

**A NEW RECORD OF *PARALONGIDORUS REX* ANDRÁSSY, 1986
FROM HUNGARY AND COMMENTS ON HEAD MORPHOLOGY
OF *P. MAXIMUS* (BÜTSCHLI, 1874) SIDDIQI, 1964 (NEMATODA: DORYLAIMIDA)**

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Summary. *Paralongidorus rex* is recorded from Hungary for the first time since its description. Morphometrics and photomicrographs of a female and juveniles belonging to four developmental stages are given together with a short comment on their morphology. The head morphology of *P. maximus* is commented on, based on SEM photomicrographs.

Key words: Cephalic lobe, description, juvenile stages, longidorids, morphometrics.

Paralongidorus rex was described by Andrassy in 1986, based on two females and one fourth stage juvenile specimen, from the soil collected in an oak forest in October 1984 at Feketehegy, the Pilis Mountains, Hungary. In June 2005, during a survey of longidorid nematodes in vineyards and orchards in some parts of Hungary, a population of a *Paralongidorus* species was found in a soil sample collected in the rhizosphere of grapevine (*Vitis* sp.) at Tolcsva. This population, which consisted of a female and juvenile specimens, was identified as *P. rex*. Although this material does not allow re-description of the species, we thought it useful to present here a brief comment on the morphometrics and photomicrographs of the female and juveniles, belonging as they do to four developmental stages.

Dr. D.J.F. Brown has provided the first author with unpublished SEM photomicrographs of the head region of *Paralongidorus maximus* (Bütschli, 1874) Siddiqi, 1964. Some of them are presented here to show morphological detail never published before for this species.

MATERIALS AND METHODS

Nematodes were extracted by Cobb's wet sieving technique, killed and fixed in hot 5% formalin and mounted in glycerin. Measurements were taken with the aid of a camera lucida.

RESULTS AND DISCUSSION

PARALONGIDORUS REX
Andrassy, 1986
(Tables I and II; Figs 1-3)

Female. (Tolcsva, grapevine, n = 1). Although the only female is badly fixed (coiled) and it has a little dam-

age to the cuticle on the tail tip, it fits the original description (Andrassy, 1986). In comparison with the holotype and the paratype, it has a shorter body length (8.3 mm *vs.* 9.60-9.77 mm) and lower "a" ratio value (86.2 *vs.* 106-111). The tail is slightly shorter in this specimen (34 µm *vs.* 40-45 µm) and the shape is somewhat different in having a somewhat conical appearance with broadly rounded tip *vs.* distinctly clavate in type specimens. Similarly to the type specimens, the thickest part of the posterior region is a little before the anal opening.

The mode of reproduction and intraspecific variability of *P. rex* are unknown because only three females have so far been found. However, because of their different origin (habitat, host plant), the differences in body length and tail shape observed could be a reflection of intraspecific variability.

Male. Not found.

Juveniles. (Tolcsva, grapevine, n = 26). Similar to adults, separated into four developmental stages (Figs 2 and 3). The first stage has a conoid tail; second, third and fourth juvenile stages have bluntly rounded to sub-hemispherical tails.

Comments on head morphology. In 1987, Swart and Heyns investigated the comparative morphology of the head regions of some longidorid nematodes from South Africa using the SEM and reported the presence of an additional morphological character, which they called 'flap-like structure' (cephalic lobe), in all the *Paralongidorus* species examined. Further data on the presence of cephalic lobes in *Paralongidorus* species from South Africa were published by Liebenberg *et al.* (1993a, 1993b, 1993c).

Cephalic lobes were observed in our specimens of *P. rex* (Figs 1 and 3), which is a new character for this species.



Fig. 1. Photomicrographs of *Paralongidorus rex*. A-B: female anterior region (black arrows indicate cephalic lobes; white arrow indicates cuticular collar); C: vulva region; D: female tail.

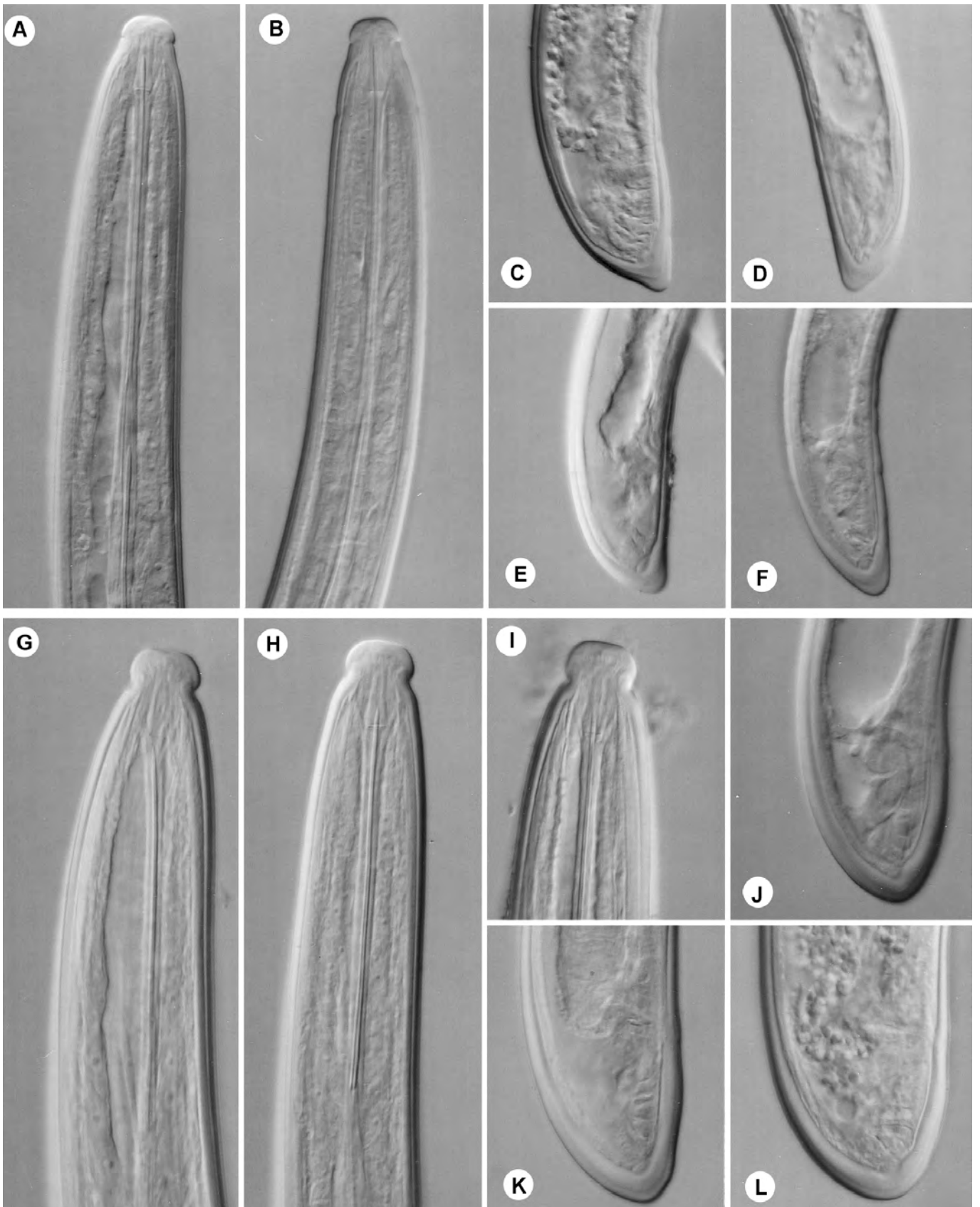


Fig. 2. Photomicrographs of juvenile stages of *P. rex*. A-B: anterior region and C-F: tail of J1 stage; G-I: anterior region and J-L: tail of J2 stage.

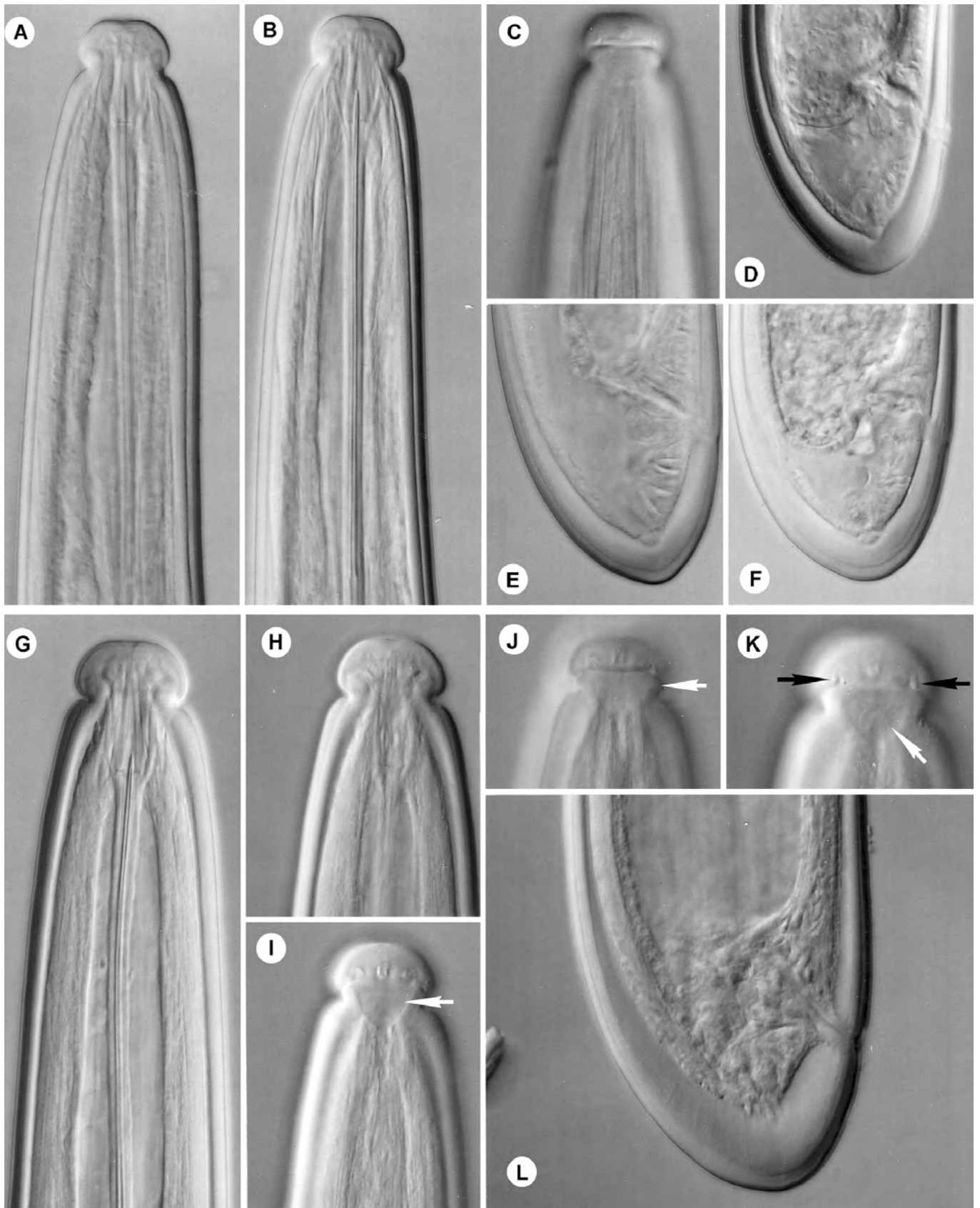


Fig. 3. Photomicrographs of juvenile stages of *P. rex*. A-C: anterior region and D-F: tail of J3 stage; G-K: anterior region and L: tail of J4 stage (I: arrow indicates amphidial pouch; J: arrow indicates cuticular collar; K: black arrows indicate cephalic lobes, white arrow indicates amphidial pouch).

Table I. Morphometrics of females of *Paralongidorus rex* from Hungary.

	Andrássy, 1986	
	Feketehegy, Pilis mountains soil from an oak forest	Tolcsva grapevine
Locality:		
Host:		
n	2 females (Holotype + Paratype)	1 female Original
L (mm)	9.60-9.77	8.3
a	106-111	86.2
b	14-16	14.2
c	230-250	244
c'	0.5-0.6	0.53
V	47	46.2
Odontostyle μm	178-180	180
Odontophore μm	-	76.3
Oral aperture to guide ring μm	38	36.9
Tail μm	40-45	34.0
J (hyaline portion of tail) μm	-	13.1
Body diam. at lip region μm	32-33	33.8
Body diam. at guide ring μm	-	55.0
Body diam. at base of oesophagus μm	-	81.3
Body diam. at mid-body or vulva μm	92-95	96.3
Body diam. at anus μm	-	63.8
Body diam. at beginning of J μm	-	40.8

Table II. Morphometrics of juveniles of *Paralongidorus rex* from Hungary.

Parameter	This study (Tolcsva, grapevine)				Andrássy, 1986
	10 J1	7 J2	7 J3	2 J4	1 J4 Paratype
n					
L (mm)	1.6 \pm 0.26 (1-2)	2.5 \pm 0.28 (2-3)	3.8 \pm 0.34 (3.5-4.5)	6.4-6.8	6.47
a	48.3 \pm 4.19 (43.6-56.1)	52.9 \pm 2.32 (50.0-56.4)	60.0 \pm 4.50 (55.0-67.0)	76.8-79.1	102
b	6.3 \pm 1.39 (4.8-8.8)	7.8 \pm 1.46 (5.7-9.6)	8.5 \pm 0.40 (7.8-9.07)	10.8-11.5	11
c	52.1 \pm 5.92 (46.2-63.2)	72.1 \pm 9.39 (60.9-89.5)	108.1 \pm 9.96 (94.5-121.8)	187.7-186.0	188
c'	1.2 \pm 0.09 (1.1-1.3)	0.9 \pm 0.10 (0.8-1.0)	0.7 \pm 0.04 (0.6-0.75)	0.5-0.6	-
Odontostyle μm	78.4 \pm 2.40 (76.4-83.3)	94.4 \pm 3.11 (89.1-98.3)	122.5 \pm 3.34 (119.0-129.3)	145.0-145.6	153
Odontophore μm	27.6 \pm 1.72 (25.3-31.0)	38.3 \pm 1.36 (37.4-40.2)	49.5 \pm 2.55 (46.0-52.3)	57.5-56.3	-
Replacement odontostyle μm	91.5 \pm 2.71 (86.9-95.4)	121.9 \pm 4.79 (114.9-127.6)	145.6 \pm 8.83 (136.8-160.9)	192.0-169.4	-
Oral aperture to guide ring μm	17.7 \pm 0.65 (17.2-19.0)	22.7 \pm 1.62 (21.3-25.9)	26.2 \pm 0.79 (25.3-27.6)	32.5-30.0	-
Tail μm	31.2 \pm 2.48 (28.7-35.6)	34.6 \pm 3.01 (31.0-39.7)	35.1 \pm 1.71 (32.8-36.8)	34.3-36.4	-
J (hyaline portion of tail) μm	6.4 \pm 0.80 (5.7-8.0)	7.1 \pm 0.99 (5.7-8.6)	9.0 \pm 0.65 (8.0-9.8)	15.0-16.3	-
Body diam. at lip region μm	12.8 \pm 0.39 (12.1-13.2)	17.7 \pm 0.55 (17.2-18.4)	22.5 \pm 0.26 (22.4-23.0)	28.8-26.3	-
Body diam. at guide ring μm	18.9 \pm 1.23 (17.2-21.3)	25.0 \pm 1.09 (23.6-26.4)	32.3 \pm 1.28 (30.0-33.3)	39.4-36.3	-
Body diam. at base of oesophagus μm	30.9 \pm 3.69 (27.6-37.4)	42.4 \pm 4.21 (37.4-48.9)	57.5 \pm 3.68 (53.4-63.2)	74.7-74.4	-
Body diam. at mid- body μm	33.7 \pm 3.60 (30.5-40.2)	46.8 \pm 4.08 (41.4-52.9)	63.5 \pm 5.67 (57.5-70)	83.8-85.6	-
Body diam. at anus μm	26.1 \pm 3.73 (22.4-30.5)	38.8 \pm 3.74 (33.3-43.7)	50.9 \pm 2.30 (47.1-53.4)	63.8-63.8	-
Body diam. at beginning of J μm	13.8 \pm 1.51 (12.1-16.1)	22.2 \pm 2.63 (19.0-26.4)	30.4 \pm 1.30 (28.7-32.8)	45.0-47.9	-

Data for J1, J2, and J3 are averages \pm standard deviation with ranges in brackets.

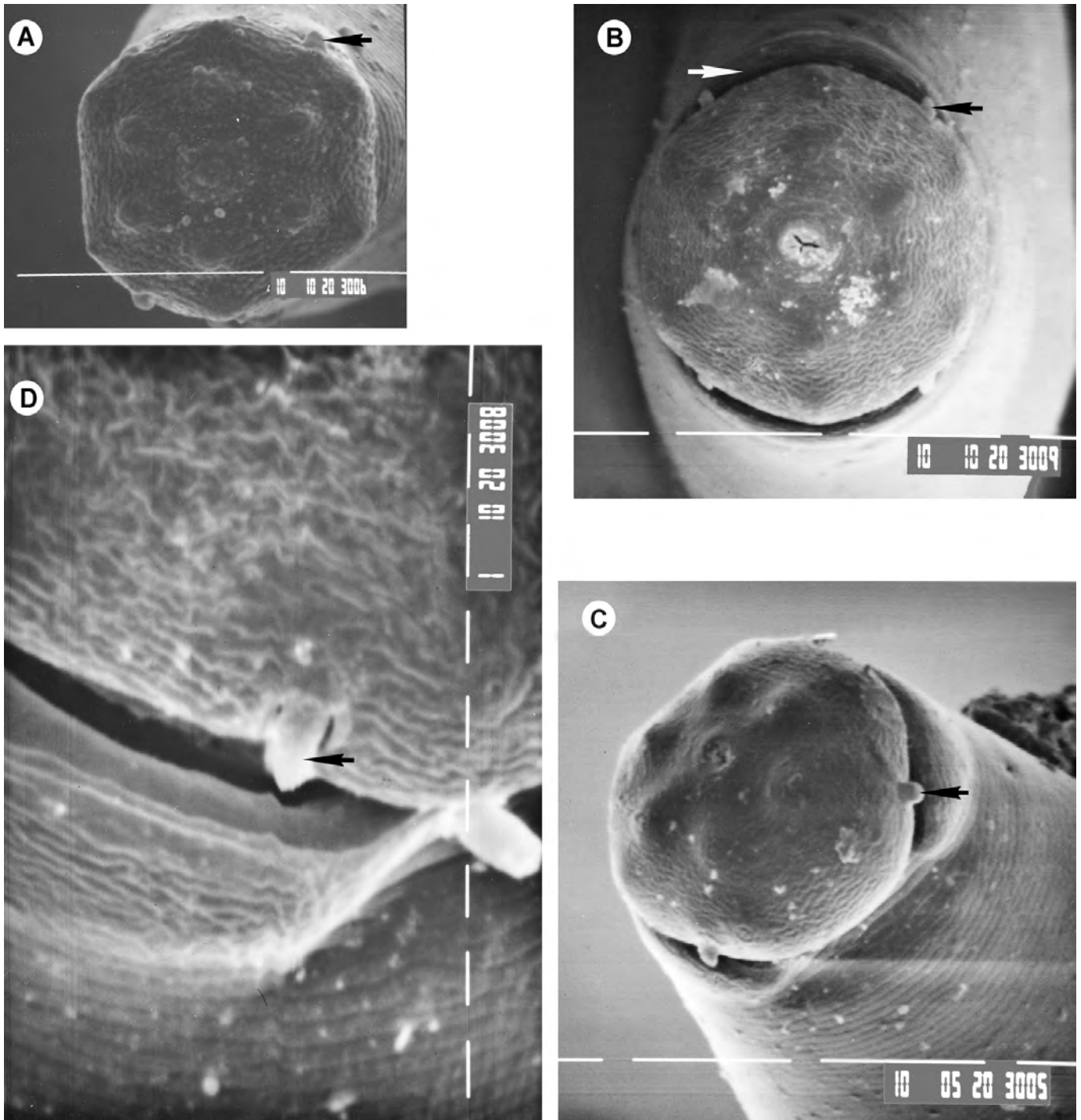


Fig. 4. SEM photomicrographs of *Paralongidorus maximus*. A-B: Head in face view; C: Head in lateral view; D: Head in lateral view – detail (A-D: black arrow indicates cephalic lobe; B: white arrow indicates amphid aperture).

PARALONGIDORUS MAXIMUS
(Bütschli, 1874) Siddiqi, 1964
(Fig. 4)

The photomicrographs, provided by Dr. D.J.F. Brown, were made probably in 1983 and some of them are presented in this paper. They clearly show the presence of cephalic lobes, which to the best of our knowledge have never been reported in *P. maximus*.

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