

Notes on mites associated with Myriapoda V. The genus *Scissuralaelaps* WOMERSLEY, 1945 (Acari, Mesostigmata)

Description of four new species from New Guinea

by A. FAIN

Summary

Four new species of mites in the genus *Scissuralaelaps* WOMERSLEY, 1945 (Mesostigmata) are described from Myriapoda from New Guinea: *S.grootaerti* n.sp., *S.hirschmanni* n.sp., *S.joliveti* n.sp. and *S.irianensis* n.sp.
Key-Words: Taxonomy. Acari. Association with Myriapoda. New Guinea.

Résumé

Quatre nouvelles espèces d'acariens du genre *Scissuralaelaps* WOMERSLEY, 1945 (Acari, Mesostigmata) sont décrites de Myriapodes de Nouvelle-Guinée: *S.grootaerti* n.sp., *S.hirschmanni* n.sp., *S.joliveti* n.sp. et *S.irianensis* n.sp.
Mots clé: Taxonomie. Acari. Association avec Myriapodes. Nouvelle Guinée.

Introduction

In this paper we describe 4 new species in the genus *Scissuralaelaps* WOMERSLEY, 1945 from New Guinea. The total of species in this genus is now 8. All these species were found associated with Myriapoda, except for one species (*S.queenslandica* WOMERSLEY, 1945) whose host is unknown. This genus is represented in New Guinea, Australia (Queensland) and the Philippine island Mindanao.

Abbreviations: IRSNB = Institut Royal des Sciences naturelles de Belgique. All the measurements are in micrometers. The width of the body and the anal shield is the maximum width. The length of the anal shield includes the cribrum.

Family Laelapidae

Genus *Scissuralaelaps* WOMERSLEY, 1945

WOMERSLEY (1945) surmized that the genus *Scissuralaelaps* is more primitive than all the other genera of Laelapidae in that coalescence of the coxal plates in the medial line has not taken place.

Actually this genus presents a mixture of either regressive

(= evolved) characters (e.g. reduction of the peritremes, reduction of the sternal shield, reduction of the number of leg setae) and primitive characters (great development of the posterior endo and exopodal sclerites and of the dorsal chaetotaxy).

Table n°I shows the chaetotaxy of the legs in the free Laelapidae (after EVANS, 1963) and in two species of *Scissuralaelaps*. The reduction is more marked in *S.grootaerti* than in *S.joliveti*. Curiously enough in one segment (genu IV) the number of setae is higher in the two species of *Scissuralaelaps* than in the free Laelapidae.

Key to the genus *Scissuralaelaps*

FEMALES

1. Each sternal shield fused posteriorly with the endopodal shields between coxae III and IV by means of a narrow sclerotized strip. Genital shield narrow, rectangular. Peritreme reaching a point between coxa I and coxa II. Tectum rounded but slightly angulated in its middle. Idiosoma 750-870 long. Dorsal shield with about 60 pairs of small setae *S. joliveti* n.sp.

Sternal shields not fused posteriorly with endopodal shields between coxae III and IV. Other characters variable 2.

2. Soft cuticle of opisthogaster with about 10 pairs of short conical spines. Sternal shields with a tooth on their postero-lateral border and bearing each 2 oblique and oval structures bearing 2 transverse striations. Tectum rounded. Peritreme wide reaching the posterior margin of coxa II. Genital shield strongly widened in its posterior half. Idiosoma 600 to 670 long. Dorsal shield bearing about 35 pairs of small setae *S.grootaerti* n.sp.

Soft cuticle of opisthogaster with setae thin, not spinous, and either short or long. Sternal

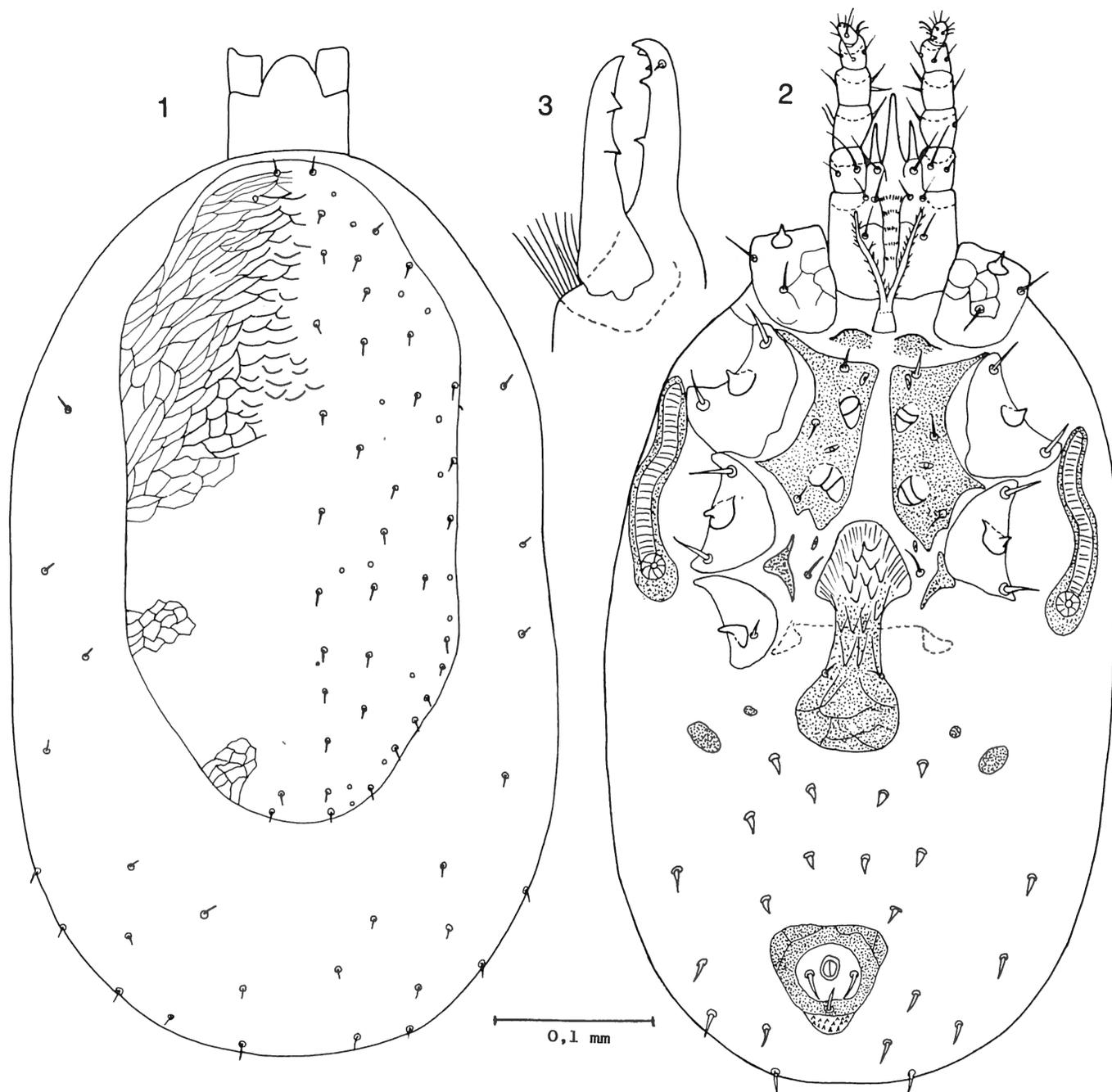
- hields lacking the striated structures. Peritremes extending beyond the anterior margin of coxae II. Other characters variable 3.
3. Dorsum and venter with thin and very long setae (70 to 150 long) Idiosoma 1500 long *S. queenslandica* WOMERSLEY, 1945
- All idiosomal setae short or very short (generally less than 30 long). Idiosoma not exceeding 1050 in length 4.
4. Large species (idiosoma (1014 to 1044 long). Peritreme extending to the anterior half of coxa I. Tectum triangular ending in a very fine point. Anal shield triangular with straight borders. Dorsal shield covering almost all the dorsum and bearing about 120 pairs of small setae. *S. hirschmanni* n.sp.
- Smaller species (maximum 860 long). Peritreme not extending beyond the posterior border of coxa I except in *S. bipartitus*. Dorsal shield with not more than 60 pairs of small setae 5.
5. Idiosoma 860 long. Dorsal shield with 60-64 pairs of small setae. Genital shield strongly widened in its posterior half. Peritreme extending beyond the posterior border of coxa I *S. bipartitus* ISHIKAWA, 1988
- Idiosoma smaller (541 to 675 long). Dorsal shield with 32 to 35 pairs of small setae (the exact number of setae is not known in *S. novaguinea*). Peritreme not extending beyond anterior border of coxa I 6.
6. Metapodal shields very small and circular. The anterior pair of hypostomal setae are short spines. Tectum triangular and serrated laterally. Absence of presternal shields. Corniculi relatively very thick. Movable digit of chelicera 33 long. Idiosoma 541 long *S. breviseta* ISHIKAWA, 1988
- Metapodal shields larger, about three times as long as wide. Anterior pair of hypostomal setae setiform and longer. Tectum variable, not serrate laterally. Presence of a pair of small presternal shields. Corniculi narrower. Moveable digit 54 long in *S. irianensis*. Idiosoma 600 to 675 long 7.
7. Posterolateral border of sternal shields toothed. Dorsal shield with a network of lines confined to the anterior and the lateral parts of the shield. Peritreme reaching the (?) posterior border of coxa I. Tectum narrow, rectangular and with blunt apex. Genital shield strongly widened in its posterior half. Genital setae on the soft cuticle. Palptrochanter with 2 subequal ventral setae (from original drawing) *S. novaguinea* WOMERSLEY, 1945
- Posterolateral border of sternal shields not toothed. Dorsal shield with a network of lines extending to the whole lateral parts of the shield. Peritreme not reaching the anterior border of coxa II. Tectum long triangular ending into a thin point. Genital shield tongue-shaped. Genital setae situated on the margins of the shield. Palptrochanter with 2 very unequal setae *S. irianensis* n. sp.

MALES

Remarks: the males of *S. breviseta*, *S. joliveti* and *S. irianensis* are unknown.

1. With holovenal shield 2.
With sternigenital and anal shields separate 4.
2. Dorsum and venter with some very long and thin setae Holovenal shield distinctly widened at level of metapodal shields. Idiosoma 1125 long *S. queenslandica* WOMERSLEY, 1945
- Dorsum and venter with only short setae. Holovenal shield not as above 3.
3. Holovenal shield abruptly and very strongly widened immediately behind coxae IV and tapering more posteriorly towards the anus. Idiosoma 520 long *S. novaguinea* WOMERSLEY, 1945
- Holovenal shield abruptly and strongly widened at the level of the anus. Idiosoma 950 long *S. bipartitus* ISHIKAWA, 1988
4. Sternigenital shield strongly widened behind coxae IV. Anal shield with 3 setae. Idiosoma 960 long *S. hirschmanni* n.sp.
- Sternigenital shield narrowed in its posterior part. Ventrianal shield with 3 anal setae and 2 short conical preanal spines. Idiosoma 453 long *S. grootaerti* n. sp.
1. *Scissuralaelaps grootaerti* n.sp.

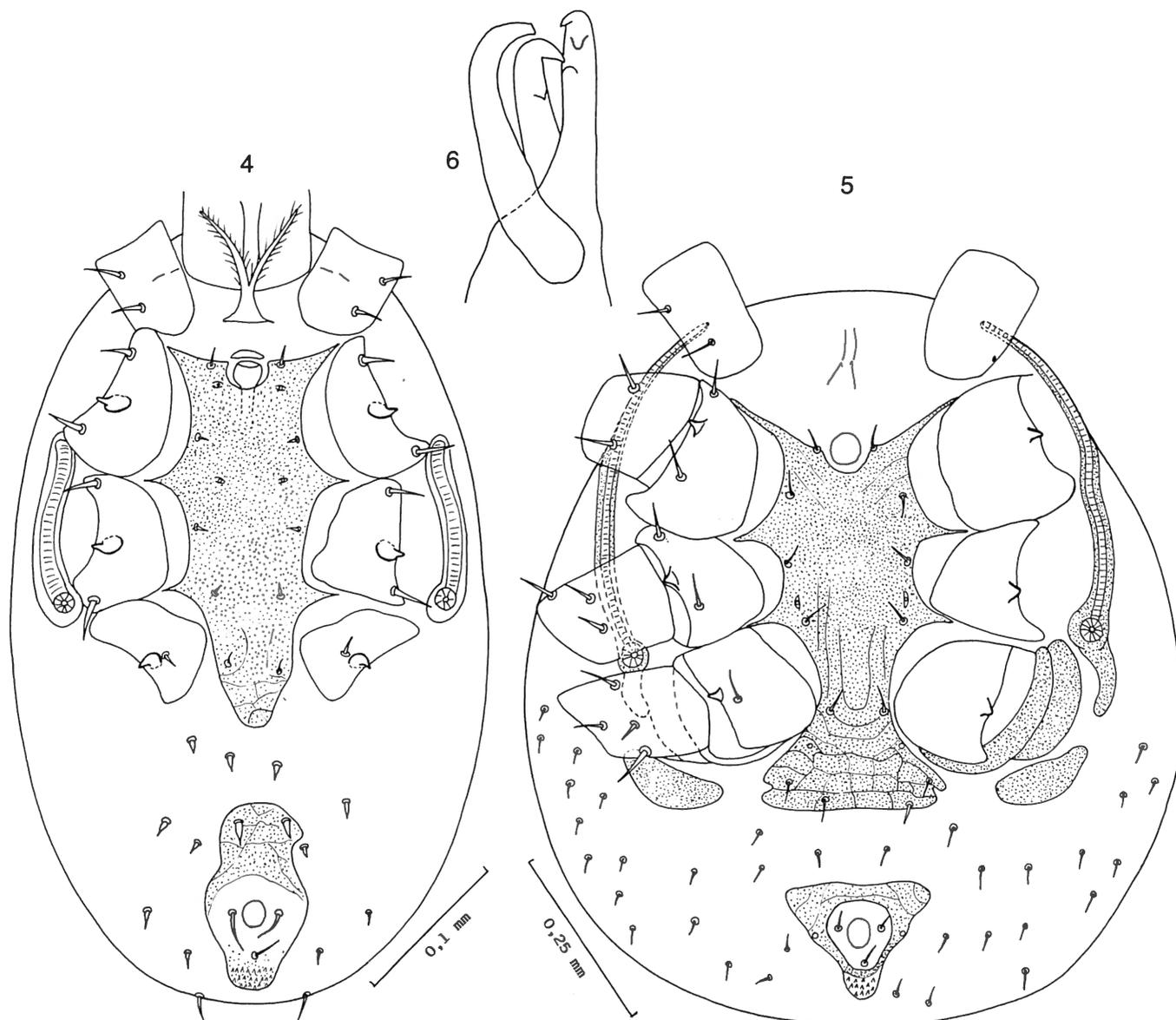
This species is named for Dr P. GROOTAERT, Institut royal des Sciences naturelles de Belgique, who discovered these mites in Papua New Guinea.



Figs 1-3 — *Scissuralaelaps grootaerti* n.sp. Female in dorsal view (1) and ventral view (2). Cheliceral digits (3).

Female, holotype (figs 1-3): Idiosoma 610 long and 360 wide. Length and width in 2 paratypes: 633 × 390 and 670 × 405. **Dorsum**: scutum 470 long and 264 wide, presenting in its anterior third a network of lines more or less scaly at some places. In the two posterior thirds of the shield the lines are confined to the lateral parts of the shield. The scutum carries 35 pairs of short setae (4 to 7 long) and 16 pairs of small pores. Soft cuticle with 12-13 pairs of small setae. **Venter**: the tritosternum is followed by a pair of small presternal shields. Sternal shields with a distinct tooth on their posterolateral borders, they bear the three pairs of sternal setae, two pairs of lyrifissures and two pairs of cuticular organs oval

in form and bearing two transverse lines. Metasternal setae and posterior pair of lyrifissures situated on the soft cuticle. Genital shield strongly widened in its posterior half, it bears the genital setae. Anal shield triangular with rounded angles, 72 long and 71 wide. There are two pairs of metapodal plates one oval and larger (27 × 18) the other much smaller and rounded. Soft cuticle of opisthogaster with 10 pairs of setae of which 6 to 8 are small conical spines (3,6 × 8). Peritremes relatively very wide and short, extending to posterior border of coxae II. **Gnathosoma**: tectum rounded. Deutosternal teeth consisting of 5 rows of 5 to 15 small denticles. Corniculi strong. Chelicerae: movable digit 40 long, bearing 2 blunt



Figs 4-6 - *Scissuralaelaps grootaerti* n.sp. Male in ventral view (4).
Scissuralaelaps hirschmanni n.sp. Male in ventral view (5) and cheliceral digits (6).

teeth, fixed digit with 4 teeth, of which 2 very small, and a very short pilus dentilis. *Legs*: all the legs with a well developed pulvillus and a pair of claws. Coxae II to IV bearing ventrally a strong boss.

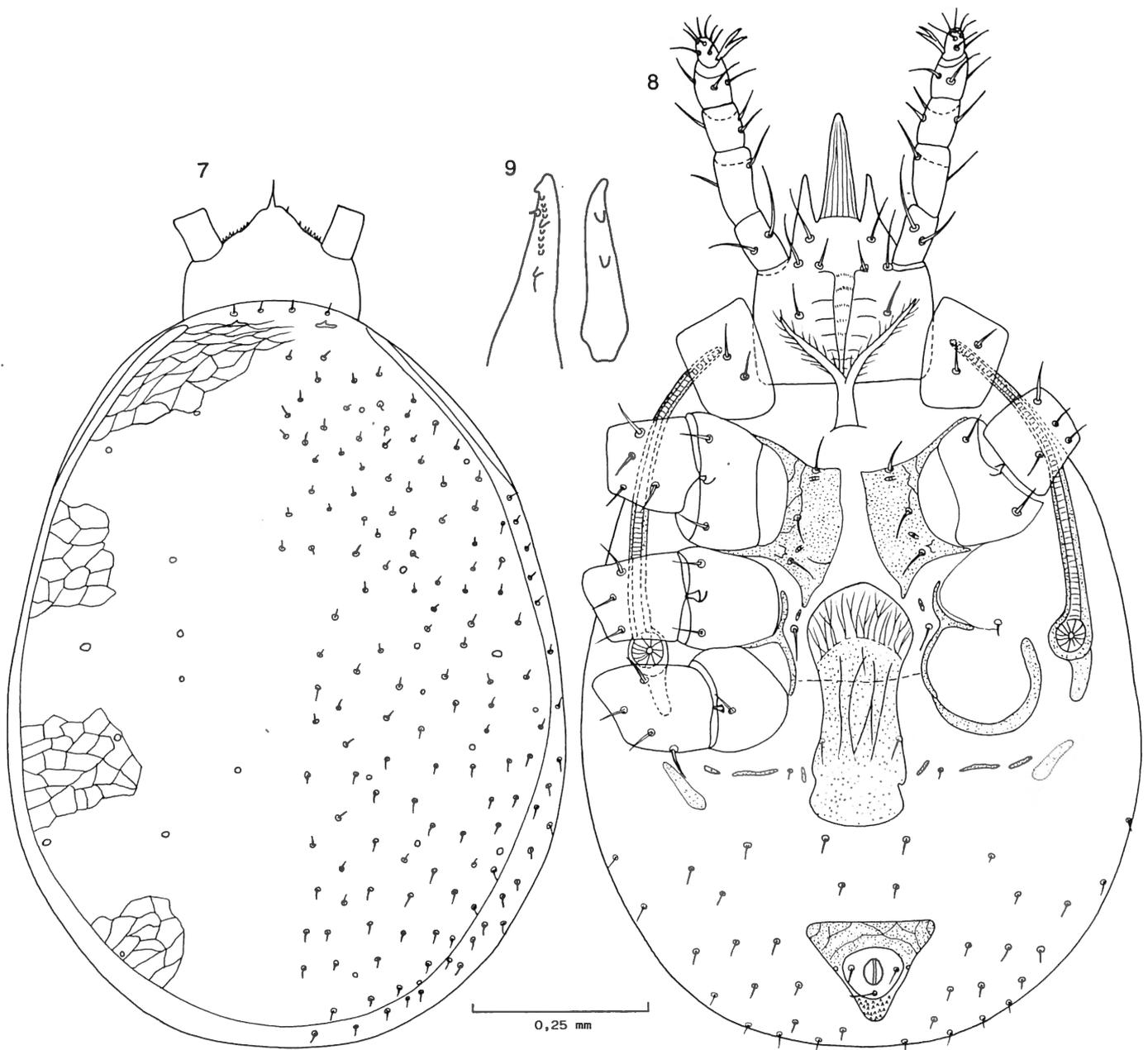
Male (fig. 4): Idiosoma 453 long and 270 wide. Dorsal shield with reticulations restricted to the lateral areas of the shield. Peritreme, legs and coxal bosses as in the female. Sternigenital sclerite extending slightly the coxae IV posteriorly and bearing 5 pairs of setae. Ventrianal shield small bearing 2 short conical spines in front of the anus. Soft cuticle of opisthogaster with short conical spines as in the female. Chelicerae: Spermatodactyl distinctly longer than the movable digit.

Host and locality:

Holotype female from an unidentified "Iule" from Bunapas Forest, Madang, Papua New Guinea (Coll. P. GROOTAERT, 27 February, 1992). Paratypes: 18 females, 2 males and 1 deutonymph, all with the same data as the holotype. Holotype and paratypes in the IRSNB. One paratype female in the British Museum, Natural History.

Remarks:

This new species differs from all the other known species in the genus, in both sexes by the short peritremes (not extending beyond the posterior margin of coxa II) and the spinous aspect of the opisthogastric setae. In addition, the female is characterized by the presence of special



Figs 7-9 — *Scissuralaelaps hirschmanni* n.sp. Female in dorsal view (7) and in ventral view (8). Cheliceral digits (9).

oval striated structures on the sternal shields and the scaly aspect of the scutum. In the male the narrow and short aspect of the sternigenital shield and the presence of a ventrianal shield with two small conical spine in front of the anus is characteristic.

2. *Scissuralaelaps hirschmanni* n.sp.

This new species is named for Dr Werner HIRSCHMANN, Nürnberg, in recognition for his monumental work on the Mesostigmata.

Female, holotype (figs 7-9): Idiosoma 1044 long and 780 wide. Length and width in 2 paratypes: 1014 × 770 and

1032 × 810. *Dorsum*: scutum 1010 long and 740 wide, bearing a poorly marked network of lines only in the periphery of the shield, the median part of the shield lacking these lines. This shield carries 120 to 125 pairs of small setae and numerous pores. We have counted one pair of lyrifissures in the anterior part of the shield (behind setae *zl*) and about 12 pairs of pores but these pores are difficult to see and it is possible that some have been overlooked. Soft cuticle with about 25 pairs of small setae. *Venter*: presternal shield not observed. Sternal shields lacking oval-striated structures and without a tooth on their posterolateral margins. Genital shield tongue-shaped, not widening posteriorly, their lateral margins slightly incised in their posterior part. Genital setae situated on the shield. Metapodal shields 75 long

and narrow, they are progressively widened towards their internal extremity. There are several other much smaller platelets between the large ones and the genital shield. Anal shield triangular, with the three margins straight, it is 132 long and 180 wide. Cuticle of opisthogaster with about 20 pairs of short thin setae. Peritremes extending beyond the middle of coxae I. *Gnathosoma*: with 6 rows of deutosternal denticles (3-5-13-16-18 and 26, starting from the base of the gnathosoma). Tectum triangular ending into a fine point and bearing denticles laterally. Corniculi well developed. Palptrochanters with 2 ventral very unequal setae. Chelicerae: movable digit 135 long, with 2 blunt teeth, fixed digit with 2 median-sized blunt teeth and 8 much smaller rounded teeth, and a very small pilus dentilis. *Legs*: all the tarsi with a pair of claws and a sucker.

Male (figs 5-6): A paratype is 960 long and 840 wide. The dorsal shield is as long as the idiosoma and almost as wide as it. It carries a network of lines but only in the anterior and the lateral parts of the shield. In the posterior part of the shield this network is indistinct or lacking. *Venter*: sternigenital shield bearing 7 pairs of setae, it is abruptly and strongly widened behind the coxae IV. This widened part is short and its posterior border straight. The lateral angles of this enlarged part are slightly notched as the genital shield in the female. Anal shield triangular as in the female. Exopodal shields of coxae IV very broad. *Gnathosoma*: chelicerae strongly developed. Spermatodactyl almost as long and as thick as the movable digit.

Host and locality:

Holotype from *Polyconoceras* sp. (spirobolod diplopod) from Lae, New Guinea. Paratypes: 3 females and 2 males with the same data as the holotype. Mites and host collected by Dr P. JOLIVET, 10 July 1969, Holotype, 2 females and 2 males paratypes in the IRSNB, one female paratype in the collection of Dr W. HIRSCHMANN.

Remarks:

This species differs from all the other known species in the genus, in both sexes by the large size of the body, the large number of scutal setae and the great length of the peritremes. In the male the sternogenital shield is separated from the anal shield as in *S. grootaerti* but there is no ventrianal shield as in this species. Moreover the sternigenital shield is strongly widened posteriorly whilst in *S. grootaerti* this shield is narrow.

3. *Scissuralaelaps joliveti* n.sp.

This species is named for Dr P. JOLIVET, Paris, who collected two of the new species which are described herein.

Female, holotype (figs 10-12): Idiosoma 870 long and 580 wide. Length and width in 2 paratypes: 800 × 540 and 750 × 510. *Dorsum*: dorsal shield 720 long and 492 wide. Scutum with a network of lines restricted to the lateral

parts of the shield and the anterior quarter. This shield bears about 60 pairs of small setae and 15 pairs of small pores. *Venter*: presternal shields very poorly distinct or absent. Sternal shields fused posteriorly with the endopodal sclerites between coxae III and IV by a narrow sclerotized band. These shields bear each 3 setae and 2 lyrifissures. The third pair of lyrifissures and the fourth pair of sternal setae are situated on the soft cuticle. Genital shield narrow and short, almost rectangular and carrying the genital setae. Endopodal shields behind coxa IV strongly developed. Metapodal shields elongate (48 × 21). Anal shield 129 long and 110 wide, its anterior and lateral margins strongly convex. Peritreme extending slightly in front of anterior margin of coxa II but not reaching coxa I. Opisthogaster with 7 to 8 pairs of small and thin setae. *Gnathosoma*: tectum almost rounded but slightly angulate apically and bearing a pair of denticles. There are 5 rows of deutosternal denticles (8 to 15 denticles per row). Cheliceral digits as in *S. hirschmanni* but shorter, the movable digit is 45 long. *Legs* as in *S. hirschmanni*.

Male: unknown.

Host and locality:

Holotype from *Polyconoceras* sp. (a spirobolod diplopod) from Lae, New Guinea; Paratypes: 3 females with the same data as the holotype. Mites collected by Dr P. JOLIVET. (10 July 1969). All the specimens are in the IRSNB.

Remarks:

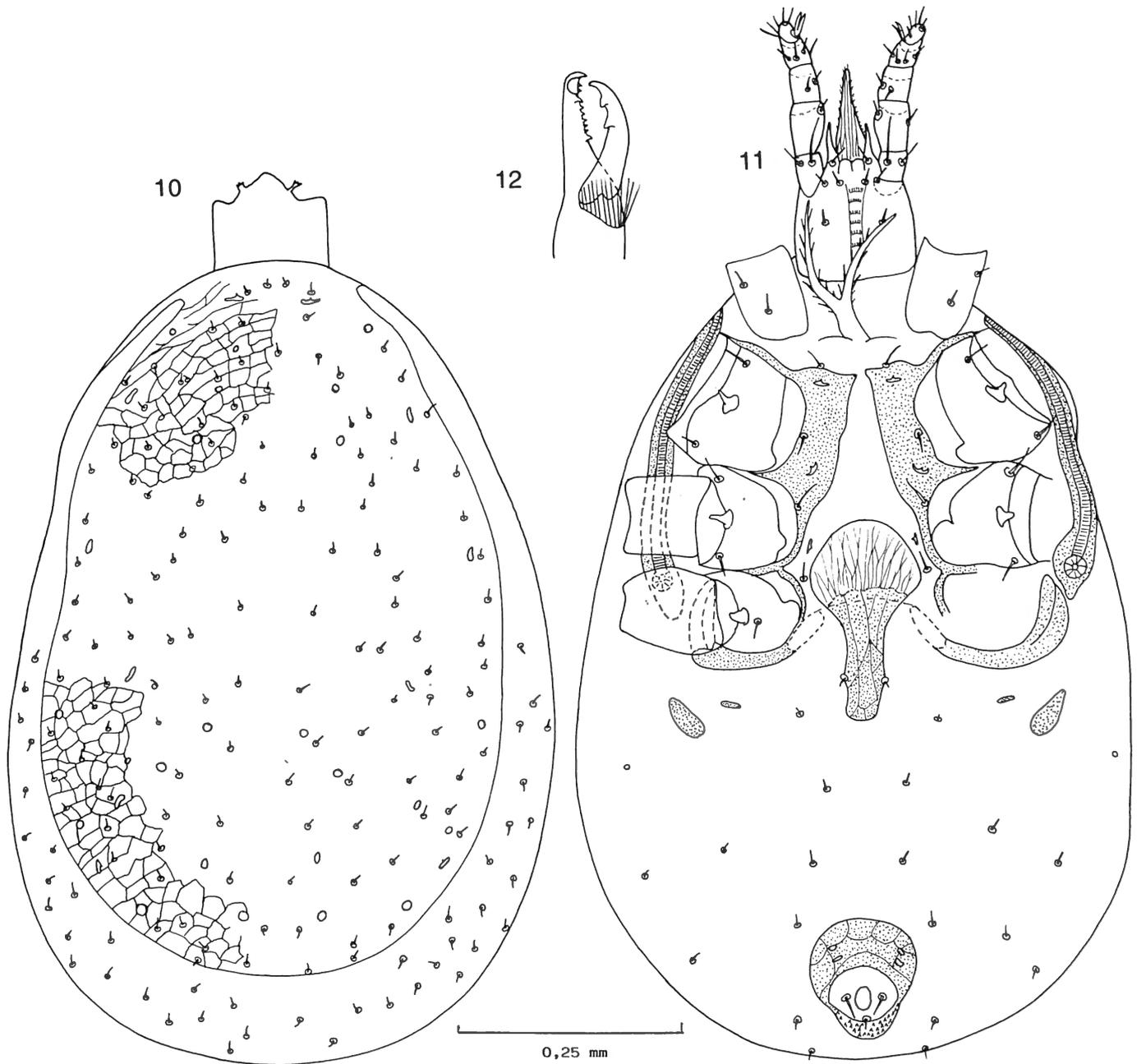
This new species is characterized by the fusion of the sternal shields with the endopodal sclerites of coxae III and IV, the narrow shape of the genital shield, the rounded aspect of the anal shield and the great number of setae (60 pairs) on the scutum.

4. *Scissuralaelaps irianensis* n.sp.

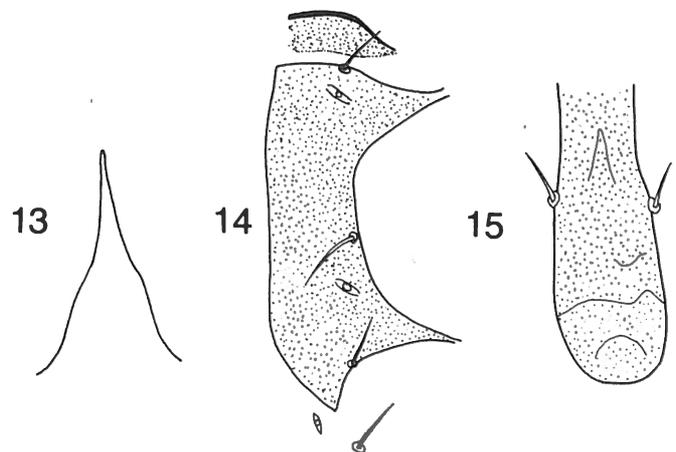
This species is represented only by the holotype female.

Female, holotype (figs 13-15): Idiosoma 630 long and 420 wide. *Dorsum*: scutum 522 long and 342 wide, with a network of lines only in the marginal areas and bearing 35 pairs of small setae and 20 pairs of pores. *Venter*: with a pair of small poorly sclerotized presternal shields. Sternal shields lacking a pattern of lines or oval-striated organs and without a tooth along their posterolateral borders. Genital shield tongue-shaped, the genital pair of setae situated on the margins of the shield. Peritreme reaching the anterior half of coxa II. Anal shield 96 wide and 78 long. Metapodal shield elongate (36 × 15).

Gnathosoma: deutosternum with 5 rows of 4 to 22 denticles. Anterior hypostomal pair of setae 30 long. Corniculi long (60) and strong. Movable digit of chelicerae 54 long. Tectum long, narrow strongly tapering towards apex into a long point. Palptrochanter with two ventral



Figs 10-12 — *Scissuralaelaps joliveti* n.sp. Female in dorsal view (10) and in ventral view (11). Cheliceral digits (12).



Figs 13-15 — *Scissuralaelaps irianensis* n.sp. Female: tectum (13), sternal shield at one side (14), genital shield (15).

inequal setae (the external 24, the internal 48). Legs: all with sucker and claws well developed.

Habitat:

Holotype from an unidentified myriapod from Sentani, Irian New Guinea. Mite collected by the "Mission Zoologique Fonds Leopold III en Irian, 1973" (see FAIN, 1974). Holotype in IRSNB.

Remarks:

This species resembles at first aspect *S. novaguinea* WOMERSLEY, 1945. It is however clearly distinct from it by a series of characters, i.e. genital shield not widened in its posterior half, genital setae situated on the margins of the shield, a tooth is lacking on posterolateral margin of the sternal shields, tectum strongly tapering apically, peritreme not reaching the anterior border of coxa II, network of lines extending to all the marginal parts of the scutum. In *S. novaguinea* (from original figures) the genital shield is strongly widened (almost circular) in its posterior half, the genital setae are off the shield, there is a well-formed tooth on posterolateral margin of sternal shields, the tectum is narrow, parallel-sided and has a blunt apex, the peritreme reaches the coxa I and the scutal network of lines is lacking in the posterior part of the shield. The tectum is the most dorsal plate of the gnathosoma. What Womersley called "epistome" could be either our tectum or a plate situated more ventrally and that is now called "epistome" (see BOURDEAU-GORIOSSI, 1989).

References

- BOURDEAU-GORIOSSI, F. 1989 — More reflections of the gnathosoma of the Mesostigmata, *Bulletin de l'Institut royal de Sciences naturelles de Belgique. Entomologie*, 58: 191-207.
- EVANS, G.O. 1963 — Observations on the chaetotaxy of the legs in the free-living Gamasina (Acari, Mesostigmata). *Bulletin of the British Museum (Natural History)*, 10: 278-303.
- FAIN, A. 1974 — Mission Zoologique du Fonds Leopold III en Irian (Nouvelle Guinée Occidentale): Acariens parasites de Marsupiaux et de Rongeurs (Listrophoroidea). *Bulletin de l'Institut royal des Sciences naturelles de Belgique. Entomologie*, 50 (7): 1-21.
- ISHIKAWA, K. — Two new species of *Scissuralaelaps* (Acarina, Laelapidae) associated with Philippine Millipedes. *Bulletin National of the Science Museum of Tokyo*, Ser A. 14: 173-178.
- WOMERSLEY, H. 1945 — An interesting and primitive new genus of Laelapidae (Acarina) from Australia and New-Guinea. *Records of the South Australian Museum*, 8: 225-228.

Table I. Chaetotaxy of some leg segments (number of setae in females)

	Free Laelapidae (From EVANS, 1963)	<i>S. joliveti</i>	<i>Scissuralaelaps</i> <i>S. grootaerti</i>
Tibia I	13	13	11
II	10	10	10
III	8	8	8
IV	10	10	10
Genua I	13	12	11
II	11	11	10
III	9	9	9
IV	9	11	10
Femora I	13	12	11
II	11	10	10
III	6	6	6
IV	6	6	6