THE FAMILY ALICORHAGIIDAE GRANDJEAN (ACARI : TROMBIDIFORMES) WITH DESCRIPTIONS OF A NEW GENUS AND SPECIES FROM SOUTH AFRICAN SOILS

BY

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INTRODUCTION.

Mites of the family Alicorhagiidae are relatively unknown and up to now only one genus, *Alicorhagia* Berlese, has been described. The present authors found this family to be very common in different types of local pasture soils. A single new species, *A. usitata*, is added to the list of the existing genus *Alicorhagia*. A new genus, *Stigmalychus*, is introduced with *S. veretrum* as the nominate species. Although this genus is provisionally placed in the family Alicorhagiidae it exhibits some characters which are atypical for the family and it may be proved later to belong to a different subfamily or family.

The type material of the new species described in this paper is deposited in the collections of the Institute for Zoological Research, Potchefstroom University and the Acarology Section of the Plant Protection Research Institute, Dept. of Agricultural Technical Service, Pretoria.

Familly *Alicorhagiidae* Grandjean, 1939.

Alicorhagiidae Grandjean, 1939, Ann. Sci. nat. 11 (2) ; BAKER & WHARTON, 1952, An introduction to Acarology, New York, Macmillan Co., 202-203.

These mites are small and of a whitish colour. A light suture separates the propodosoma and the hysterosoma. The hysterosoma is sacciform or slightly elongate and may be divided into sections. The body setae are arranged in transverse rows. The integument is soft with tuberculate striae. One pair of propodosomal sensillae is present and the epivertex bears two setae at its anterior tip. Eyes are absent. Stigmata and peritremes are lacking in the genus *Alicorhagia* but are present in the genus *Stigmalychus*. The opposed chelicerae are dentate.

The legs have six segments and the femur is divided into a basi- and telofemur. All tarsi have a single curved empodial claw. Two or three pairs of genital suckers are present.

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Genus *Alicorhagia* Berlese, 1910.

Alicorhagia, Berlese, 1910, Redia 6 (2) : 243 ; Grandjean, 1939, *Ann. Sci. nat.* 11 (2) : 72-73 ; Thor & Willman, 1941, *Das Tierreich* 71 : 155-156.
Willania, Oudemans, 1931, Ent. Ber. 8 (179) : 256.
Epistomalycus, Thor, 1931, Zool. Anz. 94 (9/10) : 233-234.

The main characters of this genus are : two pairs of genital suckers present ; each genital cover with ten setae ; the epivertex relatively large and the hysterosoma broad and sac-like.

Type species : *Alicorhagia fragilis* Berlese, 1910.

Alicorhagia usitata spec. nov.
(figs. 1-10).

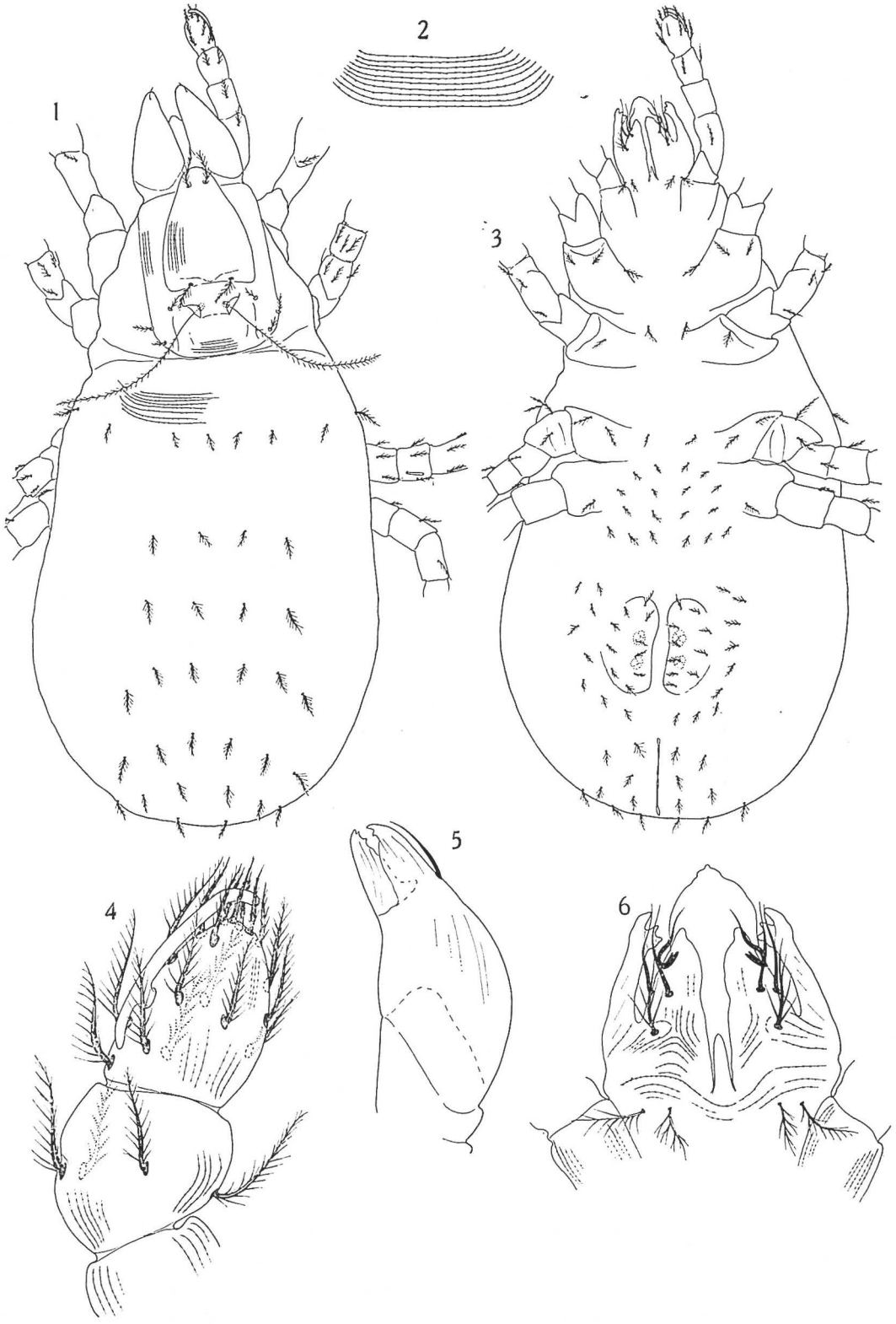
Female (figs. 1-9) : Dimensions : length of body (incl. gnathosoma) 292-337 μ ; breadth of body 125-146 μ ; length of propodosoma 77-79 μ ; length of chelicerae 45-47 μ.

Dorsum (figs 1-2) : The propodosoma and hysterosoma are separated by a faint suture (fig. 1). The propodosoma is provided with a large epivertex. Six pairs of setae are situated on the propodosoma, viz., a pair of relatively long ciliate sensillae, three pairs of relatively short branched setae and two pairs of branched setae of which one pair is situated on the posterior region and the other on the anterior region of the epivertex. No eyes are present and no tracheal system could be seen. The hysterosoma is soft, sacciform and is not divided. It bears eighteen pairs of branched setae which are arranged in transverse rows. The integument (fig. 2) has fine, punctuated striae, mostly running transversely.

Venter (fig. 3) : Coxae I-II and III-IV are in two groups and are apparently immovable. A pair of small, branched setae is situated immediately anterior to coxae II. Ten pairs of small branched setae are located between coxae III and IV. The genital opening is situated midway between coxae IV and the posterior tip of the body and possesses two pairs of genital suckers. Each genital cover bears ten setae of which six are arranged in a row next to the genital opening, with the remaining four setae situated on the lateral margin. Eight or nine pairs of para-genital setae are situated around the genital opening. The anal opening is placed posteriorly and is relatively large. Eight pairs of setae are situated in the region of the anal opening.

Gnathosoma (figs. 4-6) : The palpi (fig. 4) have six segments. The setal formula for the segments of the palpi are (with the solenidion in parentheses) : 0 — 0 — 2 — 1 — 4 — 18 (1). Each chelicera bears a single nude seta antero-dorsally. The movable digit of the chelicera (fig. 5) is tridentate and the fixed digit is bidentate. The venter of the gnathosoma (fig. 6) bears three pairs of branched setae, two pairs of long nude setae, a pair of curved setae and a pair of large three-tined maxillae.

Legs (figs. 7-9) : The legs have six segments and all femora are divided. The setal formulae for the segments of the legs are (with the solenidia in parentheses) : tarsi 49 (5) — 18 (3) — 16 — 16 ; tibiae 8 (5) — 7 (2) 5 (2) — 7 (1) ; genua 5 (5) — 5 (1) — 3 (1) — 3 ; femora 9 — 10 — 5 — 4 ; trochanter 0 — 0 — 2 — 1 ; coxae 3 — 1 — 2 — 1. The solenidia are of different shapes (figs. 7, 8 and 9). The leg striae are finely punctulate. All tarsi bear a single, strongly curved empodial claw.

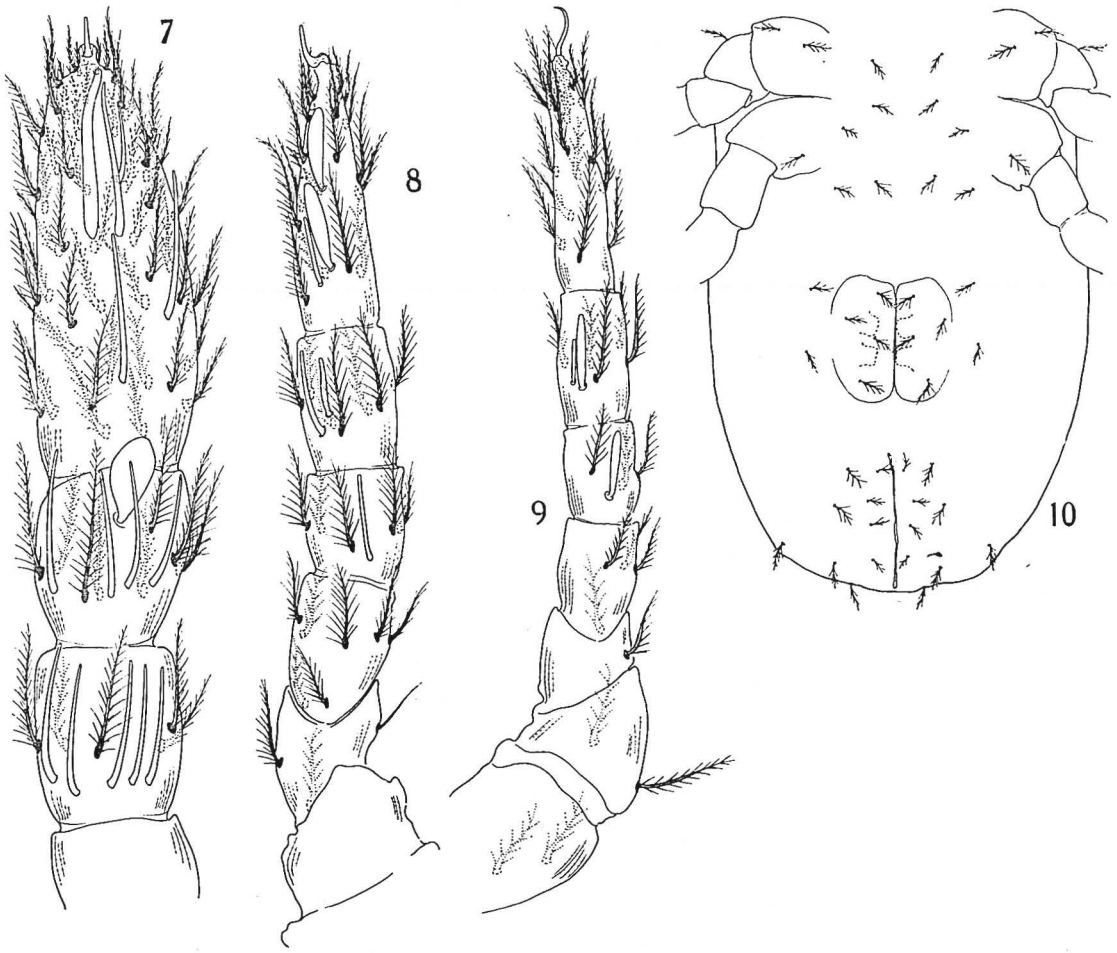


FIGS. 1-6 : *Alicorhagia usitata* spec. nov., female.

1. — Dorsum. 2. — Dorsal striae. 3. — Venter. 4. — Palp. 5. — Chelicera. 6. — Venter of gnathosoma.

NYMPHA (fig. 10) : One nymphal stage was found, probably the deutonymph. The dimensions of this stage are : length of body (incl. gnathosoma) 260-285 μ ; breadth of body 95-114 μ ; length of propodosoma 70-79 ; length of chelicera 45 μ.

The hysterosoma is covered dorsally by seventeen pairs of setae. The genital opening (fig. 10) is provided with four pairs of genital setae and two pairs of para-genital setae. Two



FIGS. 7-10 : *Alicorhagia usitata* spec. nov.
7. — Leg. I, female. 8. — Leg II, female. 9. — Leg III, female. 10. — Venter of opisthosoma, deutonymph.

pairs of genital suckers are present. The setal formulae for the segments of the legs are (with the solenidia in parentheses) : tarsi 40 (4) — 17 (2) — 15 — 15 ; tibiae 7 (4) — 6 (2) — 4 (2) — 4 (1) ; genua 5 (4) — 4 (1) — 3 (1) — 3 ; femora 7 — 6 — 4 — 2 ; trochanter 0 — 0 — 2 — 1 ; coxae 3 — 1 — 2 — 1. The palpal tarsus bears sixteen branched setae and one large solenidion.

MATERIAL STUDIED : ♀-holotype, 13 ♀-paratypes and 4 paratype nymphae collected from cultivated soil, Potchefstroom, Tvl., March 1968 (P. D. THERON).

Genus **Stigmalychus** gen. nov.

This genus can be recognized by the following characters : three pairs of genital suckers are present ; the genital covers, each with seven setae, are pointed posteriorly and are well defined ; the epivertex is relatively small ; the hysterosoma is slightly elongate and is divided by two transverse sutures ; stigmata and peritremes are present and easily perceptible.

Type species : **Stigmalychus veretrum** spec. nov.

Stigmalichus veretrum gen. nov., spec. nov.
(figs. 11-25).

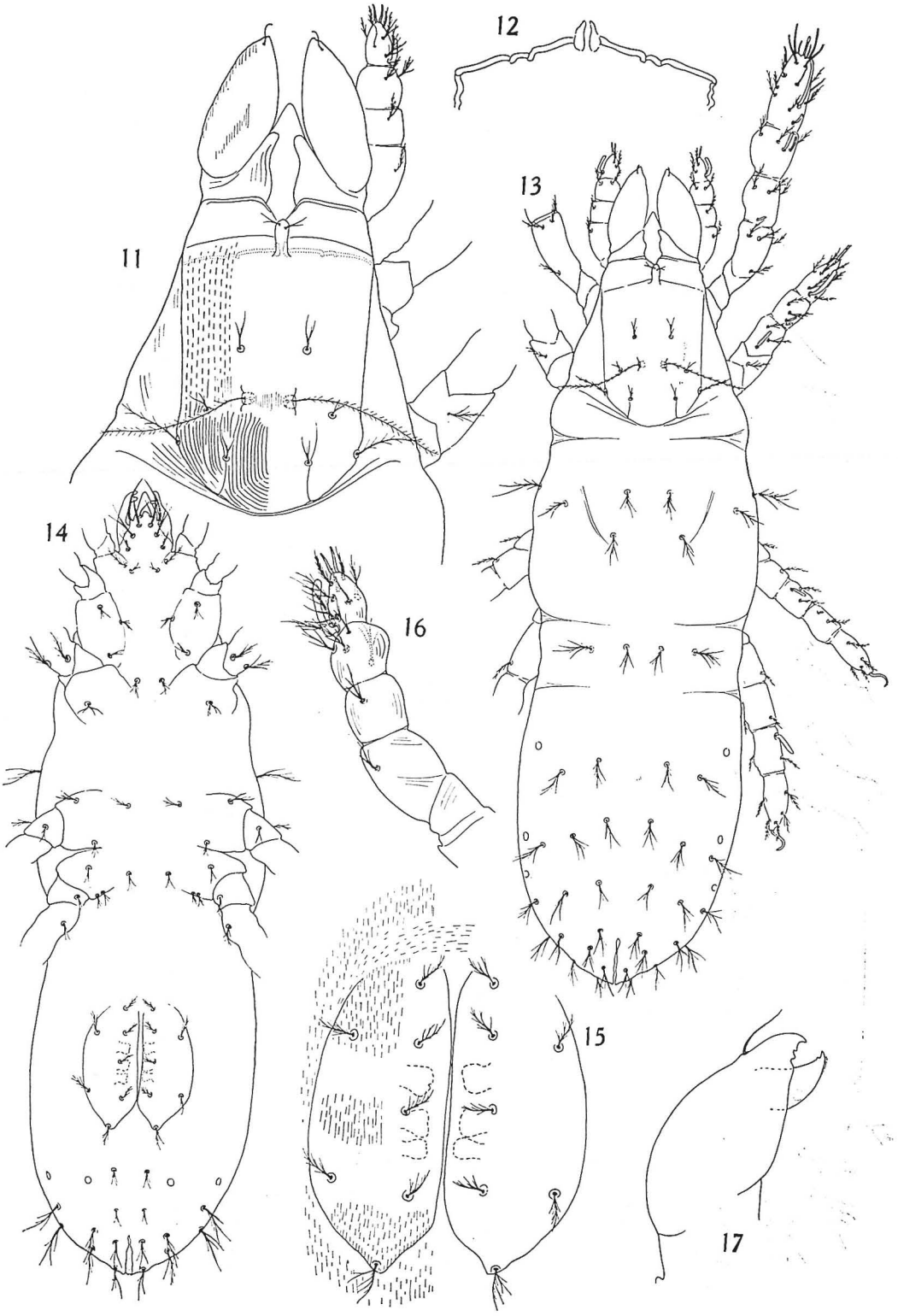
FEMALE (figs. 11-22) : Dimensions : length of body (incl. gnathosoma) 239-260 μ ; breadth of body 66-74 μ ; length of propodosoma 50 μ ; length of chelicerae 30-31 μ.

Dorsum (figs. 11-13) : The propodosoma and hysterosoma are separated by a light suture. The propodosoma (fig. 11) bears six pairs of setae, viz., one pair of relatively long ciliate sensillae, three pairs of short branched setae, one pair of ciliate setae which are less than half the length of the sensillae and are situated on the lateral margin of the propodosoma, and a pair of small branched setae which are situated at the tip of the small epivertex. Eyes are absent. The peritremes (fig. 12) are distinct, situated more or less in line with the base of the epivertex, and are shaped as depicted. The integument of the anterior portion of the propodosoma is provided with broken striae while the posterior portion has continuous striae. The hysterosoma is elongate and is divided into three sections by two often indistinct sutures (fig. 13). Four pairs of characteristically branched setae, of which the humeral pair is a little longer than the others, are situated on the anterior section. The middle section bears a transverse row of four setae. The posterior section carries thirteen pair of setae as well as three pairs of small rounded cavities of uncertain function. The anal opening is situated terminally.

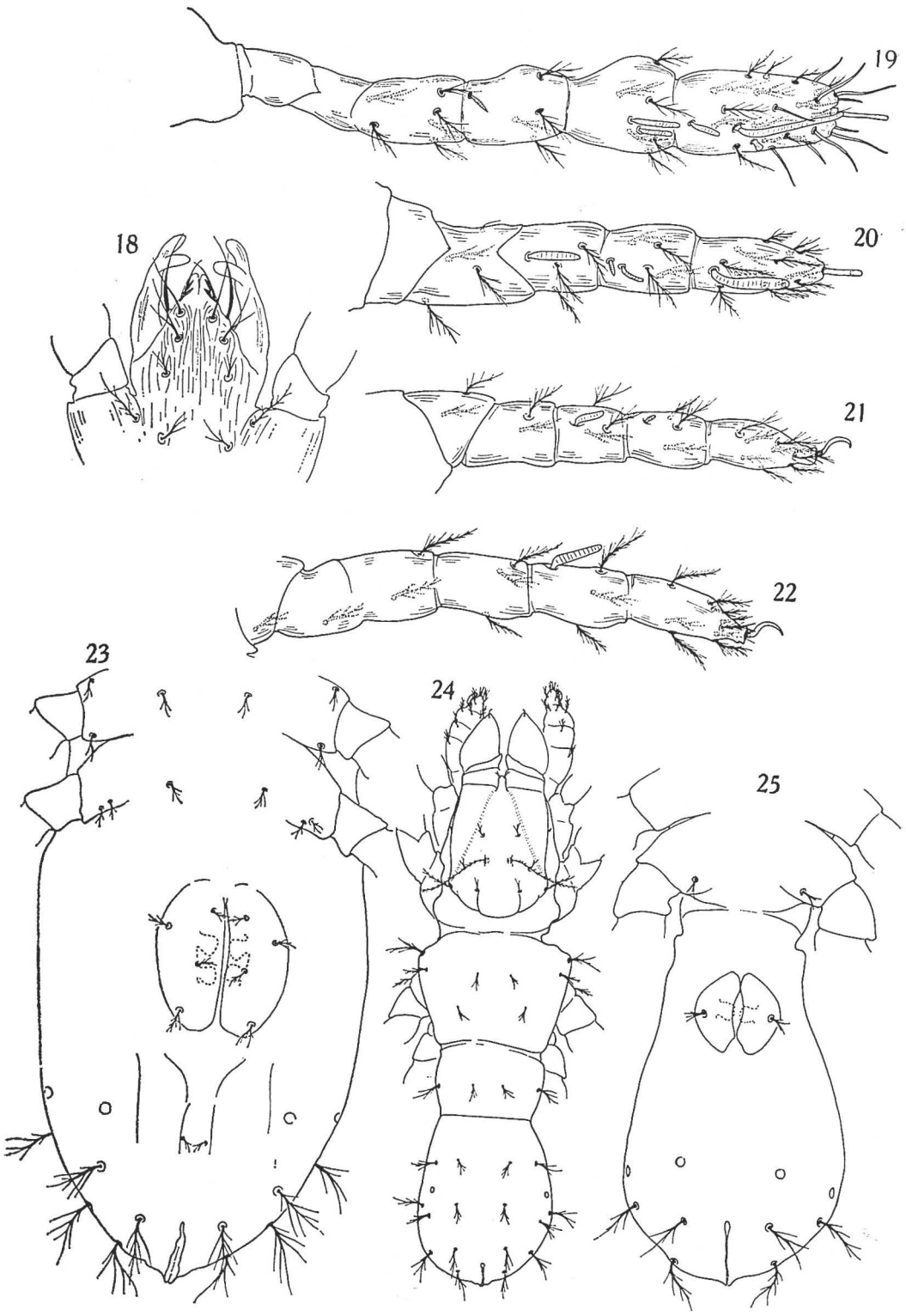
Venter (figs. 14-15) : The transverse sutures are indistinct on the venter (fig. 14). Coxae I-II and III-IV are in two groups and are immovable. The genital opening (fig. 15) is relatively large and is situated midway between coxae IV and the posterior tip of the body. The genital covers are clearly defined and each bears seven setae of which four are arranged in a row next to the genital slit and the remaining three are on the lateral margin. Three pairs of genital suckers are present. Eight pairs of setae are born on the posterior region of the opisthosoma as well as two pairs of rounded cavities in the integument. The rest of the ventral idiosoma is provided with three pairs of setae, viz., one pair between coxae IV, one pair between coxae III and another pair immediately anterior to coxae II.

Gnathosoma (figs. 16-18) : The palpi (fig. 16) consist of six segments. From base to apex the setal formula for the segments of the palpi is : 1 — 0 — 1 — 1 — 4 — 8 (3). The setae on the palptarsus are of four different types, viz., seven branched setae, one fine simple seta, two terminal rodlike solenidia and one relatively large curved solenidion. Each chelicera bears a single nude seta antero-dorsally. The movable digit of the chelicera (fig. 17) is bidentate and the fixed digit is tridentate. The venter of the gnathosoma (fig. 18) bears three pairs of branched setae, three pairs of long nude setae and a pair of large two-tined maxillae.

Legs (figs. 19-22) : The legs are relatively thick and sparsely covered with setae. All the legs have six segments and both femora I and IV are partially divided. The setal formulae



FIGS. 11-17 : *Stigmalychus veretrum* gen. nov., spec. nov., female.
11. — Propodosoma. 12. — Peritreme. 13. — Dorsum. 14. — Venter. 15. — Genital opening. 16. — Palp.
17. — Chelicera.



FIGS. 18-25 : *Stigmalychus veretrum* gen. nov., spec. nov.

18. — Venter of gnathosoma, female. 19. — Leg I, female. 20. — Leg II, female. 21. — Leg III, female. 22. — Leg IV, female. 13. — Venter of opisthosoma, deutonymph. 24. — Dorsum, protonymph. 25. — Venter of opisthosoma, protonymph.

for the segments of the legs are (with the solenidia in parentheses) : tarsi 24 (3) — 12 (1) 9 — 9 ; tibiae 6 (2) — 4 (2) — 3 (1) — 3 (1) ; genua 4 (1) — 3 (1) — 3 (1) — 3 ; femora 6 — 4 — 2 — 3 ; trochanters 0 — 0 — 2 — 1 ; coxae 3 — 1 — 2 — 3. Thirteen of the twenty-four setae on tarsus I (fig. 19) are stiff and rodlike whilst the remaining eleven are normally branched. One seta on femur II (fig. 20) is very small and simple. All tarsi bear a single, strongly curved empodial claw which is apparently not retractable.

TRITONYMPH : Dimensions : length of body (incl. gnathosoma) 180-196 μ ; breadth of body 53-61 μ ; length of propodosoma 47-50 μ.

The tritonymph is almost identical to the adult but can be distinguished by its smaller size.

DEUTONYMPH (fig. 23) : Dimensions : length of body (incl. gnathosoma) 172-194 μ ; breadth of body 53-61 μ ; length of propodosoma 47 μ ; length of chelicerae 29 μ.

The details of the dorsum are similar to that of the adult except for the opisthosoma which lacks one or two pairs of setae. The genital opening (fig. 23) is provided with two pairs of genital suckers. Four pairs of setae are present on the genital covers. The rest of the ventral opisthosoma bears four or five pairs of setae. The setal formulae for the segments of the legs are (with the solenidia in parentheses) : tarsi 18 (3) — 11 (1) — 9 — 9 ; tibiae 6 (2) — 4 (2) — 3 (1) — 3 (1) ; genua 4 (1) — 3 (1) — 2 (1) — 3 ; femora 4 — 4 — 2 — 2 ; trochanters 0 — 0 — 2 — 0 ; coxae 3 — 1 — 2 — 3. The setae on tarsus I are of two types, viz., ten stiff rodlike setae and eight branched setae. The palpi are identical to those of the adult except for the tarsi which lack one of the branched setae.

PROTONYMPH (figs. 24-25) : Dimensions : length of body (incl. gnathosoma) 186 μ ; breadth of body 47 μ ; length of propodosoma 42 μ ; length of chelicera 26 μ.

The transverse sutures are distinct dorsally (fig. 24). The opisthosoma bears eight pairs of setae dorsally and the rest of the dorsal chaetotaxy is similar to that of the adult. The genital opening (fig. 25) is provided with one pair of genital suckers and the genital covers bear one seta each. The setal formulae for the segments of the legs are (With the solenidia in parentheses) : tarsi 17 (3) — 11 (1) — 9 — 7 ; tibiae 6 (2) — 4 (2) — 3 (1) — 0 ; genua 3 (1) — 3 (1) — 2 (1) — 0 ; femora 3 — 3 — 2 — 0 ; trochanters 0 — 0 — 1 — 0 ; coxae 3 — 1 — 2 — 1. Eight of the seventeen setae on tarsus I are stiff and rodlike whilst the remaining nine are normally branched. The palpi resemble those of the deutonymph.

MATERIAL STUDIED : ♀-Holotype, 5 ♀-paratypes, 6 paratype tritonymphae, 9 paratype deutonymphae and 1 paratype protonympha collected from pasture soil, Potchefstroom, Tvl., during three successive surveys, February-July 1967 (P. D. Theron).

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