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Freeliving Nematodes from Mount Kenya. II.

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ABSTRACT.

Eight species belonging to the genus *Plectus* were collected from Mount Kenya. Two of them, *Plectus globocephalus* n. sp. and *P. telekii* n. sp., are new to science. *P. globocephalus* n. sp. differs from all species of the genus *Plectus* by its higher and globular lip region with anteriorly, sharply pointed lips. *P. telekii* n. sp. differs in its peculiar shape of the lip region, in the presence of three well developed and one reduced, preanal supplementary organs, and in the size and shape of spicules and gubernaculum. *P. parvus* Bastian, 1865 and *P. armatus* Bütschli, 1873 are redescribed and figured. The male of *P. armatus* is described for the first time. Furthermore, *P. acuminatus* Bastian, 1865, *P. parietinus* Bastian, 1865, *P. palustris* de Man, 1880 and *P. longicaudatus* Bütschli, 1873, have been identified.

INTRODUCTION

During the Belgian Expedition to Mount Kenya, a number of samples of various bryophytes were collected and fixed with hot 4 % formaldehyde. The nematodes present were picked out by hand, processed to pure glycerin by a modified Seinhorst method (De Grisse, 1969) and permanently mounted in Cobb's slides.

This paper deals with the *Plectus* species present in these samples. Specimens were recovered from the following localities and habitats :

1. *Leptodontium joannis-meyeri* C. Muell. on soil among *Erica*-bushes - Sirimon Track - 3,240 m; moderately humid; 26.7.1975.
2. *Hedwigia albicans* (Web.) Lindb. on and in between rocks - Sirimon Track - 3,240 m; humid; 26.7.1975.

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3. *Braunia secunda* (Hook.) B.S.G. in a depression among rocks, near sample 2 - Sirimon Track - 3,240 m; humid; 28.7.1975.
4. *Campylopus* spec. along the margin of Gallery Tarn - 4,450 m; humid; 31.7.1975.
5. *Aulaacomnium turgidum* (Wahl.) Schwgr. along the margin of Thompson Tarn - 4,310 m; humid; 31.7.1975.
6. *Calliergon* spec. along the margin of Teleki Tarn - 4,315 m; very humid; 1.8.1975.
7. *Tortula cavalii* Negri and *Rhacomitrium alare* Broth. on and in between rocks, about 5 m from Teleki Tarn along a supply brooklet; very humid; 1.8.1975.
8. *Philonotis* spec. and *Aulaacomnium turgidum* (Wahl.) Schwgr. among stones along a drainage-brooklet of Naro Moru Tarn - 4,200 m; very humid; 3.8.1975.
9. *Barbula* spec., *Antitrichia curtispindula* Brid. and a species of Pottiaceae - on rocks near Teleki Hut - 4,115 m; very dry; 4.8.1975.
10. *Antitrichia curtispindula* Brid. on *Hagenia*, Naro Moru Track - 3,200 m; very dry; 4.8.1975.

The distribution of the eight species found, is given in Table I. From this, it appears that *P. globocephalus* n. sp. is the commonest species; it occurs in all samples but one and is sometimes present in relatively high numbers. *P. parietinus*, *P. palustris* and *P. parvus* were each found in only one sample.

Most samples contained only one or two species of *Plectus*, but in two of the samples four species were found while in the richest one seven species occurred together.

TABLE I
Distribution of *Plectus*-species over the different samples

Sample no.	1	2	3	4	5	6	7	8	9	10
<i>P. acuminatus</i>	+	+	+							
<i>P. parietinus</i>	+									
<i>P. palustris</i>								+		
<i>P. longicaudatus</i>	+		+		+					
<i>P. parvus</i>	+									
<i>P. armatus</i>	+	+								+
<i>P. globocephalus</i>	+	+	+	+	+	+	+		+	+
<i>P. telekii</i>	+	+	+						+	

Plectus acuminatus Bastian, 1865

Measurements

(20 ♀ ♀): L = 0.67-0.83 mm; a = 20-25; b = 3.6-4.5; c = 7.4-9.2;
V = 47-51; stoma = 17-21 μm .

Habitat and Locality

Found in samples 1, 2 and 3.

Plectus parietinus Bastian, 1865

Measurements

(5 ♀ ♀): L = 1.27-1.44 mm; a = 14.1-15.6; b = 4.4-4.5; c = 11.5-12.1;
V = 46-47; stoma = 28-32 μm .

Habitat and Locality

Found in sample 1.

Plectus palustris de Man, 1880

Measurements

(15 ♀ ♀): L = 0.77-1.01 mm; a = 18-26; b = 3.9-4.6; c = 7.0-8.7;
V = 46-49; stoma = 17.5-20.5 μm .

Habitat and Locality

Found in sample 8.

Plectus longicaudatus Bütschli, 1873

Measurements

(9 ♀ ♀): L = 0.53-0.64 mm; a = 23-29; b = 3.4-4.2; c = 6.7-7.5;
V = 45-48; stoma = 12-15 μm .

Habitat and Locality

Found in samples 1, 3 and 5.

Plectus parvus Bastian, 1865 (Fig. 1)

Measurements

(20 ♀ ♀): L = 0.44-0.51 mm; a = 16.6-25.9; b = 3.4-3.8; c = 8.1-10;
V = 49-57; stoma = 14-17 μm .

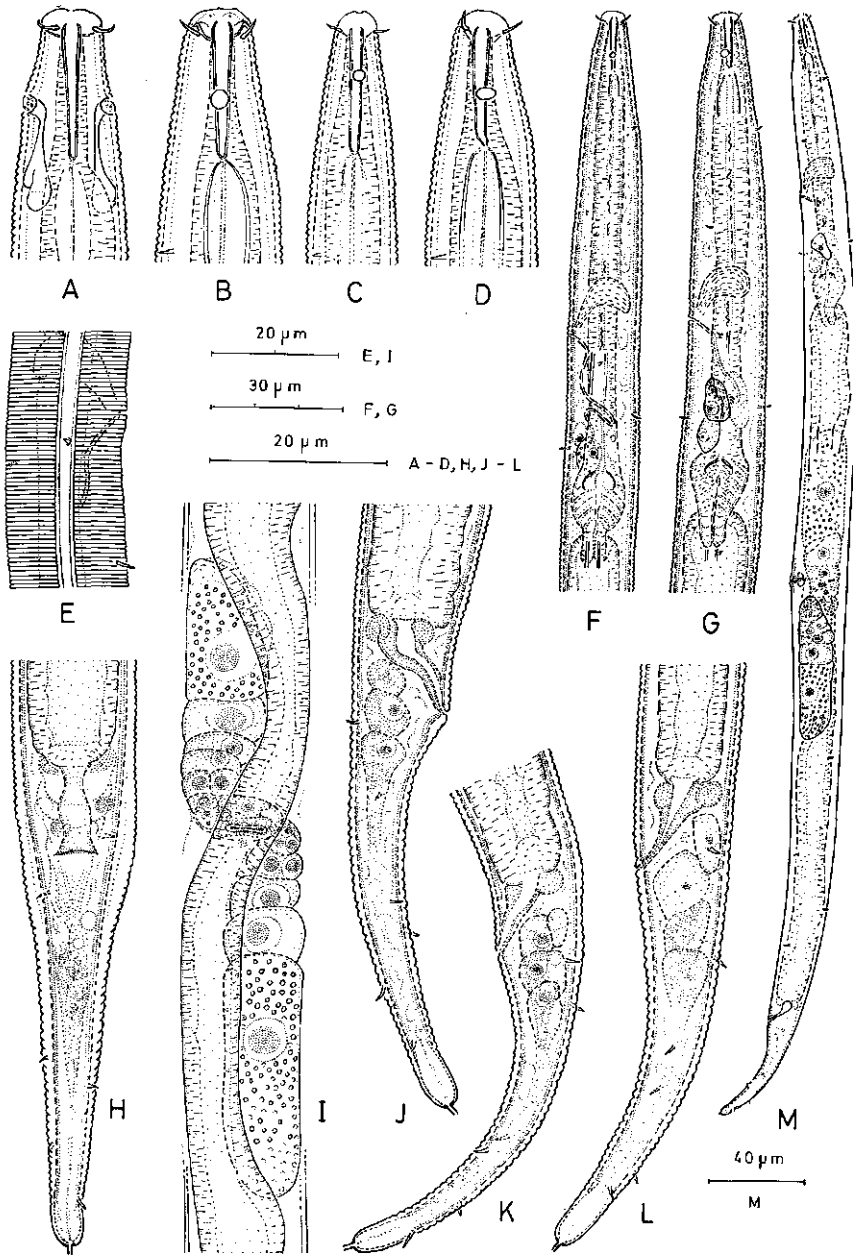


Fig. 1. — *Plectus parvus* Bastian, 1865. - Kenya-population (A, B, E, G-K and M) - A: anterior region (dorso-ventral view); - B: anterior region (lateral view); - E: body region near excretory pore (surface view); - G: oesophageal region; - H: female tail (dorso-ventral view); - I: midbody region showing reproductive system and part of intestine (ventral view); - J and K: female tail (lateral view); M: entire female.

Spitsbergen-population (D, F and L) - D: anterior region (lateral view); - F: oesophageal region; - L: female tail (lateral view).

Lauwerszeepolder-population - C: anterior region (lateral view).

Description

Female: body almost straight to slightly arcuate upon fixation; regularly tapering towards extremities, more posteriorly than anteriorly. Cuticle marked with transverse striae. Body annules almost of equal width except slightly wider on middle of tail. Two longitudinal alae interrupt transverse striae on either side, lateral field occupying one-eighth to one-sixth of body near middle.

Lip region truncate, 3.0-3.5 times broader than high, continuous with body; lips low, anteriorly rounded. Four, slender cephalic setae, 3-4 μm long i.e. about 0.35-0.45 times width of lip region; originating 2-3 body annules behind lip region, usually diverging peripherally. Stoma about 2.1-2.3 times as long as the lip region is wide. Cheilostome obscure. Prostome one-fourth to one-third the length of meso-metastome. Amphid apertures almost circular, 1.5-2.0 μm wide i.e. about one-sixth of body diameter at their level, located about halfway the meso-metastome, at 9-11 μm from anterior extremity. Excretory pore 70-80 μm from anterior extremity, 62-65 % of the total oesophageal length. Nerve ring slightly above level of excretory pore. Cervical papillae setiform, situated between longitudinal alae, 3-6 annules posterior to the level of excretory pore. Endbulb of oesophagus almost oval, provided with moderately sclerotized denticulated valves, slightly anterior to middle of bulb. Cardia well developed, one-third to half the body-width long at its level. Intestine filled with small granules. Rectum about one anal body-width long.

Vulva slit-like, elevated with prominent lips; vagina extending inward about one-fourth to one-third of the body-width. Ovaries reflexed, anterior on right and posterior on left side of intestine. Eggs 42-48 μm \times 17-20 μm . Tail arcuate, narrow, regularly tapering; about four and a half anal body-widths long; bearing two subdorsal and one subventral caudal setae on each side, left subdorsal one more posterior than right subdorsal. Spinneret 1.0-1.5 μm long.

Male: not found.

Habitat and Locality

Found in sample 1.

Remarks

P. parvus populations from Kenya, Spitsbergen and The Netherlands (Lauwerszeepolder) are comparable. The almost straight to slightly

arcuate body shape of Kenya- and Spitsbergen-populations resemble each other but differ in « C »-shape and comparatively narrow body of Lauwerszeepolder-population. Ratio of oesophageal length to head width, about 16-17 in Kenya-population, 21-22 in Spitsbergen- and 24-25 in Lauwerszeepolder-population. Broad head with low lips of Kenya-population (Fig. 1, A and B) distinctly differs from narrow head with high lips of Spitsbergen (Fig. 1, D) and Lauwerszeepolder (Fig. 1, C) which is, apparently, more close to Maggenti's drawing (1961, Fig. 8, C). Comparatively larger amphid aperture, near or below the middle of meso-metastome is contrasting with the small aperture, above the middle of meso-metastome of Lauwerszeepolder-population.

Despite these differences we consider the Kenya population as a variant of *P. parvus*, until more information becomes available.

***Plectus armatus* Bütschli, 1873 (Fig. 2)**

Measurements

(13 ♀ ♀): L = 0.33-0.47 mm; a = 14.6-18.8; b = 3.3-4.1; c = 7.7-10.2; V = 48-51; stoma = 15-21 μm .

(1 ♂): L = 0.36 mm; a = 16.4; b = 3.6; c = 9.2; T = 50; stoma = 16 μm .

Description

Female: body almost straight to slightly arcuate upon fixation, regularly tapering towards extremities. Cuticle with distinct annules, more prominent on mid-tail region. Two longitudinal alae, interrupting the transverse striae on either lateral side of the body, occupy about one-sixth of the body diameter near mid-body.

Lip region truncate, 2.5-3 times broader than high, continuous with body; lips low, anteriorly rounded. Four, anteriorly directed, cephalic setae, with flattened base, tapering in distal half to two-thirds; 3-4 μm long, i.e. about 0.7-0.9 times the width of lip region; situated at the base of lips. Stoma about two times the width of lip region; cheilostome obscure. Prostome about one-third the meso-metastome. Amphid apertures almost circular, 2.0-2.5 μm wide, i.e. one-fifth to one-fourth as wide as body diameter at their level; located just behind the base of the prostome, 7-8 μm from anterior extremity. Excretory pore 60-75 μm from anterior extremity, 60-70 % of total oesophageal length. Nerve ring slightly above level of excretory pore. Cervical

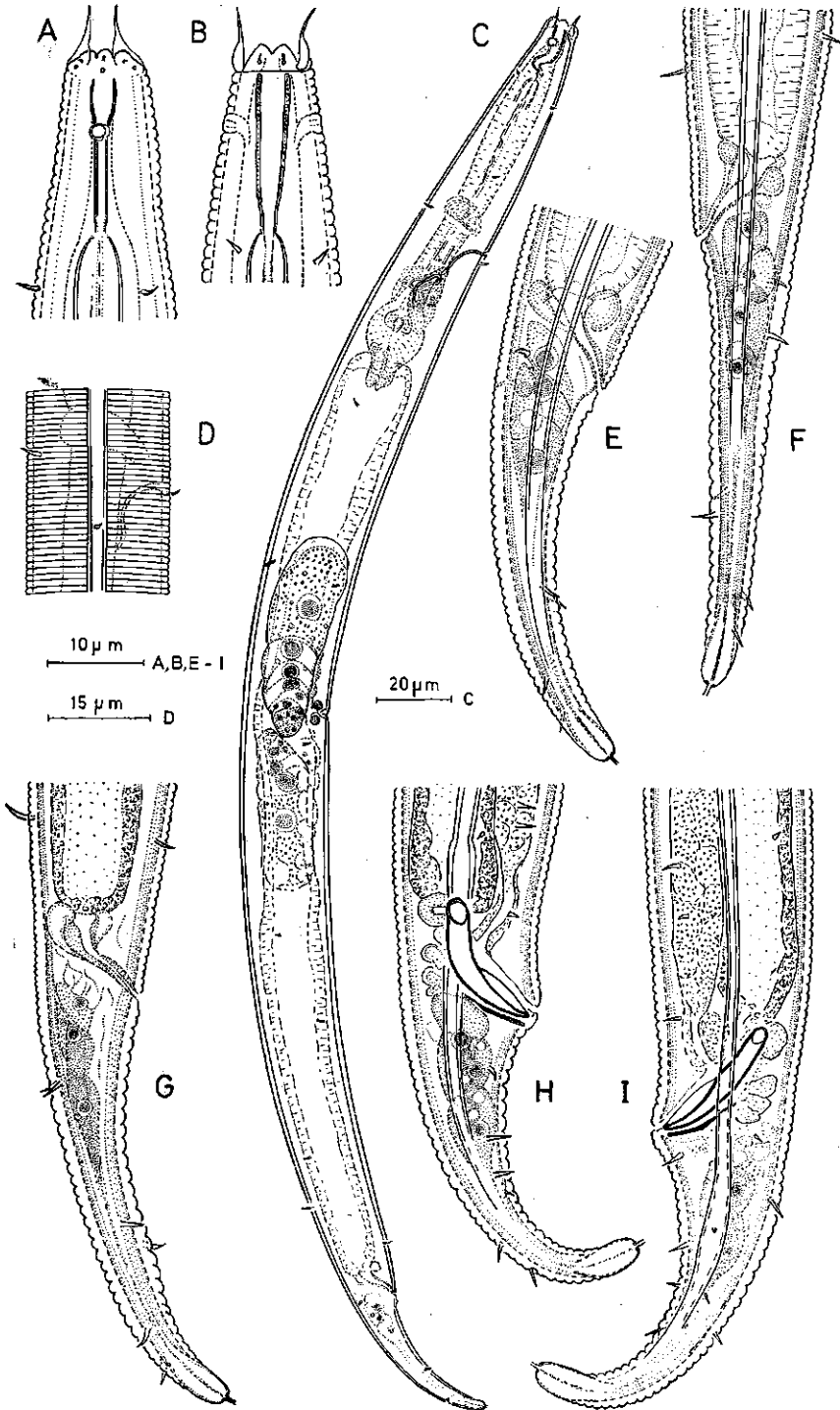


Fig. 2. — *Plectus armatus* Bütschli, 1873. - A: anterior region (lateral view); - B: anterior region (dorso-ventral view); - C: entire female; - D: body region near excretory pore (surface view); - E-G: female tails; - H-I: male tail.

papillae setiform, situated between longitudinal alae, 5-7 annules posterior to excretory pore. Endbulb almost circular, very muscular with sclerotized moderately developed, denticulated valves slightly anterior to middle of bulb. Cardia well developed, one-fourth to one-third body diameter long at its level. Intestine filled with small granules. Rectum about one anal body diameter long or slightly larger. Anus in slight depression.

Vulva slit-like. Vagina with moderately thick cuticular lining, extends inwardly about one-fifth to one-fourth the vulval body-width. Ovaries reflexed, anterior on right and posterior on left side of intestine. Tail straight to arcuate, tapering abruptly shortly behind anus; 4.5 anal body-widths long; bearing two pairs of subdorsal and one pair of subventral caudal setae on each side; left subdorsal of last pair more posterior than right subdorsal. Spinneret 1.0-1.5 μm long.

Male: similar to female. Testis diorchic, anterior and posterior testes on right and left side of intestine respectively. Spicules nearly symmetrical, right one slightly more arcuate than left one which is almost straight with slight curvature distally, about 15 μm long. Preanal supplementary accessory organs absent. Gubernaculum rod-shaped, about 0.45 times the length of spicules. Number of setae on tail, as well as throughout the body, greater than in female. Tail distally more arcuate; about 2.7 anal body-widths long. Lateral field constricted on right side just above the spicule and dilated with a short seta in between, on left side, above the middle of the tail.

Remark

♂ described for the first time.

Habitat and Locality

Found in samples 1, 2 and 10.

Plectus globocephalus n. sp. (Fig. 3)

Measurements

(20 ♀ ♀) (paratypes): L = 0.58-0.71 mm; a = 17.1-21.3; b = 3.4-4.0; c = 7.0-9.1; V = 44-52; stoma = 15-18 μm .

(♀) (holotype): L = 0.597 mm; a = 21.3; b = 3.7; c = 8.3; V = 51.1; stoma = 15 μm .

Description

Female: body arcuate upon fixation; regularly tapering towards extremities, more posteriorly than anteriorly. Cuticle marked with fine transverse striae. Body annules more prominent on mid-tail region, smaller on oesophageal region and fine on rest of the body. Two longitudinal alae interrupt the transverse striae on either lateral side of the body, occupying one-sixth of body near vulval level.

Lip region globular, slightly marked off due to peripheral elevation, 1.5-2.0 times broader than high, lips sharply pointed anteriorly. Four cephalic setae, 3-4 μm long, about half the height of the lips, situated 2-3 annules posterior to lips. Stoma 1.5-1.8 times the width of lip region. Cheilostome moderately developed. Prostome 0.6-0.7 times longer than meso-metastome. Amphid apertures almost circular, 2.5-3 μm wide, one-sixth to one-fifth of body diameter at their level, located about mid-meso-metastome, 9-12 μm from anterior extremity. Excretory pore 90-105 μm from anterior extremity, 57-63 % of the total oesophageal length. Nerve ring just above the level of excretory pore. Cervical papillae setiform, situated between longitudinal alae, 3-10 annules posterior to the level of excretory pore. Endbulb of oesophagus oval to slightly circular, provided with sclerotized and well developed denticulated valves slightly anterior to middle of bulb. Cardia well developed and sunken into anterior part of intestine, about one-fourth of body-width at its level. Intestine filled with small granules. Rectum about one anal body-width long. Anus in a slight depression.

Vulva slit-like; vagina extending inwardly over about one-fourth of the vulval body-width. Ovaries reflexed, on opposite sides of intestine, anterior one on right side and posterior one on left side. Eggs 53-57 μm \times 25-30 μm ($n = 5$). Tail regularly tapering, 4-5 anal body-widths long, bearing two pairs of subdorsal and one pair of subventral caudal setae on each side. Left subdorsal of last pair more posterior than right subdorsal. Spinneret 1.5-2.0 μm long.

Male: not found.

Habitat and Locality

In *Leptodontium joannis-meyeri* C. Muell. among *Erica*-bushes - Sirimon Track, Mt. Kenya, altitude 3,240 meters, moderately humid; collected by A. Coomans on 26.7.1975.

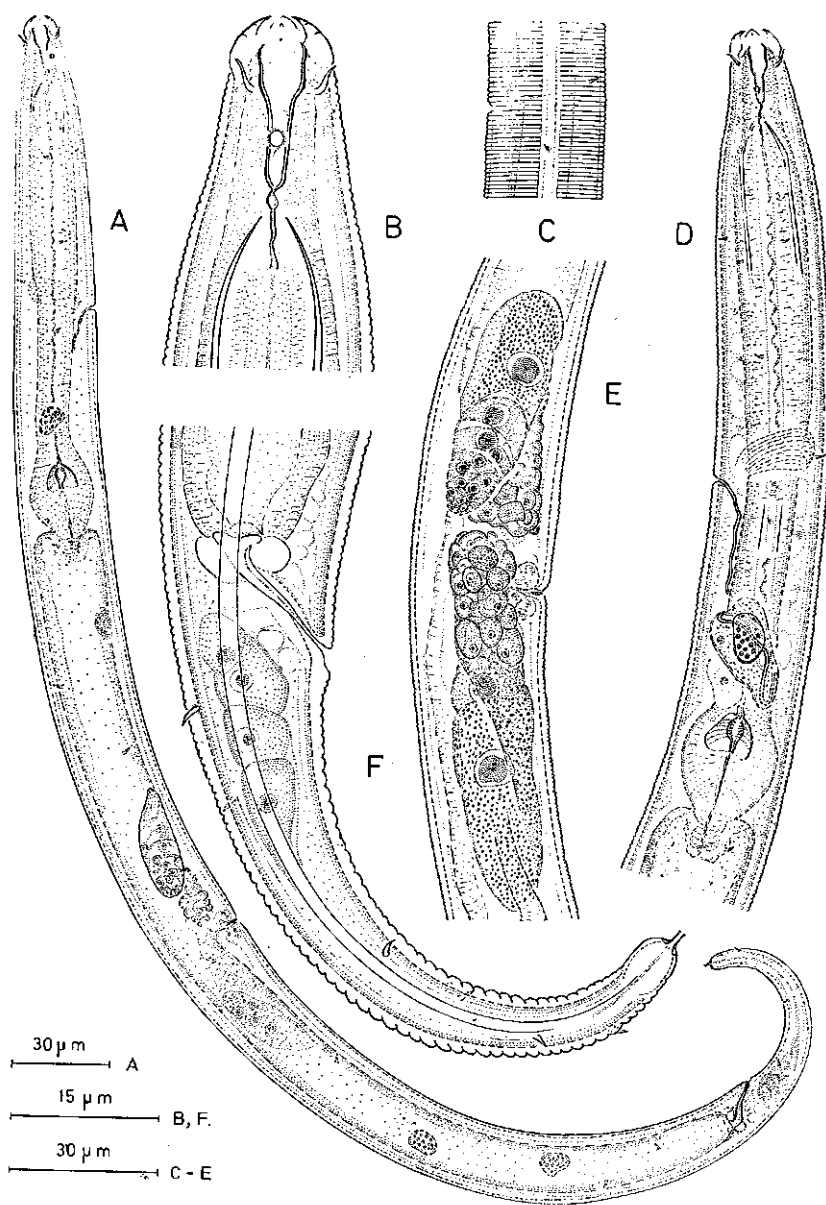


Fig. 3. — *Plectus globocephalus* n. sp. - A: entire female; - B: anterior region; - C: body region near excretory pore (surface view); - D: oesophageal region; - E: midbody region showing reproductive system; - F: female tail.

Other localities

Also found in all the other samples except no. 8.

Type specimens

Holotype female (MRAC 36583) and six paratypes (MRAC 36584) deposited at the Museum voor Midden Afrika, Tervuren, Belgium. Three female paratypes deposited with each of the following collections: U.S.D.A. Beltsville, USA; Division of Nematology, University of California, Davis, USA; Rothamsted Experimental Station, Harpenden, England; Landbouwhogeschool, Wageningen, The Netherlands; Nematode Collection, Zoology Museum, Aligarh Muslim University, Aligarh, India. Remaining female paratypes deposited at the Instituut voor Dierkunde, Rijksuniversiteit, Gent, Belgium.

Differential diagnosis

Plectus globocephalus n. sp. differs from all the species of the genus *Plectus* by its globular lip region. However, it can be compared with the closely related species *P. parietinus* Bastian, 1865 and *P. acuminatus* Bastian, 1865 because of general body shape. It differs from *P. parietinus* by its smaller body size, smaller number of prominent epidermal glands, higher globular lips, absence of the distal subdorsal caudal papilla and possible absence of males. From *P. acuminatus* it differs by the elevated and sharply pointed anterior tips of lips as compared to the broadly rounded tips of *P. acuminatus*.

***Plectus telekii* n. sp. (Figs. 4 and 5)**

Measurements

(20 ♀ ♀) (paratypes): L = 0.79-1.00 mm; a = 16.4-20.0; b = 3.8-4.6; c = 7.5-10.5; V = 43-48; stoma = 22-31 μ m.

(♂) (paratype): L = 0.75 mm; a = 18.8; b = 3.8; c = 7.5; T = 54; stoma = 22 μ m.

(♀) (holotype): L = 0.78 mm; a = 18.1; b = 3.9; c = 8.7; V = 48; stoma = 21 μ m.

Description

Female: body slightly arcuate to open « C »-shaped upon fixation, regularly tapering towards extremities, more posteriorly than ante-

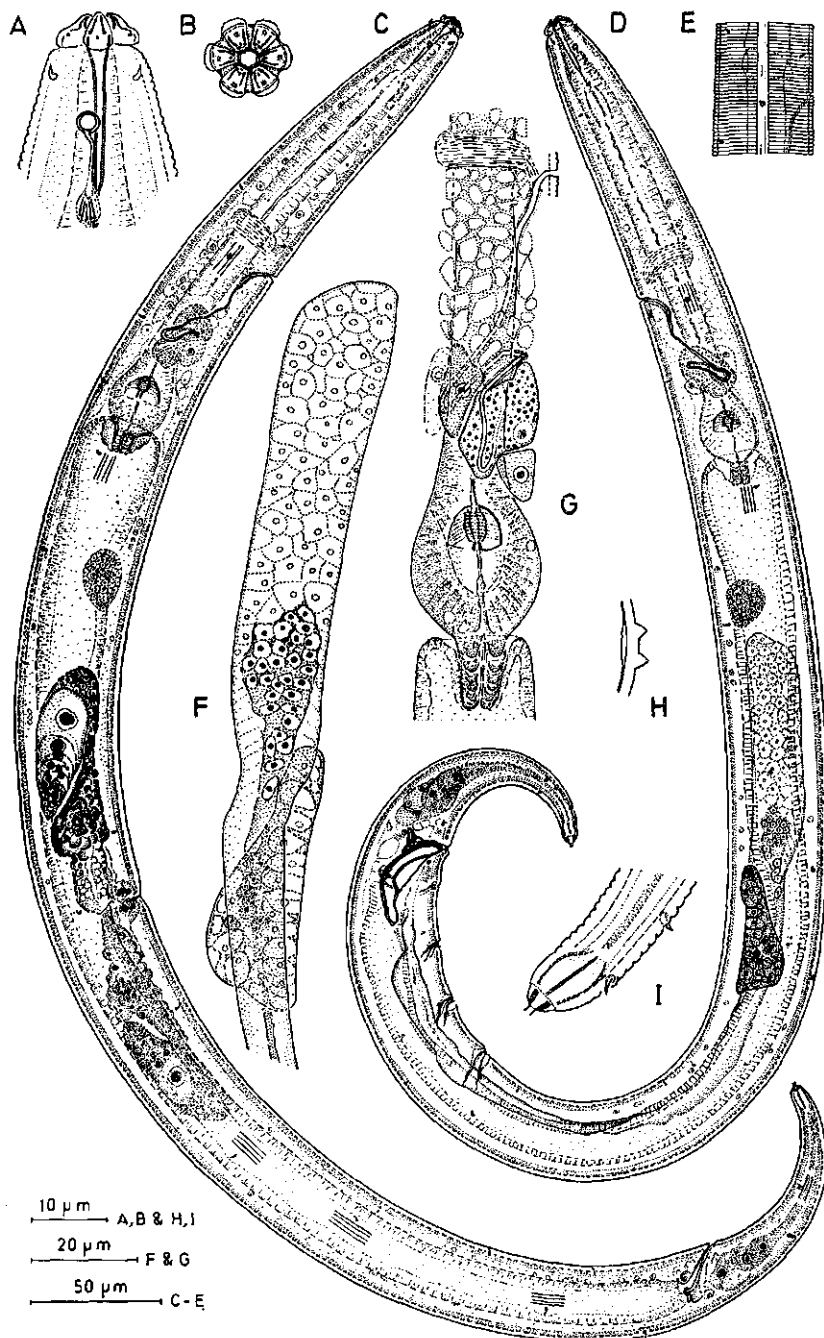


Fig. 4. — *Plectus telekii* n. sp. - A: anterior region; - B: « en face » view; - C: entire female; - D: entire male; - E: body region near excretory pore (surface view); - F: testes; - G: part of cesophageal region showing excretory system; - H: T.S. of body cuticle showing longitudinal alae; - I: posterior end of female tail.

riorly. Cuticle thick and marked with transverse striae. Body annules more prominent on mid tail region, less on anterior oesophageal region and fine on rest of the body. Transverse striae interrupted by two longitudinal alae on either side of body, which appear as four lines in each lateral field due to a mediolateral depression, except near the extremities: lateral fields occupying one-ninth to one-eighth of mid-body-width.

Lip region distinctly offset, 2.5-3 times broader than high. Anterior one-third portion of each lip abruptly narrowed and sharply pointed. Lips supported by sclerotized ribs. Four cephalic setae, 3-4 μm long, situated 3-4 annules posterior to lip region. Stoma about twice the width of lip region. Cheilostome well visible in « *en face* » view. Prostome about one-sixth of the length of meso-metastome. Amphid aperture almost circular; about 2.5-3.0 μm wide, one-sixth to one-fifth of corresponding body diameter; 8-11 μm from anterior extremity; located at the level of middle of meso-metastome. Excretory pore 108-127 μm from anterior extremity, i.e. at 50-60 % of total oesophageal length. Nerve ring just anterior to level of excretory pore. Cervical papillae setiform, situated between longitudinal alae, 1-9 annules posterior to level of excretory pore. Endbulb of oesophagus oval. Cardia well developed, length about one-fourth the body-width at its level. Intestine filled with small granules. Rectum about one anal body-width long. Anus in a slight depression.

Vulva slit-like. Vagina extending about one-fourth the body-width. Ovaries reflexed, both on either lateral side of intestine. Tail regularly tapering, 3.5-4.5 anal body-diameters long; bearing two pairs of subdorsal and one pair of subventral setae, but rarely, one pair of preanal setae descend below the anus making four pairs of tail setae altogether. Left subdorsal of last pair more posterior than right one. Spinneret about 2 μm long.

Male: similar to female. Testis diorchic, opposed, asymmetrical, anterior testis bigger than posterior one; the former situated at the right side, the latter at the left side, of the intestine. Spicules asymmetrical, arcuate, trough-shaped. Left one about 40 μm and the right about 30 μm . Four preanal supplementary accessory organs present; anterior three sclerotized and well developed, extending into body about 15 μm , 12 μm and 10 μm respectively but the fourth (the most posterior one) not sclerotized. Gubernaculum differently shaped from

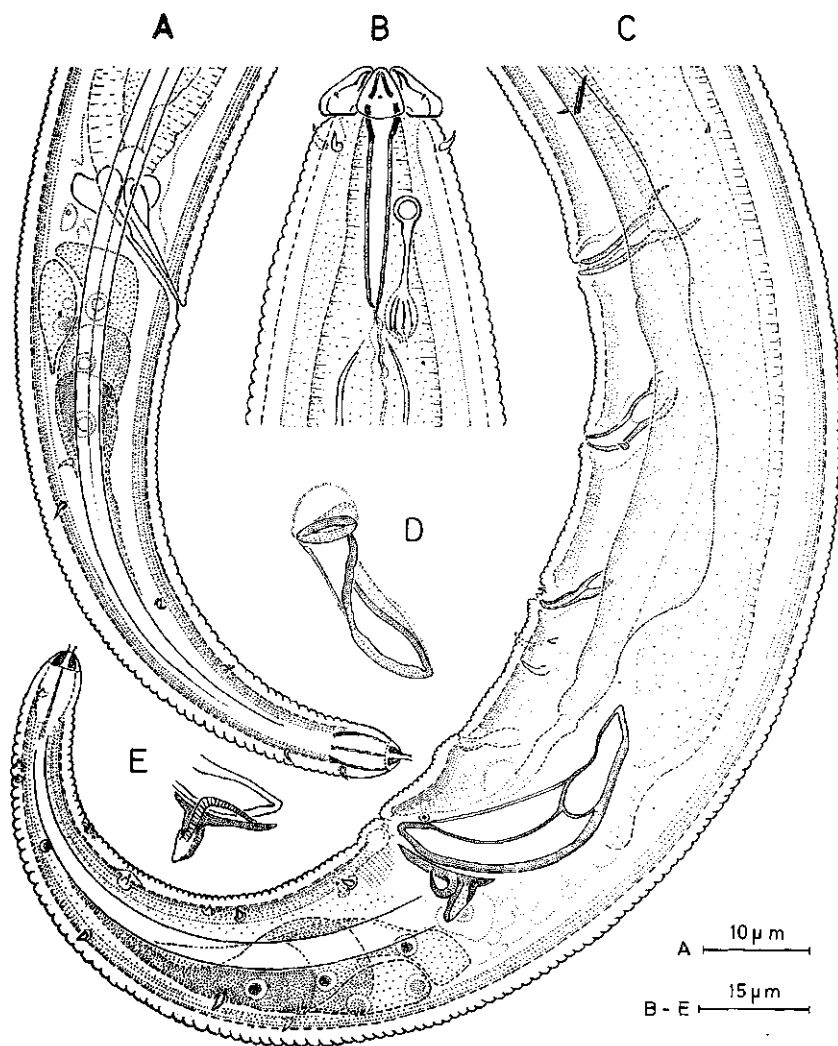


Fig. 5. — *Plectus telekii* n. sp. - A: female tail; - B: anterior region of male; - C: posterior body region of male; - D: right spicule (lateral view); - E: gubernaculum with distal end of spicule (right lateral view).

either lateral side, 17 μm long, with 6 μm long dorsal process. Preanal subventral seta at left body side. Two subdorsal and three subventral caudal setae present on either side of the tail. The posteriormost of subventral setae situated on a papilliform elevation.

Habitat and Locality

Found among *Barbula* spec., *Antitrichia curtispindula* Brid. and a species of Pottiaceae — on rocks near Teleki Hut — 4,115 m; very dry; collected by A. Coomans on 4.8.1975.

Other localities

Also found in samples 1, 2 and 3.

Type specimens

Holotype (MRAC 36585) and two paratypes (MRAC 36586) deposited at the Museum voor Midden Afrika, Tervuren, Belgium. Three female paratypes deposited with each of the following collections: U.S.D.A. Beltsville, USA; Division of Nematology, University of California, Davis, USA; Rothamsted Experimental station, Harpenden, England; Landbouwhogeschool, Wageningen, The Netherlands; Nematode Collection, Zoology Museum, Aligarh Muslim University, Aligarh, India; male paratype and other female paratypes deposited at the Instituut voor Dierkunde, Rijksuniversiteit, Gent.

Differential diagnosis

Plectus telekii n. sp. differs from all species of the genus *Plectus* in which males are known, by the presence of three well developed and one reduced (non sclerotized) preanal supplementary organs. From the most closely related species *P. annulatus* Maggenti, 1961, it differs due to structure of lateral fields, ratio of prostome and meso-metastome, size of the cephalic setae, position of the cervical papillae and presence of male. It can also be compared with *P. parietinus* Bastian, 1865, though it further differs in the ratio of prostome and meso-metastome, well offset lips, indistinct epidermal glands except one ventrolateral near the anterior end of intestine, size and shape of spicules and gubernaculum and absence of subdorsal distal caudal seta of left side.

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