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PULAEUS, A NEW CUNAXID GENUS (PROSTIGMATA : ACARI)

BY

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Summary

The generic characteristics of Pulaeus gen. nov. are provided. Pulaeus pectinatus (Ewing, 1909) comb. nov. is redescribed. One new species, Pulaeus glebulentus spec. nov., is described. Keys to and figures of the two species are given.

Résumé

Les caractères génériques de Pulaeus gen. nov. sont donnés. Pulaeus pectinatus (Ewing, 1909) comb. nov. est redcrit. Une nouvelle espèce, P. glebulentus sp. nov., est décrite. Une clé de détermination et des figures des deux espèces accompagnent le texte.

Introduction

Little is known about these free-living and predaceous mites. They are cosmopolitan in distribution. Several known species belong to the new genus Pulaeus. Ewing (1909) described Eupalus pectinatus from Illinois, U.S.A.. Berlese (1916) described E. sternalis as a new species from Palermo (Panormitano), Italy but at the same time mentioned that it differs only in palp length from E. pectinatus Ewing, of which he received two specimens (Berlese collection numbers 174/31 & 174/32) from the Columbia locality from Ewing. I have studied the specimens in question and found them conspecific. In the same work (Berlese, 1916) he described E. subterraneus from a field mouse nest, Ferrara, Italy. Thor & Willmann (1941) redescribed all above-mentioned species. Redescription of the mentioned species as well as descriptions and drawings of new species, viz. Cunaxoides americanus, C. patzcuarensis and C. minutus, are given by Baker & Hoffmann (1948). The specimens included in the description by Baker & Hoffmann (1948) of C. andrei represent different genera. Fig. 60 (Baker & Hoffmann, 1948) represents a female of the genus Neocunaxoides described by Smiley (1975) using Cunaxoides andrei as type species. Fig. 61 (Baker & Hoffmann, 1948), however, represents the new genus Pulaeus because of the presence of setae d1 5 and because basifemora IV bear setae. Smiley (1975) is of opinion that the male paratype described by Baker & Hoffmann (1948) belongs to an undescribed species of Cunaxoides (i.e. any other cunaxid with a three-jointed palp except Neo-

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cunaxoides). He also mentioned the absence of a strong dorsal plate. Judging from Fig. 66 of Baker & Hoffmann (1948) I am of the opinion that this specimen is a tritonymph, especially when the genital region is taken into account. Also from their description it is concluded that it is a tritonymph, because they mention that only the propodosoma is covered by a lobe-bearing region and that no coxal plates are present. The true systematic position cannot be determined without studying the specimen. Muma (1960) gives a very short description and figures of a new species from Florida, U.S.A., viz. Cunaxoides pectinellus. The measurements given by Muma all fall within those of Pulaeus pectinatus (Ewing, 1909) comb. nov.

Genus Pulaeus gen. nov.

Characteristics: Colour known from one species only; hyaline pale yellow with orange coloured gnathosoma. Body from generally elongated diamond-shaped. Dorsal plate covering idiosoma varies in amount of sclerotisation. Small platelets, carrying setae, may occur posteriorly to dorsal plate. Dorsal chaetotaxy is: two pairs of coarse setose sensillae (PS1 and PS2), four pairs of setae in the dl-series (dl 1, dl 2, dl 5 and dl 6), and six pairs in the dc-series (dc 1—6). Setae dc 4 always on posterior edge of dorsal shield. Setae dl 6 and dc 6 usually situated close to anal valves. Propodosomal coxae medially completely separated, partly fused anteriorly or fused completely to a sternal shield. If separated or partly fused a small platelet is present between the posteromedian edges of these coxal plates. Two clearly or less clearly lateral hysterosomal coxal plates are usually elongated posteriorly behind legs IV. Chaetotaxy of coxal plates I-IV: 3 sts (simple tactile setae), 1 pe (peg-like setae)-2sts-3sts-3sts with a medium pair of propodogastral setae on the posteromedian part of the sternal plate of the posteromedian points of the separated coxal plates. The number of hysterogastral setae vary from four in males to twelve in females; some of these may occur on the median edges of the hysterosomal coxal plates. A single median platelet is associated with the anterior rim of the genital opening and it may bear up to two setae. The genital valves are demarcated to a varying extent and bear four genital setae each. Genital papillae well developed. Anal region with one pair of anal and one pair of para-anal setae. Two pairs of copules occur in the normal positions on the hysterosoma. Lateral shoulders and sejugal groove prominent. Hypognathum with four pairs of hg-setae, two pairs of dorsal setae and a peg-like setae on each dorsal edge, lateral to the cheliceral trochanters. Surface of former either with papillae and/or lobes or striations or smooth; subcuticular ridges on the posteroventral region. Labrum-epipharynx well developed. The palp tibiotarsus with five setae, a bladder-like apophysis, one or two pointed processes and a terminal claw. The relation between length and width of the second palpal segment varies considerably. The cheliceral setae are present. Dorsal surfaces of chelicerae with papillae and/or lobes. The legs are shorter than the idiosoma. Femora divided. Tarsi-ends cone-like with terminal ambulacra, each with two rippled claws and a four-rayed empodium. Tarsus I provided with a small peg-like seta in a depression or sometimes only a depression (dep). Tarsi I and II with dorso-terminal seta and antennuate solenidion (dtasl). Setal formula for basifemora in both sexes 4 (3)-6-3-1 or 2.

Type-species: Eupalus pectinatus Ewing, 1909.

Key to species of Pulaeus from the Ethiopian region.

1. Dorsal plate mainly smooth but with band of lobes from posterior sensillar bases to lateral edge and along latter forwards; complete sternal plate in both sexes; ventral surface of hypo-
gnathum smooth; palp tibiotarsus with long terminal claw and large bladder-like apophysis; tibia I in males with three solenidia; only females with median seta-bearing platelet anterior to genital opening.  

_pectinatus_ (Ewing, 1909)

— Dorsal plate completely provided with transverse lobes; sternal plate in females completely divided but in males complete; hypognathum with ventral striations and lateral papillae regions; claw of palp tibiotarsus fused with segment and bladder-like apophysis small; flattened and elongated with terminal end rounded; two solenidia on tibia I of males; median seta-bearing platelet anterior to genital opening lacking but in females a small subcuticular scutellum associated with anterior rim of this opening.  

_glebulentus_ spec. nov.

**Pulaeus pectinatus** (Ewing, 1909) comb. nov.  
(figs. 1 — 24)

_Eupalus pectinatus_  
_Eupalus sternalis_  
_Cunaxoides pectinatus_  
Baker & Hoffmann, 1948 : 246.  
_Cunaxoides sternalis_  
Baker & Hoffmann, 1948 : 245.

This species shows considerable variation in the striation pattern of the coxal plates (sternal plate included). Striations may be prominent or nearly inconspicuous. The natural colour is orange red and form diamond-shaped.

**Female** (Figs. 1 — 24).

*Dimensions*: idiosoma: length, 360-384 \( \mu m \); width, 230-261 \( \mu m \); length of hypognathum, 118-134 \( \mu m \); length of palp, 82-96 \( \mu m \); length of chelicera, 118-132 \( \mu m \); length of legs: I, 228-246 \( \mu m \); II, 202-227 \( \mu m \); III, 226-242 \( \mu m \); IV, 249-261 \( \mu m \).

_Dorsum_ (fig. 1). Idiosoma covered by a number of sclerotized plates of varying size and forms. The large dorsal plate is strongly arched and covers the propodosoma and hysterosoma. It is mainly smooth but a band of lobes around PS2 runs laterally and then along the edge anteriorly towards PS1, and then posteriorly for a short distance (fig. 1). Two platelets occur behind the large dorsal plate, each bearing setae dc 5 and dl 5. Setae dc 6 and dl 6 of each side are borne on a common platelet (fig. 1) occurring laterally to the anal valves. These two pairs of platelets are smooth. All plates possess subcuticular punctuations. The lengths of the dorsal setae vary considerably. Setae dc 4-6 and dc 1 are finely setose. The integument anterodorsal to the anus is supplied with striations bearing sharp-pointed papillae; otherwise integumental striations smooth. Lateral shoulders not very prominent. Cupules occur in the normal position.

_Venter_ (figs. 2 & 21). Ventral plates are strongly sclerotized. The intercoxal region of the sternal plate bears broken striations; considerable geographical variation in these striations has been observed, ranging from pronounced to almost non-existent. Regions anterior and posterior to the attachment of legs I bear lobes which are replaced by papillae laterally (fig. 21).

1) Dorsum; 2) Venter; 3) Hypognathum, ventral; 4) Entomalae; 5) Palp; 6) Chelicera; 7) Chela; 8) Leg I; 9) Leg II; 10) Leg III; 11) Leg IV.
The posteromedian extension projects between the hysterosomal coxal plates; it is provided with subcuticular ornamentation and punctuation. Well-developed apodemes are associated with coxae I and II. The hysterosomal coxal plates cover a large part of the venter. Anterior to legs III they shape the lateral shoulders and the posteroverentral coursing sejugal groove. The median extensions of these plates, bearing two hysterogastal setae each, are separated by a narrow integumental strip; posteriorly they extend considerably behind legs IV (fig. 2). Medially they possess striations but lobes and papillae occur laterally. An unpaired platelet occurs anterior to the genital opening; it bears one, sometimes two, setae. Each integumental strip lateral to the genital valves bears two very small scutellum-like patches, as well as one pair of hysterogastral setae. The genital valves possess laterally broken striations and are posteriorly provided with subcuticular sculpturings. The two rows of genital setae are more or less straight. The genital papillae are well-developed. The anal region is typical of the subfamily.

**Gnathosoma** (figs. 3-7 & 22). The hypognathum (fig. 3), which is longer than broad, has a smooth ventral surface bearing the four pairs of hg-setae of which hg 3 are the longest. The dorsal edges of the coxal region are supplied with peg-like setae, papillae and ridges. The hypostome is relatively short. The entomalae (fig. 4) possess two pairs of inconspicuous adoral setae. The coxal region is ventrally supplied with subcuticular ridges. The palps (fig. 5) are broad and sturdy and the terminal chelum is level with the apex of the hypostome. Segment I lacks setae but is anterodorsally provided with papillae. Segment II is supplied with a ventral papillae-bearing region on the posteromedian side; this region is bordered dorsally by a longitudinal ridge. The lateral side bears subcuticular punctuation. This segment possesses six setae (fig. 5). The tibiotarsus is characterised by the presence of a large bladder-like apophysis (fig. 5 & 22) as well as five setae. The terminal claw is long. The chelicerae are typical of the genus (fig. 6). The whole trochanter as well as the posterior 2/3 of the length of segment II are dorsally provided with papillae but the median and posterolateral regions are smooth. The dorsal cheliceral setae are relatively short. The terminal chela (fig. 7) is partly covered by a membranous extension of segment II.

**Legs** (figs. 8-11, 23 & 24). All femora possess functional articulation facets. The dorsal surfaces of the genua, tibiae and tarsi of legs are smooth, except for a small patch of lobes distal to the trichobothrium (T) on tibiae IV. The basifemora and the proximal part of telofemur IV are provided with lobe-like papillae but telofemora I—III are smooth. The ventral surfaces of all leg joints are supplied with papillae. The legs become gradually smaller in diameter distally; the tarsi terminate almost conically into the ambulacra. The latter (fig. 23) are typical of the genus. The leg chaetotaxy is as follows (fig. 8-11 & 24): coxae I-IV, 3 sts, 1 pe-2 sts-3 sts-3 sts; trochanters I-IV, 1-1-2-1 sts; femora IV, 4 sts-4 sts, 1 ms-5 sts-3 sts-3 sts-2 sts; genua I-IV, 1-1-2-1 sts; femora IV, 4 sts, 1 ms-6 sts-3 st5s-3 st5s-2 sts, 1 ms (ms = macroseta); genua I-IV, 2 asl (antennuate solenidion), (1 asl, 1 sts), 4 sts-2 asl, 5 sts-1 asl, 5sts; tibiae I-IV, 1 asl, 1 bsl (blunt-pointed solenidion), 5 sts-1 bsl, 5 sts-1T, 4 sts; tarsi I (fig. 24)-IV, 4 bsl, 1 dep (depression), 1 dtasl (dorsoterminal antennuate solenidion), 2 tsl, 21 sts-1 bsl, 1 tls (terminal solenidion), 22 sts-1 tls, 17 sts-17 sts.

**Male** (figs. 12 — 17).

**Dimensions**: idiosoma: length, 250 μm; width, 154-200 μm; length of hypognathum, 84-103 μm; length of palp, 58-70 μm; length of chelicerae, 84-98 μm; length of legs: I, 175-204 μm; II, 158-189 μm; III, 178-206 μm; IV, 190-221 μm.
FIGS. 12-20. — *Pulicoides pectinatus* (Ewing, 1909) comb. nov.

Dorsum (fig. 12). It resembles that of the female but with the following differences. Setae dc 6 and dl 6 of each side are borne on separate platelets. Subcuticular sculpturings are present (fig. 12). Geographical variation concerning the band of lobes on the large dorsal plate has been observed; in some it is present while in other it is absent.

Venter (fig. 13). The venter differs from that of the female in several aspects. Subcuticular sculpturings occur on the sternal and hysterosomal coxal plates but not on the genital valves. A small median platelet is lacking. Only one pair of scutellum-like patches occurs in the integument laterally to the genital valves. The chaetotaxy is the same as in the female, except for the differences mentioned (fig. 13).

Gnathosoma. As in female.

Legs (figs. 14 — 17). Except for differences in the chaetotaxy the legs resemble those of the female. The chaetotaxy differs as follows: femora IV, $\frac{4}{5} - \frac{6}{5} - \frac{3}{4} - \frac{2}{3}$ sts; genua I-IV, 1 bsl, 2 asl (1 asl, 1 sts), 4 sts-1 bsl, 1 asl, 5 sts-1 bsl, 1 asl, 5 sts-1 bsl, 1 asl, 5 sts; tibia I, 1 asl, 2 bsl, 5 sts; tarsi I-IV, 1 asl, 3 bsl, 1 dep, 1 dtsl, 2 tsl, 21 sts-2 bsl, 1 dtsl, 1 tsp, 22 (19-21) sts-1 sts, 17 sts-17 sts.

Tritonymph (unknown).

Deutonymph (Fig. 18).

Dimensions: idiosoma: length, 254 \(\mu\)m; width, 173 \(\mu\)m.

In general weakly sclerotised. The dorsal propodosomal region is smooth and demarcated by integumental striations (fig. 18). The region anterior to sensillae PS1 is provided with transverse striations while a few lobes occur around their bases. The ecdysis line is prominent and accompanied by some lobes. The dorsal chaetotaxy is typical of the adults. The dorsal hysterosomal setae are borne on unstriated integument. The venter is provided with two coxal groups on each side which are distinguished by their striation patterns. The propodosomal coxal regions possess five setae each of which three are associated with coxae I and one with coxae II; the propodogastral setae occur on the posteromedian regions of coxae II. Six setae occur on each of the hysterosomal coxal regions of which three are associated with each of coxae III and IV. Three pairs of hystero gastric setae are borne on the integument. The poorly developed genital valves bear three pairs of genital setae; the genital papillae are well-developed. The anal region is typical of the subfamily. The gnathosoma resembles that of the female but is less sclerotised and lacks the subcuticular ridges on the ventral surface of the coxal region. In general the legs resemble those of the female but differences occur in the chaetotaxy. The differences are: coxa II, 1 sts instead of 2 sts; femora I-IV, $\frac{2}{5} - \frac{2}{5} - \frac{1}{4} - \frac{0}{3}$ sts; genu I, 3 asl, 5 sts; tarsi I-IV, 4 bsl, 1 dep, 1 dtsl, 2 tsl, 13 sts-1 bsl, 1 dtsl, 1 tsp, 14 sts-1 tsp, 14 sts-13 sts.

Protonymph.

Dimensions: idiosoma: length, 235 \(\mu\)m; width, 152 \(\mu\)m.

The dorsum resembles that of the deutonymph but the ecdysis line is very inconspicuous and the setae are smooth. The venter differs from that of the female in the size of the genital
valves, lesser sclerotisation of the plates, and in chaetotaxy. The latter differs as follows: one pair of setae associated the coxae IV, one pair of genital setae and two pairs of hysterothoracal setae. A single pair of genital papillae is present. The gnathosoma resembles that of the deutonymph. The femora are not completely divided because ventral skin-folds are present on femora I-III while femora IV lack such a skin-fold. The leg chaetotaxy is as follows: coxae I-IV, 3 sts, 1 pe-1 sts-3 sts-1 sts; trochanter I-IV, 1-1-2-0 sts; femora I-IV, 7-7-5-0 sts; genua I-IV, 3 as1, 5 sts-1 as1, 5 sts-1 as1, 5 sts-1 as1; tibia I-IV, 1 as1, 1 bsl, 5 sts-1 bsl, 5 sts-1 bsl, 5 sts-0; tarsi I-IV, 2 bsl, 1 dep, 2 tsl, 14 sts-1 bsl, 1 tsl, 15 sts-1 tsl, 14 sts-7 sts.

Larva (figs. 19 & 20).

Dimensions: idiosoma: length, 216-220 \( \mu \text{m} \); width, 151-153 \( \mu \text{m} \).

The larvae are still recognisable by the palp tibiotarsus. The sclerotisation is weak. The propodosomal region (fig. 19) is provided with lobes of varying lengths. The dorsum further resembles that of the protonymph. Setae dl 6 situated ventrolaterally to the anal valves. Coxae I-III bears 3-1-1 sts and each coxa I has a peg-like seta. One pair of each of propodothoracic and hysterothoracic setae are present. The genital region is lacking. The para-anal setae are, together with the anal setae, situated on the anal valves. The posterior cupules are situated relatively close together. The idiosomal integument is supplied with striations bearing small lobes. The ventral surface of the coxal region of the hypognathum is supplied with lobes but setae hg 3 and 4 are lacking. The femora of the legs are undivided and the tarsi relatively short. The leg chaetotaxy is as follows: trochanters I-III, 0-0-1 sts, femora I-III, 7-7-5 sts; genua I-III, 2 as1, 1 short bsl, 4sts-1 as1, 1 short bsl, 4sts-1 as1, 1 short bsl, 4sts; tibiae I-III, 1 as1, 1 bsl, 5sts-1 bsl, 5sts-1 bsl, 5sts; tarsi I-III, 2 bsl, 1 dep (fig. 20), 2 tsl, 14sts-1 bsl, 1 tsl, 15sts-1 tsl, 14ts.


**Figs. 21-24.** — *Pulaeus pectinatus* (Ewing, 1909) comb. nov., female.
21) Coxae I and II and trochanter I (1 000 ×); 22) Pulp tibiotarsus with terminal claw (1) and bladder-like apophysis (2) (2 550 ×); 23) Ambulacrum (2 650 ×); 24) Tarsus I (1 075 ×).

**Location of material:** 20 ♀, 12 ♂, 1 deutonymph, 1 protonymph and 1 larva deposited in the acarological collection of the Institute for Zoological Research, Pretchefstroom University, R.S.A.; 12 ♀, 8 ♂ in the National collection of the Plant Protection Research Institute, Agricultural Technical Services, Pretoria, R.S.A.

**Pulaeus globulentus** spec. nov.

(figs. 25 — 49)

The distinguishing features of this species are: the dorsal plate is completely supplied with transverse lobes; the sensillae are very coarsely setose; in females the propodosomal coxal plates are not fused to a sternal plate; the hypognathum is laterally supplied with papillae and ventrally with striations; the female possesses only three proximal solenidia on tarsus I and three
FIGS. 25-34. — *Pulaceus glebulentus* spec. nov., female.

on genu I while in the males these joints possess four such solenidia. Natural form and colour unknown.

**Female** (figs. 25-34 & 44-49).

*Dimensions*: idiosoma: length, 261-346 µm; width, 151-230 µm; length of hypognathum 110-144 µm; length of palp, 62-84 µm; length of chelicera, 103-139 µm; length of legs: I, 144-192 µm; II, 132-180 µm; III, 154-202 µm; IV, 178-221 µm.

**Dorsum** (figs. 25, 44 & 45). Dorsal plate not strongly sclerotised but clearly demarcated by transverse lobes of varying lengths (figs. 25 b, c & 45). Conspicuous subcuticular sculpturings are present on its propodosomal part. Both sensillae PS1 and PS2 possess very long side branches (fig. 25 b, c & 45). Setae dl 1 are nearly half as long as distance between their bases while setae dc 1 are half as long as the distance between their bases. The hysterosomal part bears setae dl 2 and dc 2-4; setae dc 4 are situated on the hind edge. Generally the integumental striations are smooth (fig. 25) but the regions posterior and immediately lateral to the posterior part of the dorsal plate are provided with lobes and/or papillae. Setae dl 5, dl 6, dc 5 and dc 6 are borne on the integument. Lateral shoulders are prominent.

**Venter** (fig. 26 & 46). Four coxal plates, i.e. two on each side, are distinguished due to a somewhat denser striation pattern than that of the integument (figs. 26 & 46). The propodosomal coxal plates possess conspicuous apodemes. Coxae I bear a peg-like seta and three setae each, coxae II two coxal setae and a propodogastral seta each, coxae III and IV three setae each. The hysterosomal coxal plates project considerably past legs IV flanking the genital region. The weakly sclerotised genital valves bear four setae each, of which g 3 are placed more laterally, and are provided with striations. The genital opening is considerably farther forward than the anterior edges of the genital valves. The genital papillae are well-developed. The integument, bearing finely lobed striations, has five pairs of hysterogastral setae laterally and anteriorly to the genital region. The anal region is typical of the genus.

**Gnathosoma** (figs. 27-30, 47 & 48). The hypognathum (fig. 27) is approximately 1,5 times longer than broad. The ventral surface of the coxal part is provided with striations, which, in line with setae hg 3, merge into lobes stretching to setae hg 2. A papillae-bearing region occurs posteriorly and dorsolaterally to setae hg 3; these regions reach onto the dorsal edges of the coxal region. Peg-like setae are present on the posterior part of the dorsal edges, laterally to the cheliceral trochanters. Setae hg 3 are the longest hypognathal setae; their bases are placed a good deal further back than is normal. The entomalae (fig. 28) possess two pairs of very short spine-like adoral setae. Setae hg 1 project past the entomalae. The labrum-epipharynx is well-developed. The palp (figs. 29 & 47) does bot project past but is in line with the apex of the hypostome. The chaetotaxy is typical of the genus. The bladder-like apophysis on the tibiotarsus is longer than broad, flattened and terminally rounded. A single ventral pointed process occurs on the latter palp joint. Some papillae occur on the anterodorsal edge of segment I and the dorsomedian surface of segment II (fig. 48). The chelicera (fig. 30) is typical of the genus. Papillae occur on the entire dorsal surface of the trochanter while lobe-like papillae cover only the dorsoposterior half of segment II. The cheliceral setae are relatively long.
Legs (figs. 31 — 34 & 49). The legs are shorter than the idiosoma. All femora are divided by articulation facets. The tarsi end somewhat bluntly toward the ambulacula. The latter have rifled claws. All leg segments are provided with papillae and/or lobes (fig. 49). The leg chaetotaxy differs from the females of Pulaeus pectinatus as follows (figs. 31-34): femora I - 4 sts; genu II, 1 asl, 5 sts; tarsi I (fig. 49)-IV, 3 bsl, 1 dtasal, 1 dep; 2 tsl, 21 sts-1 ssl, 1 dtasal, 1 tsl, 19 sts-1 sts, 16 sts-17 sts.

**Male** (figs. 35-40).

**Dimensions**: idiosoma: length, 200-220 μm; width, 138-144 μm; length of hypognathum, 118-120 μm; length of palp, 70 μm; length of chelicerae, 110-113 μm; length of legs: I, 154-156 μm; II, 137-139 μm; III, 158-163 μm; IV, 178 μm.

**Dorsum** (fig. 35). It closely resembles that of the female. The posterior region of the dorsal plate is relatively narrower and is more rounded. Setae dc 4 are not situated on the posteriors edge. Lateral shoulders prominent (fig. 35).

**Venter** (fig. 36). The posteromedian areas of the sternal shield project between the hysterosomal coxal plates. The sternal shield bears one pair of peg-like setae and six pairs of tactile setae; apodemes are present. The sejugal groove is prominent. The hysterosomal coxal plates bear seven setae each; three on each coxae III and coxa IV and one hystero gastral seta setae occur on the integument between the coxal plates. The coxal plates are extended past leg IV. The small genital valves, bearing four setae each, are laterally supplied with lobes but medially with papillae. The genital papillae are of equal size. The anal region resembles that of the female.

**Gnathosoma**. It resembles that of the female but cheliceral segment II possesses lobes and papillae only on the posterior one-third of the dorsal surface.

**Legs** (figs. 37-40). The legs of the male differ from those of the female (figs. 37-40) only in chaetotaxy as follows: femur I - 4 (3) sts; genua I & II, 1 bsl, 2 asl (1 asl, 1 sts), 4 sts-1 bsl, 1 asl, 5 sts; tarsi I-IV, 4 bsl, 1 dep, 1 dtasal, 2 tsl, 21 (22) sts-2 bsl, 1 dtasal, 1 tsl, 19 sts-1 tsl, 16 sts-17 (16) sts.

**Tritonymph** (figs 41 & 42).

**Dimensions**: idiosoma: length, 273-292 μm; width, 161-176 μm.

Sclerotised plates are lacking. The dorsal propodosomal region differs little from that of the female but the lobe arrangement deviates to some extent (fig. 41). That part of the hysterosoma which in the female is occupied by the dorsal plate is mainly supplied with transverse lobe-bearing striations. The hysterosomal setae are borne on unstriated regions of the integument. Lateral shoulders are inconspicuous. The venter resembles that of the female except for the absence of sclerotised plates. The number of hystero gastric setae is 8 (9). The genital
FIGS. 35-43. — *Pulaeus glebulentus* spec. nov.

35) Dorsum, male; 36) Venter, male; 37) Leg I, male; 38) Leg II, male; 39) Leg III, male; 40) Leg IV, male;
41) Propodosomal region, tritonymph; 42) Tarsus I, tritonymph; 43) Tarsus I, protonymph.
region with valves striated longitudinally. Anal region typical of the species. Gnathosoma resembles that of females but less sclerotised. The papillae reach anteriorly to just in front of setae hg 2. The femora are divided. The leg chaetotaxy differs from that of the adult on the following joints: femora I-IV, \( \frac{3 \text{ sts}}{5 \text{ sts}} \frac{5 \text{ sts}}{3 \text{ sts}} \frac{2 \text{ sts, 1 ms}}{2 \text{ ms}} \frac{0}{1 \text{ ms}} \); tarsi I (fig. 42)-IV, 3 bsl, 1 dep, 1 dtasl, 2 tsl, 17 sts-1 bsl, 1 dtasl, 1 tsl, 15 sts-1 tsl, 14 sts-13 sts.

![Images of Pulaeus glebulentus](44-49)

**Figs. 44-49.** — *Pulaeus glebulentus* spec. nov., female.

44) Posterior pseudostigmata with sensilla and dorsal plate (2 700 \( \times \)); 45) Sensillae PS1 (2 750 \( \times \)); 46) Coxal plate I and II (2 500 \( \times \)); 47) Palp tibiotarsus (2 750 \( \times \)); 48) Palp segment II, dorsal (2 700 \( \times \)); 49) Tarsus I (2 625 \( \times \)).

**Protonymph** (fig. 43).

**Dimensions:** idiosoma: length, 204-230 \( \mu \text{m} \); width, 129-149 \( \mu \text{m} \).

The dorsum resembles that of the tritonymph. The venter, however, differs, for coxae II possess only one coxal seta and one propodogastral setae each; only two pairs of hysterogastral setae are present; coxae IV possess one coxal seta each, only one pair of genital setae and one pair of genital papillae are present. The anal region is typical of the species. The gnathosoma, although less sclerotised, resembles that of the tritonymph. The chelicerae are dorsally completely provided with papillae and lobes. The femora of legs I and II are ventrally provided
with a skin-fold, femur III is surrounded by such a fold and femur IV lacks it completely. The leg chaetotaxy is as follows: coxae I-IV, 3 sts, 1 pe-1 sts-3 sts-1 sts; trochanters I-IV, 1-1-2-0 sts; femora I-IV, 7 sts-7 sts - 1 sts 4 sts - 0; genua I-IV, 3 asl, 5 sts-1 asl, 5 sts-1 asl, 5 sts-1 asl; tibiae I-IV, 1 asl, 1 bsl, 5 sts-1 bsl, 5 sts-1 bsl, 5 sts-0; tarsi I-IV, 2 bsl, 1 peg in dep. (fig. 43), 2 tsl, 14 sts-1 bsl, 1 tsl, 15 sts-1 tsl, 14 sts-7 sts.

**Deutonymph & Larva (unknown).**


**Location of material.** ♀ — Holotype, 13 ♀ — paratypes, 2 ♀ — paratypes and 2 tritonymph paratypes deposited in the acarological collection of the Institute for Zoological Research, Potchefstroom University, R.S.A.; 7 ♀ — paratypes and 1 tritonymph paratype deposited in the National collection of the Plant Protection Research Institute, Agricultural Technical Services, Pretoria, R.S.A.

**Remarks.** The dorsal plate of the females of the Angola material is provided with fine lobes. The tritonymphs of the same material possess dorsal and ventral striations with fine lobes.

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**References**


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