-g)

Material.— Holotype: ♂ (21), allotype: ♀ (20), and paratype: tritonymph (22), Saba, Windward side, 9-27.xii.1956, on bark.

Description: ♂ (description based on the holotype (figs 5a-g)).

Pedipalps and (not KOH treated) body rather dark reddish orange, legs and chelicera light orange.

Body finely granulated, L 2.54.

Carapace.— Finely granulated, L. 0.32, greatest W 0.33, L/W 0.97, no eye spots visible. Abdominal tergites divided, near both lateral sides with delicate longitudinal ridges, scuta middle tergites with about 7 marginal setae.

Chelicera (figs 5a-b).— 0.38/0.145, L/W 2.59; movable finger L 0.32; galea: L 0.12, with 7 lateral rami of different length, scattered over distal 2/3 of galeal L; fixed finger with apical tooth provided secondarily on inner surface near base with small retroconical denticle, followed on inner margin of finger by 4 retroconical teeth; movable finger with strongly developed blunt subapical lobe; serrula exterior with 22 blades; flagellum of 3 spiny setae, anterior most one longest (L 0.12), with halfway and at about 1/3 setal length some few small thorny processes along anterior margin, and 2 similar but still smaller processes along posterior margin near distal end, posterior most one shortest (L 0.06); lamina exterior present. Chaetotaxy: 5 setae on exterior surface of hand and 1 on movable finger close to subapical lobe.

Pedipalp (figs 5c-d).— Trochanter 0.65/0.34, L/W 1.91; femur 1.17/0.42, L/W 2.66; patella 1.09/0.45, L/W 2.38; chela without pedicel 1.68/0.49, L/W 3.43; chela with pedicel 1.75/0.49, L/W 3.57; hand without pedicel 1.0/0.49, L/W 2.04; hand with pedicel 1.05/0.49, L/W 2.15; movable finger L 0.81, $0.83 \times L$. hand without pedicel, and $0.73 \times L$ hand with pedicel. Marginal teeth of both fingers ranging from cuspidate at distal end to not clearly retroconical, but more obtuse towards basal end of row.

Fixed finger with 50 marginal teeth. Distance trichobothria from base apical tooth on outside curve: *et* 0.14, *est* 0.40, *esb* 0.65, *eb* 0.67, *it* 0.21, *ist* 0.36, *isb* 0.59 and *ib* 0.61, i.e.: position of *et*, *it*, *ist* and *est* in distal half of finger L (arbitrarily considered equal to movable finger L), and of *isb*, *esb*, *eb* and *ib* near finger base, of which *isb*, *esb* and *eb* are inserted closely together in one row.

Movable finger with 52 marginal teeth. Distance trichobothria and nodus ramosus from base apical tooth on outside curve: *t* 0.31, *st* 0.54, *sb* 0.70 and *b* 0.73, nodus ramosus 0.34, i.e. *t* and nodus ramosus within distal half of finger L (nodus ramosus somewhat proximal to *t*), and remaining trichobothria in basal third of finger L. Distance *st* to *t* $1.48 \times$ distance *st* to *sb*.

First leg (fig. 5e).— Trochanter 0.21/0.16, L/D 1.36; femur 0.28/0.17, L/D 1.64; patella 0.57/0.21, L/D 2.70; femur L/patella L 0.49 \times ; femur + patella 0.69/0.22, L/D 3.07; tibia 0.52/0.135, L/D 3.87; tarsus 0.44/0.09, L/D 4.68, L claws 0.09; arolium L from base claws 0.07, and $0.76 \times L$ claws.

Fourth leg (fig. 5f).— Trochanter 0.40/0.19, L/D 2.09; femur 0.36/0.21, L/D 1.72; patella 0.72/0.28, L/D 2.59; femur + patella 0.93/0.27, L/D 3.45; tibia 0.77/0.175, L/D 4.39; tarsus 0.55/0.125, L/D 4.41; claws and arolium lost, but arolium shorter than claws in leg III.

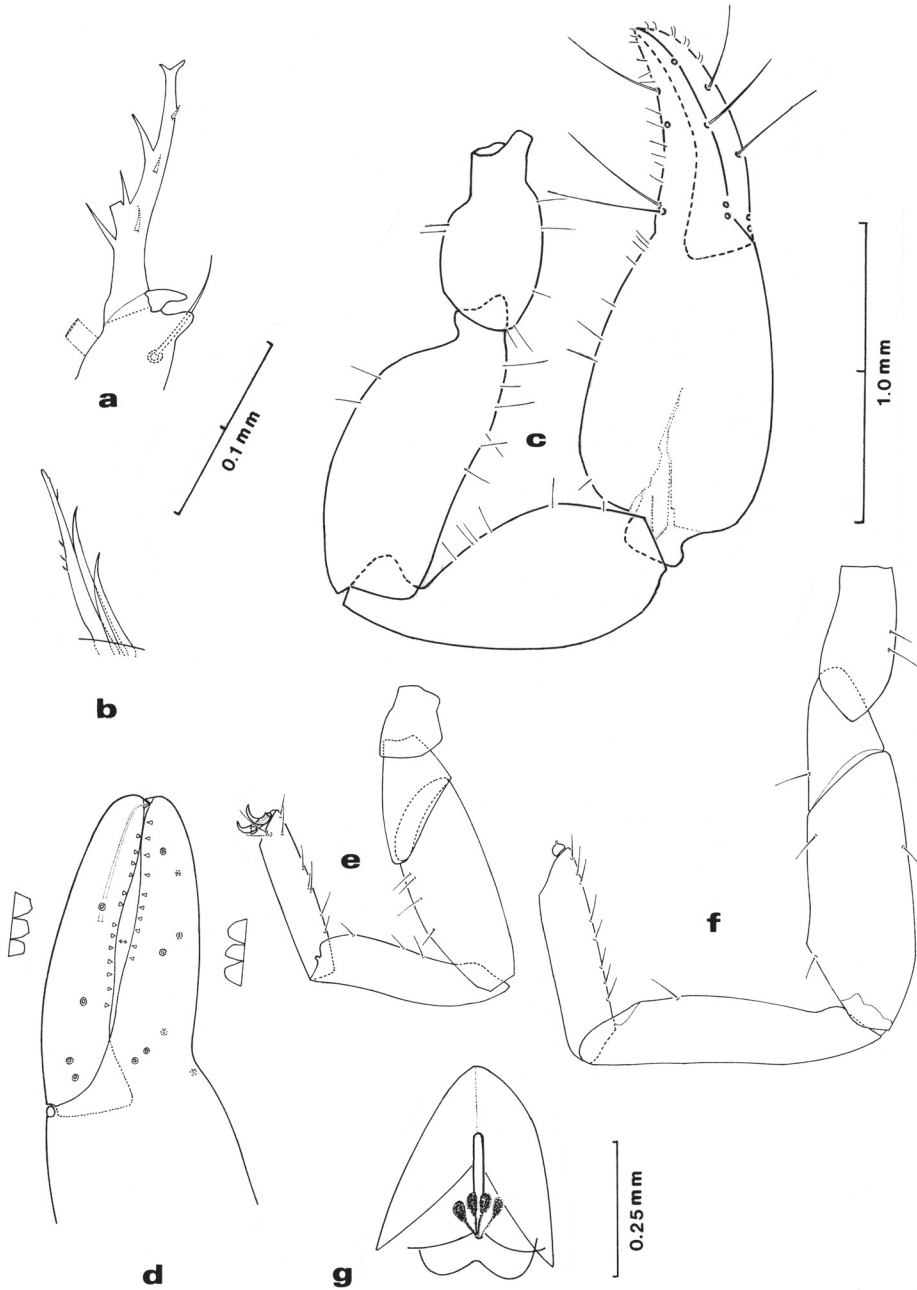


Fig. 5. *Corticochernes sabae* gen. nov. et spec. nov., holotype ♂ (no. 21) (a- g) and alloype ♀ (no. 20) (h) from Saba. (a) Inner aspect of tip of right cheliceral movable finger showing galeal seta, subapical lobe, apical tooth, galea and anterior most blade of serrula exterior; (b) outer aspect of flagellum of right chelicera; (c) ventral aspect of right pedipalp; (d) extero-lateral aspect of part of left chelal hand showing position of trichobothria and accessory teeth, and of nodus ramosus in movable finger; (e) anterior aspect of left leg I; (f) posterior aspect of right leg IV (claws and arolium lost); (g) internal male genitalia.

Male genital complex.— Only well perceptible are a prominent cuticular oval frame with a posterior median sinus, and a median solid rod gradually tapering towards the rounded top (no. 21). Internal male genitalia of arrowy shape with parallel lateral rods narrowed to the basic end where 2 small stalked leaf-like diverticula on both sides of median line are inserted (no. 25) (fig. 5 g).

Female.

Colour about similar to that of ♂; body considerable stouter than in ♂, but segments of pedipalps and legs of about same size as in ♂ or even somewhat smaller.

Body L 4.01.

Carapace.— L 1.05/greatest W 0.96, L/W 1.10, no eye spots observable, anterior margin of carapace with 4 setae, posterior margin of carapace with about 10 setae.

Abdomen: tergites and sternites divided; chaetotaxy of tergal scuta I-X (on each side of median line): 10/8: 8/8: 5/7: 8/7: 7/7: 7/8: 10/9: 9/7: 6/7: 9/9.

Chelicera L 0.41; movable finger L 0.28; galea broken off; apical tooth of fixed finger on inner margin secondarily with 3 small denticles, followed by 6 marginal retroconical teeth; movable finger with a subapical rather obtuse conical lobe; serrula interior with about 18 ligulate blades of which the 4 smaller distal blades are sharply spined along the posterior margin (number of spines from most distal blade backwards respectively: 4, 5, 8 and 9 spines); serrula exterior with 23 ligulate blades; flagellum of 3 spiny setae, anterior most one longest: 0.12, middle one: 0.11, and shortest one: 0.09. Lamina exterior present.

Pedipalp.— Trochanter 0.59/0.32, L/W 1.83; femur 0.94/0.39, L/W 2.425; patella 0.98/0.415, L/W 2.36; chela without pedicel 1.63/0.56, L/W 2.92; chela with pedicel 1.74/0.56, L/W 3.12; hand without pedicel 0.96/0.56, L/W 1.71; hand with pedicel 1.10/0.56, L.W 1.96; movable finger L 0.77, and 0.80 × L hand without pedicel, and 0.70 × L hand with pedicel.

Fixed finger with 41 marginal teeth, 14 lateral - and 4 (+9 smaller and less developed) medial accessory teeth. Distance trichobothria from base apical tooth on outside curve: *et* 0.095, *est* 0.35, *esb* 0.56, *eb* 0.60, *it* 0.23, *ist* 0.35, *isb* 0.58 and *ib* 0.60, i.e. position of trichobothria about as in ♂.

Movable finger with 45 marginal teeth, 12 lateral - and 4 medial accessory teeth.

Distance trichobothria from base apical tooth on outside curve: *t* 0.22, *st* 0.44, *sb* 0.59, *b* 0.64 and nodus ramosus 0.32, i.e. position of trichobothria and nodus ramosus about as in ♂. Distance *st* to *t* 1.41 × distance *st* to *sb*.

First leg: trochanter 0.21/0.18, L/W 1.14; femur 0.30/0.20, L/D 1.49; patella 0.53/0.19, L/D 2.78; femur L / patella L 0.56 ×; femur + patella 0.67/0.20, L/D 3.38; tibia 0.51/0.13, L/D 4.01; tarsus 0.42/0.10, L/D 4.16; L. claws 0.06; arolium absent, but arolium shorter than claws in leg III.

Fourth leg: trochanter 0.40/0.22, L/D 1.80; femur 0.36/0.21, L/D 1.67; patella 0.70/0.29, L/D 2.44; femur + patella 0.92/0.29, L/D 3.20; tibia 0.72/0.16, L/D 4.46; tarsus 0.52/0.12, L/D 4.34; L claws 0.11; arolium L from base claws 0.07, and 0.63 × L claws.

Chaetotaxy ♀ genital area: anterior operculum with a cluster of 12 close-set setae and 2 arched lyrifissures around median line close to the anterior margin, and on face 3 setae to the left and 4 setae to the right of median line; along the posterior margin of the posterior operculum a row of 11 setae. Internal genitalia are not distinguishable.

Tritonymph. Description based on the paratype. Colour about similar to that of the adult animals.

Body L 2.74.

Carapace.— L about 49.0/W about 50.0, L/W about 0.98; no eye spots observable; anterior margin with 2 median and 2 lateral setae, posterior margin with 4 setae.

Abdomen.— Tergites divided, each scutum of middle tergite with about 7 marginal setae.

Chelicera L 0.27.— Movable finger L 0.20; galea L 0.02, thumb-like, unbranched, with rounded top; inner margin of fixed finger behind apical tooth with 5 retroconical teeth; subapical lobe on movable finger not observable; serrula exterior with 19 ligulate blades of which posteriormost one almost about 2 times as long as preceding blades; flagellum not observable.

Pedipalp: trochanter 0.40/0.20, L/W 2.035; femur 0.58/0.25, L/W 2.31; patella 0.52/0.24, L/W 2.16; chela without pedicel 1.09/0.37, L/W 2.925; chela with pedicel 1.14/0.37, L/W 3.06; hand without pedicel 0.66/0.37, L/W 1.78; hand with pedicel 0.725/0.37, L/W 1.94; movable finger L 0.47, $0.71 \times L$ hand without pedicel, and $0.65 \times L$ hand with pedicel.

Fixed finger with 29 marginal teeth, 8 lateral - and 2 medial accessory teeth. Distance trichobothria from base apical tooth on outside curve: *et*: 0.09, *est* 0.22, *esb* 0.36, *eb* 0.385, *it* 0.11, *ist* 0.17 and *ib* 0.37 (*isb* absent), i.e.: position *et*, *it*, *ist* and *est* in distal half of finger L (arbitrarily considered equal to movable finger L), and *esb*, *ib* and *eb* near finger base.

Movable finger with 32 marginal teeth, 6 lateral accessory teeth and 1 medial. Distance trichobothria and nodus ramosus from base apical tooth on outside curve: *t* 0.20, *st* 0.33 and *sb* 0.43 (*b* absent), nodus ramosus 0.21, i.e.: *t* and nodus ramosus within distal half of finger L (nodus ramosus somewhat proximal to *t*), *st* and *b* in about basal third of finger L. Distance *st* to *t* $1.46 \times$ distance *st* to *sb*.

Legs: L/D of segments not determinable because of depth shrinkage. Arolia in fore- and hindlegs shorter than claws.

Discussion.— The new genus differs from the related genus *Neochernes* Beier, 1932 from North America and Northern South America by the clear distal position of trichobothrium *ist* on palpal fixed finger with respect to *est* (versus *ist* not or only a little distal to *est*); the number of marginal teeth: in fixed finger 50 (versus 47), in movable finger 52 (versus 48/49); the number of accessory teeth on chelal fixed finger: lateral 10 (versus 3), medial 8 (versus 6); on chelal movable finger: lateral lateral 13 (versus 2), medial 2 (versus 3); and by the number of blades of the serrula exterior on cheliceral movable finger: 22 versus 18/19. Differentiation between *Corticochernes* gen. nov. and *Americhernes* Muchmore, 1991, from Brazil concerns the distance between trichobothrium *it* on palpal fixed finger and fingertip: distance mentioned clearly less in *Corticochernes* versus clearly greater in *Americhernes*. Finally there is a point of difference between *Corticochernes* and the genera *Pseudophilanus* Mahnert, 1979 and *Sphenochernes* Turk, 1953, from Brazil by the length/width ratio of tibia IV, respectively 4.39 (δ)/4.46 (f) versus 3.6 and 4.8.

Etymology.— The new generic name *Corticochernes* refers to the bark (Latin: *cortex*) on which it is collected and the specific epithet refers to the island Saba.

Family Atemnidae Chamberlin, 1931

Diagnosis (after Chamberlin (1931), modified by Harvey (1992)).— Eyes lacking; cheliceral flagellum mostly composed of 3 or 4 pinnate setae; venom apparatus developed in chelal fixed finger only; accessory teeth on chelal fingers absent; femur-patella articulation of fore-legs and hindlegs strongly different; position of tarsus IV sub-basal.

Genus *Trinidatemnus* gen. nov.

Type species: *Trinidatemnus separatus* spec. nov. Terra typica: Trinidad.

Diagnosis.— The new genus: *Trinidadensus* is characterised by the very long wing-shaped lateral apodemes and the about same length of atrium and lateral rods of the male genitalia (fig. 8b).

Trinidatemnus separatus spec. nov.

Material.— Trinidad, ground I.C.T.A., on bark, 1.ix.1956: 5 ♂♂ (23-26, 29), and 1 ♀ (28).

Diagnosis.— Body L 2.50 (2.38-2.57) (♂), 2.96 (♀); cheliceral subapical lobe big and rounded; serrula exterior with 22-23 blades; L/W ratio of palpal femur 2.36; palpal movable finger L 0.56-0.61; nodus ramosus in palpal fixed finger a little distal to trichobothrium *et*; *it* on palpal fixed finger 1/4 to 1/5 finger length distal to the level of *est*; *ist* distal to the level of *est*; number of marginal teeth in palpal fixed finger 34-36, in movable finger 48-54; L/D ratio of tarsus IV 3.11 (2.875-3.20) (♂), 3.13 (♀).

Description: ♂ (description based on the holotype (26) and 5 paratypes (23-25, 29) (figs 6-8)).

Carapace, body and pedipalps reddish-orange, but legs and chelicera paler and more yellowish-orange.

Body L 2.50 (2.38-2.57).

Carapace.— L 0.90 (0.835-1.01), greatest W 0.88 (0.86-0.93), L/W 1.01 (0.925-1.13); eyes absent; anterior margin with 2 setae on each side of midline, posterior margin with 8 (6-10) setae.

Abdomen.— Chaetotaxy, middle tergites with about 6 marginal setae on each side of midline; dividing of tergites not clearly perceptible.

Chelicera (figs 6a-b).— L 0.35 (0.33-0.36)/W 0.15 (0.15-0.16), L/W 2.34 (2.21-2.45); movable finger L 0.26 (0.24-0.285); galea: L 0.07 (0.06-0.09), main stalk terminally with 3 small rami and 3 lateral rami of different length within distal third of stalk L; movable finger with rounded rather big subapical lobe, followed by 1 or 2 very small retroconical teeth; serrula exterior with 22(1) or 23(4) ligulate blades; flagellum consists of 4 spiny setae: anterior most one 0.09-0.105 long, unilaterally pinnate along anterior margin with 7 or 8 very small (near top) to small rays within distal $\frac{3}{4}$ of length, second one 0.07-0.08 long, third one 0.05-0.06 long, and posterior most one 0.05 long; fixed finger with non-sclerotic apical tooth supplied with 2 or 3 very small knobs along inner margin, followed by 4 non-sclerotic rounded retroconical marginal teeth. Chaetotaxy: 4 setae on anterior surface of hand (seta *sb* dropped out), and 1 near movable finger tip; laminal - and interior setae are longer than basal - and exterior setae. Galeal seta on movable finger is sill shorter (compare Chamberlin, 1931: 67, fig. 14f).

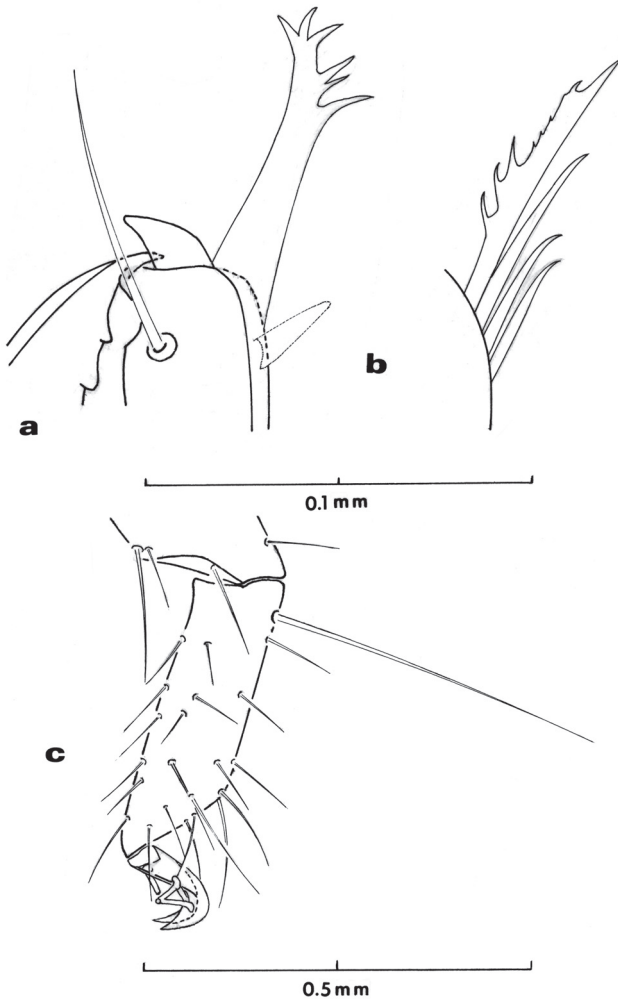


Fig. 6. *Trinitatemnus separatus* gen. nov. et spec. nov., holotype ♂ from Trinidad (no. 23): (a-c) (a) Extero-lateral aspect of tip of fixed - and movable right cheliceral fingers showing part of lamina exterior, galeal seta, subapical lobe, apical tooth, galea and anterior most blade of serula exterior; (b) extero-lateral aspect of flagellum of right chelicera; (c) tarsus of left leg IV showing basal tactile setae along anterior margin.

Pedipalp (fig. 7).— Trochanter, pseudo-tactile seta (pt) on extensor margin, 0.44 (0.41-0.47)/0.27 (0.24-0.29), L/W 1.72 (1.46-1.76); femur, surface coarsely granulated, 1 or 2 pseudo-tactile setae close to extensor margin near distal end, 0.79 (0.72-0.82)/0.35 (0.32-0.36), L/W 2.28 (2.25-2.33); patella, 1 or 2 pseudo-tactile setae near base, 0.70 (0.65-0.70)/0.39 (0.35-0.40), L/W 1.81 (1.71-1.89); chela without pedicel, 2 pseudo-tactile setae along extensor margin near base, 1.25 (1.18-1.33)/0.52 (0.475-0.56), L/W 2.40 (2.25-2.54); chela with pedicel, same, 1.335 (1.235-1.385)/0.52 (0.475-0.56), L/W 2.57 (2.45-2.66); hand without pedicel, same, 0.80 (0.74-0.83)/0.52 (0.48-0.57), L/W 1.52 (1.45-1.58); hand with pedicel, same, 0.91(0.83-0.93)/0.52(0.48-0.57), L/W 1.73 (1.61-1.79); movable finger L 0.58 (0.56-0.61), 0.74 (0.71-0.76) × L. hand without pedicel, and 0.65 (0.62-0.68) × L hand with pedicel.

Fixed finger with 36 (34-36) marginal teeth; distance trichobothria and nodus ramosus from base apical tooth on outside curve: *et* 0.18 (0.16-0.20), *est* 0.38 (0.35-0.43), *esb* 0.49

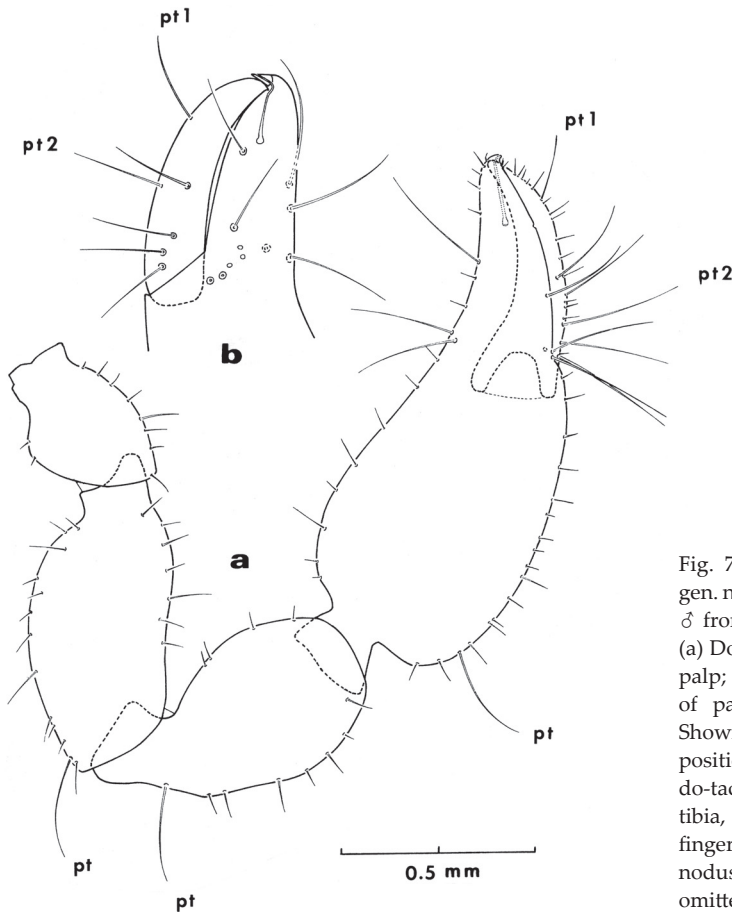


Fig. 7. *Trinidademnus separatus* gen. nov. et spec. nov., holotype ♂ from Trinidad (no. 23): (a-b) (a) Dorsal aspect of right pedipalp; (b) extero-lateral aspect of part of left chelal hand. Shown in both sketches are: position of trichobothria, pseudo-tactile setae (pt) on femur, tibia, chela-base and movable finger, and of venom duct and nodus ramosus (marginal teeth omitted).

(0.48-0.525), *eb* 0.52 (0.50-0.54), *it* 0.255 (0.24-0.28), *ist* 0.32 (0.30-0.34), *isb* 0.43 (0.40-0.46), *ib* 0.46 (0.43-0.48) and nodus ramosus 0.165 (0.15-0.175), i.e. nodus ramosus and *et* within distal third of finger L (level nodus ramosus somewhat distal to that of *et*), *it* a little distal to midpoint finger L (arbitrarily considered equal to movable finger L), *ist* within midpoint finger and basal third of finger L, *est* and *isb* within basal third and basal quarter of finger L, and *ib*, *esb* and *eb* near finger base.

Movable finger with 48 (1) marginal teeth, but often up to about 54 marginal teeth by the presence of a continuous tooth row in the basal part of finger; distance trichobothria and pseudo-tactile setae (pt) from base apical tooth on outside curve: *t* 0.32 (0.29-0.33), *st* 0.43 (0.415-0.45), *sb* 0.49 (0.46-0.51), *b* 0.51 (0.485-0.53), *pt 1* 0.18 (0.13-0.22), and *pt 2* (3) 0.38 (0.36-0.41), i.e. *pt 1* about within distal third and distal fourth, *pt 2* and *t* within midpoint and basal third, and *st*, *sb* and *b* within basal fourth of finger L.

First leg: trochanter 0.17 (0.16-0.19)/0.16 (0.15-0.18), L/D 1.04 (1.02-1.10); femur 0.21

(0.19-0.22)/0.21 (0.19-0.23), L/D 0.97 (0.89-1.0); patella 0.40 (0.385-0.42)/0.22 (0.20-0.24), L/D 1.81 (1.73-1.96); femur L / patella L 0.51 (0.495-0.525); femur + patella 0.52 (0.485-0.54)/0.23 (0.21-0.25), L/D 2.25 (2.12-2.34); tibia 0.37 (0.35-0.39)/0.15 (0.135-0.165), L/D 2.55 (2.34-2.68); tarsus 0.32 (0.31-0.33)/0.10 (0.10-0.11), L/D 3.08 (2.94-3.20); claws L 0.08 (0.07-0.09); arolium L from base claws 0.065 (0.06-0.07), and 0.79 (0.71-0.84) × L claws.

Fourth leg (fig. 6c): trochanter 0.30 (0.28-0.315)/0.20 (0.18-0.23), L/D 1.49 (1.38-1.62); femur (4) 0.33 (0.32-0.345)/ 0.24 (0.23-0.26), L/D 1.40 (1.33-1.44); patella (4) 0.66 (0.62-0.69)/0.34 (0.31-0.37), L/D 1.985 (1.88-2.13); femur + patella (4) 0.84 (0.78-0.89)/0.34 (0.31-0.37); L/D 2.48 (2.33-2.65); tibia 0.58 (0.54-0.60)/0.19 (0.175-0.21); L/D 2.97 (2.87-3.10); tarsus 0.40 (0.38-0.42)/0.13 (0.12-0.14), L/D 3.11 (2.875-3.20); claws L 0.11 (0.10-0.11); arolium L from base claws 0.08 (0.07-0.09), and 0.74 (0.67-0.83) × L claws.

Male genitalia: cuticular frame rounded with only a shallow sharp notch in the anterior median part. Anterior operculum with a cluster of about 6 small setae, and posterior operculum with 3 longer setae on both sides of median line.

Female: description based on 1 specimen (28).

Colour about as in male.

Body L 2.96.

Carapace: L 0.91, greatest W 0.86, L/W 1.05; eyes absent; anterior margin with 2 setae and posterior margin with 4 setae on each side of midline.

Abdomen. — Chaetotaxy of middle tergites as in male, dividing of tergites not clearly perceptible.

Chelicera. — 0.36/0.16, L/W 2.29; movable finger L. 0.24; apical tooth of fixed - and movable finger only weakly sclerotic around tooth-point; galea: L 0.07, top - and lateral rami as in male; movable finger with rounded non-sclerotic subapical lobe, immediately followed by 1 or 2 small sharp retroconical non-sclerotic teeth; serrula exterior with 22 ligulate blades; flagellum consists of 4 spiny setae of different length: anterior most one 0.105 long, unilaterally pinnate along anterior margin with 8 small rays within distal 2/3 of length, second one 0.08 long, third one 0.06 long and posterior most one 0.05 long; fixed finger with 2 very small conical non-sclerotic teeth along interior margin of apical tooth, followed by 4 blunt non-sclerotic retroconical teeth. Chaetotaxy as in male.

Pedipalp. — Trochanter 0.475/0.26, L/W 1.795; femur, 1 pseudo-tactile seta along extensor margin near distal end, 0.825/0.35, L/W 2.36; patella, 2 pseudo tactile setae along extensor margin near base, 0.76/0.40, L/W 1.92; chela without pedicel, 1 pseudo-tactile seta along anterior margin near base, 1.33/0.54, L/W 2.49; hand without pedicel, same, 0.83/0.54, L/W 1.53, hand with pedicel, same, 0.935/0.54, L/W 1.73; movable finger L 0.59, 0.705 × L hand without pedicel, and 0.63 × L hand with pedicel.

Fixed finger with 36 marginal teeth; distance trichobothria and nodus ramosus from base apical tooth on outside curve about as in male: *et* 0.19, *est* 0.365, *esb* 0.50, *eb* 0.52, *it* 0.26, *ist* 0.33, *isb* 0.455, *ib* 0.46, and nodus ramosus 0.18.

Movable finger with 49 marginal teeth; distance trichobothria and pseudo-tactile setae (pt) from base apical tooth on outside curve about as in male: *t* 0.31, *st* 0.43, *sb* 0.50, *b* 0.52, *pt* 1 0.18 and *pt* 2 0.40.

First leg. — Trochanter 0.175/0.17, L/D 1.05; femur 0.23/0.23, L/D 1.03; patella 0.40/0.24, L/D 1.70; femur L/ patella L 0.58; femur + patella L 0.52/0.24, L/D 2.22; tibia 0.385/0.15, L/D 2.59; tarsus 0.32/0.12, L/D 2.80; L claws 0.08; arolium L from base claws 0.07, and 0.87 × L claws.

Fourth leg.— Trochanter 0.32/0.20, L/D 1.55; femur 0.34/0.27, L/D 1.26; patella 0.70/0.35, L/D 1.975; femur + patella 0.86/0.35, L/D 2.43; tibia 0.59/0.18, L/D 3.235; tarsus 0.41/0.13; L/D 3.13; tactile seta from base tarsus 0.045; L claws 0.11; arolium L 0.095, and $0.86 \times L$ claws.

Chaetotaxy and internal structure of female genital area obscure.

Etymology.— The generic name (*Trinidademnus*) refers to the type location: Trinidad and the specific epithet refers to the difficulty to separate pseudoscorpion species on their outer morphology (“*separatus*” is Latin for separation).

Discussion.— The new genus runs in the “Key to recent families and genera” from the Amazon drainage basin (Peru, Ecuador, Brasil) by Mahnert & Adis (2002: 369) to the genus *Paratemnoides* (type species: *P. minor* (Balzan, 1891)). Comparing the studied material with the species mentioned on an outer morphological base only results in insignificant differences. Examination of the male genitalia however comes to the decisive conclusion that there is no resemblance at all with the shape of the male apparatus in *Paratemnoides*, but that the shape gets much more near the genus *Brazilitemnus* Muchmore, 1975.

The proposed new genus *Trinidademnus* can be separated from the genus *Paratemnoides* Harvey, 1991 (= *Paratemnus* Beier, 1932) by the very long wing-shaped lateral apodemes of the male genitalia nearly reaching the level of the distal end of the male apparatus (fig. 8b), versus short lateral apodemes with hooked branches in *Paratemnoides* (Klaussen, 2005: 654, fig. 19). The apparently related genus *Brazilitemnus* has similar wing-shaped lateral apodemes, but these are considerable shorter than in *Trinidademnus*. Further there is a difference in length of the atrium and the lateral rods between the two genera: lateral rods shorter than atrium in *Brazilitemnus*, about of same length in *Trinidademnus*. Moreover the last genus has two prominent eyes on its carapace, versus eyes lacking in *Trinidademnus*.

Acknowledgements

I wish to thank Dr Volker Mahnert, Muséum d’histoire naturelle, Geneva, for his most valuable constructive criticism and advise with regard to the realisation of this article.

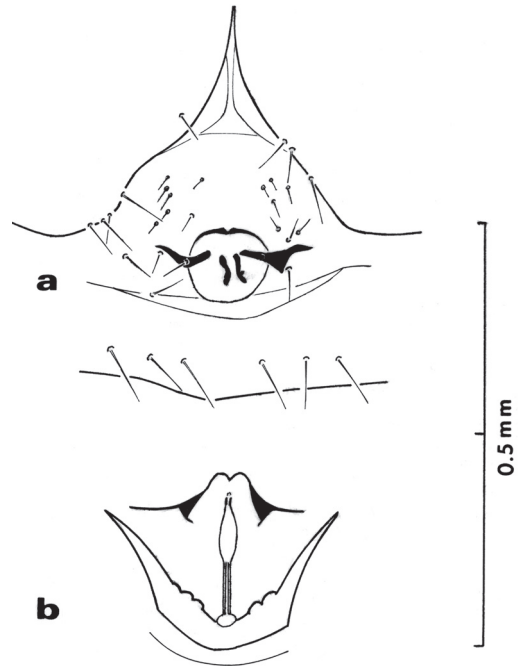


Fig. 8. *Trinidademnus separatus* gen. et spec. nov., ♂ from Trinidad: (a-b) (a) Ventral aspect of genital area showing chaetotaxy (paratype no. 26); (b) inner aspect from ventral side of genitalia showing wing-shaped lateral apodemes, atrium and lateral rods (paratype no. 25).

References

- Araújo Feio, J.L., 1945. Novos Pseudoscorpionídeos da Região Neotropical. — Boletim do Museu Nacional. Nova Série. Zoologia 44: 23-31, figs 18-24.
- Beier, M., 1932. Pseudoscorpionidea. Subord. C. Cheliferinea. — Das Tierreich 58: 1-294, figs 1-300.
- Chamberlin, J.C., 1930. A synoptic classification of the false scorpions or chela-spinners, with a report on a cosmopolitan collection of the same. Part II. The Diplosphyronida (Arachnida-Chelonethida). — Ann. Mag. Nat. Hist. (10) 5: 1-48, 585-620, figs 1-3.
- Chamberlin, J.C., 1931. The arachnid order Chelonethida. — Stanford Univ. (Univ. Ser.) Biol. 7, (1): 1-284, figs 1-71.
- Caporiacco, L. di, 1947. Diagnosi preliminari di specie nuove di Aracnidi della Guiana Britannica. — Istituto di Zoologia Comparata dell' Università di Pisa: 20-34.
- Harvey, M.S., 1991. Catalogue of the Pseudoscorpionida. — Manchester University Press, Manchester, 726 pp.
- Harvey, M.S., 1992. The phylogeny and systematics of the Pseudoscorpionida (Chelicerata): Arachnida. — Invertebrate Taxonomy 6: 1373-1435.
- Hoff, C.C., 1946 (a). Descripción de una especie nueva del género *Pachychernes* Beier, 1932. — Ciencia 7: 13-14, figs 1-3.
- Hoff, C.C., 1946 (b). A redescription of *Atemnus elongatus* Banks, 1895. — Proc. New England Zoological Club 23: 99-107, figs 1-2.
- Klausen, F.E., 2005. The male genitalia of the family *Atemnidae*. — J. Arachnol. 33: 641-662, figs 1-28.
- Mahnert, V., 1979. Pseudoscorpione (Arachnida) aus dem Amazonas-Gebiet (Brasilien). — Revue suisse Zool. 86 (3): 719-810.
- Mahnert, V. & Adis, J., 2002. 4.6 Pseudoscorpiones. — Amazonian *Arachnida* and *Myriapoda*: 367-380, figs 1-14.
- Muchmore, W.B., 1975. Use of the spermathecae in the taxonomy of chernetid pseudoscorpions. — Proc. 6th Int. Arachn. Congr., 1974: 17-20, figs 1-15.
- Muchmore, W.B., 1997. An unusual new *Pachychernes* from Panama and Mexico (Pseudoscorpionida: Chernetidae). — Entomological News 108 (1): 19-23, figs 1-4.
- Tooren, D. van den, 1995. Pseudoscorpions of the genus *Aphelolpium* (Pseudoscorpionida, Olpiidae) from Curaçao, Aruba and Bonaire. — Stud. Nat. Hist. Caribb. Region 72: 69-97, figs 1-10, tabs 1-3.
- Tooren, D. van den, 2002. Pseudoscorpions of the genus *Apolpium* from Venezuela, and the genera *Pachyolpium*, *Leptolpium* gen. nov. and *Serianus* from Curaçao, Aruba and Bonaire (Pseudoscorpiones, Olpiidae). — Zool. Med. Leiden 76 (15): 141-192, figs 1-34.
- Tooren, D. van den, 2004. Pseudoscorpions (Pseudoscorpiones) of the genus *Cordyllochernes* (Chernetidae) from Brazil. — Zool. Med. Leiden 78 (16): 275-289, (figs 1-7).
- Villegas-Guzman, G.A. & Pérez, T.M., 2007. A new species of *Pachychernes* (Pseudoscorpiones, Chernetidae) from Mexico associated with nests of *Neotoma micropus* (Rodentia, Muridae). — J. Arachnol. 34: 578-585, figs 1-10.

Received: 20.vii.2006

Accepted: 18.ii.2008

Edited: C. van Achterberg