GAMASELLOPSIS, A NEW GENUS OF RHODACARIDAE (ACARI) FROM FOREST SOIL IN SOUTH AFRICA

BY

G. C. LOOTS & P. A. J. RYKE.

(Institute for Zoological Research, Potchefstroom University, South Africa).

GENUS **GAMASELLOPSIS** gen. nov.

This new genus is based on four new species collected from the floor of the evergreen indigenous forest at Magoebaskloof, Transvaal and is placed in the family Rhodacaridae on account of the divided dorsal shield in the nymphs and the fact that the chaetotaxy of the legs (see EVANS, 1963) is basically similar to other rhodacarid genera. The type material of the new species described in this paper is deposited in the collections of the Institute for Zoological Research, Potchefstroom University.

Diagnosis : Small, well sclerotized specimens with an entire dorsal shield in the adult stage. The dorsum bears 35-37 pairs of setae, 15 pairs of which are situated on the opisthonotal region of the dorsal shield. The latter region is apparently characterized by the presence of two pairs of px setae. Sternal shield with four pairs of simple setae. Opisthogaster of both female and male with seven pairs of setae, excluding the circumanals. Male with sterniti-genital and ventri-anal shields. Fixed digit of female chelicerae with four denticles and movable digit tridentate ; movable digit of male chelicerae unidentate and bearing a spermatophoral process with free distal end. Apotele on palptarsus threetined. Chaetotaxy of legs basically normal for Rhodacaridae except for genu I and IV ; genu I bears only two ventral setae (av2 being absent), and genu IV has only one ventral seta (pv1 absent) and one of its dorsal setae (ad2) may also be absent. Tibia I provided with a ventral dilation in the adults. Leg II of male armed.

Genotype : *Gamasellopsis curtipilus* spec. nov.

KEY TO THE SPECIES OF *Gamasellopsis*.

1. Dorsum with 35 pairs of simple setae ; genu IV with 4 dorsal setae (ad2 absent)..... **G. vandenbergi**
— Dorsum with 37 pairs of setae ; genu IV with 5 dorsal setae (ad2 present)..... 2.
2. Setae jl and J5 with rounded distal ends, the latter being twice as long as the other setae on dorsum ; postanal seta twice as long as para-anals..... **G. magoebaensis.**
— All dorsal setae simple and the majority of about equal length..... 3.
3. Majority of the dorsal setae about as long as the distances between consecutive setal bases ; circumanal setae simple with postanal seta approximately twice as long as para-anals ..... **G. longipilus.**
— Dorsal setae considerably shorter than the distances between consecutive setal bases ; circumanal setae with rounded tips and all of approximately equal length..... **G. curtipilus.**

Gamasellopsis curtipilus spec. nov.

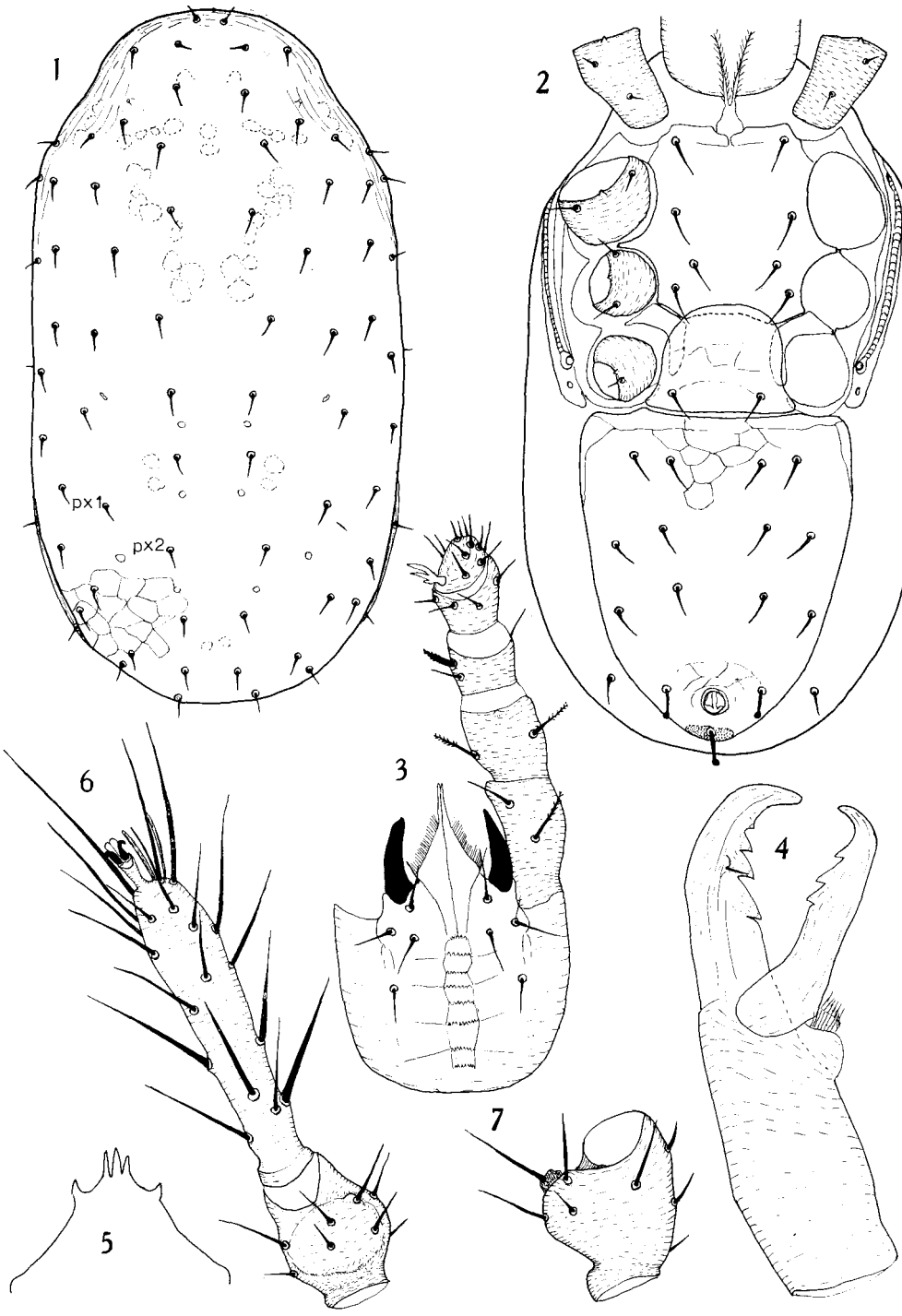
figs. 1-12.

Female (figs. 1-7).

Dimensions : Lenght, 318-346 μ ; breadth, 164-192 μ ; leg I (excluding pretarsus), 279-308 μ ; leg IV, 202-250 μ ; length of ventri-anal shield, 142-179 μ ; breadth, 117-135 μ ; length of genital shield (between posterior margins of genital and sternal shields), 40-47 μ ; breadth, 61-72 μ ; length of sternal shield, 77-84 μ ; breadth (between coxae II), 61-65 μ ; postanal seta, 16-21 μ ; vertical seta, 9 μ ; scapular seta, 9-14 μ ; J5, 12 μ.

Dorsum (fig. 1). The dorsum is provided with 37 pairs of simple setae, 34 pairs of which are situated on the entire dorsal shield. One of the three pairs which are placed on the lateral interscutal membrane is situated in the podonotal region. The j and z series are each composed of the normal complement of six setae whereas the s and r series have five and three respectively. Setae s1, r1, r2 and r5 are absent. Only the J series on the opisthonotum has the full complement of five, the Z and S series eaching having four, and the R series consisting of two setae which are placed on the membrane. An additional px series consisting of two pairs of setae is present between the J and Z series. The dorsal shield is ornamented with interconnecting punctated lines which are more prominent on the opisthonotum. Five pairs of pores could be detected on the dorsum.

Venter (fig. 2). The sternal shield is provided with four pairs of simple setae and the pair of pre-endopodal shields is fused with its anterior margin. The peritrematal shields are narrow and produced slightly behind the posterior margins of coxae IV ; the peritremes strecth anteriorly to a position immediately behind the anterior margins of coxae II. Free metapodal shields are absent.



FIGS. 1-7. — *Gamasellopsis curtipilus* spec. nov., female.

Fig. 1, dorsum ; Fig. 2, venter ; Fig. 3, gnathosoma ; Fig. 4, chelicera ; Fig 5, tectum ; Fig. 6, tibia and tarsus I ; Fig. 7, tibia I.

The genital shield is well sclerotized, bears a pair of simple setae and its membraneous anterior margin overlaps the hind margin of the sternal shield. The ornamented ventri-anal shield is longer than broad and bears six pairs of setae in addition to the circum-anals. The latter setae have rounded distal tips, the para-anals being placed in line with the anterior margin of the anus. The opisthogastric cuticle is provided with one pair of simple setae.

Gnathosoma (figs. 3-5). The corniculi extend anteriorly to a position just behind the front margin of the palp trochanter ; the inner malae reach more anteriod past this point (fig. 3). The hypostome bears four relatively short setae and eight rows of denticles. The chaetotaxy of the palp is normal ; the palp tarsus bears a three-tined apotele, one of the tines being very small ; the femur is provided with a small spur-like projection ventrally. The fixed digit of the chelicera (fig. 4) bears four teeth and the movable digit is tridentate ; the pilus dentilis is small. The anterior margin of the tectum (fig. 5) has three median teeth flanked by two lateral projections.

Legs (figs. 6-7). The well sclerotized legs bear simple as well as rod-like setae. The chaetotaxy of the legs (after EVANS, 1963) can be summerized as follows :

Leg No.	I	II	III	IV
Trochanter	6	5	5	5
Femur	$(2 - \frac{5}{4} - 2)$	$(2 - \frac{5}{3} - 1)$	6	6
Genu	$(2 - \frac{3}{1}, \frac{3}{1} - 2)$	$(2 - \frac{3}{1}, \frac{2}{1} - 2)$	$(2 - \frac{2}{1}, \frac{2}{0} - 1)$	$(2 - \frac{2}{1}, \frac{3}{0} - 1)$
Tibia	$(2 - \frac{3}{2}, \frac{3}{2} - 2)$	$(2 - \frac{2}{1}, \frac{2}{1} - 2)$	$(2 - \frac{1}{1}, \frac{2}{1} - 1)$	$(2 - \frac{1}{1}, \frac{3}{1} - 1)$

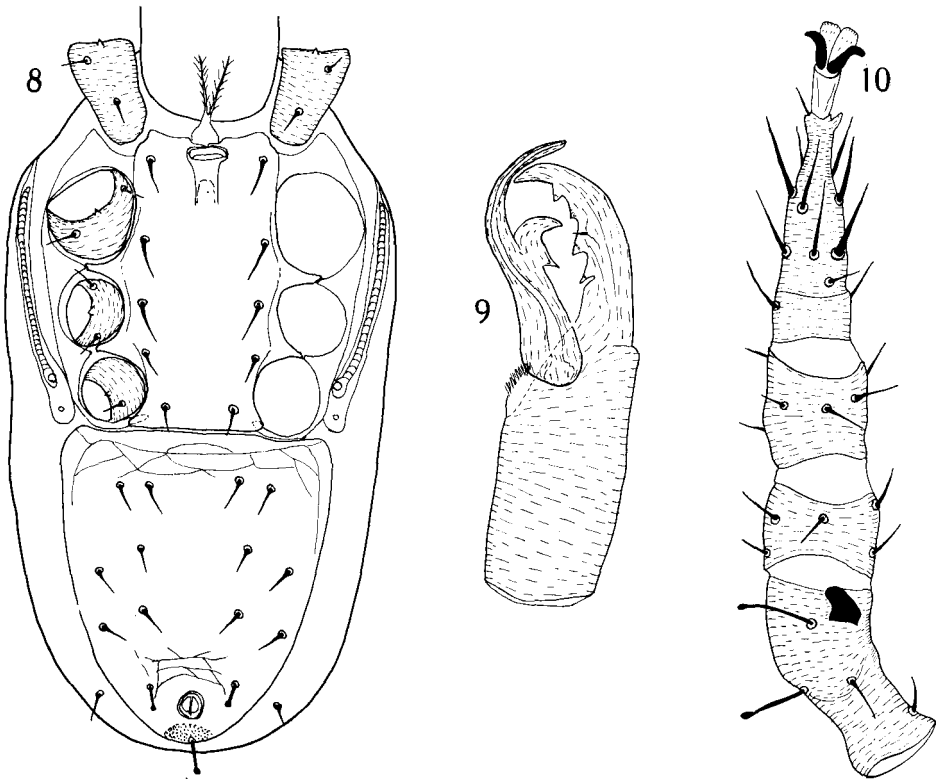
With the exception of genu I this species has the same chaetotactic pattern as *Sessiluncus heterotarsus*. There is a pronounced reduction in the number of ventral setae on the genu of leg I as well as those of legs III and IV. Tarsus I (fig. 6) is provided with two rod-like setae in addition to the simple and other sensory setae. All the legs are provided with pretarsi, claws and pulvilli, the claws on leg I being small. The tibia of leg I has a ventral dilation (figs. 6 & 7) and seta pv1 is situated on a small protuberance (fig. 7).

Male (figs. 8-10).

Dimensions : Length, 269-299 μ ; breadth, 134-173 μ ; leg I, 241-270 μ ; leg IV, 202 μ ; length of ventri-anal shield, 110-121 μ ; breadth, 93-114 μ ; length of sterniti-

genital shield, 107-119 μ ; breadth, 56-58 μ ; postanal seta, 19-21 μ ; vertical seta, 9 μ ; scapular seta, 12 μ ; seta J5, 9-12 μ.

The dorsum of the male resembles that of the female. The venter is covered by a sterniti-genital and a ventri-anal shield (fig. 8). The pre-endopodal shields are fused with the sternal shield. Other features of the venter resemble those of the female. The fixed digit of the chelicera (fig. 9) is provided with four teeth and a small pilus dentilis ; the movable digit is unidentate and the spermatophoral process is free distally. Leg II (fig. 10) is armed with a spur on the femur ; the latter also bears setae with rounded tips (also present in the female).



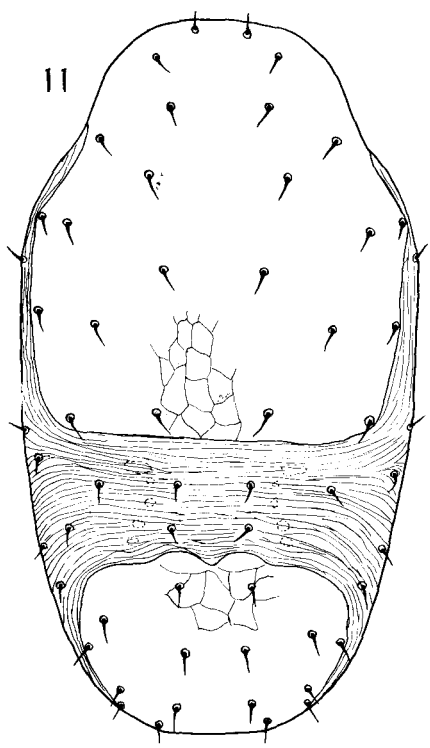
FIGS. 8-10. — *Gamasellopsis curtipilus* spec. nov., male.
Fig. 8, venter ; Fig. 9, chelicera ; Fig. 10, leg. II

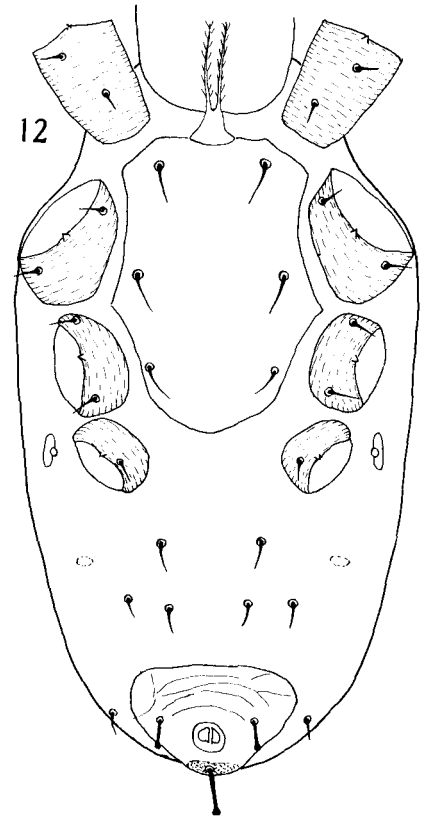
Protonymph (figs. 11-12).

Dimensions : Length, 231 μ ; breadth, 125 μ ; leg I, 222 μ ; leg IV, 173 μ ; length of anal shield, 33 μ ; breadth, 54 μ ; length of sternal shield, 93 μ ; breadth, 56 μ ; length of anterior dorsal shield 133 μ ; breadth, 125 μ ; length of pygidial shield, 54 μ ; breadth, 91 μ.

Dorsum (fig. 11). The dorsum is covered by a podonotal and a pygidial shield. The podonotum bears 14 pairs of simple setae, 12 pairs of which are situated on the anterior dorsal shield. The j and z series are each composed of five setae whereas the s and r series each has two setae. The r series are placed on the integument.

The opisthonotum bears 15 pairs of simple setae, eight pairs of which are situated on the pygidial shield. The J, Z and S series are each composed of five setae, the R and px series being absent.





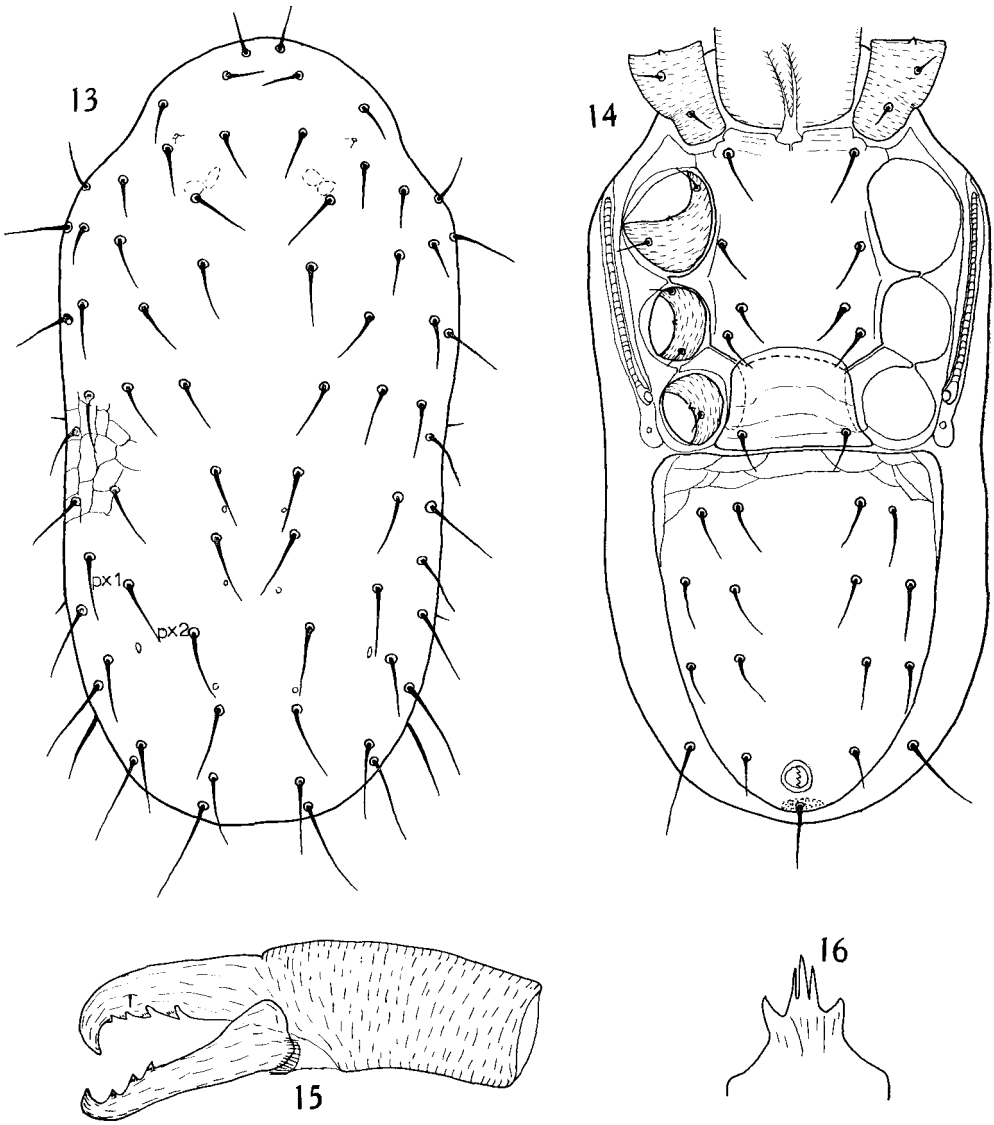
FIGS. 11-12. — *Gamasellopsis curtipilus* spec. nov. protonymph.
Fig. 11, dorsum ; Fig. 12, venter.

Venter (fig. 12). The sternal shield with its convex posterior margin bears three pairs of simple setae. The peritrematal shields are small and the peritremes are very short. The opisthogastric cuticle is provided with four pairs of setae. The circumanal setae on the anal shield resemble those of the adult.

Legs. The ventral dilation on tibia I is absent.

Material studied :

Holotype ♀, allotype ♂, morphotype protonymph, 2 paratypes ♀♀ and 1 ♂ from soil in the indigenous evergreen forest at Magoebaskloof, Transvaal ; collected by means of Berlese funnels by R. A. VAN DEN BERG, 1963.



FIGS. 13-16. — *Gamasellopsis longipilus* spec. nov., female.
Fig. 13, dorsum ; Fig. 14, venter ; Fig. 15, chelicera ; Fig. 16, tectum.

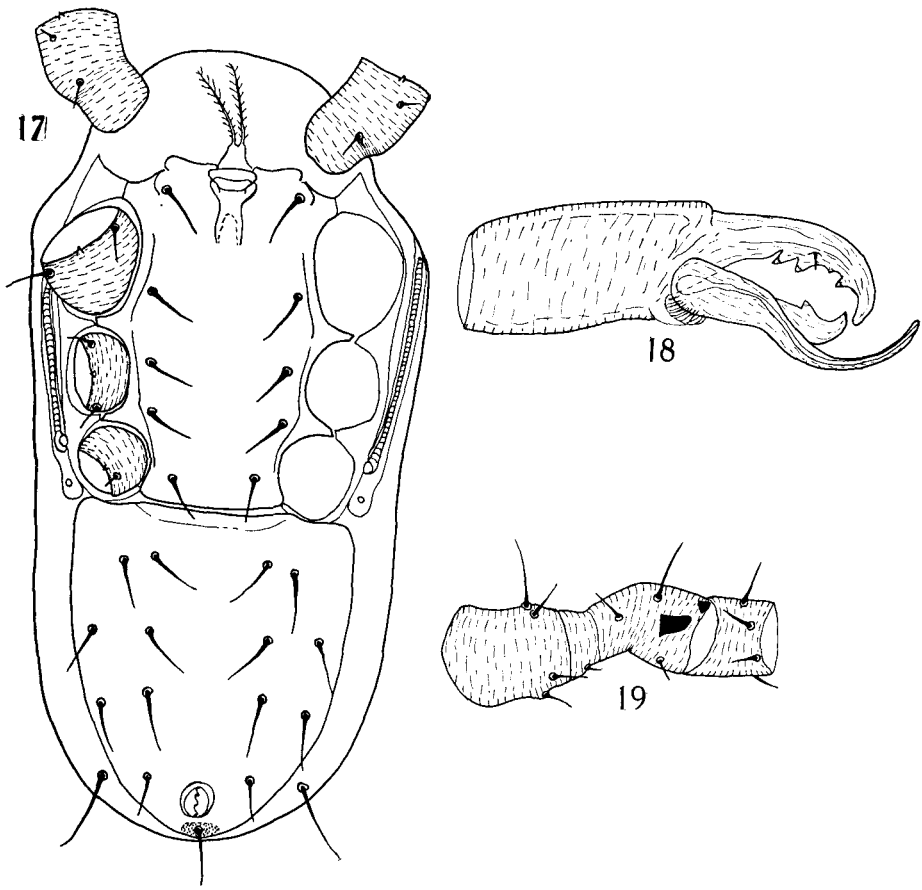
Gamasellopsis longipilus spec. nov.

figs. 13-19.

Female (figs. 13-16).

Dimensions : Length, 279-289 μ ; breadth, 145-154 μ ; leg I, 250-260 μ ; leg IV, 193-202 μ ; length of ventri-anal shield, 126-133 μ ; breadth, 102-117 μ ; length of genital shield, 33-40 μ ; breadth, 56-61 μ ; length of sternal shield, 77-79 μ ; breadth, 56-61 μ ; postanal seta, 21-23 μ ; vertical seta, 14-16 μ ; scapular seta, 23-26 μ ; seta J5, 28-35 μ.

Dorsum (fig. 13). The dorsum is provided with 37 pairs of simple setae, the arrangement of which closely resembles that of *G. curtipilus*. The setae, however, are much longer than those of the latter species and the majority of them have



FIGS. 17-19. — *Gamasellopsis longipilus* spec. nov. male.
Fig. 17, venter ; Fig. 18, chelicera ; Fig. 19, leg II.

a length which almost equals the distances between consecutive setal bases. Only setae r6 and R2 are considerably shorter than the other dorsal setae. As in *curtipilus* two pairs of px setae are present. The dorsum is ornamented by interconnecting, punctated lines and it bears five pairs of pores, one pair of which is situated on the podonotum.

Venter (fig. 14). The sternal shield (with the fused preendopodal shields), the genital and peritrematal shields, and the peritreme closely resemble those of *curtipilus*. The opisthogaster is provided with seven pairs of simple setae in addition to the circumanals. The ventri-anal shield is ornamented by a punctated line reticulation. The postanal seta and the pair situated on the opisthogastric cuticle are longer than the other setae on the venter.

Gnathosoma (figs. 15-16). The hypostome resembles that of *curtipilus* in having eight rows of denticles. The chelicerae (fig. 15) as well as the tectum (fig. 16) are also basically similar to those of the type species.

Legs. The chaetotactic pattern on the legs is the same as that of *curtipilus*. Some of the setae are longer and none of the setae on femur I have rounded distal ends.

Male (figs. 17-19).

Dimensions : Length, 250 μ ; breadth, 125 μ ; leg I, 231 μ ; leg IV, 193 μ ; length of ventri-anal shield, 102 μ ; breadth, 91 μ ; length of sterniti-genital shield, 107 μ ; breadth, 54 μ ; postanal seta, 21 μ.

The dorsum of the male is similar to that of the female and the venter (fig. 17) closely resembles that of the male of *curtipilus* except that the postanal seta and the pair of setae on the interscutal membrane are relatively longer. The movable digit of the male chelicera (fig. 18) is unidentate, the spermatophoral process being much longer than the digit ; the fixed digit has four teeth. Leg II is armed as shown in fig. 19.

Material studied :

Holotype ♀, allotype ♂ and 5 female paratypes from soil in the indigenous evergreen forest at Magoebaskloof, Transvaal ; collected by R. A. VAN DEN BERG, 1963.

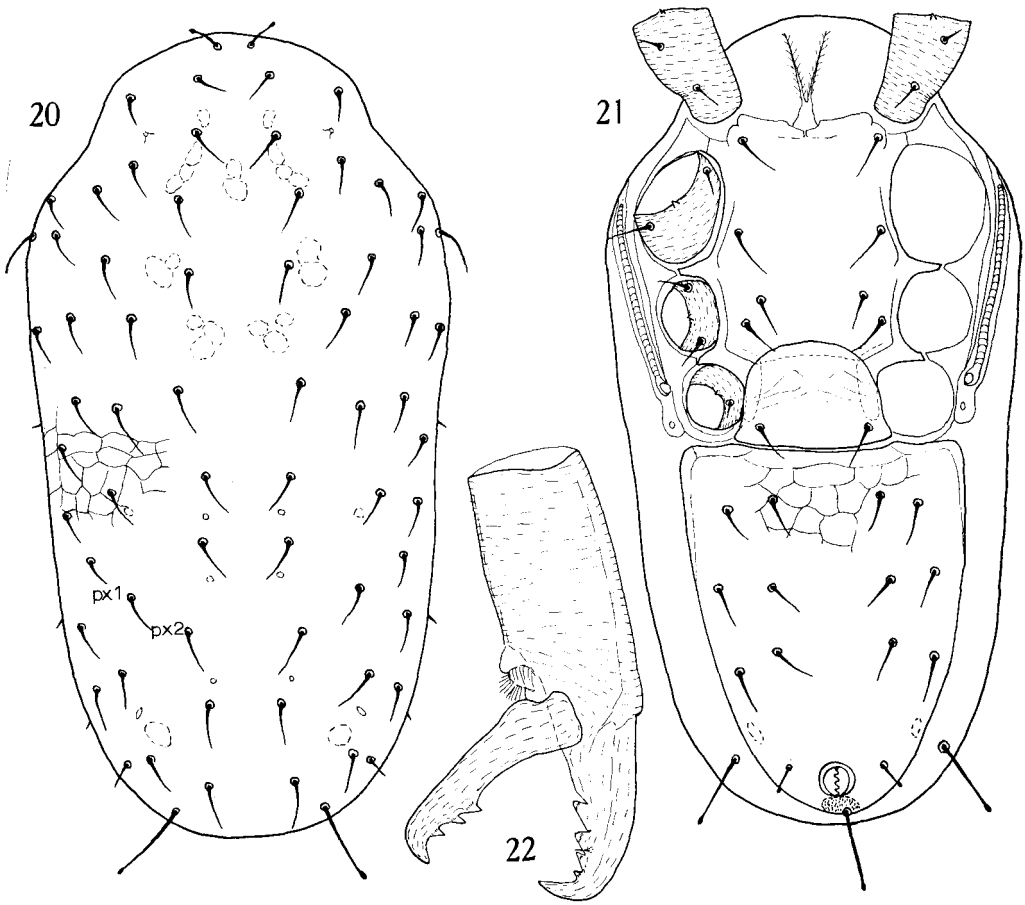
Gamasellopsis magoebaensis spec. nov.,

figs. 20-25.

Female (figs. 20-22).

Dimensions : Length, 289 μ ; breadth, 145 μ ; leg. I, 250 μ ; leg. IV, 202 μ ; length of ventri-anal shield, 128 μ ; breadth, 102 μ ; length of genital shield, 30 μ ; breadth, 58 μ ; length of sternal shield 82 μ ; breadth, 58 μ ; postanal seta, 30 μ ; vertical seta, 14 μ ; scapular seta, 14 μ ; seta J5, 30 μ.

Dorsum (fig. 20). The dorsum bears 37 pairs of setae, two pairs (j1 and J5) having rounded distal ends and three pairs (r6, R2 and R3), which are placed on the lateral interscutal membrane, being considerably shorter than the others. Basically the distribution pattern of the setae resembles those of the species described above. The relative lengths of the setae represent a condition which is intermediate



FIGS. 20-22. — *Gamasellopsis magoebaensis* spec. nov., female.
Fig. 20, dorsum ; Fig. 21, venter ; fig. 22, chelicera.

between *G. curtipilus* and *longipilus*. Setae J5 are placed wide apart and they are twice as long as the majority of the other dorsal setae ; their tips are rounded.

The ornamentation and the pores on the dorsum are similar to those of the other species described. It is evident that these three species are closely related, but as they are sympatric and were even found in the same samples they cannot be regarded as subspecies of a single species.

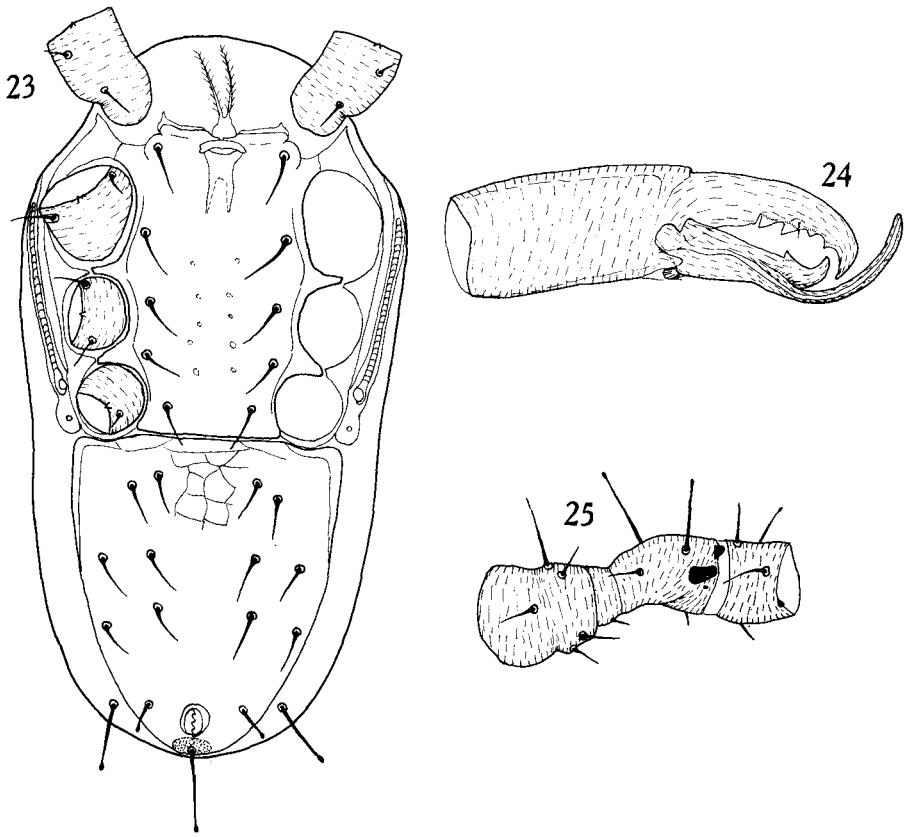
Venter (fig. 21). The venter differs from the other species in the following respects : the endopodal shields in the region of coxae IV are fused with the sternal shield, the line of fusion, however, being discernable. The circumanal setae have rounded tips and the postanal seta is twice as long as the para-anals. The pair of setae on the opisthogastric cuticle are as long as those in *longipilus* but they have rounded tips.

Gnathosoma. The hypostome, chelicerae (fig. 22) and tectum are basically similar to those of the other species.

Legs. The only difference that could be detected was that setae with rounded distal ends were present on both femur and genu of leg I.

Male (figs. 23-25).

Dimensions : Length, 260 μ ; breadth, 134 μ ; leg I, 241 μ ; leg IV, 193 μ ; length of ventri-anal shield, 107 μ ; breadth, 78 μ ; length of sterniti-genital shield, 107 μ ; breadth, 56 μ ; postanal setal, 28 μ ; J5, 30 μ.



FIGS. 23-25. — *Gamasellopsis magoebaensis* spec. nov., male.
Fig. 23, venter ; Fig. 24, chelicera ; Fig. 25, leg. II.

The dorsum is similar to that of the female. The sterniti-genital shield is ornamented by punctated areas (fig. 23) and the ventri-anal shied as well as other features of the venter resemble those of the female. The chelicerae and the spurs on genu II are shown in figs. 24 and 25 respectively.

Material studied.

Holotype ♀ and allotype ♂ from the forest floor at Magoebaskloof, Transvaal ; collected by R. A. VAN DEN BERG, 1963.

Gamasellopsis vandenbergi spec. nov.

figs. 26-34.

Female (figs. 26-31).

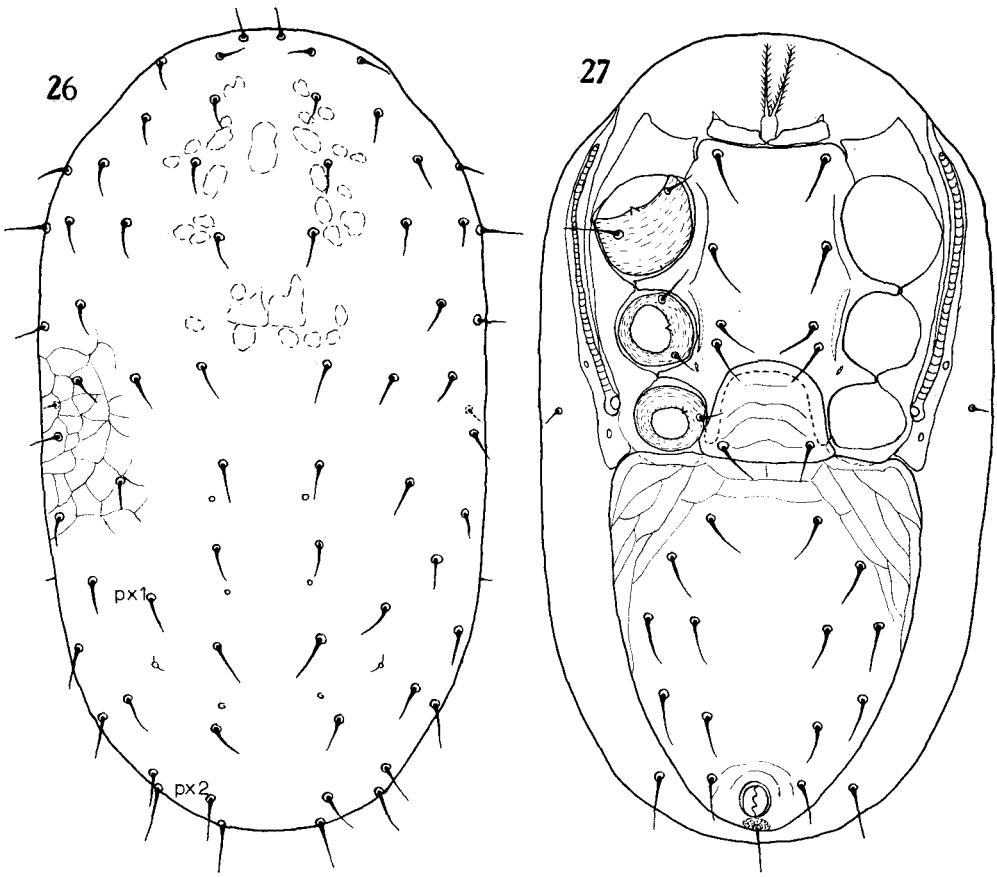
Dimensions : Length, 405 μ ; breadth, 231 μ ; leg I, 424-443 μ ; leg IV, 327-347 μ ; length of ventri-anal shield, 182-184 μ ; breadth, 158-165 μ ; length of genital shield, 42-44 μ ; breadth, 68-72 μ ; length of sternal shield, 110 μ ; breadth, 75 μ ; postanal seta, 21 μ ; vertical seta, 19 μ ; scapular seta, 23 μ ; seta J5, 23-26 μ.

Dorsum (fig. 26). The dorsum bears 35 pairs of setae, two pairs of which are situated on the interscutal membrane ; these latter setae are small and inconspicuous and they are the only reprensentatives of the r and R series. The j, z and s series of the podonotum all have the full complement of six setae ; the pair of r setae is inserted more on the ventro-lateral aspect of the animal. The J series is comprised of the normal five setae whereas the Z and S series each have four. Two pairs of px setae are present, px2 being placed near the posterior margin of the dorsal shield. The shield is ornamented as shown in the figure ; only four pairs of pores, all situated on the opisthonotal region, could be detected.

Venter (fig. 27). The sternal shield is completely fused with the endopodal shields between coxae III and IV. The pair of pre-endopodal shields flanking the base of the tritosternum is free. The exopodal shields are very prominent anterior to coxae II. The peritremal shields which are posteriorly fused with the exopodals, are produced slightly behind coxae IV and abut the ventri-anal shield. The peritreme reaches anteriorly to a position beyond the front margin of coxa II. The genital shield has the normal two setae and its membraneous anterior part overlaps the hind margin of the sternal shield. The ventri-anal shield is provided with six pairs of setae in addition to the circumanals which are of approximately equal lengths. The cuticle of the opisthogaster bears one pair of simple setae which is only slightly longer than the other setae on the venter. The ornamentations on the ventri-anal shield are shown on the figure.

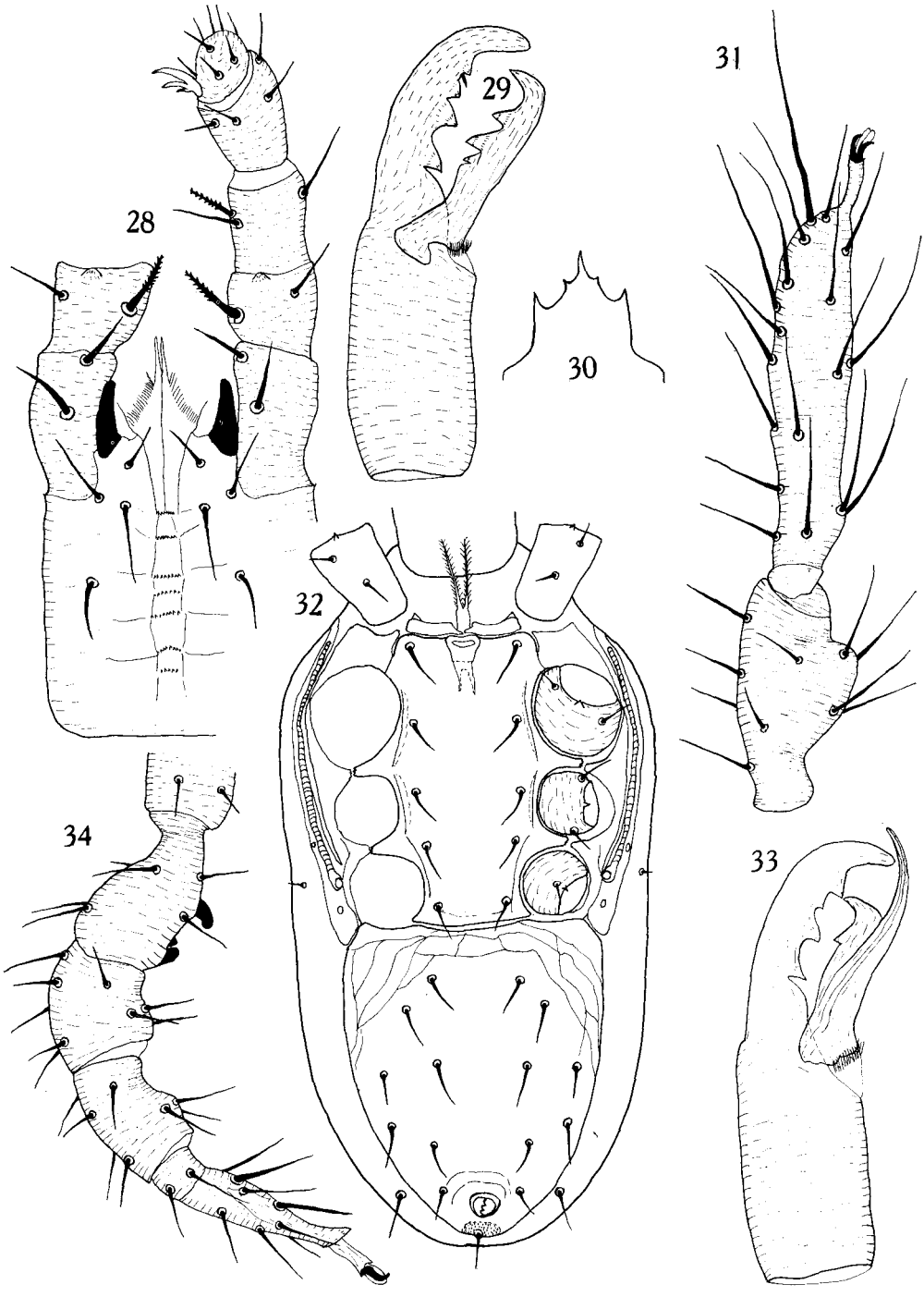
Gnathosoma (figs. 28-30). The corniculi and inner malae are very similar to those of the other species (fig. 28). The hypostome bears seven rows of denticles.

The palp femur differs from the other species in that it bears one relatively stout serrate seta in addition to the other simple setae ; the anterior margin of the femur also bears a small spur-like structure. The apotele on the palp tarsus is three-tined and resembles those of the other species. The chelicerae and the tectum are depicted in figs. 29 and 30 respectively ; the three median denticles of the anterior margin of the tectum are not of equal length as in the other species described above.



FIGS. 26-27. — *Gamasellopsis vandenbergi* spec. nov.
Fig. 26, dorsum ; Fig. 27, venter.

Legs (fig. 31). The chaetotactic pattern of the legs is similar to those of the other species except that genu IV has only four dorsal setae, ad2 being absent ($2 — \frac{1}{1}, \frac{3}{0} — 1$). Tarsus I is without rod-like setae and genu I has a prominent ventral dilation (fig. 31).



FIGS. 28-34. — *Gamasellopsis vandenbergi* spec. nov.

Fig. 28, gnathosoma ♀ ; Fig. 29, chelicera ♀ ; Fig. 30, tectum ♀ ; Fig. 31, tibia and tarsus I ♀ ; Fig. 32, venter ♂ ; Fig. 33, chelicera ♂ ; Fig. 34, leg II ♂.

Male (figs. 32-34).

Dimensions : Length, 347-366 μ ; breadth, 193 μ ; leg I, 376 μ ; leg IV, 299-308 μ ; length of ventri-anal shield, 147-156 μ ; breadth, 133 μ ; length of sterniti-genital shield, 142-151 μ ; breadth, 68-70 μ ; postanal seta, 19-21 μ.

The dorsum is similar to that of the female and except for the sterniti-genital shield the other features of the venter resemble those of the female (fig. 32). The chelicerae and the armed leg II are shown in figures 33 and 34 respectively.

Material studied.

Holotype ♀, allotype ♂, 1 ♀ and 1 ♂ paratypes from forest floor, Magoebaskloof, Transvaal ; collected by R. A. VAN DEN BERG, 1963.

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