

LAMELLAREA, A NEW ORIBATID GENUS (ACARI)
FROM SOUTH AFRICA

BY

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Among the most striking features of the newly established genus *Lamellarea*, are the possession of a single anal seta in the middle near the inner edge of each anal plate, and the presence of only two small pairs of areae porosae, A_1 and A_2 , on the notogaster. Although the lamellar cusps, on which the names of the different species of this genus are based, differ markedly in the different species, the lamellae are basically alike. At their bases the lamellae slant obliquely laterally towards the bothrydia, while their chitinous inner edges have the shape of an "u" turned upside down. Each laterally orientated sensilla has a large, lichenous distal part. The notogaster, of which the dorsosejugal suture is distinct, overlaps the posterior parts of the bothrydia. A flattened, humeral process, hardly protruding from the lateral outline of the body, is always present on each notogastral shoulder. Other features of the genus *Lamellarea* are the V-shaped part of the ventral plate, the inconspicuous *iad* and the five genital setae which are grouped in a characteristic manner.

Affinity :

According to the identification keys of BALOGH (1961, 1963, 1965), the genus *Lamellarea* belongs to the super family Oribatuloidea. Although it differs in general appearance and in many fundamental respects, such as the small size, the well-developed lamellae and the single anal seta, this genus can provisionally be classified under the family Oribatulidae.

LAMELLAREA ARDUA gen. nov., sp. nov.

Fourteen specimens were found in samples of plant debris collected from Bloemfontein, Fouriesburg and Ventersburg.

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Measurements : Holotype : Length 260 μ ; breadth 160 μ , height 129 μ . Others : 211-260 μ ; 130-173 μ ; 98-129 μ .

Diagnosis :

Lamellar cusps broad at their bases and terminating in toothlike processes ; sensillar heads broad ; *im* directed medially ; colour yellow to light brown.

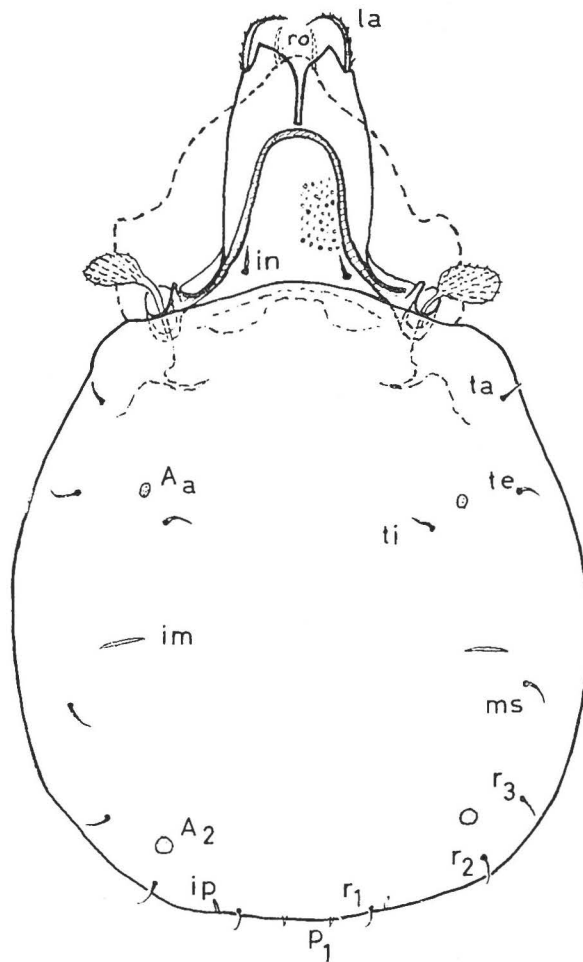


FIG. 1 : *Lamellarea ardua* gen. nov., sp. nov. Dorsal view (X 500).

Prodorsum : (figs. 1-5).

The darkly coloured, chitinous inner edges of the lamellae almost have the shape of an "u" turned upside down. At their bases the lamellae are rather thin, and slant obliquely towards the bothrydia. Anteriorly each lamellar cusp terminates in a toothlike process which extends beyond the tip of the rostrum.

Seta *la* is unilaterally barbed, and is situated on a small, flattened apophysis on the lateral side of the lamellar cusp. Both setae curve medially. The interlamellar space is granulous and is apically limited by a narrow translamella. Two short, glabrous interlamellar setae are inserted near the bases of the lamellae. The rostrum, which is distally slightly trilobed, carries two barbed rostral setae *ro* (fig. 5). The notogaster overlaps the posterior parts of the cup-shaped bothrydia. Both sensillae are directed laterally. They have thin, shortish stalks with broad, almost flabellate actino-chitinous heads, which are beset with rows of bristles (fig. 4).

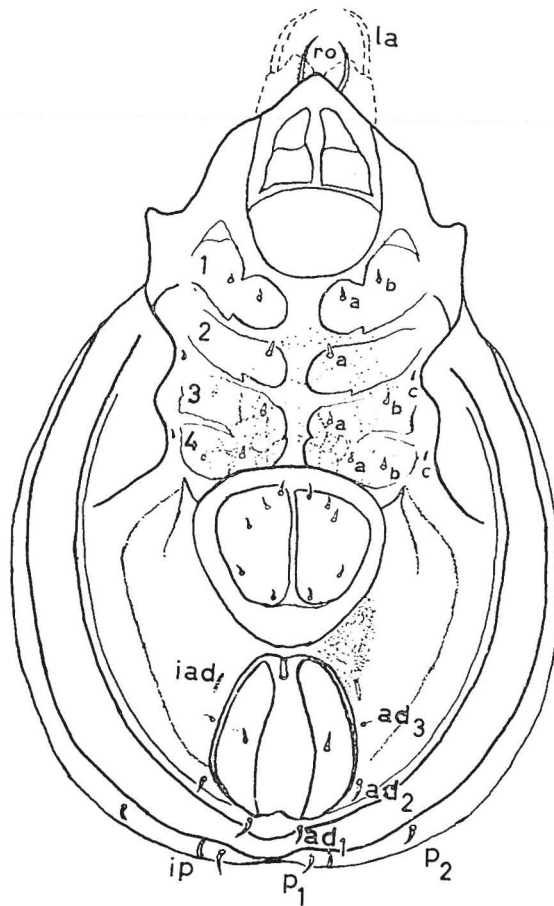


FIG. 2 : *Lamellarea ardua* gen. nov., sp. nov. Ventral view (X 500).

Notogaster : (figs. 1 and 2).

Anteriorly and posteriorly the notogaster, which is not much longer than broad, is slightly flattened. The dorsosejugal suture is distinct. A small, flattened protuberance, directed antero-laterally is situated on each notogastral shoulder.

As setal pair p_3 is lacking, only nine pairs of smooth, slightly curved notogastral setae are present. Setae p_1 - p_2 are inserted ventrally, and are consequently hardly discernible from the dorsal side. Two pairs of porous areas are present on the notogaster. Porous area A_a is situated slightly nearer to ti than to te , while A_2 is situated posteriorly between r_2 and r_3 . The latter porous area is considerably larger than A_a . There are five pairs of lyrifissures of which only im and a part of ip can be seen dorsally. Lyrifissure im is situated on the posterior half of the notogaster, and is oriented medially. All the other lyrifissures, ia , ih , ips and ip , are shorter than im .

Ventral plate : (fig. 2).

On either side of the anal and genital plates, a V-shaped area of the ventral plate is microsculptured. A broad chitinous rim encircles the genital plates. Each bears five minute genital setae, of which the three anterior ones are evenly spaced from one another. The fourth seta is situated laterally, halfway between the third and the fifth genital setae. The latter is inserted postero-medially. A single anal seta occurs in the middle near the inner edge of each anal plate. In front of the anal plates, the rather long and darkly coloured pre-anal organ is present. Three pairs of adanal setae are present on the ventral plate. Lyrifissure iad is considerably shorter than im . It slants obliquely backwards, and is situated laterally to the anterior third of the anal plates.

Podosoma : (fig. 2).

Even though the third epimere is fused medially to the fourth one, the four epimeres are distinct. They are microsculptured by muscular impressions, especially the two posterior ones. The setal formula of the epimeres is 2-1-3-3. All these setae are small, except the laterally situated $3c$ and $4c$ which are minute. A rather long pedotectum covers acetabulum I.

Gnathosoma : (figs. 6-8).

Two smooth hypostomal setae h are present on the upper third of the short but broad hypostome. As shown in fig. 6, a transparent, membranous lateral lip L is present between the two maxillae M . The narrow anterior part of each maxilla bears two large, darkly coloured, chitinised teeth. Whereas seta a is inserted anteriorly near the inner edge of the maxilla, seta m has an almost postero-lateral position, and bends sharply near its base. Setae or are thin and pointed, and almost meet each other apically in the median line.

Both the cheliceral setae cha and chb are barbed (fig. 7). As usual Trägårdh's organ Tg , which is weakly chitinised and cone-shaped, is situated on the medial side of the chelicera.

The setal formula of the pedipalp is 0-2-1-3-9 (fig. 8). With the exception of setal pairs lt and vt , four eupathidial setae, acm , ul' , ul'' and sul , and a free sole-

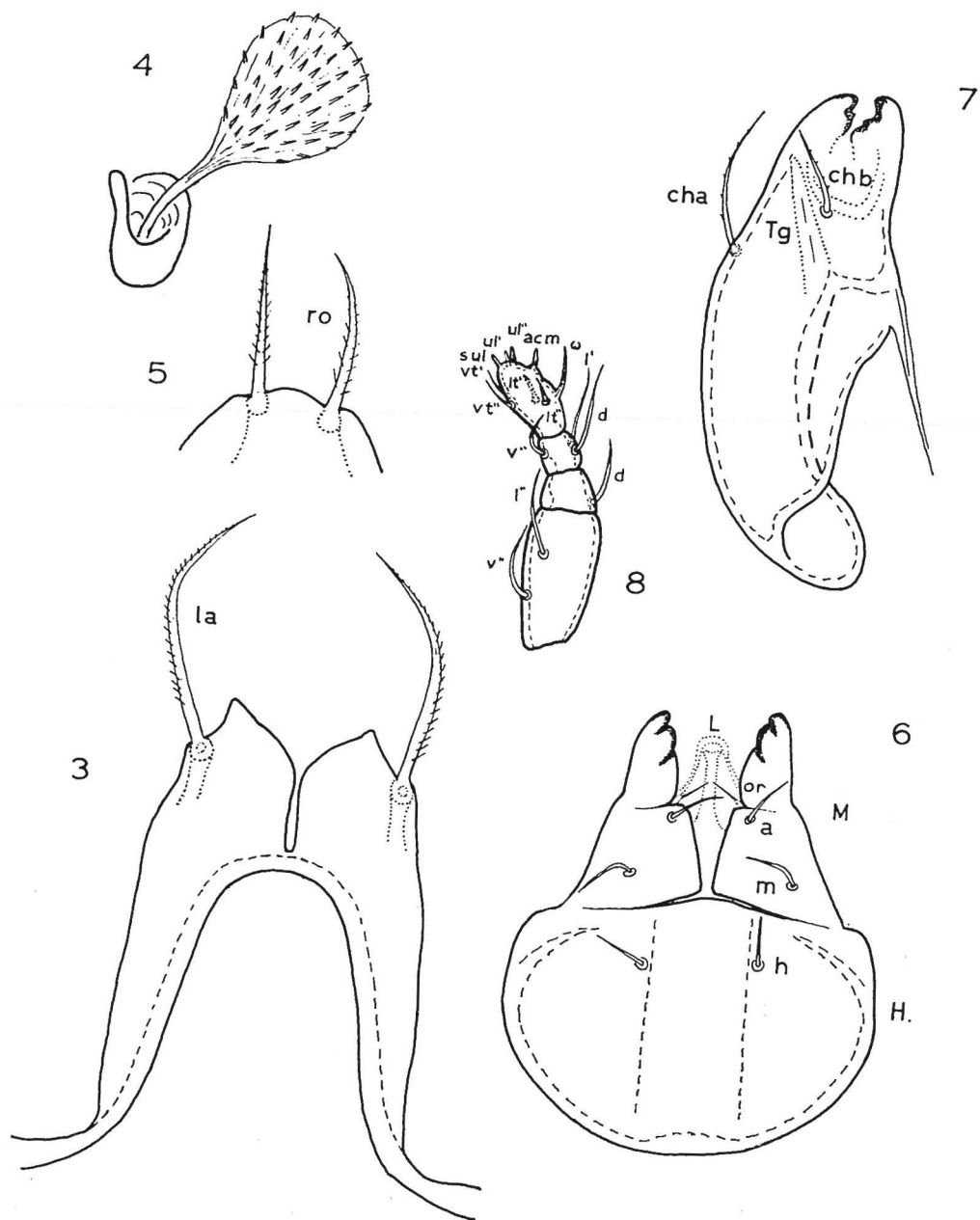


FIG. 3-8 : *Lamellarea ardua* gen. nov., sp. nov.

3. — Dorsal view of the lamellae (X 1250). 4. — Sensilla and bothrydium (X 1250). 5. — Rostral setae on the apex of the rostrum (X 1250). 6. — Ventral view of the infracapitulum (X 1250). 7. — Lateral view of the right chelicera (X 1250). 8. — Antiaxial view of the left pedipalp (X 1250).

nidion occur on the rather broad tarsus. All the setae of the other podomeres of the pedipalp are glabrous and inserted in their normal positions.

Legs : (figs. 9-11).

All the legs are monodactyle. Tarsus I is 35 μ long, while the other tarsi are shorter, being about 26 μ long. The tibiae, on the other hand, increase in length from the front backwards, from 27 to 44 μ . Their anterior parts bulge slightly. They all possess a short, blunt process antero-ventrally. An antero-dorsal process of tibia I extends over the posterior part of the adjoining tarsus. There is an indication of a similar structure on tibia II. All the genua have more or less a similar shape, and their lengths vary from 10 to 12 μ . Paraxial porous areas with large, accentuated pores are present on both trochanters of legs III and IV, and on all the femora. Whereas those of femora I and II are slightly kidney-shaped and situated dorsally below seta *d*, the porous areas of femora III and IV are oval-shaped and situated posterior to *d*.

The solenidion formulae are : I : 0-1-2-2 ; II : 0-1-1-1 ; III : 0-0-1-1-0 ; IV : 0-0-1-1-0.

Both ω_1 and ω_2 of tarsus I are about as long as the single ω on tarsus II. The tactile and acuminate ϕ_1 is extremely long (64 μ), and curves towards the front. This solenidion is inserted on the antero-dorsal process of tibia I, while the short (10 μ) and straight ϕ_2 is situated lower down, paraxial to the former. In contrast to the solenidia of tibiae III and IV, ϕ II is also inserted on the antero-dorsal tip of the tibia. Solenidion ϕ II is approximately 22 μ long, while those of tibiae III and IV are about 9 μ . Each genu bears a short, slightly curved σ on its anterior half.

As the ontogenetic development of the legs could not be studied, the possibility exists that some of the following leg setae may be titled wrongly.

Leg I : (fig. 9).

Setal formula : 1-4-2-3-14-1. Apart from p'' , $p v''$ and *s* which are barbed, all the paired setae of the tarsus are smooth and acute. They are inserted in their normal positions except the setal pair *p*, which is lacking. Dorsally the short ϵ is always present and slightly thickened at its distal end. Three setae are present on the anterior half of the tibia. Of these *l'* is glabrous, while *v'* and *v''* are barbed. Seta *v'* is situated anterior to *v''*. Whereas the genu bears only two setae, *v'* and *v''*, the femur possesses four setae. These are *d*, *l'*, *v'* and *v''*, of which the first mentioned seta is short and smooth and curves towards the front.

Leg II : (fig. 10).

Setal formula : 1-4-2-3-13-1. All the setae of leg II, with the exception of ζ which is lacking, are exactly similar to those of leg I.

9. — Paraxial view of the first left leg (X 1250). 10. — Paraxial view of the second right leg (X 1250). 11. — Antiaxial view of the third left leg. (Trochanter excluded). (X 1250).

Leg III : (fig. 11).

Setal formula : 2-3-1-3-12-1. Of all the setae of the tarsus, only *ft'* and *s* are unpaired. Seta *v'* of the tibia is situated antero-ventrally, rather far from *v''*. Both the genu and the femur lack one seta each. They are *v''* and *v'* respectively.

Leg IV :

Setal formula : 1-3-1-3-12-1. In contrast to trochanter III, the trochanter of this leg bears only one seta. In other respects, the chaetotaxy of this leg is similar to that of leg III.

Owing to the fact that *Lamellarea digitata* *sp. nov.* and *Lamellarea forceps* *sp. nov.* (see below) resemble *Lamellarea ardua* *sp. nov.* in so many respects, only their dissimilarities with the latter will be discussed in the following descriptions of the two species.

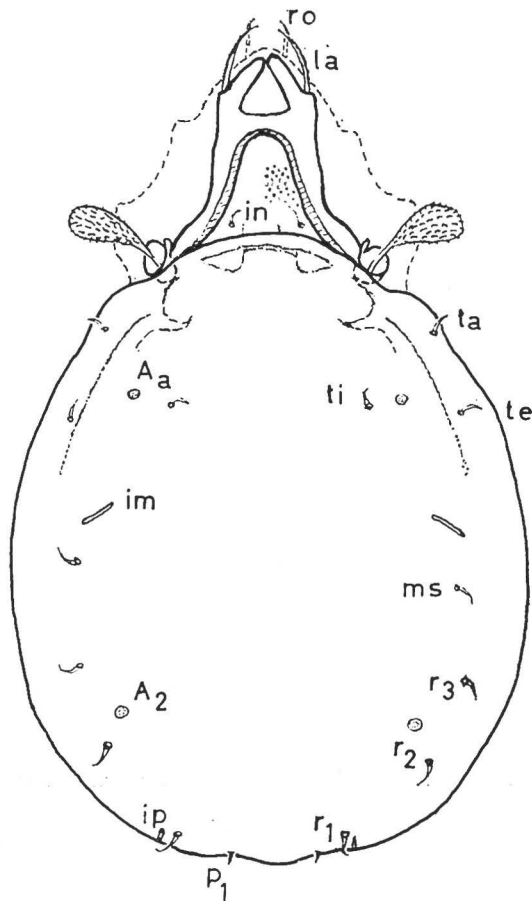


FIG. 12 : *Lamellarea digitata* *sp. nov.* Dorsal view (X 500).

LAMELLAREA DIGITATA sp. nov.

Only three specimens were collected near Fouriesburg in a sample of plant material.

Measurements : Holotype : Length 239 μ , breadth 143 μ , Height 111 μ . Others : 235-243 μ ; 143-165 μ ; 111-116 μ .

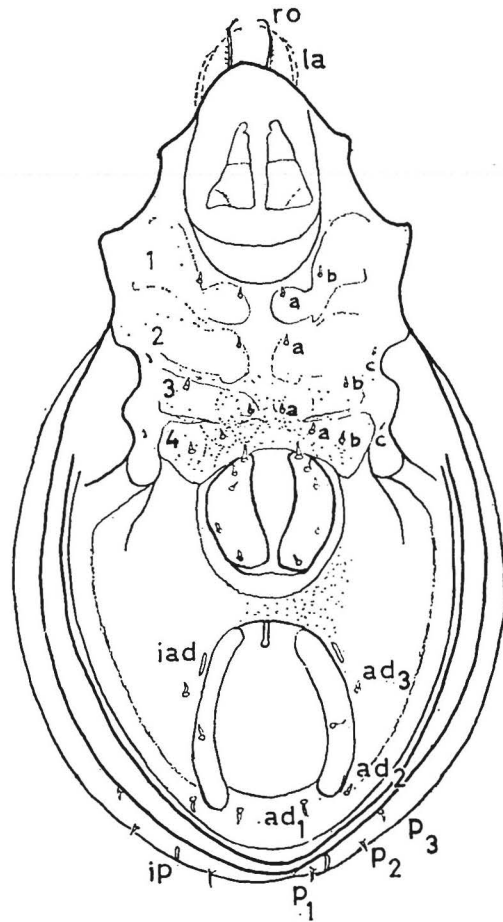


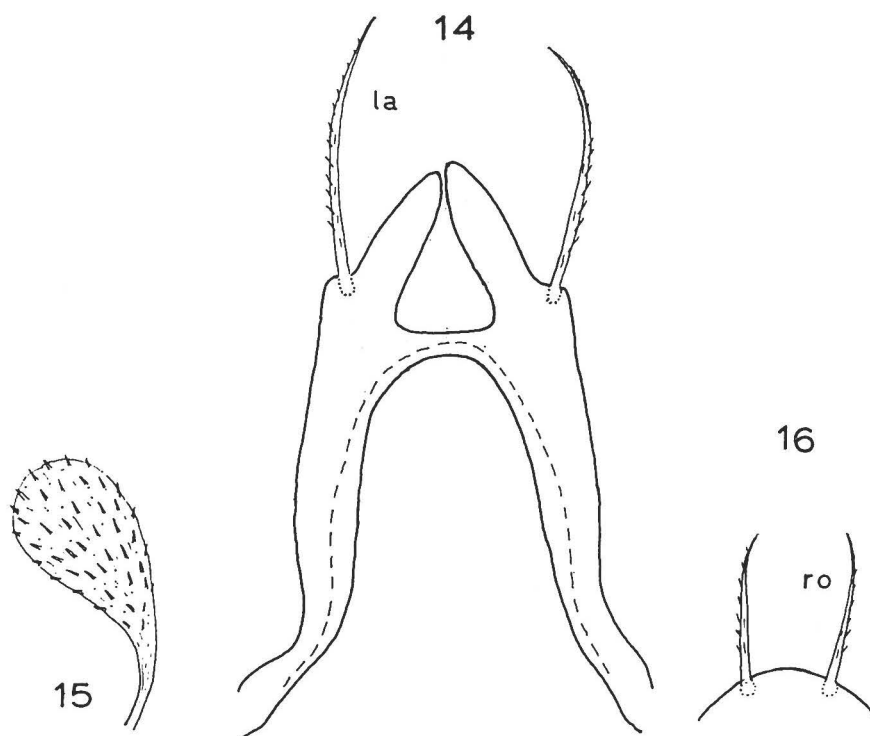
FIG. 13 : *Lamellarea digitata* sp. nov. Ventral view (X 500).

Diagnosis :

Lamellar cusps finger-shaped ; rostrum apically rounded and extends beyond the tips of the lamellae ; *im* situated on the anterior half of the notogaster ; seta *p*₃ present ; notogaster oval-shaped.

Prodorsum : (figs. 12-16).

The lamellar cusps each terminates in a fingerlike process which slants obliquely towards the front (fig. 14). Their apices almost meet in the median line. A triangular area is almost completely enclosed by these two processes and the broad translamella. In contrast to *Lamellarea ardua*, the interlamellar space is rather narrow anteriorly. The rostrum is rounded apically (fig. 16), and extends beyond the tips of the lamellae. Rows of fine bristles cover the actinochitinous parts of the sensillar heads, which are slightly narrower than those of *Lamellarea ardua* (fig. 15).



FIGS. 14-16 : *Lamellarea digitata* sp. nov..

14. — Dorsal view of the lamellae (X 1250). 15. — Sensilla (X 1250). — 16. — Rostral setae on the apex of the rostrum (X 1250).

Notogaster : (figs. 12 and 13).

The notogaster is oval-shaped. Lyrifissure *im* slants obliquely towards the front, and is situated on the anterior half of the notogaster. Ten pairs of setae occur on the notogaster, as p_3 is present.

Ventral plate : (fig. 13).

The almost v-shaped area of the ventral plate is finely punctated.

LAMELLAREA FORCEPS sp. nov.

A sample of leaf litter, collected at Fouriesburg, yielded five specimens.

Measurements : Holotype : Length 263 μ ; breadth 157 μ ; height 111 μ . Others : 239-263 μ ; 137-157 μ ; 98-111 μ .

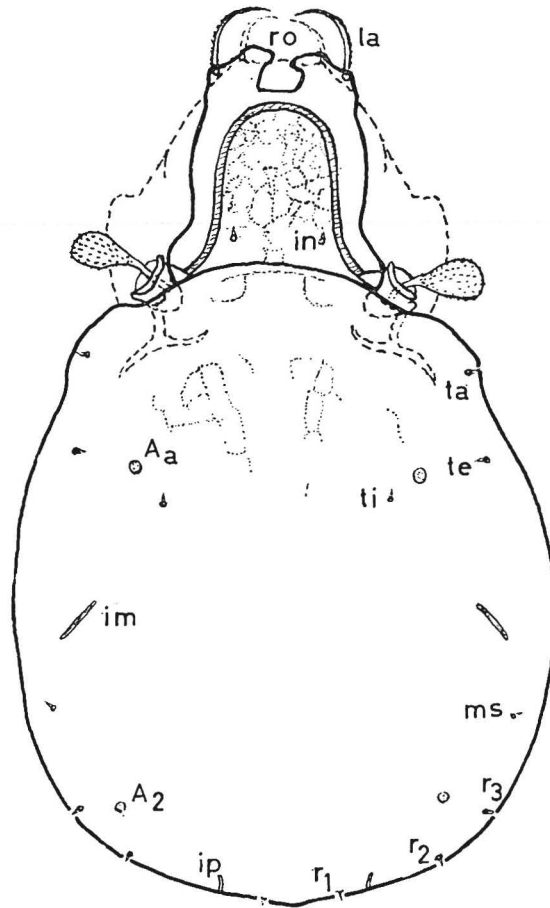


FIG. 17 : *Lamellarea forceps* sp. nov. Dorsal view (X 500).

Diagnosis :

Lamellar cusps forcipated ; setae *ro* curved medially and inserted far from each other ; interlamellar space reticulated ; short notogastral setae ; *A_a* larger than *A₂* ; epimeres 3 and 4 separated.

Prodorsum : (figs. 17-21).

Antero-medially each lamellar cusp has a short, thumblike process, giving the impression of a forceps (fig. 19). In some specimens the tips of these processes

meet each other in the median line, thereby enclosing a more or less rectangular area, limited posteriorly by the broad translamella. The interlamellar space is rather broad and has a reticulated appearance. Setae *ro* curve medially and are situated at a distance from each other (fig. 21). Setae *la* are mounted on broad distinct apophyses on the lateral aspects of the lamellar cusps. The sensillar heads are not as broad as those of *Lamellarea ardua*. Each sensilla furthermore bears rows of very fine bristles (fig. 20).

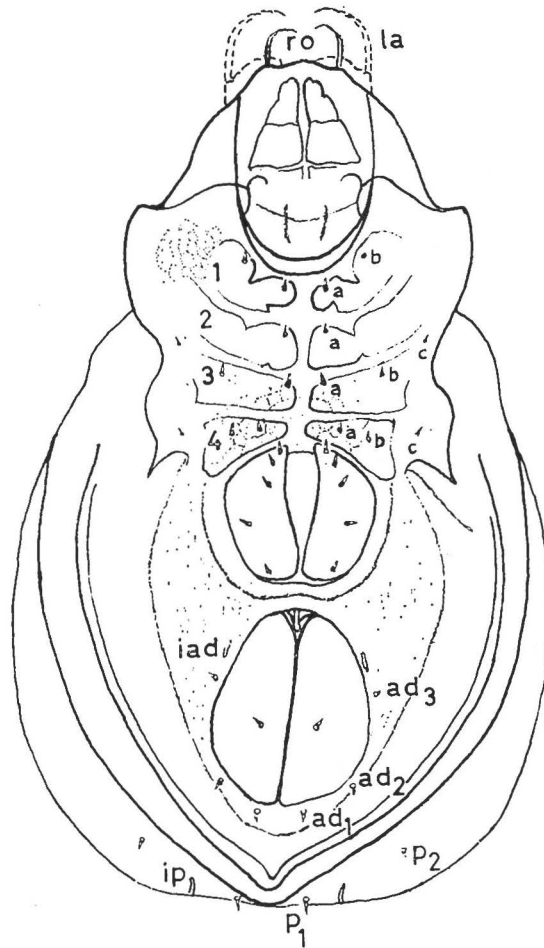


FIG. 18 : *Lamellarea forceps* sp. nov. Ventral view (X 500).

Notogaster : (figs. 17 and 18).

All the notogastral setae are short. Lyrifissure *im* slants obliquely forwards, and its situated in the posterior half of the notogaster. In contrast to *Lamellarea ardua* in which A_a is smaller than A_2 , the opposite is true of *Lamellarea forceps*.

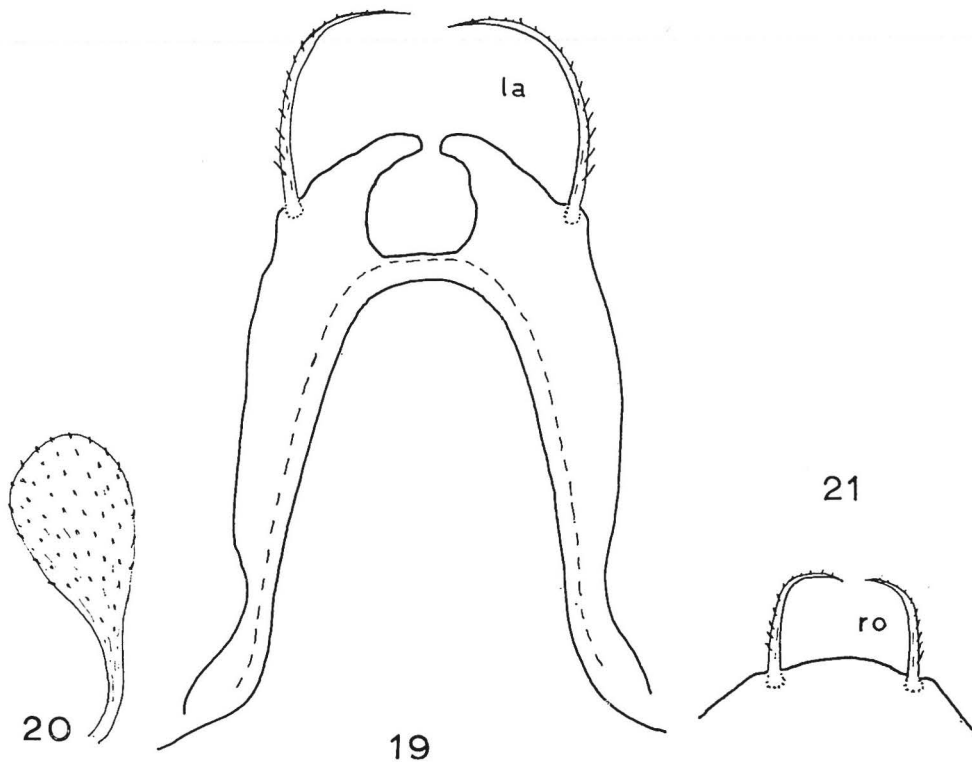
Ventral plate : (fig. 18).

Fine striae occur on the v-shaped part of the ventral plate.

Podosoma : (fig. 18).

There is no median connection between the third and the fourth epimeres.

All the type specimens on which the descriptions of the new species are based, are kept in the collection of the Zoology Department, University of the Orange Free State, Bloemfontein, Republic of South Africa.



FIGS. 19-21 : *Lamellarea forceps* sp. nov.

19. — Dorsal view of the lamellae (X 1250). 20. — Sensilla (X 1250). — 21. — Rostral setae on the apex of the rostrum (X 1250).

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SUMMARY.

Three new South African species, *Lamellarea ardua* n. sp., *Lamellarea digitata* n. sp. and *Lamellarea forceps* n. sp. are described under the newly established oribatid genus, *Lamellarea* n. g.

RÉSUMÉ.

Trois espèces nouvelles, Sud Africaines, *Lamellarea ardua* n. sp., *Lamellarea digitata* n. sp. et *Lamellarea forceps* n. sp., sont décrites et classées dans un genre nouveau, *Lamellarea* n. g.

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