A taxonomic survey of the family Anatonchidae (Nematoda)

By

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Abstract. The third paper of a series summarizing the taxonomy of the nematode superfamily Mononchoidea treats the family Anatonchidae. Twenty genera grouped into three subfamilies are characterized: *Nullonchus, Iotonchulus, Caputonchus, Mulveyellus, Jensenonchus, Iotonchus, Hadronchus, Parahadronchus, Prionchulellus, Prionchuloides, Hadronchoides* and *Hadronchulus* (Iotonchinae); *Miconchus, Promiconchus, Crassibucca, Paracrassibucca* and *Doronchus* (Miconchinae); *Truxonchus, Anatonchus* and *Tigronchoides* (Anatonchinae). 131 valid species are listed and presented in form of identification keys. Two species new to science, *Parahadronchus egregius* and *Anatonchus sympathicus* spp. n., are described and several new combinations proposed.

In two of my last papers (1992, 1993) I outlined the taxonomic picture of the families Mononchidae CHITWOOD, 1937 and Mylonchulidae JAIRAJPURI, 1969, both belonging to the superfamily of predaceous nematodes, Mononchoidea CHITWOOD, 1937. Within the family Mononchidae I characterized eleven genera and 100 species, within Mylonchulidae seven genera and 67 species. The present study discusses the family Anatonchidae JAIRAJPURI, 1969.

Anatonchidae is the richest among the three families both in genera and species: 131 valid species will be enumerated below and grouped into twenty genera. Although the representatives of the family show a fairly colourful picture in their appearance, especially in the organization of the buccal cavity, all they are common in a peculiar character: they have a structure in the oesophago-intestinal junction which never occurs in the other two families.

Family **ANATONCHIDAE** JAIRAJPURI, 1969

Mononchina, Mononchoidea. Medium-sized or large animals to over 6 mm. Buccal cavity heavily sclerotized, large, often very roomy, flattened at base. Dorsal tooth present (a single exception: *Nullonchus*), not too large, occasionally even rather weak, predominantly projected forward but in some cases backward, retrorse; located either in anterior or posterior part of buccal capsule. Beside this main tooth, subven-

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tral teeth, minute denticles or longitudinal ridges of various type and arrangement can be present. Oesophago-cardial junction tuberculate.

Anatonchidae mainly differs from both Mononchidae and Mylonchulidae by the presence of a special tuberculate structure in the junction between the oesophagus and cardia—intestine. These "tubercles" are formed by the widening of the oesophago-cardial lumen, and show a triradiate symmetry. Whereas the oesophago-intestinal valve in the other two families is always simple, not widened. The role of this phenomenon of Anatonchidae is not known exactly.

Moreover, Anatonchidae can be distinguished from Mylonchulidae by the fact that such a very large claw-like dorsal tooth and those transverse rasp-like denticles being so typical for Mylonchulidae never occur in it. To separate Anatonchidae from Mononchidae is, however, not so simple. The reason for this is that in the appearance of the buccal cavity — the main distinguishing character for genera — a sort of parallel evolution can be often observed. That means that similarly shaped and structured buccal capsules can occur in both families. The stoma of Anatonchidae is, however, in general more roomy and more flattened at base than that of the other family; moreover, the junction between the anterior end of the buccal capsule and the short sclerotized "funnel" just before that is never as sharply pointed as in Mononchidae. It may be mentioned else that the lumen of the oesophagus predominantly begins with a distinct widening in Anatonchidae but it begins simply in Mononchidae (Fig. 1). But the main distinguishing character of the two families is the presence or absence of those tubercles in the oesophago-intestinal junction as mentioned above.

Fig. 1. Some differences in the buccal-oesophageal region between Mononchidae and Anatonchidae. (See in text, page 10)

The present family is not so homogeneous as Mononchidae and far not so as Mylonchulidae. This is supported by the fact, too, that while Mononchidae can be divided into two subfamilies, and Mylonchulidae has only one subfamily, for the 20 genera of Anatonchidae three subfamilies must be distinguished.

Key to subfamilies of Anatonchidae

1 Teeth three, equal in shape and location, and directed backward (retrorse) ..... **Anatonchinae**
— Teeth various in shape and arrangement, directed forward, never retrorse 2

2 Subventral walls of buccal cavity unarmed or provided with several small denticles, either scattered or arranged along longitudinal ribs ..... **Iotonchinae**
— Subventral walls of buccal cavity without minute denticles but armed with teeth grouped into one or two pairs, similar in shape as, or somewhat smaller than dorsal tooth ..... **Miconchinae**

Subfamily IOTONCHINAE Jairajpuri, 1969

Anatonchidae. Buccal cavity roomy. Dorsal tooth — lacking in one genus — located in anterior or posterior half of buccal capsule and pointed forward. Subventral walls either completely unarmed or provided with smooth or serrate longitudinal ribs, or scattered denticles. Valid teeth, similar to dorsal tooth, never occurring on subventral walls (Fig. 2).

12 genera (with 79 species), in alphabetic order:

Caputonchus Siddiqi, 1984
Hadronchoides Jairajpuri & Rahman, 1984
Hadronchulus Ray & Das, 1983
Morenchus Dhanachand, Renubala & Mohilal, 1991 (syn. n.)
Hadronchus Mulvey & Jensen, 1967
Iotonchulus gen. n.
Iotonchus Cobb, 1916
Mononchus (*Iotonchus* Cobb, 1916)
Jensenonchus Jairajpuri & Khan, 1982
Mulveyellus Siddiqi, 1984
Nullonchus Siddiqi, 1984
Parahadronchus Mulvey, 1978
Prionchulellus Mulvey & Jensen, 1967
Prionchuloides Meyl, 1963

Key to genera of Iotonchinae

1 Buccal cavity completely unarmed, without any teeth or denticles ..... **Nullonchus** Siddiqi
— Buccal cavity armed at least with a dorsal tooth 2

2 Only one — the dorsal — tooth present 3
— Beside dorsal tooth also serrate ribs or/and small denticles present 7

3 Dorsal tooth located at or near base of buccal cavity ..... **Iotonchus** Cobb
— Dorsal tooth located in anterior fourth to somewhat posterior to middle of stoma 4

4 Facing the dorsal tooth a thin longitudinal ridge present ..... **Jensenonchus** Jairajpuri & Khan
— Facing the dorsal tooth no longitudinal ridge 5

5 Lip region sharply set off by a deep constriction; tail straight ..... **Caputonchus** Siddiqi
— Lip region not set off so sharply; tail more or less arcuate 6

6 Tail filiform, 10—20 anal body widths long; terminal spinneret present ..... **Iotonchulus** gen. n.
— Tail conoid, 2—6 anal body widths long; terminal spinneret lacking ..... **Mulveyellus** Siddiqi

7 Dorsal tooth opposed by two, rarely four, longitudinal serrate ridges 8
— Dorsal tooth opposed by fine scattered denticles 11

8 Dorsal tooth located in posterior half of buccal cavity, mostly subbasal, serrate ridges similarly posterior in location; caudal spinneret present ..... **Parahadronchus** Mulvey
— Dorsal tooth located in anterior half of buccal cavity, serrate ridges occupying almost the entire length of stomatal walls; caudal spinneret absent 9

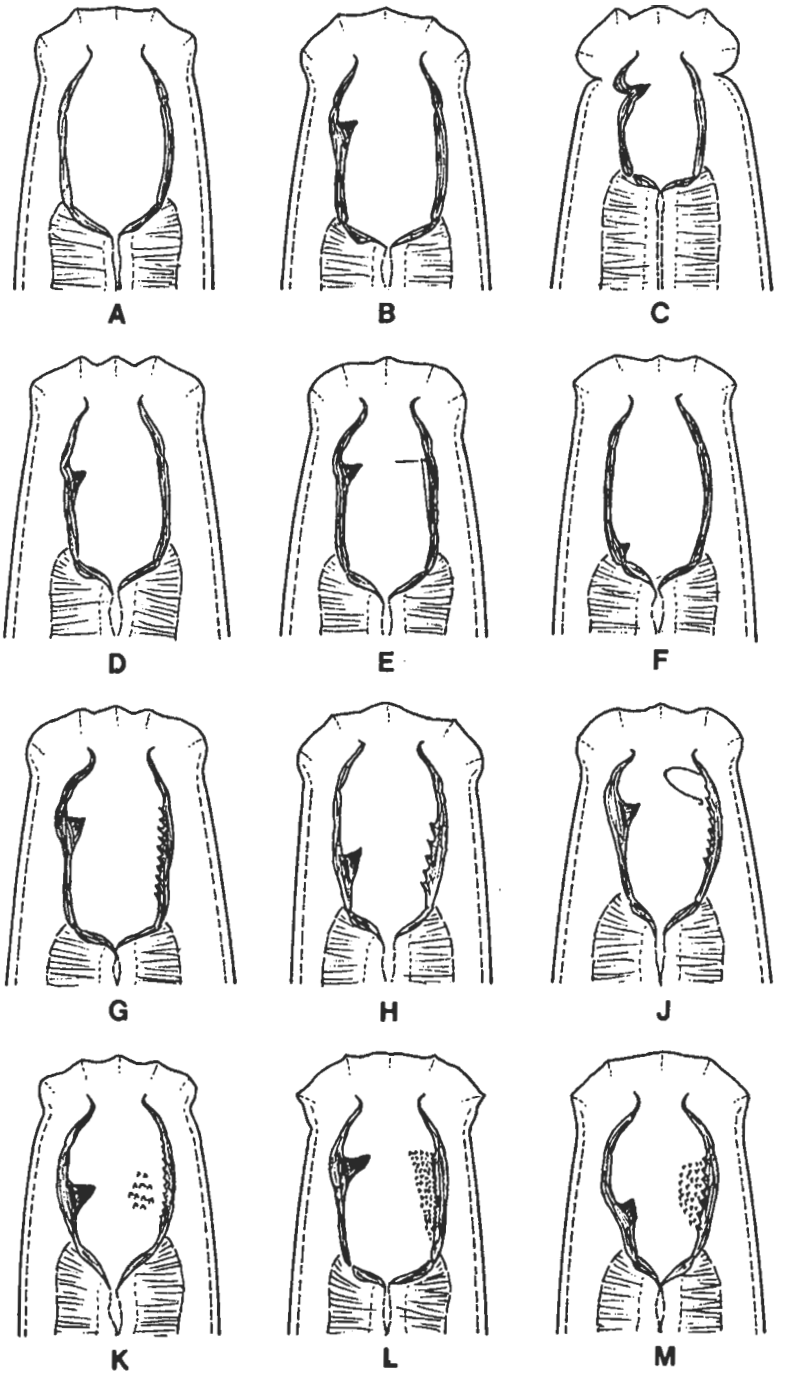

Fig. 2. Buccal cavities in the family Anatonchidae. A—M: Genera of the subfamily Iotonchinae; A: *Nullonchus*, B: *Iotonchulus*, C: *Caputonchus*, D: *Mulveyellus*, E: *Jensenonchus*, F: *Iotonchus*, G: *Hadronchus*, H: *Parahadronchus*, J: *Prionchulellus*, K: *Prionchuloides*, L: *Hadronchoides*, M: *Hadronchulus*

9 Subventral serrate ridges forming a hook-like loop anteriorly ... **Prionchulellus** MULVEY & JENSEN
— Subventral serate ridges simple, not forming loops 10

10 Beside ribs, subventral walls with a number of irregularly dispersed minute denticles; female amphidelphic ..... **Prionchuloides** MEYL
— Subventral walls only with two ribs; female prodelphic ..... **Hadronchus** MULVEY & JENSEN

11 Dorsal tooth in anterior part of buccal cavity, denticles almost along the entire length of subventral walls; female prodelphic ..... **Hadronchoides** JAIRAJPURI & RAHMAN
— Dorsal tooth in posterior part of buccal cavity; denticles also restricted to the posterior walls; female amphidelphic ..... **Hadronchulus** RAY & DAS

Genus ***Nullonchus*** SIDDIQI, 1984

Anatonchidae, Iotonchinae. Body length between 1 and 2 mm. Cuticle smooth. Lip region slightly set off. Buccal cavity roomy, broadly ovoid, completely devoid of any teeth or denticles or ribs. Proximal end of oesophagus tuberculate, tubercles however smaller than in general in the family. Female mono-prodelphic, with or without posterior uterine sac. Vulva located in 68—76% of body length. Male not known. Tail conoid-arcuate, 2—5 times as long as anal diameter. Caudal glands and spinneret present.

Type species: *Nullonchus levistomus* SIDDIQI, 1984.

A very remarkable genus, the sole within the superfamily Mononchoidea which has nothing armature in the buccal cavity. Whether the toothless stoma should be regarded as a primary or secondary phenomenon, it cannot be decided in lack of known transitional forms toward the tooth-bearing types. SIDDIQI (1984) grants that whichever theory may be right. Owing to the fact that also the larval stages have no tooth in the stoma we may suppose that this type of unarmament is an ancient character.

The species of *Nullonchus* have been described from soils of rain forests in South America.

Three species:

N. levistomus SIDDIQI, 1984
N. rapax SIDDIQI, 1984
N. valens SIDDIQI, 1984

Key to species of Nullonchus

1 Postvulval uterine sac present, 1.5 times as long as corresponding width of body; buccal cavity about 50 µm long. — ♀: L=1.9 mm; a=31; b=4; c=10; V=72%; c'=5. ♂ unknown. (Colombia) ..... **valens** SIDDIQI
— Postvulval uterine sac absent; buccal cavity 30—35 µm long 2

2 Tail shorter, 2—3 anal diameters; vagina strongly arcuate, directed forward. — ♀: L=1.0—1.5 mm; a=23—28; b=3.3—4.1; c=12—18; V=74—76%; c'=2.3—3.1. ♂ unknown. (Colombia) ..... **levistomus** SIDDIQI
— Tail onger, 4—5 anal diameters; vagina slightly oblique. — ♀: L=1.4—1.7 mm; a=28—36; b=4.0—4.1; c=9.8—11.4; V=68—73%; c'=4.3—5.1. ♂ unknown. (Colombia) ..... **rapax** SIDDIQI

Genus ***Iotonchulus*** gen. n.

Anatonchidae, Iotonchinae. Body either small, near 1 mm, or very large, close to 4 mm. Cuticle smooth. Buccal cavity barrel-shaped, dorsal tooth rather small, located close to midway in stoma. Subventral armature lacking. Oesophago-intestinal valve tuberculae. Female genital system amphidelphic or prodelphic, in the latter case with

a very short postvulval sac. Vulva between 52 and 62%. Spicula with small lateral pieces. Copulatory supplements 11—13. Female tail filiform, 12—19 times as long as anal diameter, male tail comparatively shorter and plumper. Caudal glands and spinneret present.

Type species: *Iotonchus longicaudatus* BAQRI, BAQRI & JAIRAJPURI, 1978 = *Iotonchulus longicaudatus* (BAQRI, BAQRI & JAIRAJPURI, 1978) comb. n.

In the anterior position of the dorsal tooth *Iotonchulus* comes close to *Jensenonchus* JAIRAJPURI & KHAN, 1982, *Mulveyellus* SIDDIQI, 1984 and *Caputonchus* SIDDIQI, 1984 but it can be easily distinguished from them in having a filiform tail and well developed terminal spinneret.

The representatives of this genus are inhabitants of wet soils and occur in Asia (2 species) and Australia-Oceania (1 species).

Three species:

I. bangkokensis (BUANGSUWON & JENSEN, 1966) comb. n.
Iotonchus bangkokensis BUANGSUWON & JENSEN, 1966
I. longicaudatus (BAQRI, BAQRI & JAIRAJPURI, 1978) comb. n.
Iotonchus longicaudauts BAQRI, BAQRI & JAIRAJPURI, 1978
Mulveyellus longicaudatus (BAQRI, BAQRI & JAIRAJPURI, 1978) SIDDIQI, 1984
Iotonchus heynsi MOHANDAS & PRABHOO, 1979 (syn. n.)
I. ophiocercus (CLARK, 1961) comb. n.
Iotonchus ophiocercus CLARK, 1961

Remarks

Iotonchus heynsi MOHANDAS & PRABHOO, 1979. — This species seems to be identical with *Iotonchulus longicaudatus* (BAQRI, BAQRI & JAIRAJPURI, 1978). The little "differences" mentioned by MOHANDAS and PRABHOO do not seem to be enough to separate *heynsi* from *longicaudatus*.

Key to species of Iotonchulus

1 Large species, 3.7—4 mm; female amphidelphic. — ♀: L=3.8—4.0 mm; a=41—47; b=4.7—4.9; c=4.7—5.2; V=54—62%; c'=12—14. ♂: L=3.7—3.8 mm; a=38—40; b=4.6—5.2; c=5.8—10; PO: 11—13. (New Zealand) ..... **ophiocercus** (CLARK)
— Much smaller species, near 1 mm; female prodelphic 2

2 Tail terminus bulbous; buccal cavity 13—15 µm long, 1.5 times as long as wide. — ♀: L=0.8—0.9 mm; a=33—43; b=4.1—4.7; c=2.9—4.0; V=52—60%; c'=12—15. ♂ unknown. (Thailand) ..... **bangkokensis** (BUANGSUWON & JENSEN)
— Tail terminus cylindrical; buccal cavity 21—24 µm long, twice as long as wide. — ♀: L=1.0—1.3 mm; a=32—45; b=3.4—4.6; c=3.4—4.1; V=59—62%; c'=13—19. ♂ unknown. (India, Kazakhstan) ..... **longicaudatus** (BAQRI, BAQRI & JAIRAJPURI)

Genus *Caputonchus* SIDDIQI, 1984

Anatonchidae, Iotonchinae. Very small nematodes, 0.5—0.6 mm. Cuticle smooth. Lip region sharply set off by a deep constriction. Buccal cavity spacious but small, shorter than labial width, dorsal tooth located in its anterior fourth, pointing forward. No subventral ridges or denticles. Oesophageal base tuberculate. Vulva somewhat posterior to mid-body; ovaries two. Male not known. Tail straight, conical with minutely rounded tip, 2.5—3 times as long as anal body width. Caudal glands and spinneret lacking.

Type species: *Caputonchus capitatus* SIDDIQI, 1984.

Caputonchus is closely related to *Mulveyellus* SIDDIQI, 1984 in having an anteriorly located tooth, unarmed subventral walls, a short tail and rudimentary caudal glands. It differs from that by the small and stout body, the sharply separated head, the unusually small buccal cavity, the farther forward located tooth and the straight tail.

Terricolous animals, known from the Caribbean Region.

One species:

C. capitatus SIDDIQI, 1984

— ♀: L=0.5—0.6 mm; a=19—21; b=3.4—3.7; c=15—16; V=54—59%; c'=2.4—2.7. ♂ unknown. (St. Lucia) ..... **capitatus** SIDDIQI

Genus *Mulveyellus* SIDDIQI, 1984

Anatonchidae, Iotonchinae. Body 0.8 to 3.1 mm long. Cuticle smooth. Buccal cavity barrel-shaped with a single dorsal tooth varying in location from anterior third to somewhat posterior to the middle of buccal capsule. Subventral walls devoid of ribs or denticles. Oesophago-cardial valve tuberculate. Vulva between 52 and 81% of body length. Female reproductive system prodelphic or amphidelphic. Spicula with lateral accessory pieces. Supplements 11—15. Tails of both sexes equal in shape, as long as 2.5—6 anal body widths, conoid-arcuate. Caudal glands reduced, spinneret absent.

Type species: *Mononchus jairi* LORDELLO, 1959 = *Mulveyellus jairi* (LORDELLO, 1959) SIDDIQI, 1984.

Mulveyellus is closest to *Jensenonchus* JAIRAJPURI & KHAN, 1982 but differs from that in the absence of small longitudinal ribs on the subventral walls.

Terrestrial nematodes. They have been observed in four continents: Asia (2 species), Africa (2 species), South America (4 species) and Australia-Oceania (1 species).

Five species:

M. arenicola (ALTHERR, 1963) comb. n.
Iotonchus arenicola ALTHERR, 1963
M. jairi (LORDELLO, 1959) SIDDIQI, 1984
Mononchus jairi LORDELLO, 1959
Iotonchus jairi (LORDELLO, 1959) CLARK, 1961
M. monhystera (COBB, 1917) SIDDIQI, 1984
Mononchus monhystera COBB, 1917
Iotonchus monhystera (COBB, 1917) JAIRAJPURI, 1970
M. parazschokkei (ALLGÉN, 1929) comb. n.
Mononchus parazschokkei ALLGÉN, 1929
Mononchus (Iotonchus) parazschokkei ALLGÉN, 1929 (GOODEY, 1951)
Iotonchus parazschokkei (ALLGÉN, 1929) GOODEY, 1951
M. shamimi (PATIL & KHAN, 1982) comb. n.
Iotonchus shamimi PATIL & KHAN, 1982

Remarks

Mulveyellus jairi (LORDELLO, 1959). — *Iotonchus jairi* apud MALCEVSCHI, 1981 seems to belong more to *M. monhystera* (COBB, 1917) than *M. jairi* by virtue of the anterior position of the dorsal tooth; as a consequence, the first description of the male concerns *monhystera* and not *jairi*.

1 Female genital organ unpaired, prodelphic, without a posterior uterine sac 2
— Female genital organ paired, amphidelphic 3

2 Dorsal tooth in anterior third of buccal cavity. — ♀: L= 1.0—1.3 mm; a=23—30; b=3.6—4.3; c=12—17; V=72—81%; c'=2.6—3.0. ♂: L=1.1—1.2 mm; a=31—35; b=3.6—4.0; c=13—16; PO: 11—12. (Ivory Coast, South Africa, Colombia, Brazil, Argentina) ..... **monhystera** (COBB)
— Dorsal tooth midway in the buccal cavity. — ♀: L=0.8—1.6 mm; a=23—30; b=3.4—4.3; c=12—16; V=71—76%; c'=2.5—3. ♂ unknown. (India, Nigeria, St. Lucia, Brazil) ..... **jairi** (LORDELLO)

3 Apex of dorsal tooth situated in anterior third of stoma. — ♀: L=1.7 mm; a=24; b=3.6; c=14; V=64%; c'=3. ♂ unknown. (India) ..... **shamimi** (PATIL & KHAN)
— Apex of dorsal tooth situated behind the middle of stoma 4

4 Tail longer, 5—6 anal diameters and curled up. — ♀: L=3.1 mm; a=41; b=5.4; c=13; V=52%; c'=5—6. ♂ unknown. (Argentina) ..... **arenicola** (ALTHERR)
— Tail shorter, 3.5—4 anal diameters, simply arcuate, not curled up. — ♀: L=1.1—2.8 mm; a=23—27; b=3.4—4.6; C=8—15; V=57—65%; c'=3.5—4. ♂: L=2.9 mm; a=33—36; b=3.7—4.1; c=25—27; PO: 14—15. (Chile, New Zealand, Campbell Islands) ..... **parazschokkei** (ALLGÉN)

Genus *Jensenonchus* JAIRAJPURI & KHAN, 1982

Anatonchidae, Iotonchinae. Body length varying between 0.5 and 2.3 mm. Cuticle smooth. Buccal cavity roomy, armed with a dorsal tooth situated in anterior third to mid-section of stoma. Facing the tooth a small longitudinal ridge and/or a fine transverse rib on each subventral wall present. Oesophago-intestinal junction tuberculate. Female amphidelphic or prodelphic, in latter case without postvulval sac. Vulva located between 60 and 80% of body length. Spicula arcuate with bifurcate accessory pieces. Supplements 9—15 in number. Tails similar in both sexes, either very short and rounded or 2—5 anal diameters long and conoid-arcuate. Caudal glands reduced, terminal opening absent.

Type species: *Iotonchus ovatus* JENSEN & MULVEY, 1968 = *Jensenonchus ovatus* (JENSEN & MULVEY, 1968) JAIRAJPURI & KHAN, 1982.

JAIRAJPURI and KHAN (1982) suggested this genus for one — the type — species. I would like to widen it for some further species, too, which can be characterized in having an anteriorly located dorsal tooth and conspicuous subventral ribs opposite that. *Jensenonchus* comes closest to *Mulveyellus* SIDDIQI, 1984, from which it differs by the presence of the ribs mentioned above. This difference between them is quite the same as that between *Clarkus* JAIRAJPURI, 1970 and *Coomansus* JAIRAJPURI & KHAN, 1977 in the family Mononchidae. *Clarkus* and *Coomansus* on the one side, and *Jensenonchus* and *Mulveyellus* on the other side — serve a good precedent for the parallel evolution within two different families.

Terrestrial animals occurring in six continents: Europe (2 species), Asia (1 species), Africa (1 species), North America (5 species) and Oceania (1 species).

Six species:

J. alter sp. n.
Iotonchus amphigonicus apud JENSEN & MULVEY, 1968
J. amphigonicus (THORNE, 1924) comb. n.
Mononchus amphigonicus THORNE, 1924
Iotonchus amphigonicus (THORNE, 1924) ANDRÁSSY, 1958
J. antedontoides (COETZEE, 1967) comb. n.
Iotonchus antedontoides COETZEE, 1967
Mulveyellus antedontoides (COETZEE, 1967) SIDDIQI, 1984

Iotonchus monhystera apud JAIRAJPURI, 1970; KHAN & JAIRAJPURI, 1980; JAIRAJPURI & KHAN, 1982

J. antedontus (MULVEY, 1963) comb. n.
Iotonchus antedontus MULVEY, 1963
Mulveyellus antedontus (MULVEY, 1963) SIDDIQI, 1984

J. ovatus (JENSEN & MULVEY, 1968) JAIRAJPURI & KHAN, 1982
Iotonchus ovatus JENSEN & MULVEY, 1968

J. vorax (COBB, 1917) comb n.
Mononchus vorax COBB, 1917
Mononchus papillatus vorax COBB, 1917 (MICOLETZKY, 1922)
Iotonchus vorax (COBB, 1917) MULVEY, 1963
Mulveyellus vorax (COBB, 1917) SIDDIQI, 1984
Mononchus sphagni BRZESKI, 1960 (syn. n.)
Clarkus sphagni (BRZESKI, 1960) JAIRAJPURI, 1970
Iotonchus sphagni (BRZESKI, 1960) LOOF & WINISZEWSKA-SLIPINSKA, 1993
Iotonchus celer SUSULOVSKIJ, 1988 (syn. n.)

Remarks

Jensenonchus alter sp. n. — JENSEN and MULVEY (1968) described under the name *"Iotonchus amphigonicus"* a species that is scarcely identical with THORNE'S *amphigonicus*. It differs clearly from the latter by some characteristics which are enumerated below in the present key. I regard these differences as of specific value and suggest a separate name, *Jensenonchus alter* sp. n., for the species of JENSEN and MULVEY.

Jensenonchus antedontoides (COETZEE, 1967). — JAIRAJPURI (1970), KHAN and JAIRAJPURI (1980) and JAIRAJPURI and KHAN (1982) described a species each from India, under the name *"Iotonchus monhystera"*. They supposed that *"Iotonchus antedontoides* COETZEE, 1986 was identical with their *"monhystera"*. I am in agreement with them; we may synonymize both species. But there is an other problem: the Indian *"monhystera" (=antedontoides)* can not be equal with the true *monhystera* as described by COBB in 1916. They differ in two main respects: the ventral wall of the stoma facing the dorsal tooth in the Brazil species (COBB's) is smooth, unarmed, in the Indian one, however, it bears two kinds of fine ribs, longitudinal and transverse as well; the tail of the Brazilian nematode is blunt, conspicuously rounded on its tip, while that of the Indian is more slender and pointed on its tip. As a consequence, JAIRAJPURI's species is other than COBB's one but the same as COETZEE's.

Iotonchus sphagni (BRZEKI, 1960). — It is scarcely doubt that both *I. sphagni* (BRZESKI, 1960) and *I. celer* SUSULOVSKIJ, 1988 are identical with *Jensenonchus vorax* (COBB, 1917). They agree in every morphological respect as well as in the measurements. The agreement in shape and length of the tail is especially noteworthy. Neither COBB (1917) nor MULVEY (1963) mentioned or illustrated a ventral ridge opposite the dorsal tooth, LOOF and WINISZEWSKA-SLIPINSKA (1933) however examined specimens of both *vorax* and *sphagni* and constated that ventral ridges do occur in them.

Key to species of Jensenonchus

1 Female prodelphic. — ♀: L=0.7—1.5 mm; a=21—35; b=3.1—4.7; c=10—19; V=72—81%; c'=2—3. ♂: L=1.1—1.2 mm; a=31—35; b= 3.6—4.0; c=13—14; PO: 11. (India, South Africa, New Caledonia) ..... **antedontoides** (COETZEE)
— Female amphidelphic 2

2 Tail in both sexes broadly rounded, shorter than anal body width; body very small, under 1 mm. — ♀: L=0.5—0.8 mm; a=19—27; b=3.5—3.7; c=31—58; V=59—63%; c'=0.6—0.7. ♂: L=0.6—0.9 mm; a=20—26; b=3.5—4.7; c=39—46; PO: 9—10. (United States: Oregon) ..... **ovatus** (JENSEN & MULVEY)

— Tail in both sexes conoid, ventrally bent, 2—5 times as long as anal body diameter; body larger, to 2.3 mm 3

3 Apex of dorsal tooth situated in anterior third of buccal cavity 4

— Apex of dorsal tooth situated midway in buccal cavity 5

4 Tail longer, 4—5 anal diameters, sharply ventrally arcuate. — ♀: L=1.4—2.0 mm; a=24—38; b=3.4—4.3; c=9—14; V=58—67%; c'=4—5. ♂ unknown. (Great Britain, Poland, Bohemia, Ukraine, Canada, United States [New Jersey, Wisconsin]) ..... **vorax** (COBB)

— Tail shorter, 2—3 anal diameters, not so sharply arcuate. — ♀: L=1.2—1.5 mm; a=22—24; b=3.1—4.0; c=13—19; V=65—69%; c'=2—3. ♂: L=1.1—1.4 mm; a=24—30; b=3.1—3.8; c=12—20; PO: 14—15. (India, United States [California]) ..... **antedontus** (MULVEY)

5 Transverse ribs on subventral walls levelling with dorsal tooth; tip of tail rounded; body about 2 mm. — ♀: L=2.3 mm; a=29; b=5; c=22; V=68%; c'=2.5. ♂: L=2.3 mm; a=35; b=4.9; c=25; PO: 10—12. (United States [Utah]) ..... **amphigonicus** (THORNE)

— Transverse ribs on subventral walls situated more forward than dorsal tooth; tip of tail pointed; body about 1 mm. — ♀: L=1.2—1.3 mm; a=26; b=3.2; c=17—23; V=67—72%; c'=2.5. ♂ unknown. (United States [Oregon]) ..... **alter sp. n.**

Genus *Iotonchus* COBB, 1916

Mononchus (*Iotonchus* COBB, 1916).

Anatonchidae, Iotonchinae. Body length varying between very wide limits: 0.8 and 6.4 mm. Cuticle smooth. Bucal cavity predominantly roomy, occassionally oblong, moderately wide (varying in length from 20 to 90 μm). Dorsal tooth always basal or suprabasal, not too strong, often rather small. No other armature in buccal cavity. Oesophago-cardial junction of tuberculate type. Female genital organ paired or unpaired, prodelphic. Vulva located from mid-body to 80% of body length. Spicula more or less arcuate; bifurcate lateral pieces present. Number of copulatory supplements 6 to 22. Tail similar in both sexes, variable in shape and length, predominantly conoid or filiform, rarely very short and bluntly rounded, 0.7 to 50 (!) anal diameters long. Caudal glands and spinneret mostly well developed, in some species rudimentary or lacking; spinneret often subterminal.

Type species: *Mononchus gymnolaimus* COBB, 1893 = *Iotonchus gymnolaimus* (COBB, 1893) COBB, 1916.

As for number of species *Iotonchus* is the richest genus in the family, and after *Mylonchulus* the second richest in the whole superfamily. In the basal position of the dorsal tooth and lack of other armature, *Iotonchus* can be easily distinguished from the other genera of Anatonchidae.

A worldwide distributed genus but the majority of species has been recorded from Asia, Africa and Australia. The species of *Iotonchus* are distributed as follows: in Europe 5, Asia 19, Africa 20, North America 4, South America 7 and Australia-Oceania 11 species. It is remarkable that the European and North American continents are poor in representatives of the genus (*carpathicus, magyar, risoceiae* and *rotundicaudatus,* or *acutus, brachylaimus, gymnolaimus* and *tenuidentatus,* respectively). The most widely occurring species is *I. trichurus* observed in 9 countries or states.

Forty-seven species:

I. acuticaudatus MULVEY & JENSEN, 1967

I. acutus COBB, 1917

Mononchus (Iotonchus) acutus COBB, 1917

Iotonchus laticupulatus RAZZHIVIN, 1971 (syn. n.)

I. **anisostomus** Buangsuwon & Jensen, 1966
I. **baqrii** Jairajpuri, 1969
I. **basidontus** Clark, 1961
Iotonchus prabhooi Mohandas, 1979 (syn. n.)
I. **brachylaimus** Cobb, 1917
Mononchus (Iotonchus) brachylaimus Cobb, 1917
I. **candelabri** Yeates, 1992
I. **carpathicus** Popovici, 1990
I. **chantaburensis** Buangsuwon & Jensen, 1966
Iotonchus khani Mohandas & Prabhoo, 1979 (syn. n.)
I. **clarki** Mulvey & Jensen, 1967
I. **consimilis** Cobb, 1917
Mononchus (Iotonchus) consimilis Cobb, 1917
I. **geminus** Heyns & Lagerwey, 1965
I. **gymnolaimus** (Cobb, 1893) Cobb, 1916
Mononchus gymnolaimus Cobb, 1893
Mononchus (Iotonchus) gymnolaimus Cobb, 1893 (Cobb, 1916)
I. **indicus** Jairajpuri, 1969
I. **kherai** Mohandas & Prabhoo, 1979
I. **kirbyi** Siddiqi, 1984
I. **kirghistanicus** Sultanalieva, 1983
I. **lacuplanarum** Yeates, 1992
I. **lamottei** Malcevschi, 1981
I. **litoralis** Coetzee, 1967
I. **loteniae** De Bruin & Heyns, 1992
I. **magyar** Andrássy, 1973
I. **maragnus** Clark, 1961
I. **microdontus** Thong, 1971
I. **montanus** Yeates, 1992
I. **nayari** Mohandas & Prabhoo, 1979
Iotonchus shafii Khan & Jairajpuri, 1980 (syn. n.)
I. **nigeriensis** Mulvey & Jensen, 1967
I. **parabasidontus** Mulvey & Jensen, 1967
I. **parageminus** Jiménez-Guirado, 1994
I. **pauli** Heyns & Lagerwey, 1965
I. **percivali** Clark, 1961
I. **pseudodigonicus** Ahmad & Jairajpuri, 1983
I. **rapidulus** Siddiqi, 1984
I. **recessus** Yeates, 1992
I. **rayongensis** Buangsuwon & Jensen, 1966
I. **rinae** Coetzee, 1967
I. **risoceiae** Carvalho, 1955
Mononchus (Iotonchus) risoceiae Carvalho, 1955
Mononchus (Iotonchus) sp. apud Carvalho, 1953
Iotonchus carvalhoi Andrássy, 1958
I. **rotundicaudatus** Peña-Santiago & Jiménez-Guirado, 1991
I. **silvallus** Ahmad & Jairajpuri, 1983
I. **spinicaudatus** Coetzee, 1967
I. **stockdilli** Yeates, 1988
I. **tarjani** Mulvey & Jensen, 1967

I. tenuidentatus (KREIS, 1924) GOODEY, 1951
Mononchus tenuidentatus KREIS, 1924
Mononchus (Iotonchus) tenuidentatus KREIS, 1924 (GOODEY, 1951)
I. transkeiensis HEYNS & LAGERWEY, 1965
Iotonchus thailandensis BUANGSUWON & JENSEN, 1966 (syn. n.)
I. trichurus COBB, 1917
Mononchus (Iotonchus) trichurus COBB, 1917
I. vulvapapillatus ANDRÁSSY, 1964
I. zullinii MALCEVSCHI, 1981

Remarks

Iotonchus indicus JAIRAJPURI, 1969 and *Iotonchus tenuidentatus* (KREIS, 1924). — COOMANS and KHAN (1981) called the attention to the close resemblance of these species. I think that the nematode they described from Kenya under the name *"indicus"* was in the validity a *tenuicaudatus*. For *I. indicus* it is very characteristic that the tip of tail is regularly conical and sharply pointed as described by JAIRAJPURI (1969), KHAN and JAIRAJPURI (1980) and JAIRAJPURI and KHAN (1982) whereas that of *I. tenuicaudatus* is rounded as illustrated by KREIS (1924), MULVEY (1963), MULVEY and JENSEN (1967) and COOMANS and KHAN (1981).

Iotonchus khani MOHANDAS & PRABHOO, 1979. — It is hardly doubtful that this species is identical with *I. chantaburensis* BUANGSUWON & JENSEN, 1966. They agree both in morphology and measurements.

Iotonchus lacuplanarum YEATES, 1992. — It is very close to *I. baqrii* JAIRAJPURI, 1970 differing only by shorter spicula and narrower anterior body end from that.

Iotonchus laticupulatus RAZZHIVIN, 1971. — This species cannot be differenciated from *I. acutus* COBB, 1917.

Iotonchus prabhooi MOHANDAS, 1979. — MOHANDAS characterized his species as being very closely related to *I. basidontus* CLARK, 1961 and differring by the smaller body and the shorter tail from that. These values are, however, within the range of *basidontus;* body 1.4—1.7 mm, tail 200—250 µm in *prabhoi* — body 1.5—1.9 mm, tail 210—300 µm in *basidontus*. There is no reason to maintain *prabhooi* as a separate species.

Itonchus shafii KHAN & JAIRAJPURI, 1980. — This species corresponds entirely with *I. nayari* MOHANDAS & PRABHOO, 1979.

Iotonchus stockdilli YEATES, 1988. — Beside the type population YEATES found animals from an other locality as well which were unusually large (♀: 5.9 mm, ♂: 6.4 mm). It is questionable if they belonged to *stockdilli*.

Iotonchus thailandensis BUANGSUWON & JENSEN, 1966. — It agrees so completely with *I. transkeiensis* HEYNS & LAGERWEY, 1965 that it cannot be separated from that.

Iotonchus vulvapapillatus ANDRÁSSY, 1964. — MULVEY and JENSEN (1967) found a nematode in Nigeria they identified as *I. vulvapapillatus*. Those specimens were however much smaller than the true *vulvapapillatus* — only half as long as that — thus the identity of them is rather doubtful.

Key to species of Iotonchus

1 Female genital organ unpaired, prodelphic, or asymmetric, pseudo-prodelphic with rudimentary, non-functional posterior ovary 2
— Female genital organ paired, amphidelphic 18

2 Genital organ prodelphic, at most with a short postuterine sac 3
— Genital organ pseudo-prodelphic, with a posterior rudimentary ovary 16

3 Larger species, about 3 mm; buccal cavity 60 μm long or so 4
— Smaller species, 2 mm or shorter; buccal cavity 50 μm or shorter 5

4 Tail terminus swollen, bulbous. — ♀: L=2.9 mm; a=40; b=4.2; c=7.1; V=67%; c'=9. ♂ unknown. (Fiji Islands, United States [Virginia]) ..... **gymnolaimus** (COBB)
— Tail terminus cylindrical, not swollen. — ♀: L=2.8—3.5 mm; a=34—41; b=4.5—4.9; c=6.6—7.6; V=68—69%; c'=8. ♂ unknown. (India, Brazil, Hawaii) ..... **consimilis** COBB

5 Postvulval uterine sac present, 1—3 times as long as corresponding body width 6
— Postvulval uterine sac practically absent (conspicuously shorter than one body width) 10

6 Postvulval sac 2—3 times longer than body diameter 7
— Postvulval sac about equal with body diameter 8

7 Tail 360 μm, as long as 10—11 anal diameters, cylindrical in its posterior part. — ♀: L=2.1 mm; a=43; b=4.6; c=5.8; V=63%; c'=10—11. ♂ unknown. (New Caledonia) ..... **recessus** YEATES
— Tail 200—230 μm, as long as 6 anal diameters, uniformly tapering to its tip. — ♀: L=1.6 mm; a=32—35; b=4.1—4.4; c=7.2—7.9; V=65—66%; c'=7. ♂: L=1.6 mm; a=31; b=4; c=8.3; PO: 9. (Ivory Coast) ..... **lamottei** MALCEVSCHI

8 Caudal glands and spinneret lacking; spicula bifurcated distally. — ♀: L=1.6—1.9 mm; a=25—35; b=3.9—4.6; c=10—13; V=68—72%; c'=4. ♂: L=1.4—1.7 mm; a=28—36; b=3.9—4.5; c=12—16; PO: 6—8. (Nigeria) ..... **nigeriensis** MULVEY & JENSEN
— Caudal glands conspicuous, spinneret present, subdorsal 9

9 Tail 5—6 anal diameters long; gubernaculum quite thin. — ♀: L=1.9—2.1 mm; a=29—34; b=3.8—4.7; c=9—12; V=71—75%, c'=5—6. ♂: L=2.0—2.3 mm; a=27—34; b=4.0—4.4; c=9—12; PO: 6—8. (Nigeria) ..... **acuticaudatus** MULVEY & JENSEN
— Tail 4 anal diameters long; gubernaculum swollen. — ♀: L=1.3—2.0 mm; a=26—36; b=3.8—4.7; c=9.6—13; V=69—76%; c'=4. ♂: L=1.3—2.0 mm; a=29—37; b=3.9—4.6; c=10—13; PO: 7—10. (Ivory Coast) ..... **zullinii** MALCEVSCHI

10 Tail filiform, 15—20 anal diameters long. — ♀: L=1.2—1.8 mm; a=28—46; b=3.5—5.4; c=3—5; V=52—65%; c'=15—20. ♂: L=1.7 mm; a=28; b=4.4; c=3.6; PO: 8—10. (India, Singapore, Mauritius, Nigeria, St. Lucia, Brazil, New Zealand, New Caledonia, Campbell Islands) ..... **trichurus** COBB
— Tail conoid to elongate, 4—10 (exceptionally 12) anal diameters long 11

11 Tip of tail swollen. — ♀: L=1.2—1.3 mm; a=29—31; b=3.7—4.2; c=5.5—6.0; V=61—64%; c'=6. ♂ unknown. (Singapore) ..... **microdontus** THONG
— Tip of tail simple, not swollen 12

12 Small species, 0.8—1 mm; tail strongly curved, hook-like. — ♀: L=0.8—1.0 mm; a=24—32; b=3.5—4.5; c=3.8—6.0; V=59—65%; c'=6.0—7.5. ♂ unknown. (Thailand, Singapore) ..... **chantaburensis** BUANGSUWON & JENSEN
— Larger species, 1.4—2 mm; tail simply curved, not hook-like 13

13 Tail short, as long as 4—5 anal body widths, spinneret terminal. — ♀: L=1.7 mm; a=30; b=3.7; c=13; V=68%; c'=4—5. ♂ unknown. (Thailand) ..... **anisostomus** BUANGSUWON & JENSEN
— Tail longer, as long as 7—12 anal body widths, spinneret subventral 14

14 Buccal capsule twice as long as wide, conspicuously longer than labial width; lips high. — ♀: L=1.4—1.8 mm; a=27—36; b=3.9—4.3; c=4.8—5.6; V=62—65%; c'=7—12. ♂ unknown. (India) ..... **silvallus** AHMAD & JAIRAJPURI
— Buccal capsule as long as or slightly longer than wide, about equal in length with labial width; lips low 15

15 Spicula 80—90 μm long; head broad, truncate. — ♀: L=1.5—1.7 mm; a=28—37; b=4.0—4.6; c=5.7—6.0; V=62—70%; c'=8—11. ♂: L=1.4—1.7 mm; a=31—35; b=4.3—4.8; c=5—7; PO: 9—10. (India) ..... **baqrii** JAIRAJPURI
— Spicula 50—60 μm long; head markedly narrowed. — ♀: L=1.9—2.0 mm; a=36—39; b=4.6; c=6.1—6.3; V=63—64%; c'=10. ♂: L=1.8—2.1 mm; a=38—45; b=4.2—4.9; c=6.3—7.2; PO: 9—12. (New Caledonia) ..... **lacuplanarum** YEATES

16 Body long, about 3 mm; tail as long as 8—9 anal diameters, with terminal pore; buccal cavity about 60 μm long. — ♀: L=2.9—3.3 mm; a=40—46; b=4.2—4.6; c=6.8—7.8; V=67—72%; c'=8—9. ♂ unknown. (Fiji Islands) ..... **kirbyi** SIDDIQI
— Body shorter, about 1.5—2 mm; tail as long as 11—18 anal diameters, with slightly subterminal pore; buccal cavity 30—40 μm long 17

17 Tail 330—370 μm, 11—12 anal diameters long; posterior gonad twice the body width. — ♀: L=1.4—1.6 mm; a=31—34; b=4.2—4.7; c=4.1—4.7; V=60—63%; c'=11—12. ♂: L=1.4—1.7 mm; a=33—41; b=4.4—4.7; c=4.6—5.1; PO: 6—8. (India) ..... **pseudodigonicus** AHMAD & JAIRAJPURI
— Tail 430—540 μm, 13—18 anal diameters long; posterior gonad thrice the body width. — ♀: L=1.7—2.3 mm; a=41—51; b=4.2—5.1; c=3.9—4.4; V=55—66%; c'=13—18. ♂ unknown. (Fiji Islands) ..... **rapidulus** SIDDIQI

18 Tail broadly rounded, hemispheroid, shorter to slightly longer than anal diameter 19
— Tail conoid-arcuate or filiform, generally much longer than anal diameter 20

19 Head sharply set of by a constriction; body 2—3 mm long, very slender. — ♀: L=2.3—3.2 mm; a=45—63; b=5.9—7.7; c=55—108; V=62—69%; c'=0.8—1.4. ♂ unknown. (Spain) ..... **rotundicaudatus** PEÑA-SANTIAGO & JIMÉNEZ-GUIRADO
— Head slightly set off by a depression; body 4 mm long, less slender. — ♀: L=4.2 mm; a=38; b=4.9; c=86; V=69%; c'=0.7. ♂ unknown. (Hungary) ..... **magyar** ANDRÁSSY

20 Tail unusually long, whip-like, 40—50 times anal diameter, thereupon vulva far ahead; large species, 3.3—4.2 mm. — ♀: L=3.6—4.2 mm; a=59—69; b=6.3—7.1; c=2.3—2.9; V=36—39%; c'=40—50. ♂: L=3.3 mm; a=53; b=6.2; c=27; PO: 12. (New Zealand) ..... **maragnus** CLARK
— Tail never so long, at most 25 times anal diameter, vulva at or behind mid-body 21

21 Body large, 6 mm, and slender; tail very long, about 25 anal diameters. — ♀: L=5.9 mm; a=71; b=5.0; c=3.8; V=51%; c'=25. ♂: L=6.1 mm; a=74; b=5.1; c=4.1; PO: 18. (New Zealand) .. **percivali** CLARK
— Body at most 4.5 mm long but generally shorter, not so slender; tail maximal 15 anal diameters long 22

22 Caudal spinneret present 23
— Caudal spinneret absent 39

23 Tail 90—190 μm, 1.5—4 times as long as anal diameter 24
— Tail 200 μm or longer, 5—15 times as long as anal diameter 29

24 Tail as long as 1.5—2 anal diameters. — ♀: L=1.4—1.8 mm; a=20—23; b=3.2—3.7; c=23—28; V=72—75%; c'=1.5—2. ♂: L=1.6 mm; a=19—22; b=3.3—3.8; c=20—25; PO: 22. (Kirghizia) ..... **kirghistanicus** SULTANALIEVA
— Tail as long as 3—4 anal diameters 25

25 Buccal cavity 50—65 μm long, very roomy, with convex walls; supplements 15—17 26
— Buccal cavity 30—40 μm long, less roomy, with parallel wells; supplements 9—14 27

26 Bigger species, 3.2—3.5 mm; tail uniformly tapering to its tip. — ♀: L=3.2 mm; a=33; b=4.8; c=17; V=65%; c'=3—4. ♂: L=3.5 mm; a=40; b=5.3; c=17; PO: 16. (United States: Virginia) ..... **brachylaimus** COBB
— Smaller species, 2.1—2.8 mm; tail almost cylindrical in its posterior half. — ♀: L=2.1—2.0 mm; a=24; b=4—5; c=10—15; V=61—68%; c'=3.5—4.0. ♂: L=2.6—2.8 mm; a=34—37; b=4—5; c=16—21; PO: 13—17. (South Africa) ..... **litoralis** COETZEE

27 Head set off by a strong constriction; spinneret subterminal-subdorsal; vulval papillae absent. — ♀: L=1.8—2.4 mm; a=39—53; b=5.1—6.2; c=17—25; V=63—69%; c'=2.5—4.3. ♂: L=1.7—2.2 mm; a=35—52; b=5.1—6.1; c=24—32; PO: 9—13. (Spain) ..... **parageminus** JIMÉNEZ-GUIRADO
— Head set off by a depression; spinneret terminal; vulval papillae present. 28

28 Tail more slender, in its posterior half — especially in male — nearly cylindrical. — ♀: L=1.4—1.9 mm; a=27—38; b=4—5; c=10—17; V=61—72%; c'=3.5—5. ♂: L=1.3—1.9 mm; a=28—40; b=4—5; c=15—19; PO: 9—12. (South Africa) ..... **rinae** COETZEE
— Tail less slender, uniformly narrowing. — ♀: L=1.6—2.4 mm; a=25—37; b=3.9—4.7; c=12—17; V=64—68%; c'=(2, 5—) 3—4. ♂: L=1.7—2.0 mm; a=28—44; b=3.9—4.5; c=12—21; PO: 11—14. (South Africa, Argentina) ..... **geminus** HEYNS & LAGERWEY

29 Tail filiform, 14—16 times as long as anal body width; vulval region with papillae. — ♀: L=3.8—4.3 mm; a=50—53; b=5.2—5.7; c=4.8—5.5; V=50—53%; c'=14—16. ♂: L=3.7—3.9 mm; a=48—62; b=4.9—5.1; c=6.1—6.8; PO: 10—11+2—4. (Kenya, Uganda, Nigeria) .... **vulvapapillatus** ANDRÁSSY
— Tail shorter, 5—10 times as long as anal body width; papillae predominantly lacking at vulval region 30

30 Spinneret conspicuously subterminal, subventral 31
— Spinneret regularly terminal 36

31 Tip of tail slightly but distinctly swollen. — ♀: L=2.0 mm; a=37; b=4.9; c=9.5; V=57%; c'=7—8. ♂ unknown. (Thailand) ..... **rayongensis** BUANGSUWON & JENSEN
— Tip of tail not swollen (closely related species) 32

32 Tip of tail conical, sharply pointed; body 2 mm or shorter. — ♀: L=1.2—2.2 mm; a=21—39; b=4.0—4.8; c=5—8; V= 56—65%; c'=6—10. ♂ unknown. (India, St. Lucia, El Salvador) ..... **indicus** JAIRAJPURI
— Tip of tail finely rounded; body 2 mm or longer (to 4 mm) 33

33 Buccal cavity (of female) about 70 μm long; male supplements 9—11. — ♀: L=2.5—3.4 mm; a=33—26; b=4.2—4.6; c=6.0—8.3; V=61—62%; c'= 7—8. ♂: L=2.1—2.9 mm; a=32—38; b=4.1—4.9; c=7—9; PO: 9—11. (India) ..... **kherai** MOHANDAS & PRABHOO
— Buccal cavity (of female) about 50 μm long; male supplements 12—17 34

34 Larger species, 3.5—4 mm; tail 550 μm long. — ♀: L=3.5—3.8 mm; a=38—40; b=4.7—4.8; c=6.4—6.9; V=57—60%; c'=9—10. ♂: L=3.7 mm; a=43; b=4.7; c=8.4; PO: 12. (New Caledonia) ..... **montanus** YEATES
— Smaller species, 2—3 mm; tail 450 μm or shorter 35

35 Buccal cavity comparatively narrow, nearly twice as long as wide. — ♀: L=1.9—2.7 mm; a=28—46; b=4—5; c=5—9; V=53—61%; c'=6—9. ♂: L=2.1—2.5 mm; a=30—42; b=4.4—5.0; c=8—10; PO: 12—17. (Nigeria, Kenya, United States, Suriname) ..... **tenuidentatus** KREIS
— Buccal cavity spacious, hardly 1.5 times as long as wide. — ♀: L=2.3—2.9 mm; a=38—42; b=4.2—4.6; c=6.4—7.5; V=61—63%; c'=7.5—9. ♂: L=2.6—2.8 mm; a=38—43; b=4.3—4.5; c=7.1—8.6; PO: 12—16. (New Caledonia) ..... **candelabri** YEATES

36 Body shorter than 2 mm. — ♀: L=1.4—1.9 mm; a=24—36; b=3.6—4.9; c=6.4—9.0; V=48—63%; c'=5—7. ♂: L=1.9 mm; a=30; b=3.8; c=8.6; PO: 14. (India, Thailand, Singapore, Ivory Coast, Colombia, New Zealand) ..... **basidontus** CLARK
— Body longer than 2 mm (to 4.3 mm) 37

37 Buccal cavity oblong, about twice as long as wide; advulval papillae present. — ♀: L=2.2—2.7 (—3.5) mm; a=27—50; b=4.0—4.9; c=6.0—10.5;V=56—66%; c'=6.5—9. ♂: L=2.0—2.4 (—3.1) mm; a=27—50; b=4.2—4.7; c=9—15; PO: 12—13+2. (India, Nigeria, South Africa) ..... **parabasidontus** MULVEY & JENSEN
— Buccal cavity very roomy, only 1.2—1.3 times as long as wide; advulval papillae rarely present .. 38

38 Body 3—4 mm long; tail 300—400 μm, as long as 6—8 anal diameters. — ♀: L=2.7—4.3 mm; a=30—37; b=4.2—4.9; c=8—11; V=59—64%; c'=6—8. ♂: L=3.1—3.7 mm; a=36—39; b=4.5—5.1; c=10—11; PO: 14—18. (Hungary, India, Mauritius, South Africa, Brazil, Hawaii) ..... **risoceiae** CARVALHO
— Body 2—3 mm long; tail 200—300 μm, as long as 4—6 anal diameters. — ♀: L=2.0—2.7 mm; a=27—40; b=4.0—4.6; c=8—14; V=60—70%; c'=4—6. ♂: L=2.0—2.6 mm; a=30—37; b=3.8—4.7; c=8—16; PO: 12—16. (India) ..... **nayari** MOHANDAS & PRABHOO

39 Tail 3—5 anal diameters or 120—170 μm long 40
— Tail 7—15 anal diameters or 200—700 μm long (closely related species, not easy to separate them) 41

40 Vulval lips sclerotized; supplement 9—12. — ♀: L=1.6—2.4 mm; a=22—40; b=4.4—6.0; c=11—16; V=61—66%; c'=3—5. ♂: L=1.4—1.9 mm; a=28—40; b=4.4—5.5; c=13—16; PO: 9—12. (Kazakhstan, South Africa, United States [California, Virginia]) ..... **acutus** COBB
— Vulval lips not sclerotized; supplements 8—9. — ♀: L=1.3—1.5 mm; a=35—42; b=4.8—5.1; c=8.4—9.3; V=59—63%; c'=5. ♂: L=1.3—1.4 mm; a=38—45; b=4.6—5.1; c=10—11; PO: 8—9. (South Africa) ..... **pauli** HEYNS & LAGERWEY

41 Tail length between 420 and 690 μm 42
— Tail length between 210 and 420 μm 44

42 Body 1.7—2.2 mm; buccal cavity oblong, nearly twice as long as wide. — ♀: L=1.7—2.2 mm; a=27—41; b=4.4—5.0; c=3.3—4.0; V=47—51%; c'=15. ♂: L=1.6—1.7 mm; a=34—39; b=4.3—4.4; c=4; PO: 11+1. (Nigeria) ..... **tarjani** MULVEY & JENSEN
— Body 2.5 to 4.2 mm; buccal cavity roomy, 1.2—1.5 times as long as wide 43

43 Tip of female tail somewhat swollen then conoid, tail as long as 7—10 anal body widths. — ♀: L=3.2—4.2 mm; a=41—49; b=5.2—5.7; c=7—9; V=58—73%; c'=7—10. ♂: L=3.2—3.7 mm; a=45—54; b=5—6; c=8—9; PO: 11—12. (New Zealand) ..... **stockdilli** YEATES
— Tip of female tail not swollen, cylindrical then finely rounded, tail as long as 9—15 anal body widths. — ♀: L=2.5—3.5 mm; a=32—44; b=4.2—5.1; c=4.3—6.6; V=55—60%; c'=9—15. ♂: L=2.1—3.7 mm; a=33—47; b=4.3—5.1; c=4.9—6.7; PO: 11—13. (Romania) ..... **carpathicus** POPOVICI

44 Buccal cavity elongate, distinctly longer (about 1.5 times) than labial width; tail cylindroid in posterior half. — ♀: L=1.7—2.0 mm; a=28—34; b=3.9—5.2;c=4.6—5.9; V=52—59%; c'=9—10. ♂ unknown. (Nigeria) ..... **clarki** MULVEY & JENSEN
— Buccal cavity barrel-shaped, roomy, as long as labial width; tail uniformly tapering 45

45 Body 2.2—3 mm; tail 10—12 anal diameters long. — ♀: L=2.2—3.0 mm; a=33—42; b=5—6; c=6—10; V=62—66%; c'=10—12. ♂: L=1.3—2.5 mm; a=36—42; b=5—6; c=9—13; PO: 13—14. (South Africa) ..... **spinicaudatus** COETZEE
— Body 1.5—2 mm; tail 7—9 anal diameters long 46

46 Posterior ovary much smaller than anterior. — ♀: L=1.9—2.4 mm; a=34—42; b=4.3—5.1; c=7.3—8.6; V=61—68%; c'=7—9.5. ♂ unknown. (South Africa) ..... **loteniae** DE BRUIN & HEYNS
— Both ovaries about equal in length. — ♀: L=1.5—1.7 mm; a=28—48; b=3.7—5.7; c=6—8; V=58—66%; c'=7—8. ♂ unknown. (India, Thailand, South Africa) ..... **transkeiensis** HEYNS & LAGERWEY

Genus *Hadronchus* MULVEY & JENSEN, 1967

Anatonchidae, Iotonchinae. Body 1.5—2.2 mm long. Cuticle smooth. Buccal cavity roomy, broad on its both ends, as long as, or somewhat longer than labial width. Dorsal tooth well developed, in anterior half (in 30—40%) of stoma. Opposed by two denticulate or serrate ridges occupying almost entire length of subventral walls. Posterior end of oesophagus tuberculate. Female genital system prodelphic, with or without posterior uterine branch. Vulva in 61—69% of body length. Spicula arched. Supplements 8—10 in number. Tails in both sexes similar, conoid-arcuate, 4—6 times as long as anal body width. Caudal glands and spinneret reduced.

Type species: *Hadronchus bisexualis* MULVEY & JENSEN, 1967.

The genus is distinctive because of the anterior position of the dorsal tooth, the presence of long subventral serrate ridges, the monodelphic female, the short tail and lacking spinneret.

Terrestrial nematodes known in Africa.

Two species:

H. bisexualis MULVEY & JENSEN, 1967
H. monohystera MULVEY & JENSEN, 1967

Key to species of Hadronchus

1 Posterior uterine sac present; tail as long as 4 anal diameters; subventral denticles small. — ♀: L=1.6—2.2 mm; a=27—35; b=3.7—4.1; c=12—17; V=61—65%; c'=4. ♂: L=1.5—1.9 mm; a=33—40; b=3.7—4.1; c=16—24; PO: 8—10. (Nigeria) ..... **bisexualis** MULVEY & JENSEN
— Posterior uterine sac absent; tail as long as 6 anal diameters; subventral denticles comparatively large. — ♀: L=1.6—1.9 mm; a=34—40; b=3.6—3.9; c=9—10; V=64—69%; c'=6. ♂ unknown. (Nigeria) ..... **monohystera** MULVEY & JENSEN

Genus *Parahadronchus* MULVEY, 1978

Anatonchidae, Iotonchinae. Body 1.9—3.3 mm long. Cuticle smooth. Buccal cavity large, barrel-shaped, as long as, or longer than labial diameter. Dorsal tooth large, located in posterior half of stoma; opposed by two or four short longitudinal ridges bearing small denticles, 2—8 each, located also in posterior part of stoma. Oesophago-intestinal junction tuberculate. Female reproductive apparatus didelphic or mono-prodelphic. Vulva in 54—75% of body length. Spicula comparatively slender and arcuate. Male with 10—13 supplements. Tails of both sexes similar, elongate to filiform, as long as 6 to 18 anal diameters. Caudal glands and spinneret present or absent.

Type species: *Hadronchus andamanicus* JAIRAJPURI, 1969 = *Parahadronchus andamanicus* (JAIRAJPURI, 1969) MULVEY, 1978.

The genus is closely allied to *Hadronchus* MULVEY & JENSEN, 1967 but differs from that by the posterior location of the dorsal tooth and the subventral ridges, the restricted number of denticles and the longer tail.

Terricolous animals occurring in Asia.

Six species*:

P. andamanicus (JAIRAJPURI, 1969) MULVEY, 1978
Hadronchus andamanicus JAIRAJPURI, 1969
P. diphuensis (PHUKAN & SANWAL, 1981) comb. n.
Hadronchus diphuensis PHUKAN & SANWAL, 1981
P. egregius sp. n.
P. shakili (JAIRAJPURI, 1969) MULVEY, 1978
Hadronchus shakili JAIRAJPURI, 1969
Hadronchus karangensis PHUKAN & SANWAL, 1981 (syn. n.)
P. subhonicus DHANACHAND, RENUBALA & MOHILAL, 1991
P. yuenae (THONG, 1971) MULVEY, 1978
Hadronchus yuenae THONG, 1971

Remarks

Hadronchus karangensis PHUKAN & SANWAL, 1981. — According to the original description this species differs from *Parahadronchus shakili* (JAIRAJPURI, 1969) by the somewhat longer tail (and by the slender body and more anterior postion of vulva — being consequence of the longer tail). JAIRAJPURI and KHAN (1982) as well as BAQRI (1991) presented further specimens of *shakili* showing an intermediate position both in tail length and location of vulva. I think it correct if we regard *shakili* and *karangensis* as one and the same species.

Key to species of Parahadronchus

1 Female prodelphic 2
— Female amphidelphic 4

2 Postuterine sac absent; tail 590—660 µm long. — ♀: L=2.3—2.9 mm; a=35—41; b=4.2—4.7; c=3.9—4.7; V=56—62%; c'=12—13. ♂ unknown. (Singapore) ..... **yuenae** (THONG)
— Postuterine sac present, 2—3 times the body width; tail 410—500 µm long 3

* RENUBALA and DHANACHAND recently (1992) described two further species: *P. marami* and *P. siroii* from India, but their paper was not attainable.

3 Buccal cavity 60—80 μm long, roomy; caudal spinneret terminal. — ♀: L=2.2—3.2 mm; a=30—41; b=3.7—4.4; c=5—13; V=64—75%; c'=8—10. ♂: L=2.2—2.8 mm; a=32—42; b=4.0—4.4; c=6—8; PO: 12—13. (India) ..... **andamanicus** JAIRAJPURI

— Buccal cavity 50 μm long, less roomy; caudal spinneret subdorsal. — ♀: L=2.8 mm; a=38; b=4.7; c=5.7; V=67%; c'=8—9. ♂: L=2.2—2.5 mm; a=36—39; b=4.2—4.9; c=6.6—7.1; PO: 12—13. (India) ..... **subhonicus** DHANACHAND, RENUBALA & MOHILAL

4 Subventral denticles arranged along four ridges; caudal spinneret lacking. — ♀: L=2.5 mm; a=42; B=4.5; c=4.2; V=54%; c'=18. ♂ unknown. (Vietnam) ..... **egregius** sp. n.

— Subventral denticles arranged along two ridges; caudal spinneret present 5

5 Apex of dorsal tooth at 60—70% of buccal length; subventral ridges with 2—3 denticles each; spicula 65—70μm long. — ♀: L=1.9—2.2 mm; a=34—38; b=4.2—4.7; c=4.9—5.3; V=56—59%; c'=10—12. ♂: L=1.9—2.2 mm; a=36—40; b=4.4—4.8; c=5—6; PO: 10—11. (India) ..... **diphuensis** (PHUKAN & SANWAL)

— Apex of dorsal tooth at 50—60% of buccal length; subventral ridges with 3—6 denticles each; spicula 80—95 μm long. — ♀: L=2.3—3.3 mm; a=32—47; b=4.2—4.9; c=5.5—11; V=56—70%; c'=6—11. ♂: L=2.0—2.8 mm; a=28—44; b=3.4—4.6; c=6.6—13; PO: 11—13. (India) ..... **shakili** (JAIRAJPURI)

Genus ***Prionchulellus*** MULVEY & JENSEN, 1967

Anatonchidae, Iotonchinae. Small nematodes, 0.9—1.4 mm. Cuticle smooth. Buccal cavity barrel-shaped, dorsal tooth in anterior third of it, opposed by two denticulate ribs occupying the anterior two-third of stoma and terminating distal in a hook-like loop. Oesophago-cardial junction tuberculate. Vulva at mid-body, female mono-prodelphic. Male unknown. Tail elongate, as long as 6 anal body diameters, without glands and spinnerets.

Type species: *Prionchulellus cavenessi* MULVEY & JENSEN, 1967.

The genus resembles *Hadronchus* MULVEY & JENSEN, 1967 but the hooked anterior ends of the subventral ribs easily distinguish it from *Hadronchus*.

Soil inhabiting animals occurring in Africa.

One species:

P. cavenessi MULVEY & JENSEN, 1967

— ♀: L=0.9—1.4 mm; a=18—27; b=3.7—4.6; c=6.1—7.7; V=49—56%; c'=6. ♂ unknown. (Nigeria) ..... **cavenessi** MULVEY & JENSEN

Genus ***Prionchuloides*** MULVEY, 1963

Anatonchidae, Iotonchinae. Body close to 2 mm. Cuticle smooth. Buccal cavity very spacious, dorsal tooth midway in it. Each subventral wall bearing a finely denticulated longitudinal rib and a number of minute, irregularly dispersed denticles. Oesophago-intestinal junction most probably tuberculate. Female amphidelphic, vulva posterior to mid-body. Male unknown. Tail conoid-arcuate, without glands and terminal spinneret.

Type species: *Mononchus (Sporonchulus) micoletzkyi* MEYL, 1954 = *Prionchuloides micoletzkyi* (MEYL, 1954) MULVEY, 1963.

Prionchuloides is characterized by the combination of two types of subventral denticles, one arranged along longitudinal ribs, the other irregularly scattered. The original description of MEYL is rather laconic, it says nothing about the nature of the oesophago-intestinal junction. Due to the very roomy buccal capsule we may suppose that *Prionchuloides* belongs rather to the family Anatonchidae than Mononchidae.

Terrestrial, known from Europe.

One species:

P. micoletzkyi (MEYL, 1954) MULVEY, 1963
Mononchus (Sporonchulus) micoletzkyi MEYL, 1954
Judonchulus micoletzkyi (MEYL, 1954) ANDRÁSSY, 1958

— ♀: L=1.7 mm; a=22; b=4; c=14; V=62%; c'=?. ♂ unknown. (Italy) ..... **micoletzkyi** (MEYL)

Genus *Hadronchoides* JAIRAJPURI & RAHMAN, 1984

Anatonchidae, Iotonchinae. Small nematodes, hardly longer than 1 mm. Cuticle smooth. Buccal cavity moderately roomy. Dorsal tooth large, sharply pointed, located in anterior in anterior half of buccal cavity. Subventral walls armed with numerous small denticles gradually decreasing in number posteriorly. Oesophageal terminus of tuberculate type. Female prodelphic with long postuterine sac. Vulva post-equatorial. Male unknown. Tail filiform, 15—20 times anal body width. Caudal glands present, spinneret terminal.

Type species: *Hadronchoides microdenticulatus* JAIRAJPURI & RAHMAN, 1984.

The genus is distinctive because of the anteriorly located dorsal tooth and the several minute denticles occupying the majority of stomatal length. It differs from *Hadronchulus* RAY & DAS, 1983, its closest relative, by the position of the dorsal tooth and the denticles, moreover by the monodelphic female genital organ.

Soil inhabitants, distributed in Asia.

One species:

H. microdenticulatus JAIRAJPURI & RAHMAN, 1984

— ♀: L=1.1—1.2 mm; a=39—41; b=4.8—4.9; c=2.8—3.8; V=52—60%; c'=15—21. ♂ unknown. (India) ..... **microdenticulatus** JAIRAJPURI & RAHMAN

Genus *Hadronchulus* RAY & DAS, 1983

Morenchus DHANACHAND, RENUBALA & MOHILAL, 1991 (syn. n.)

Anatonchidae, Iotonchinae. Body 1.8—3.2 mm long. Cuticle smooth. Buccal cavity moderately large. Dorsal tooth massive, in posterior part of stoma. Facing to it, subventral walls bearing minute denticles arranged in majority on the posterior walls. Oesophago-cardial junction tuberculate. Female amphidelphic but posterior gonad occasionally less developed than anterior. Vulva located in 50—70% of body length. Spicula arcuate, supplements 10—13 in number. Tails of both sexes similar, elongate-conoid to filiform, as long as 4 to 20 anal diameters. Caudal glands and spinneret present.

Type species: *Hadronchulus shamimi* RAY & DAS, 1983.

Closely related to *Hadronchoides* JAIRAJPURI & RAHMAN, 1984 but the dorsal tooth lies posteriad in the buccal cavity and the small denticles are facing to it; furthermore the female genital organ is didelphic. The recently described genus *Morenchus* DHANACHAND, RENUBALA & MOHILAL, 1991 is so close to *Hadronchulus* that I do not think it is real to separate them from each other. The only difference is that the subventral denticles in *Morenchus* are less in number.

Terrestrial animals known in Asia.

Three species:

H. denticulus (DHANACHAND, RENUBALA & MOHILAL, 1991) comb. n.
Morenchus denticulus DHANACHAND, RENUBALA & MOHILAL, 1991

H. grandis (PATIL & KHAN, 1982) comb. n.
Sporonchulus grandis PATIL & KHAN, 1982
H. shamimi RAY & DAS, 1983

Remarks

Iotonchus similis (COBB, 1893). — COBB described this species without any illustration. It has a dorsal tooth at the base of the buccal cavity and sevaral small denticles like those of a file. Maybe this species belongs to *Hadronchulus* but owing to the meagre description it is better to regard it as a species incertae sedis.

Key to species of Hadronchulus

1 Subventral denticles reduced in number and forming a wavy pattern. — ♀: L=2.7—3.1 mm; a=48—61; b=4.9—5.3; c=3.5—5.0; V=51—53%; c'=15—21. ♂: L=3.0—3.2 mm; a=46, b=4.7—5.0; c=4.4—4.5; PO: 10—13. (India) ..... **denticulus** (DHANACHAND, RENUBALA & MOHILAL)
— Subventral denticles very numerous, rasp-like 2

2 Tail 4 anal diameters or 110—155 μm long; both ovaries equally developed. — ♀: L=2.0—2.2 mm; a=31—37; b=3.6—4.0; c=14—18; V=67—70%; c'=3.5—4.5. ♂: L=1.85 mm; a=39; b=3.6; c=18; PO: 12. (India) ..... **grandis** (PATIL & KHAN)
— Tail 15—20 anal diameters or 480 μm long; posterior ovary less developed than anterior. — ♀: L=2.6—2.8 mm; a=39—44; b=4.5—4.7; c=5.8—6.3; V=62—68%; c'=14—15. ♂: L=2.4—2.7 mm; a=42—46; b=4.5—4.7; c=6.6—7.6; PO: 10—13. (India) ..... **shamimi** RAY & DAS

Subfamily MICONCHINAE ANDRÁSSY, 1976

Anatonchidae. Buccal cavity roomy. Dorsal tooth located in anterior or posterior part of stoma and pointed forward. Subventral walls also with teeth equal in shape with dorsal tooth or somewhat smaller, arranged in one pair or two pairs and located anteriorly and/or posteriorly in buccal cavity (Fig. 3).

Five genera (with 32 species); in alphabetic order:

Crassibucca MULVEY & JENSEN, 1967
Doronchus gen. n.
Miconchus ANDRÁSSY, 1958
Miconchoides JAIRAJPURI & KHAN, 1982
Paracrassibucca BAQRI & JAIRAJPURI, 1974
Promiconchus JAIRAJPURI & KHAN, 1982

Key to genera of Miconchinae

1 Buccal cavity with one dorsal tooth and two subventral teeth 2
— Buccal cavity with one dorsal tooth and four subventral teeth 4

2 Dorsal tooth in anterior, subventral teeth in posterior part of buccal cavity ..... **Promiconchus** JAIRAJPURI & KHAN
— All teeth in posterior part of buccal cavity, levelling with each other 3

3 Tail showing sexual dimorphism: in female elongate-conoid with sharp tip, in male much shorter and plumper, with bluntly rounded tip ..... **Doronchus** gen. n.
— Tail without sexual dimorphism, similar in both sexes ..... **Miconchus** ANDRÁSSY

4 Dorsal tooth anterior, one pair of subventral teeth levelling with it, the other pair located posterior in buccal cavity; female prodelphic ..... **Crassibucca** MULVEY & JENSEN
— Dorsal tooth anterior, both pairs of subventral teeth located posterior in buccal cavity; female amphidelphic ..... **Paracrassibucca** BAQRI & JAIRAJPURI

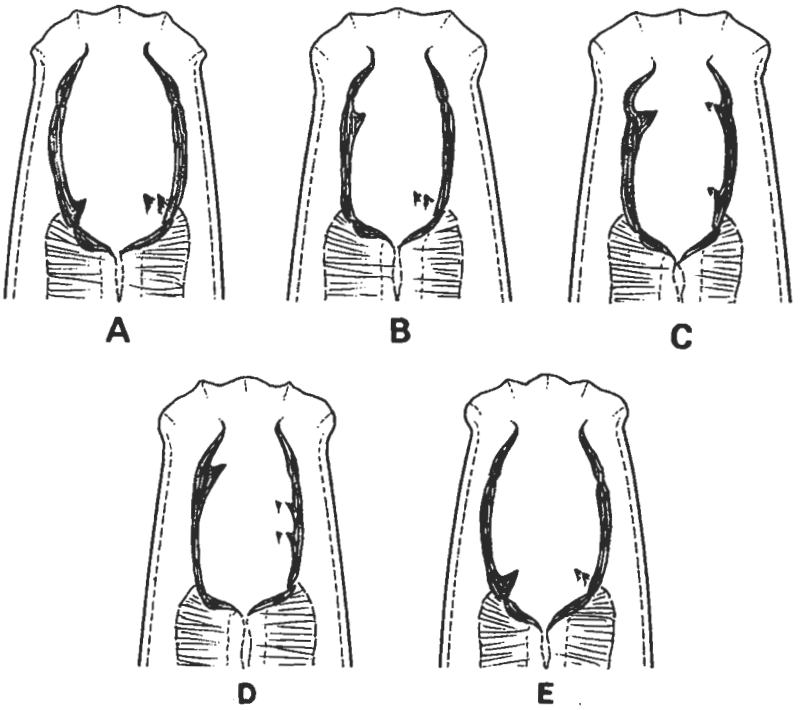

Fig. 3. Buccal cavities in the family Anatonchidae. A—E: Genera of the subfamily Miconchinae; A: *Miconchus*, B: *Promiconchus*, C: *Crassibucca*, D: *Paracrassibucca*, E: *Doronchus*

Genus ***Miconchus*** ANDRÁSSY, 1958

Miconchoides JAIRAJPURI & KHAN, 1982.

Anatonchidae, Miconchinae. Body length varying between 1 and 7 mm, but generally 2—3 mm long. Cuticle smooth. Buccal cavity roomy, armed with three teeth — one dorsal and two subventral — equal in shape and location, lying in posterior half of stoma. Other denticles or ridges lacking. Oesophago-intestinal valve tuberculate. Female predominantly didelphic, rarely monodelphic: prodelphic or pseudo-prodelphic. Position of vulva varying between 49 and 79%. Males known in two-third of species. Spicula arcuate, with lateral guiding pieces. Copulatory supplements 9 to 24. Tails of both sexes equal in shape, more or less conoid, occasionally filiform, with pointed or rounded tip, 2 to 25 times as long as anal body width. Caudal glands and spinneret either well developed or reduced.

Type species: *Mononchus digiturus* COBB, 1893 = *Miconchus digiturus* (COBB, 1893) ANDRÁSSY, 1958.

The genus is well characterized in having three equal teeth levelling with each other and located in the posterior part of stoma. JAIRAJPURI and KHAN (1982) separated one species — *Miconchus studeri* (STEINER, 1914) — from the other and suggested a new genus, *Miconchoides*, for it. They characterized *Miconchoides* in having a very small teeth behind each "normal" teeth. KHAN and COOMANS (1980) demonstrated, however, that those tiny secondary teeth occur generally in juvenile stages only, it is not judged therefore to separate *studeri* from the other representatives of

Miconchus in generic level. On this account JIMÉNEZ-GUIRADO, PEÑA-SANTIAGO and CASTILLO-CASTILLO (1993) synonymized *Miconchoides* with *Miconchus*.

The species of *Miconchus* prefer terrestrial habitats, and are distributed over the globe. In Europe 7, Asia 9, Africa 6, North America 11, South America 2 and Australia 2 species occur. The most abundant of them is *Miconchus studeri* recorded from 14 countries.

Twenty-three species:

M. aquaticus KHAN, AHMAD & JAIRAJPURI, 1978
M. californicus MULVEY, 1962
M. citri KHAN, AHMAD & JAIRAJPURI, 1978
M. crenicaudatus GAGARIN, 1984
M. dalhousiensis JAIRAJPURI, 1969
M. digiturus (COBB, 1893) ANDRÁSSY, 1958
Mononchus digiturus COBB, 1893
Mononchus (Iotonchus) digiturus COBB, 1893 (COBB, 1916)
Iotonchus digiturus (COBB, 1983) COBB, 1916
M. effilatus (SCHUURMANS STEKHOVEN & TEUNISSEN, 1938) ANDRÁSSY, 1958
Mononchus effilatus SCHUURMANS STEKHOVEN & TEUNISSEN, 1938
Mononchus (Iotonchus) effilatus SCHUURMANS STEKHOVEN & TEUNISSEN, 1938 (GOODEY, 1951)
M. elegans LAL & KHAN, 1988
M. eurinus EROSHENKO, 1975
M. exilis (COBB, 1917) ANDRÁSSY, 1958
Mononchus exilis COBB, 1917
M. fasciatus (COBB, 1917) ANDRÁSSY, 1958
Mononchus (Iotonchus) fasciatus COBB, 1917
Iotonchus fasciatus COBB, 1917
M. hopperi MULVEY, 1962
M. kansasensis MULVEY & DICKERSON, 1970
M. longicaudatus JIMÉNEZ-GUIRADO, PEÑA-SANTIAGO & CASTILLO-CASTILLO, 1993
M. oregensis JENSEN & MULVEY, 1958
M. pararapax MULVEY & JENSEN, 1967
M. rapax (COBB, 1917) ANDRÁSSY, 1958
Mononchus (Iotonchus) rapax COBB, 1917
Iotonchus rapax COBB, 1917
M. regius (COBB, 1917) ANDRÁSSY, 1958
Mononchus (Iotonchus) regius COBB, 1917
Iotonchus regius COBB, 1917
M. rex (COBB, 1904) ANDRÁSSY, 1958
Mononchus rex COBB, 1904
Mononchus (Iotonchus) rex COBB, 1904 (COBB, 1917)
Iotonchus rex (COB, 1904) COBB, 1917
M. schneideri (MEYL, 1955) ANDRÁSSY, 1958
Iotonchus schneideri MEYL, 1955
M. studeri (STEINER, 1914) ANDRÁSSY, 1958
Mononchus studeri STEINER, 1914
Mononchus (Iotonchus) studeri STEINER, 1914 (COBB, 1916)
Iotonchus studeri (STEINER, 1914) COBB, 1916
Mononchus (Anatonchus) studeri STEINER, 1914 (COBB, 1916)
Miconchoides studeri (STEINER, 1914) JAIRAJPURI & KHAN, 1982
M. thornei MULVEY & JENSEN, 196/
M. triodontus BUANGSUWON & JENSEN, 1966

Remarks

Miconchus crenicaudatus GAGARIN, 1985. — Possibly identical with *M. eurinus* EROSHENKO, 1975, differing in the shape of tail tip from that.

Key to species of Miconchus

1 Female monodelphic or pseudo-monodelphic (posterior ovary present but strongly reduced) 2
— Female didelphic 3

2 Female monodelphic, posterior uterine sac about as long as corresponding body width; apex of dorsal tooth in posterior third of buccal cavity. — ♀: L=1.4—1.9 mm; a=22—39; b=3.7—5.2; c=12—19; V=70—79%; c'=3—4. ♂: L=1.5—1.7 mm; a=36—37; b=3.5—4.4; c=13—18; PO: 12—17. (Yugoslavia, India, Fiji Islands, United States [Oregon], St. Lucia, Colombia, Venezuela) ..... **digiturus** (COBB)
— Female pseudo-monodelphic, posterior genital branch as long as two corresponding body widths; apex of dorsal tooth midway in buccal cavity. — ♀: L=1.6—1.8 mm; a=27—33; b=3.6—4.3; c=12—15; V=68—74%; c'=3. ♂: L=1.8 mm; a=35; b=4; c=16; PO:15. (Thailand) ..... **triodontus** BUANGSUWON & JENSEN

3 Teeth basal in position, originating at the very end of the interlateralia (lateral walls) 4
— Teeth suprabasal in position or farther forward, to midway in buccal cavity, conspicuously originating before the proximal ends of the interlateralia (lateral walls) 10

4 Tail filiform, 15—25 anal diameters long. — ♀: L=2.5—3.3 mm; a=45—62; b=5.2—5.9; c=3.2—4.5; V=49—58%; c'=15—25. ♂: L=2.3—2.9 mm; a=30—49; b=5.0—5.6; c=3.4—4.4; PO: 10—14. (Spain) ..... **longicaudatus** JIMÉNEZ-GUIRADO, PEÑA-SANTIAGO & CASTILLO-CASTILLO
— Tail conoid to elongate, not filiform, 2—8 anal diameters long 5

5 Tail 7—8 anal diameters long 6
— Tail 2—5 anal diameters long 7

6 Body very large, near 5 mm, slender. — ♀: L=4.8 mm; a=59; b=4.6; c=8.9; V=68%; c'=8. ♂ unknown. (Lake Tanganyika, Brazil) ..... **schneideri** (MEYL)
— Body much smaller, about 1 mm, plump. — ♀ unknown. ♂: L=1.1 mm; a=18; b=3; c=4.8; PO: 10. (Zaire) ..... **effilatus** (SCHUURMANS STEKHOVEN & TEUNISSEN)

7 Caudal spinneret present. — ♀: L=1.4—2.2 mm; a=24—38; b=3.6—4.6; c=12—20; V=60—70%; c'=2—4. ♂: L=1.4—2.0 mm; a=25—32; b=3.7—4.2; c=14—21; PO: 11—20. (Holland, Germany, Great Britain, Switzerland, Poland, Austria, Slovakia, Romania, Spain, France, Italy, Mauritius, United States [California], El Salvador) ..... **studeri** (STEINER)
— Caudal spinneret absent 8

8 Large species, about 3 mm. — ♀: L=3.2 mm; a=40; b=5; c=40; V=62%; c'=4. ♂: L=2.8 mm; a=43; b=5; c=23; PO: 11. (United States: Oregon) ..... **oregensis** JENSEN & MULVEY
— Smaller species, 1.5—2 mm 9

9 Tail plump, 2.5—3 times anal body width; buccal teeth strong. — ♀: L=1.8—2.0 mm; a=21—31; b=3.6—4.0; c=13—18; V=68—73%; c'=2.5—3.5. ♂ unknown. (India) ..... **citri** KHAN, AHMAD & JAIRAJPURI
— Tail slenderer, 5—5.5 times anal body width; buccal teeth small. — ♀: L=1.5—1.6 mm; a=21—24; b=3.8—4.2; c=9—10; V=61—64%; c'=5—5.5. ♂ unknown. (India) ..... **elegans** LAL & KHAN

10 Apices of teeth midway in buccal cavity; tail always short, 2—3 times anal body width 11
— Apices of teeth in 60—70% of buccal cavity; tail varying in length 14

11 Body large, 3—4 mm; male supplements 21—24 12
— Body smaller, 1.5—2 mm; male supplements 14—15 13

12 Tail sharply pointed on tip. — ♀: L=2.7—2.9 mm; a=23; b=3.6—4.2; c=18—22; V=70—72%; c'=2.2—2.5. ♂: L=2.8—3.1 mm; a=23—25; b=3.6—4.2; c=18—23; PO: 21—23. (Russia) ..... **crenicauda** GAGARIN
— Tail rounded on tip. — ♀: L=3.9 mm; a=32; b=4; c=21; V=70%; c'=2. ♂: L=3.4 mm; a=28; b=4.4; c=26; PO: 24. (Russia: Far East) ..... **eurinus** EROSHENKO

13 Tail short, c=56. — ♀: L=2.0 mm; a=43; b=3.7; c=56; V=78%; c'=1.8. ♂: L=2.0 mm; a=45; b=4.2; c=50; PO: 14. (Romania, Georgia, Australia) ..... **exilis** (COBB)
— Tail longer, c=15—18. — ♀: L=1.4—1.6 mm; a=25—31; b=3.6—3.9; c=15—18; V=70—72%; c'=3. ♂: L=1.5—1.6 mm; a=29—31; b=3.4—4.0; c=18—20; PO: 14—15. (United States: Kansas) ..... **kansasensis** MULVEY &DICKERSON

14 Very big species, 6—7 mm 15
— Smaller species, 2—3.5 mm 16

15 Tail 1200—1300 μm, 13 anal diameters long. — ♀: L=6.5—7.0 mm; a=45; b=5; c=5.3; V=58%; c'=13. ♂: L=6.5—7.0 mm; a=43; b=5; c=7.1; PO: 17. (New Zealand) ..... **rex** (COBB)
— Tail 600 μm, 7 anal diameters long. — ♀: L=6.2 mm; a=43; b=5.9; c=10; V=63%; c'=7. ♂ unknown. (United States: Virginia) ..... **regius** (COBB)

16 Tail with spinneret 17
— Tail without spinneret 20

17 Body about 4 mm long. — ♀: L=3.7 mm; a=38; b=4.7; c=10; V=61%; c=6. ♂ unknown. (Poland?, United States [Virginia]) ..... **rapax** (COBB)
— Body 2—3 mm long 18

18 Advulval papillae, especially anterior to vulva, present; tail 2.5—3 anal diameters long. — ♀: L=1.9—2.8 mm; a=24—37; b=3.7—4.6; c=15—21; V=66—73%; c'=2.5—3. ♂: L=1.4—2.5 mm; a=26—40; b=3.9—4.6; c=17—20; PO: 17—21. (Romania, India) ..... **aquaticus** KHAN, AHMAD & JAIRAJPURI
— Advulval papillae absent; tail 4—10 anal diameters long 19

19 Tail slender, 300—500 μm, as long as 8—10 anal diameters. — ♀: L=2.2—2.9 mm; a=35—51; b=3.6—5.1; c=5.2—7.9; V=58—65%; c'=8—10. ♂: L=2.7—2.8 mm; a=49—54; b=4.4—4.8; c=6.7—8.4; PO: 12—13. (Ivory Coast, Nigeria, United States [California]) ..... **pararapax** MULVEY & JENSEN
— Tails stout, 150—250 μm, as long as 4—6 anal diameters. — ♀: L=2.0—2.6 mm; a=25—37; b=3.6—4.0; c=9—19; V=63—68%; c'=4—6. ♂: L=2.0—2.4 mm; a=36—40; b=4.3—4.5; c=22—25; PO: 15. (Egypt, Nigeria, St. Lucia, El Salvador, Cuba) ..... **thornei** MULVEY & JENSEN

20 Buccal capsule comparatively slender, about twice as long as wide; apices of teeth about in 60% of buccal length 21
— Buccal capsule broad, about 1.5 times as long as wide; apices of teeth about in 70% of buccal length 22

21 Teeth unusually small; tail of 5 anal diameters. — ♀: L=2.1—2.4 mm; a=36—42; b=5.5—6.0; c=7.8—10; V=60—66%; c'=5—5.5. ♂ unknown. (United States: Florida) ..... **fasciatus** (COBB)
— Teeth normally developed; tail of 7—9 anal diameters. — ♀: L=2.2—3.3 mm; a=34—57; b=4.2—6.0; c=6.9—9.7; V=60—66%; c'=7—9. ♂: L=2.3—2.9 mm; a=33—45; b=4.4—5.7; c=8—14; PO: (9—) 14—15. (Romania, United States [Florida]) ..... **hopperi** MULVEY

22 Teeth small, less projecting; tail 140—160 μm long. — ♀: L=1.9—2.3 mm; a=28—31; b=3.5—4.0; c=12—14; V=63—68%; c'=3.5—4. ♂ unknown. (India) ..... **dalhousiensis** JAIRAJPURI
— Teeth large, well projecting; tail 190—350 μm long. — ♀: L=2.4—3.2 mm; a=31—51; b=4.5—5.9; c=7.4—14; V=59—70%; c'=4.5—6.0. ♂: L=2.2—3.1 mm; a=43—49; b=5.3—5.9; c=15—21; PO: 15. (Egypt, United States [California, Oregon]) ..... **californicus** MULVEY

Genus ***Promiconchus*** JAIRAJPURI & KHAN, 1982

Anatonchidae, Miconchinae. Body of medium length, 1.3—1.9 mm. Cuticle smooth. Buccal cavity barrel-shaped, spacious, armed with three teeth. Dorsal tooth located in anterior third/fourth of stoma, rather weak, less stronger than subventral teeth. These latter located in posterior third/fourth of buccal capsule. Oesophagocardial valve tuberculate. Female mono-prodelphic, vulva in 63—70% of body length. Spicula arcuate, accessory pieces bifurcate. Supplements unusually few in number: 5—6. Tail elongate, ventrally or first ventrally then dorsally bent, as long as 4—10 anal body widths. Caudal glands and spinneret lacking.

Type species: *Crassibucca microdonta* MULVEY & JENSEN, 1967 = *Promiconchus microdontus* (MULVEY & JENSEN, 1967) JAIRAJPURI & KHAN, 1982.

Promiconchus, in having the dorsal tooth anterior, subventral teeth posterior in buccal cavity, resembles *Crassibucca* MULVEY & JENSEN, 1967 and *Paracrassibucca* BAQRI & JAIRAJPURI, 1974. It can be separated from them by the presence of one pair of subventral teeth only.

The species of *Promiconchus* favour wet biotopes and are distributed in Africa, Central- and South America.

Three species:

P. conicaudatus (ALTHERR, 1970) comb. n.
Crassibucca conicaudata ALTHERR, 1970
P. incultus (CARVALHO, 1960) comb. n.
Mononchus (Cobbonchus) incultus CARVALHO, 1960
Cobbonchus incultus CARVALHO, 1960
Promiconchus siddiqii AHMAD & JAIRAJPURI, 1993 (syn. n.)
P. microdontus (MULVEY & JENSEN, 1967) JAIRAJPURI & KHAN, 1982
Crassibucca microdonta MULVEY & JENSEN, 1967

Remarks

Promiconchus conicaudatus (ALTHERR, 1970). — Maybe this species is identical with *P. incultus* (CARVALHO, 1060). The sole specimen of ALTHERR was still young, it may not be compared therefore with mature females of CARVALHO.

Promiconchus siddiqii AHMAD & JAIRAJPURI, 1993. — There is no doubt that this recently described species is the same as *P. incultus* (CARVALHO, 1960). It corresponds in every respect to CARVALHO's species, in the mesurements as well. The single "difference" is that *siddiqii* shows a very short, quite insignificant postuterine part.

Key to species of Promiconchus

1 Tail 300 µm, as long as 10 anal diameters, simply bent ventrad. — ♀ unknown. ♂: L=1.5—1.7 mm; a=34—38; b=4.3—4.6; c=5.3—5.7; PO: 5+1. (Nigeria) ..... **microdontus** (MULVEY & JENSEN)
— Tail 100—160 µm, as long as 4—6 anal diameters, first ventrally then dorsally bent 2

2 Apex of dorsal tooth located in the anterior third of buccal cavity; body 2 mm or longer. — juv. ♀: L=1.95 mm; a=45; b=3.8; c=20; c'=4. ♂ unknown. (Brazil) ..... **conicaudatus** (ALTHERR)
— Apex of dorsal tooth located in anterior fourth of buccal cavity; body about 1.5 mm long. — ♀: L=1.3—1.7 mm; a=27—41; b=3.8—4.2; c=11—20; V=63—70%; c'=5—6. ♂ unknown. (Dominica, Brazil) ..... **incultus** (CARVALHO)

Genus *Crassibucca* MULVEY & JENSEN, 1967

Anatonchidae, Miconchinae. Smaller nematodes, 1—1.5 mm. Cuticle smooth. Buccal cavity oblong, narrower than general in the family, provided with five teeth. Dorsal tooth, largest of them, situated in the anterior third of buccal capsule. Subventral teeth arranged in two pairs: one pair, the smaller, levelling with dorsal tooth, the other pair, the larger, located in posterior third/fourth of stoma. Junction between oesophagus and intestine tuberculate. Female prodelphic, without postuterine sac. Vulva in 60—70% of body length. Male known in one species. Spicula with accessory pieces, supplements 8. Tails of both sexes similar, conoid-arcuate to elongate, 3—14 times anal body with. Caudal glands poorly developed, spinneret present or absent.

Type species: *Crassibucca penicula* MULVEY & JENSEN, 1967.

Crassibucca is well characterized by the special armature in the buccal cavity. It differs from *Paracrassibucca* BAQRI & JAIRAJPURI, 1974, a genus which is also characterized by five teeth, by the anterior position of one pair of subventral teeth, as well as by the prodelphic gonad.

Soil inhabitants known from Africa and South America.

Three species:

C. colombica SIDDIQI, 1984
C. macrocauda MULVEY & JENSEN, 1967
C. penicula MULVEY & JENSEN, 1967

Key to species of Crassibucca

1 Tail long, 12—14 anal diameters, very slender. — ♀: L=1.4—1.5 mm; a=38—41; b=3.8; c=5.0—5.4; V=63%; c'=12—14. ♂ unknown. (Nigeria) ..... **macrocauda** MULVEY & JENSEN
— Tail shorter, 2.5—4.5 anal diameters, fairly plump 2

2 Tail 50—70 µm; posterior subventral teeth nearly as strong as dorsal tooth; spinneret lacking. ♀: L=0.9—1.2 mm; a=27—43; b=3.4—3.9; c=16—18; V=60—70%; c'=2.5—3. ♂: L=1.1—1.2 mm; a=30—37; b=3.8—4.2; c=20—29; PO: 8. (Nigeria, St. Lucia) ..... **penicula** MULVEY & JENSEN
— Tail 110—120 µm; posterior subventral teeth much smaller than dorsal tooth; spinneret present. — ♀: L=1.3 mm; a=36—38; b=3.6—3.7; c=11—12; V=69—70%; c'=4.5. ♂ unknown. (Colombia) ..... **colombica** SIDDIQI

Genus *Paracrassibucca* BAQRI & JAIRAJPURI, 1974

Anatonchidae, Miconchinae. Small nematodes, 0.7—0.8 mm. Cuticle smooth. Buccal cavity oblong, comparatively narrow, armed with five teeth. Dorsal tooth large, in anterior third or fourth of buccal cavity, subventral teeth — two pairs — much smaller than dorsal tooth and lying in the posterior half of stoma, behind each other. Oesophago-intestinal valve tuberculate. Female amphidelphic, vulva in 60—63% of body length. Male unknown. Tail short, ventrally arcuate, 2—2.5 anal diameters long. Caudal glands and spinneret present.

Type species: *Paracrassibucca jenseni* BAQRI & JAIRAJPURI, 1974 = *Paracrassibucca paucidentata* (LORDELLO, 1970) JAIRAJPURI & KHAN, 1982.

Paracrassibucca can be compared with *Crassibucca* MULVEY & JENSEN, 1967 — which is similarly armed with five teeth — but it differs from that in showing both pairs of subventral teeth in posterior location.

Terrestrial nematodes known in Asia and South America.

One species:

P. paucidentata (LORDELLO, 1970) JAIRAJPURI & KHAN, 1982
Sporonchulus paucidentatus LORDELLO, 1970
Paracrassibucca jenseni BAQRI & JAIRAJPURI, 1974 (syn. n.)

— ♀: L=0.7—0.8 mm; a=17—25; b=3.1—3.7; c=17—22; V=60—63%; c'=2—2.5 ♂ unknown. (India, El Salvador, Brazil) ..... **paucidentata** (LORDELLO)

Remarks

Paracrassibucca jenseni BAQRI & JAIRAJPURI, 1974. — This species corresponds so entirely to the characteristics of *P. paucidentata* (LORDELLO, 1970) that it is advisable to regard it as a junior synonym of the latter.

Genus *Doronchus* gen. n.

Anatonchidae, Miconchinae. Body 1.8 to 3.6 mm long. Cuticle finely annulated. Labial region set off from body. Buccal cavity barrel-shaped, moderately roomy, slightly longer than cephalic diameter, armed with three basal teeth lying at the same level. Dorsal tooth distinctly larger than subventral ones. Oesophageal terminus tuberculate. Female amphidelphic, vulva located in 53—62% of body length. Spicula arcuate, with forked lateral pieces. Copulatory supplements 12—16. Tails of both sexes different: in female almost straight, elongate-conoid with sharp terminus and 5—10 times as long as anal body width, in male ventrally bent, broadly conoid with bluntly rounded terminus, only 1.5—2 times as long as anal body width. Caudal glands and spinneret lacking.

Type species: *Miconchus kirikiri* YEATES, 1967 = *Doronchus kirikiri* (YEATES, 1967) comb. n.

YEATES described in 1967 two *Miconchus* species from New Zealand for which I feel necessary to suggest a new genus. This genus, *Doronchus* gen. n., fits in general characteristics into the subfamily Miconchinae, and shows a close resemblance to the genus *Miconchus* ANDRÁSSY, 1958 in number and location of teeth. By virtue of a phenomenon it is however unique not only in the mentioned subfamily but also in the whole suborder Mononchina: it shows a definite sexual difference in shape and length of the tail. It occurs commonly in the mononchid nematodes that the tail of males is comparatively somewhat shorter than that of females but the general shape of this region of body is always equal in both sexes. MULVEY and DICKERSON (1970) also pointed at this sexual dimorphism in tail shape in the two *Miconchus* species presently transferred into the genus *Doronchus*, and they drew a parallel between these species and the representatives of the family Dorylaimidae showing the same phenomenon in forming the tail.

Terrestrial nematodes inhabiting dune sands in New Zealand.

Two species:

D. kirikiri (YEATES, 1967) comb. n.
Miconchus kirikiri YEATES, 1967
D. reflexus (YEATES, 1967) comb. n.
Miconchus reflexus YEATES, 1967

Key to species of Doronchus

1 Body shorter, 1.8—2.8 mm; female tail 5—8 anal diameters long; posterior fork of lateral guiding piece in male distally curved. — ♀: L=1.8—2.8 mm; a=33—53; b=4.6—6.0; c=8—14; V=53—62%; c'=4.5—8.3. ♂: L=2.1—2.3 mm; a=39—52; b=4.9—5.7; c=26—26; PO: 12—13. (New Zealand) ..... **reflexus** (YEATES)

— Body longer, 3.2—3.6 mm; female tail 8—10 anal diameters long; both forks of lateal guiding piece in male straight. — ♀: L=3.2—3.6 mm; a=38—41; b=4.8—5.3; c=6.9—7.6; V=55—60%; c'=8—10. ♂: L=2.9—3.2 mm; a=35—37; b=4.5—5.6; c=27—29; PO 14—16. (New Zealand.) ..... **kirikiri** (YEATES)

Subfamily ANATONCHINAE JAIRAJPURI, 1969

Anatonchidae. Buccal cavity more or less roomy. Teeth three, equal in shape and location — in anterior or posterior half of buccal capsule — retrorse, backward pointed, often hinging by conspicuous hafts on walls. Minute denticles lacking (Fig. 4). Oesophago-cardial tubercles especially prominent.

Three genera (with 20 species):

Anatonchus COBB, 1916
Mononchus (Anatonchus COBB, 1916)
Tigronchoides IVANOVA & DZHURAEVA, 1971
Truxonchus SIDDIQI, 1984

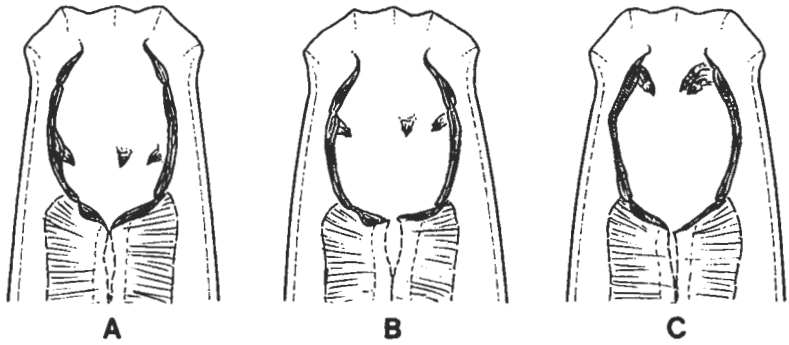

Fig. 4. Buccal cavities in the family Anatonchidae. A—C: Genera of the subfamily Anatonchinae; A: *Truxonchus*, B: *Anatonchus*, C: *Tigronchoides*

Key to genera of Anatonchinae

1 Teeth lying behind the middle of buccal cavity ..... **Truxonchus** SIDDIQI
— Teeth lying midway or farther forward in buccal cavity 2

2 Teeth, especially in females, located at anterior end of stoma; dorsal wall of buccal cavity becoming thinner and somewhat angular in mid-region ..... **Tigronchoides** IVANOVA & DZHURAEVA
— Teeth located midway in stoma; dorsal wall of buccal cavity not becoming conspicuously thinner and angular in mid-region ..... **Anatonchus** COBB

Genus ***Truxonchus*** SIDDIQI, 1984

Anatonchidae, Anatonchinae. Body length varying from 2 to 6.5 mm. Cuticle smooth. Buccal cavity either oblong, about half as wide as long, or very broad, nearly as wide as long. One dorsal and two subventral retrorse teeth, equal in shape and position, located behind the middle of stoma (originated on or near the posterior ends of interparietalia). Oesophago-intestinal junction well tuberculate. Female amphidelphic, vulva in 49—68% of body length. Spicula fairly massive, arcuate, with forked lateral pieces. Supplements 12—20 in number. Tail in both sexes similar, arcuate-conoid or, exceptionally, straight, 2 to 14 times as long as anal body width. Caudal glands and spinneret present or absent.

Type species: *Anatonchus subacutus* MULVEY, 1961 = *Truxonchus subacutus* (MULVEY, 1961) SIDDIQI, 1984.

This genus differs from *Anatonchus* COBB, 1916 and *Tigronchoides* IVANOVA & DZHURAEVA, 1971 in the location of the teeth lying in the posterior part of buccal cavity. They are close to the posterior ends of the interparietalia (Fig. 5). I agree with SIDDIQI (1984) that this situation of teeth can be regarded as more primitive than that occurring in *Anatonchus* and especially in *Tigronchoides*, since the migration of these buccal elements during the ontogenesis clearly show a from-back-to-ahead direction.

Soil animals living in Europe (2 species), Asia (1 species) and North America (5 species).

Six species:

T. alleni (MULVEY, 1961) SIDDIQI, 1984
Anatonchus alleni MULVEY, 1961
T. dolichurus (DITLEVSEN, 1911) SIDDIQI, 1984
Mononchus dolichurus DITLEVSEN, 1911
Mononchus (Anatonchus) dolichurus DITLEVSEN, 1911 (COBB, 1916)
Anatonchus dolichurus (DITLEVSEN, 1911) COBB, 1916
T. gracilicaudatus (COBB, 1917) comb. n.
Mononchus (Anatonchus) gracilicaudatus COBB, 1917
Anatonchus gracilicaudatus COBB, 1917
T. mulveyi (ALTHERR, 1968) SIDDIQI, 1984
Anatonchus mulveyi ALTHERR, 1968
T. paralleni (JAIRAJPURI & KHAN, 1982) SIDDIQI, 1984
Anatonchus sp. apud MULVEY, 1961
Truxonchus confusus SIDDIQI, 1984
T. subacutus (MULVEY, 1961) SIDDIQI, 1984
Anatonchus subacutus MULVEY, 1961

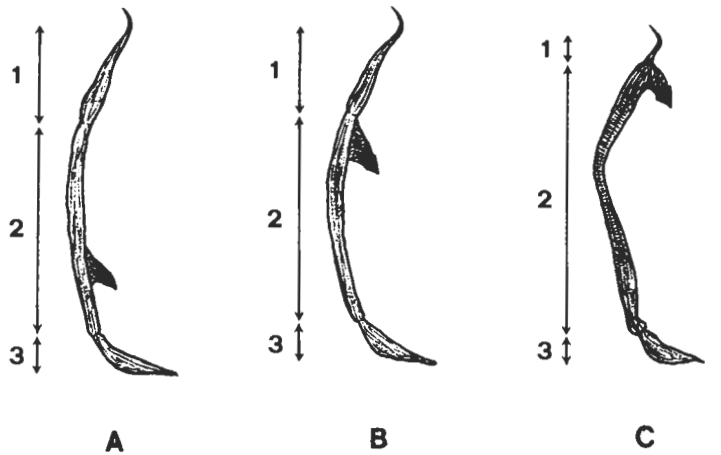

Fig. 5. Dorsal walls of buccal cavities in the subfamily Anatonchinae; A: *Truxonchus*, B: *Anatonchus*, C: *Tigronchoides*. (1: praeparietale, 2: interparietale, 3: postparietale)

Remarks

Truxonchus mulveyi (ALTHERR, 1968). — The shape of the tail in this species is strange for the subfamily Anatonchinae. It is not impossible that the single specimen of ALTHERR had a wounded tail and was not other than a premature female of *T. dolichurus* (DITLEVSEN, 1911). The shape and structure of buccal cavity entirely conform with those of the latter species.

1 Tail cylindroid with bluntly rounded tip, 2—2.5 anal diameters long. — Juv. ♀: L=3.2 mm; a=39; b=3.4; c=27; V=68%; c'=2—2.5. ♂ unknown. (Germany) ..... **mulveyi** (ALTHERR)
— Tail elongate-conoid with sharp of finely rounded tip, 7—14 anal diameters long 2

2 Buccal cavity oblong, twice as long as wide. — ♀: L=5.8—6.5 mm; a=36—43; b=4.6—5.0; c=4.3—5.4; V=49—55%; c'=12—14. ♂: L=5.9—6.3 mm; a=40—50; b=4.5—5.0; c=5.5—5.9; PO: 20. (Holland, Denmark, Germany, Great Britain, Poland, Norway, Faeroer Islands, Switzerland, Austria, Bohemia, Slovakia, Spain, United States [New York], Canada) ..... **dolichurus** (DITLEVSEN)
— Buccal cavity nearly globular, as long as or hardly longer than wide 3

3 Large nematodes, 4—6 mm; tail 10—12 anal diameters long 4
— Smaller nematodes, 2—3.5 mm; tail 7—8 anal diameters long 5

4 Caudal spinneret subventral; body 4.8—6.1 mm; teeth large. — ♀: L=4.8—6.0 mm; a=50—71; b=4.3—6.5; c=8—12; V=60—67%; c'=11—12. ♂: L=4.8—6.1 mm; a=56—78; b=4.8—5.9; c=6.6—10.8; PO: 17—19. (United States: California, Oregon, Virginia) ..... **gracilicaudatus** (COBB)
— Caudal spinneret terminal; body 3.8—4 mm long; teeth comparatively small. — ♀: L: 4.0—4.8 mm; a=42—51; b=4.8—5.2; c=7.3—11; V=53—67%; c'=10. ♂: L=3.8—4.6; a=42—51; b=4.7—5.2; c=8.3—10; PO: 15—16. (United States: California) ..... **paralleni** (JAIRAJPURI & KHAN)

5 Tip of tail sharp, subacute, without spinneret. — ♀: L=2.5—3.5 mm; a=36—46; b=4.2—5.6; c=8—13; V=60—66%; c'=7—8. ♂: L=2.1—3.2 mm; a=33—50; b=4.2—5.6; c=8—13; PO: 12—19. (United States: California, Oregon) ..... **subacutus** (MULVEY)
— Tip of tail finely rounded, with spinneret. — ♀: L=2.5—3.5 mm; a=33—50; b=4.4—5.5; c=6.7—11; V=60—66%; c'=8; ♂: L=2.7—3.0 mm; a=37—48; b=4.7—5.5; c=8.5—10; PO: 12—17. (Georgia, United States [California]) ..... **alleni** (MULVEY)

Genus *Anatonchus* COBB, 1916

Mononchus (*Anatonchus* COBB, 1916).

Anatonchidae, Anatonchinae. Body length between 1.5 and 4.1 mm. Cuticle smooth or occasionally finely annulated. Buccal cavity either oblong or spheroid, very roomy in the latter case. Teeth retrorse, in equal shape and level, located at the mid-region of stoma, hinging by haft on the buccal walls and ending in arrow-like tips. Oesophago-cardial tubercles especially well developed. Female didelphic, vulva in 58—71% of body length. Advulval papillae generally present. Spicula with forked accessory pieces. Supplements 10—17 in number. Tail conoid to filiform, 2 to 14 anal diameters long, in both sexes similar. Caudal glands and spinneret predominantly present.

Type species: *Mononchus tridentatus* DE MAN, 1876 = *Anatonchus tridentatus* (DE MAN, 1876) COBB, 1916.

This genus differs from *Truxonchus* SIDDIQI, 1984 by the more anterior position of the teeth, from *Tigronchoides* IVANOVA & DZHURAEVA, 1971 by the shape of dorsal wall (see there) and the more posterior position of the teeth (Fig. 5).

Soil inhabiting animals occurring in four continents as follows: in Europe 5, Asia 3, Africa 1 and North America 1 species. The most common form is *A. tridentatus* recorded from 24 countries.

Seven species:

A. acutus ALTHERR, 1974
A. ferox SIDDIQI, 1984
A. hortensis ANDRÁSSY, 1973
A. kashmirensis JAIRAJPURI & KHAN, 1982
A. mamillatus ALTHERR, 1968
A. sympathicus sp. n.

A. tridentatus (DE MAN, 1876) COBB, 1916
Mononchus tridentatus DE MAN, 1876
Mononchus (Anatonchus) tridentatus DE MAN, 1876 (COBB 1916)
Mononchus (Iotonchus) tridentatus DE MAN, 1876 (COBB, 1916)

Remarks

Anatonchus kreisi MEYL, 1961. — MEYL proposed this name for *Mononchus (Anatonchus) tridentatus* apud KREIS, 1924. The single specimen observed by KREIS was an aberrant one showing the buccal teeth in different levels (the dorsal tooth in the anterior, the two subventral teeth in the posterior half of the stoma). Such a peculiar arrangement of teeth is strange for *Anatonchus* and related genera.

Anatonchus kashmirensis JAIRAJPURI & KHAN, 1982. — It is closely allied to *A. mamillatus* ALTHERR, 1968, perhaps identical with that.

Anatonchus tridentatus (DE MAN, 1876). — See the description below.

Key to species of Anatonchus

1 Tail 10—14 anal diameters long; teeth with unusually long hafts. — ♀: L=3.6—4.1 mm; a=45—53; b=4.6—5.1; c=4.9—7.6; V=58—65%; c'=10—14. ♂: L=3.2 mm; a=50; b=4.7; c=5—8; PO: 14. (Fiji Islands) ..... **ferox** SIDDIQI
— Tail 2—8 anal diameters long; teeth with short hafts 2

2 Bigger animals, 2.5—3.6 mm; eggs spherical, generally 6—8 in the uterus. — ♀: L=2.8—3.6 mm; a=27—40; b=4.5—5.2; C=8—12; V=60—65%; c'=5—8. ♂: L=2.5—2.7 mm; a=30—40; b=4—5; c=8—12; PO: 15—17. (Holland, Belgium, Germany, United Kingdom, Poland, Switzerland, Austria, Bohemia, Slovakia, Hungary, Romania, Yugoslavia, Spain, France, Italy, Estonia, Russia, Turkey, Georgia, Uzbekistan, Iran, Ghana, United States, Mexico) ..... **tridentatus** DE MAN
— Smaller animals, 1.5—2.3 mm; eggs oblong, 1—2 in the uterus 3

3 Tail very sharp on tip, without spinneret. — ♀ unknown. ♂: L=1.6 mm; a=34; b=4.2; c=9.6; c'=4; PO: 11. (Germany) ..... **acutus** ALTHERR
— Tail finely rounded on tip, with spinneret 4

4 Buccal cavity oblong, much longer than wide 5
— Buccal cavity spherical, about as wide as long 6

5 Female tail as long as 5—6 anal diameters, male tail first conoid then cylindroid;vulva longitudinal. — ♀: L=2.0—2.3 mm; a=28—33; b=4.2—4.5; c=8.7—10; V=62—63%; c'=5.2—5.6. ♂: L=1.9—2.4 mm; a=30—37; b=4.2—4.5; c=10—12; PO: 11—13. (Germany, Hungary) ..... **sympathicus** sp. n.
— Female tail as long as 2.5—4 anal diameters, male tail conoid, uniformly tapering; vulva transverse. — ♀: L=1.5—2.0 mm; a=25—37; b=3.8—4.8; c=11—20; V=63—71%; c'=2.5—4. ♂: L=1.5—1.8 mm; a=28—36; b=3.7—4.6; c=12—20; PO: 10—14. (Hungary, Romania, Yugoslavia, France) ..... **hortensis** ANDRÁSSY

6 Tail 300 µm long, 6—7 anal diameters. — ♀: L=2.1 mm; a=27; b=4.5; c=6.7; V=62%; c'=6—7. ♂: L=2.1 mm; a=35; b=4.6; c=11.5; PO: 14. (Germany) ..... **mamillatus** ALTHERR
— Tail 180 µm long, 4—5 anal diameters. — ♀: L=1.8 mm; a=30; b=3.6; c=11; V=67%; c'=4.5. ♂ unknown. (India) ..... **kashmirensis** JAIRAJPURI & KHAN

Genus *Tigronchoides* IVANOVA & DZHURAEVA, 1971

Anatonchidae, Anatonchinae. Medium-sized to large animals, 1.7 to 5 mm. Cuticle smooth or, especially on tail, finely annulated. Buccal cavity roomy to very roomy, often nearly globular; dorsal wall (interparietale) transversely striated, becoming thinner in its mid-region and bulged. Teeth retrorse, equal in shape and location, in female lying quite at the anterior end of buccal cavity and hinging by conspicuous hafts on the walls, in male located somewhat more posterior and having shorter

hafts. Apices of teeth arrow-like. Oesophago-intestinal valves tuberculate. Female amphidelphic or prodelphic; vulva in 59—77% of body length, often provided with advulval papillae. Spicula with forked accessory pieces. Supplements 9 to 18. Tails of both sexes nearly equal in shape, conoid to filiform, as long as 3 to 20 anal body widths. Caudal glands and spinneret mostly present.

Type species: *Tigronchoides varidentus* IVANOVA & DZHURAEVA = *Tigronchoides ginglymodontus* (MULVEY, 1961) comb. n.

The genus *Tigronchoides* was erected by IVANOVA and DZHURAEVA (1971) as a related genus of *Tigronchus* KIRJANOVA in KIRJANOVA & KRALL, 1969. The Soviet authors suggested also a separate family, Tigronchidae (better: Tigronchoididae — see SIDDIQI, 1984, being Tigronchoides the type genus) for them. Both genera were characterized in having very long, tigre-like teeth in the buccal cavity. *Tigronchoides* was differenciated from *Tigronchus* in having also "normal", *Anatonchus*-like teeth hinging on the anterior end of the buccal capsule. In my book (1976) I supposed that both *Tigronchus* and *Tigronchoides* belonged to the family Anatonchidae and were most probably identical with the genus *Anatonchus* COBB, 1916. The so-called tigre-teeth were nothing else than simple splits between the mural plates (interparietalia) of the buccal capsule at their points of junction. SIDDIQI (1984) shared my opinion, and synonymized both genera mentioned above with *Anatonchus.*

To make a clean sweep in the matter, I tried to obtain the original slides with the type specimens of *Tigronchus* and *Tigronchoides* as well, but in vain. Whereas I have received some soil samples from near the locus typicus of *Tigronchoides varidentus,* namely from around roots of a *Fraxinus* tree in the vicinity of the Zoological Institute in Dushanbe, Tadzhikistan (collected by Z. KOVÁCS). In two of these samples I have found several specimens — both females and males — which I could identified with *Tigronchoides varidentus.* Well, these nematodes completely agreed also with *Anatonchus ginglymodontus* MULVEY, 1961! Indeed, if we compare the descriptions given by MULVEY on the one hand and given by IVANOVA and DZHURAEVA on the other hand, we can see an actual agreement between *ginglymodontus* and *varidentus.**

I propose therefore to retain the name *Trigronchoides* for that genus which has *ginglymodontus* as type species and which shows some differences from both *Truxonchus* and *Anatonchus* (see below).

Although KIRJANOVA's *Tigronchus* also belongs most probably to the subfamily Anatonchinae, the type species, *T. taurinus,* remains a species inquirenda seu incertae sedis.

Tigronchoides is closely related to *Truxonchus* SIDDIQI, 1984 and *Anatonchus* COBB, 1916. It can be distinguished from the first genus by the very anterior position of the buccal teeth, from the second one by the shape and structure of the interparietale, the poorly developed proparietale and the more anterior arrangement of the hinging teeth (Fig. 5).

The representatives of *Tigronchoides* favour terrestrial habitats and are distributed in five continents: in Europe 4, Asia 1, North America 1, South America 1 and Australia 2 species. The most abundant species is *T. ginglymodontus.*

Seven species:

T. amiciae (COOMANS & LIMA, 1965) comb. n.
Anatonchus amiciae COOMANS & LIMA, 1965

* I think it is unnecessary to give here a description of *T. ginglymodontus* since very good ones can be found in the recent papers of POPOVICI (1990) and BARSI (1991). My animals completely correspond to those.

T. australicus (WINISZEWSKA-SLIPINSKA, 1989) comb. n.
Anatonchus australicus WINISZEWSKA-SLIPINSKA, 1989
T. filicaudatus (ALTHERR, 1971) comb. n.
Anatonchus filicaudatus ALTHERR, 1971
T. ginglymodontus (MULVEY, 1961) comb. n.
Anatonchus ginglymodontus MULVEY, 1961
Anatonchus killickae CLARK, 1963 (syn. n.)
Tigronchoides varidentus IVANOVA & DZHURAEVA, 1971 (syn. n.)
Anatonchus varidentus (IVANOVA & DZHURAEVA, 1971) SIDDIQI, 1984
T. istvani (WINISZEWSKA-SLIPINSKA, 1989) comb. n.
Anatonchus istvani WINISZEWSKA-SLIPINSKA, 1989
T. monohystera (ALTHERR, 1977) comb. n.
Anatonchus monohystera ALTHERR, 1977
T. sukuli (BAQRI, DAS & AHMAD, 1981) comb. n.
Anatonchus sukuli BAQRI, DAS & AHMAD, 1981

Remarks

Anatonchus killickae CLARK, 1963. — I have no doubt whatever this species is equal with *T. ginglymodontus* (MULVEY, 1961). The shape and position of the teeth, the presence of numerous advulval papillae, the shape, length and the fine annulation of the tail as well as the measurements all conform with each other in both species.

Anatonchus valitangiensis KHAN & SAEED, 1987. — I could not obtain the original paper. In the Nematological Abstracts (Abstr. No. 1563 in the Volume 59) it is noted that this species resembles *A. killickae* CLARK, 1963. Is it perhaps similarly equal with *ginglymodontus?*

Key to species of Tigronchoides

1 Female monodelphic with posterior uterine sac 2
— Female amphidelphic 3

2 Buccal cavity wider than long; tail straight; body about 3 mm. — ♀: L=3.1 mm; a=40; b=4; c=22; V=75%; c'=3. ♂ unknown. (Brazil) ..... **monohystera** (ALTHERR)
— Buccal cavity longer than wide; tail arcuate; body about 2 mm. — ♀: L=1.7—2.0 mm; a=30—35; b=3.9—4.3; c=12—16; V=73—77%; c'=3—4. ♂: L=1.7—2.0 mm; a=32—38; b=4.1—4.7; c=14—16; PO: 13—17. (Yugoslavia, Italy) ..... **amiciae** (COOMANS & LIMA)

3 Large species, 4—5 mm 4
— Smaller species, 2—3 mm 5

4 Tail filiform, as long as 12—20 anal diameters; spicula 80—90 μm long. — ♀: L=3.1—4.8 mm; a=40—50; b=5.0—5.7; c=4—5; V=60—64%; c'=12—20. ♂: L=3.3—4.6 mm; a=42—56; b=4.4—5.6; c=5.0—7.6; PO 13—14. (Romania) ..... **filicaudatus** (ALTHERR)
— Tail not so long, 7—8 anal diameters; spicula 140—150 μm long. — ♀: L=4.9 mm; a=47; b=5; c=8; V=64%; c'=7—8. ♂: L=4.4—4.7 mm; a=43—46; b=5.1—5.2; c=12; PO: 14—15. (India) ..... **sukuli** (BAQRI, DAS & AHMAD)

5 Advulval papillae and caudal spinneret lacking; tail strongly curved, hook-like. — ♀: L=2.0 mm; a=35; b=5.7; c=7.4; V=61%; c'=7. ♂: L=1.7—1.9 mm; a=36—40; b=4.5—5.4; c=12—13; PO: 9—12. (Australia) ..... **australicus** (WINISZEWSKA-SLIPINSKA)
— Advulval papillae and caudal spinneret present; tail not hook-like 6

6 Teeth located in anterior fourth of buccal capsule; this latter conspicuously longer than wide. — ♀: L=2.8 mm; a=33; b=4.7; c=15; V=72%; c'=3.4. ♂: L=2.1—2.6 mm; a=27—33; b=4.5—4.9; c=17—19; PO: 16—18. (Poland) ..... **istvani** (WINISZEWSKA-SLIPINSKA)

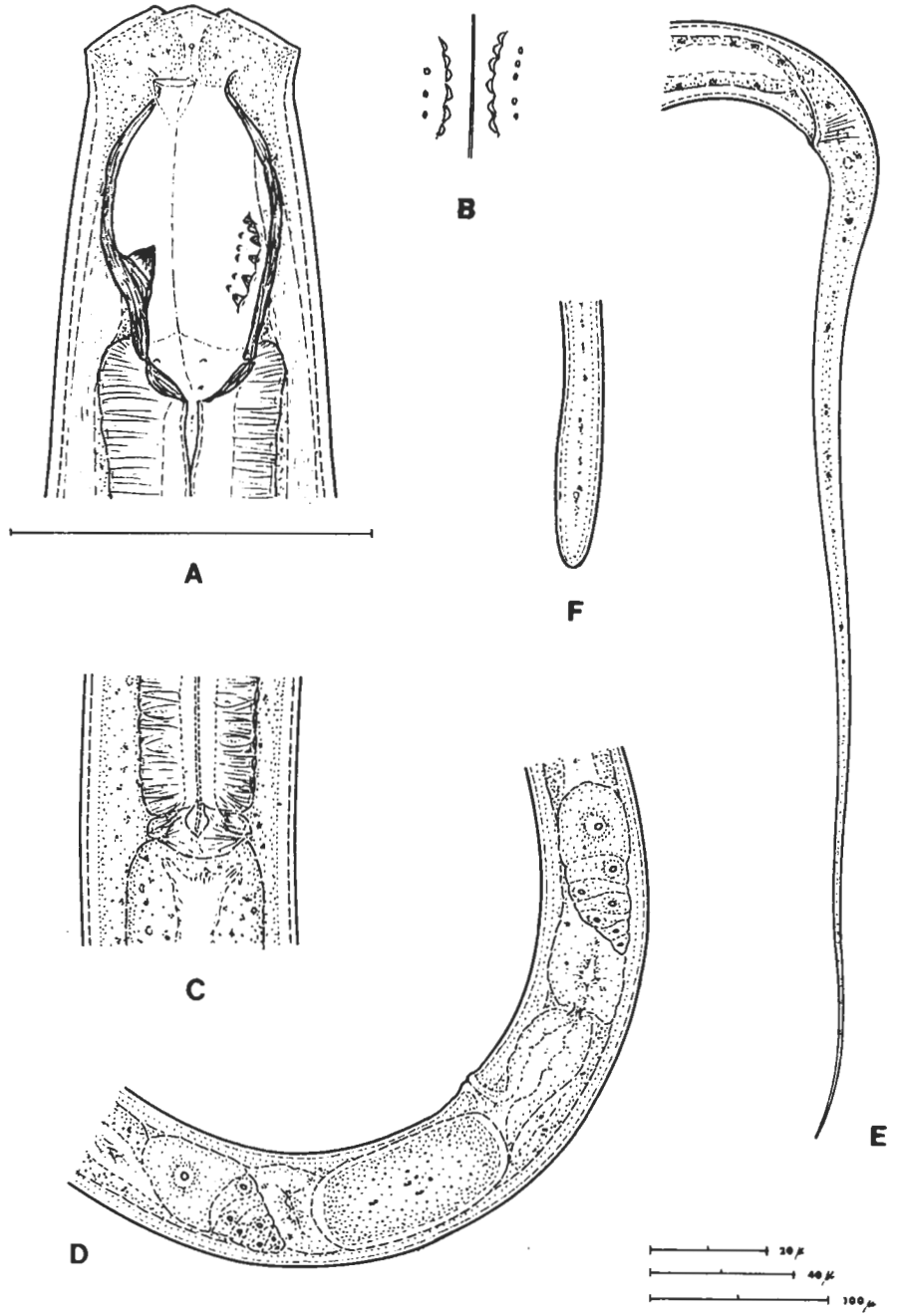

Fig. 6. *Parahadronchus egregius* sp. n. A: anterior end, and body width at posterior end of oesophagus; B: denticles on the left and right subventral walls; C: cardial region; D: female gonad; E: tail; F: tip of tail. (Bars: 20 μm=A, 40 μm=C, 100 μm=D, E)

— Teeth hinging on the anterior end of buccal capsule; this latter as wide as, or wider than long. — ♀: L=1.7—3.2 mm; a=20—42; b=3.7—5.2; c=8—17; V=59—72%; c'=3.5—6. ♂: L=2.5—3.2 mm; a=32—44; b=4.0—5.1; c=11—19; PO: 12—17. (Poland, Romania, Yugoslavia, Spain, Tadzhikistan, United States [California], New Zealand) ..... **ginglymodontus** (MULVEY)

Parahadronchus egregius sp. n.

(Fig. 6A—F)

♀: L=2.48 mm; a=42; b=4.5; c=4.2; V=54%; c'=18.

Body slender, 60 μm wide at the middle. Cuticle smooth, only 1.5—2μm thick. Head slightly set off from body, 36 μm wide, lips conoid. Body at posterior end of oesophagus 1.7 times as wide as head. Amphids caliciform, small, 1/6 the body width, located at level with beginning of buccal capsule.

Buccal cavity (the "capsule") 55×32 μm, 1.7 times as long as wide, or 1.5 times as long as labial diameter, about 1/10 the oesophageal length. Buccal walls comparatively thin, dorsal postparietale shorter but thicker than subventral ones. Dorsal tooth large, located in posterior half of buccal cavity with apex lying midway in the latter. Facing the dorsal tooth there are two denticulate ribs on each subventral wall. Denticles contiguous, sitting in common "gums". Subventral ribs slightly but conspicuously arched with 6 denticles each, sublateral ribs straight, shorter than the former and provided with 5 denticles (on the right side) or 3 denticles (on the left side). Denticles located between 40 and 70% of buccal length.

Oesophagus 550 μm long. Distance between oesophagus and vulva 1.4 times as long as oesophagus. Oesophago-intestinal junction clearly tuberculate. Nerve ring at 28% of oesophageal length. Intestine thick-walled with hexagonal cells. In its lumen nematode remains and several oligochete setae could be observed. Rectum about as long as anal body width.

Female didelphic, each gonad 3.2—3.6 times as long as body diameter. Vagina 22 μm long, vulva transverse with slightly sclerotized lips. No sphincter between oviduct and uterus. One egg: 117×54 μm; twice as long as corresponding body width.

Tail long, 585 μm, 18 anal diameters, 23% of entire length of body. Tip of tail finely rounded. Caudal glands reduced, spinneret lacking.

Male unknown.

The new species seems to be related to the representatives of the genus *Parahadronchus* MULVEY, 1978, but it differs from the known five species in having two denticulate ribs — not one — on both subventral walls. On the other hand, it shows some resemblance to the species *Hadronchulus denticulatus* (DHANACHAND, RENUBALA & MOHILAL, 1991) where the denticles are twisted, not arranged in straight lines. But in the latter species the denticles are much smaller and more scattered in arrangement, and the shape of the buccal cavity and the dorsal tooth is other.

Holotype: ♀ on the slide No. 12343-As. Paratypes: 2 juveniles.

Type locality: Vietnam, Santa Maria, 20 km from Bao Loc, soil from a secondary forest, October, 1988.

It is remarkable that all species of *Parahadronchus* have been discovered in Asia.

Anatonchus tridentatus (DE MAN, 1876) COBB, 1916

(Fig. 7 A—E)

♀: L=2.8—3.0 mm; a=27—32; b=4.5—4.6; c=7.8—8.4; V=60—63%; c'=7—7.5.

Body 94—104 μm wide at mid region. Cuticle 4—4.5 μm thick, smooth but on the posterior part of tail finely striated. Head slightly set off, 52—55 μm wide, lips conoid. Body at posterior end of oesophagus 1.5—1.6 times as wide as head. Amphids levelling with anterior end of buccal cavity.

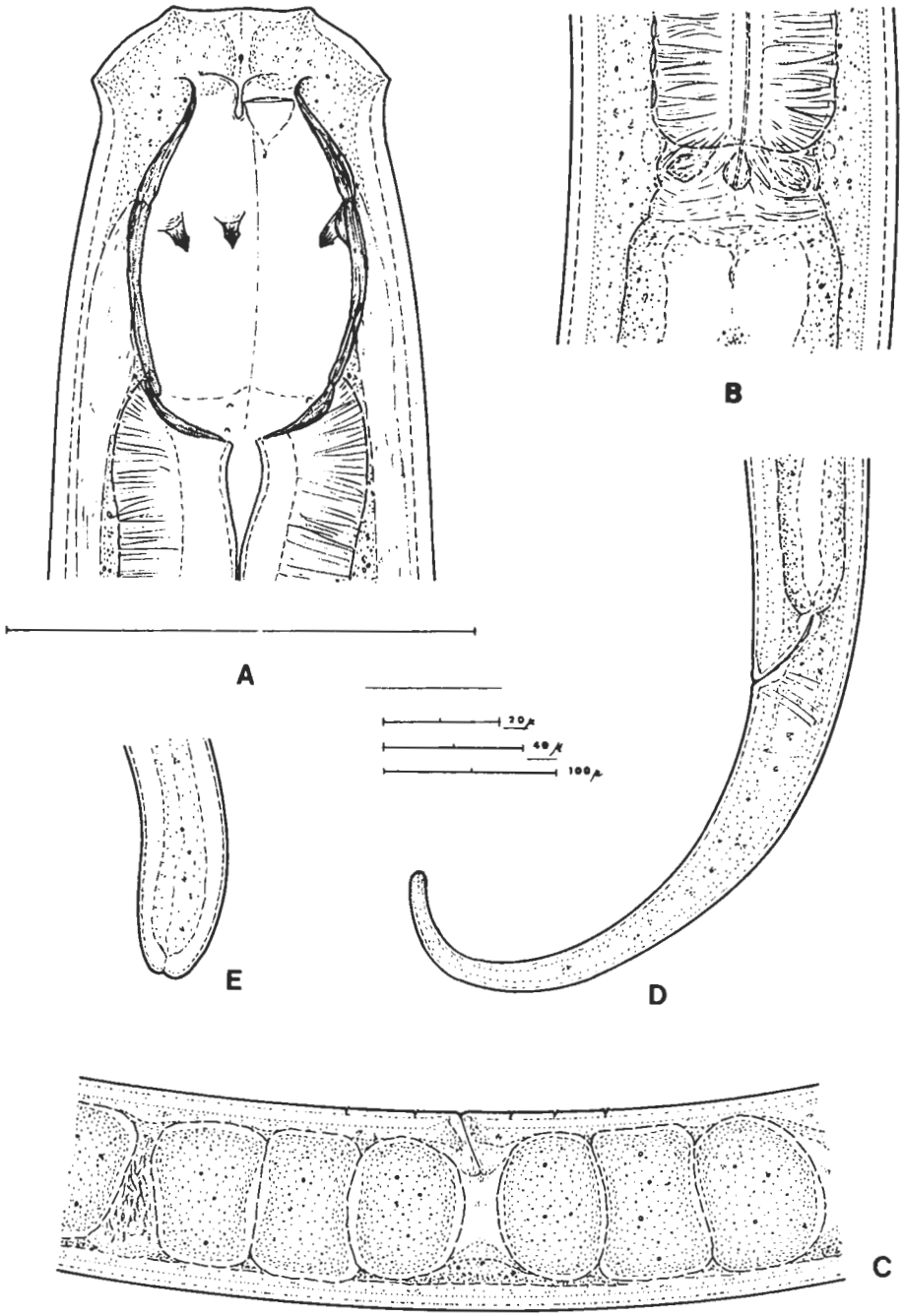

Fig. 7. *Anatonchus tridentatus* (DE MAN, 1876) COBB, 1916. A: anterior end, and body width at posterior end of oesophagus; B: cardial region; C: vulval region; D: female tail; E: tip of tail. (Bars: 20 µm=A, 40 µm=B, 100 µm=C, D)

Buccal cavity comparatively thin-walled, roomy, 59—63×38—40 μm, about 1.5 times as long as wide. Proparietale long, almost 2/3 the length of interparietale. Teeth hinging on the anterior ends of interparietalia, i.e. located in the first half of buccal cavity, their apices in 42—44% of stoma. Teeth 4.5—5 μm long, sharply pointed.

Oesophagus 620—650 μm long (measured from the head). Distance between posterior end of oesophagus and vulva 1.7—1.8 times as long as oesophagus. Intestine with remains of nematodes and oligochetes.

Vulva transverse, with slightly sclerotized lips. Vagina somewhat oblique. Gonads paired, each 3.5—3.6 times as long as mid-body diameter. Eggs more or less spheroid, often wider than long, 55—82×76—84 μm, partly pressed against each other. Two females contained six, three ones seven eggs each.

Distance between vulva and anus twice as long as tail. The latter 350—360 μm, 12—12.5% of body length, 7—7.5 times anal body diameter, ventrally bent, finely annulated on its posterior part, 4 μm thick somewhat before its tip. Caudal glands small, spinneret present, practically terminal.

After DE MAN, the males are provided with 15—17 supplements.

There are several records about *Anatonchus tridentatus* in the literature; it was observed in 24 countries so far. Whether all these data refer to our species — it is not sure at all. The original animals of DE MAN were large (2.7—3.6 mm) and had comparatively long tails (♀: c=8—9; ♂: c=10—12), whereas in the literature we can find data of essentially shorter animals, too, or those of specimens provided with much shorter tails (c'=4—5). The above described females fit into the measurements given by DE MAN very vell. Also the shape and number of the eggs correspond completely to the data given by LOOF (1961) when he re-examined the type material of DE MAN.

Characteristic is for *Anatonchus tridentatus* that the proparietalia are comparatively long, the teeth lie before the middle of the buccal cavity, the vulva is transverse, the uteri contain eggs in greater number, the tail is finely annulated and the spinneret opens terminally.

Locality of the population described: Hungary, near Aggtelek, fallen leaves and wet detritus at the entrance of the Baradla Cave, September, 1980.

Anatonchus sympathicus sp. n.

(Fig. 8 A—H and 9 A—F)

Hungarian (type-) population: ♀: L=2.0—2.1 mm; a=28—30; b=4.2—4.4; c=8.7—9.1; V=63%; c'=5.4—5.6. ♂: L=1.9 mm; a=30; b=4.1; c=10; c'=4.5.

German population: ♀: L=2.3 mm; a=33; b=4.5; c=10; V=62%; c'=5.2. ♂: L=2.4 mm; a=37; b=4.5; c=12; c'=4.

Body 68—71 μm (♀) or 66—68 μm (♂) wide at mid-region. Cuticle 3—3.5 μm thick, smooth, in posterior half of tail finely annulated. Head 44—45 μm wide, slightly set off from body, lips conoid. Body at proximal end of oesophagus 1.5—1.6 times as wide as head. Amphids at level of anterior end of buccal cavity, 1/6 the corresponding body width.

Buccal cavity 48—51×33—34 (♀) or 41—48×27—30 (♂) μm, 1.4—1.5 times as long as wide, comparatively thick-walled. Prolaterale (on the dorsal side) 25—28% of entire length of buccal capsule, or nearly half as long as interparietale. Teeth at the anterior ends of interparietalia, equal in shape and location; in one male the left subventral tooth was somewhat more back (one tooth-length) than the right one. Apices of teeth located in 41—47% (♀) or in 48—56% (♂) of buccal length.

Oesophagus 450—540 μm long (measured from head end); distance between oesophago-intestinal tubercles and vulva 1.7—1.8 times as long as oesophagus. Tuber-

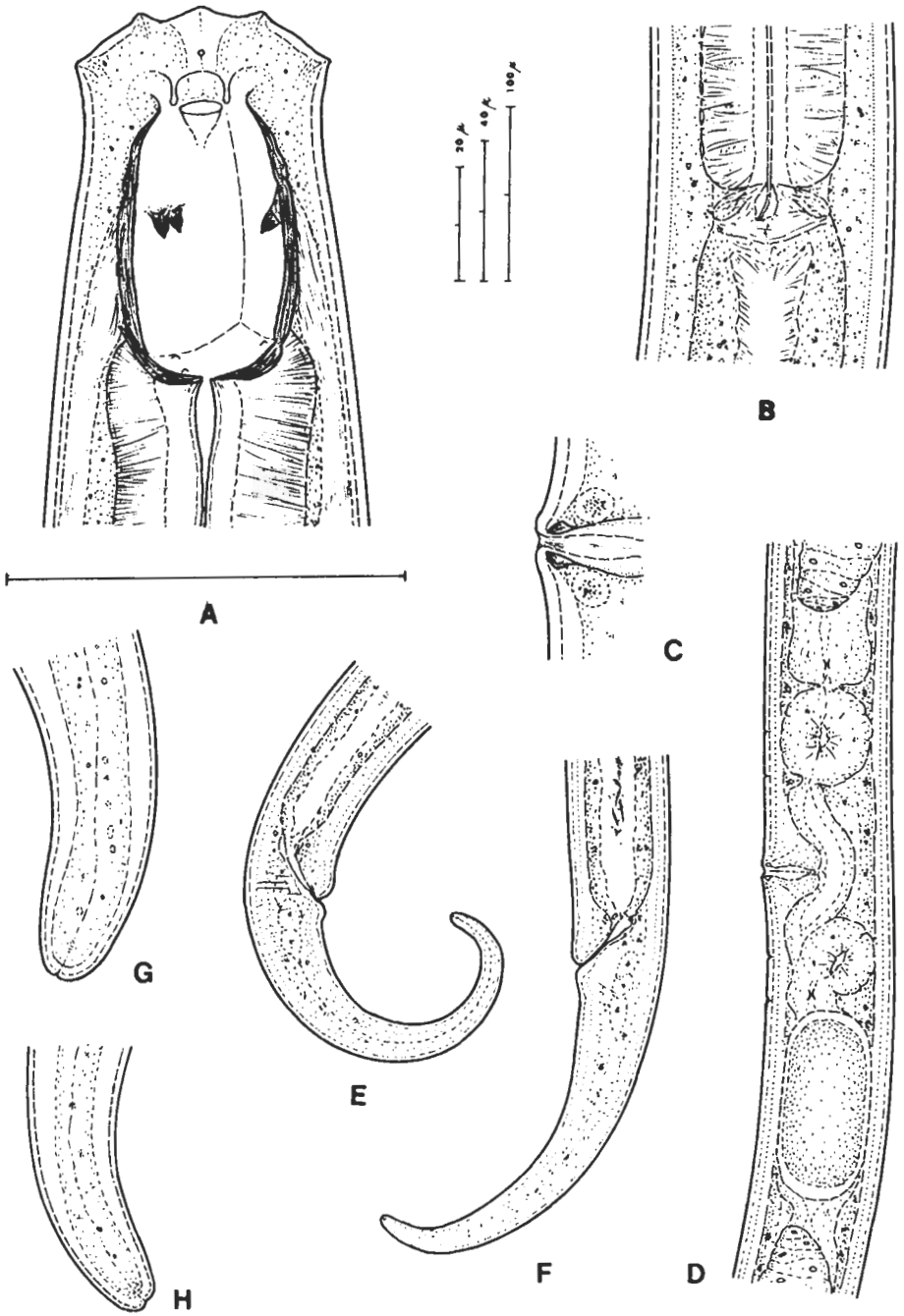

Fig. 8. *Anatonchus sympathicus* sp. n. Female. A: anterior end, and body width at posterior end of oesophagus; B: cardial region; C: vulva; D: vulval region; E—F: tails; G—H: tips of tails. (Bars: 20 μm=A, 40 μm=B, 100 μm=D, E, F)

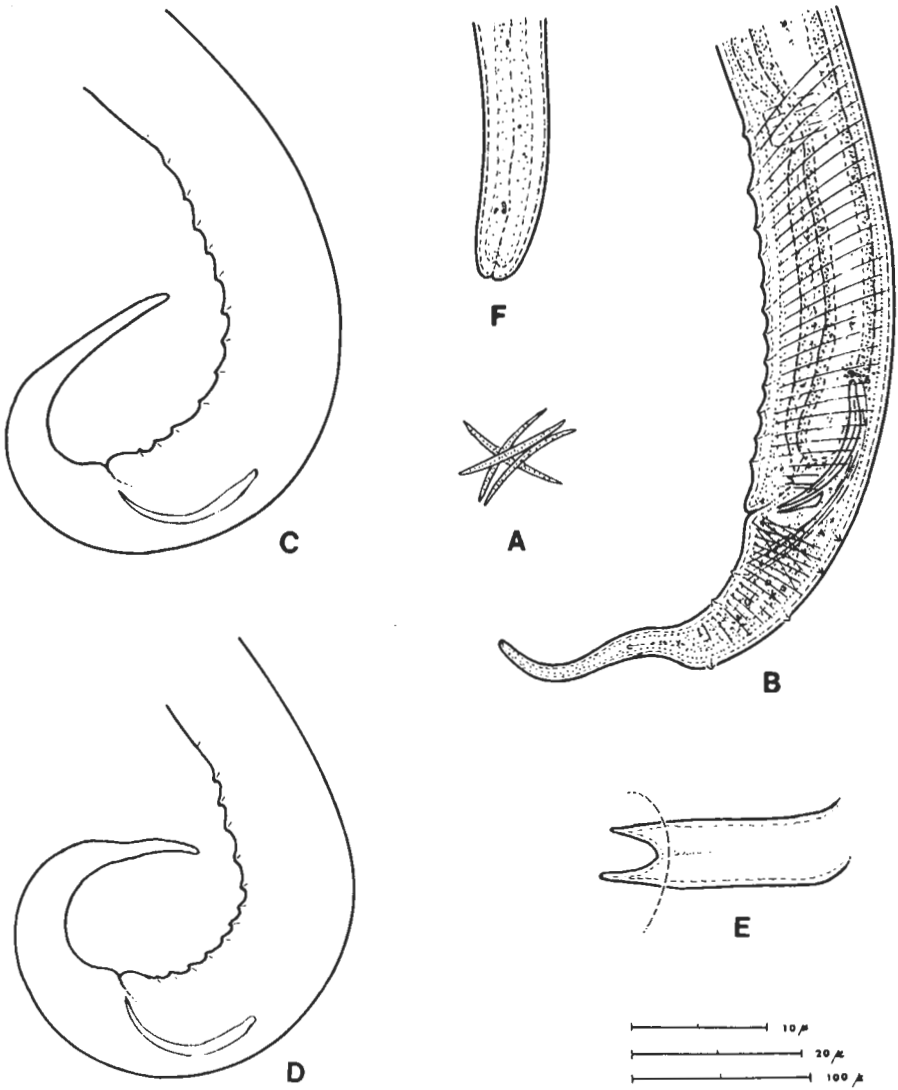

Fig. 9. *Anatonchus sympathicus* sp. n. Male. A: spermatozoa; B: posterior end; C—D: contours of posterior ends of two further males; E: lateral accessory piece; F: tip of tail. (Bars: 10 µm=E, 20 µm=F, 100 µm= B, C, D)

cles well developed. Intestine covered by large, mostly hexangular cells; its lumen contained several setae of Oligochaeta.

Vulva longitudinal, with sclerotized lips. Vagina 27—31 µm long. Gonads paired, each 4.6—5 times as long as mid-body diameter. One egg: 112×46 µm, oblong, 2.5 times as long as wide, or 1.6 times as long as corresponding body width.

Vulva—anus distance 2.2—2.8 times as long as tail. Tail 225—250 µm, 10—11% of body length, 5.2—5.6 times as long as anal body diameter, ventrally arcuate, very

finely annulated, 8—10 μm thick somewhat before its rounded tip. Caudal glands small, spinneret present, terminal.

♂: Similar to female but buccal cavity somewhat smaller, teeth more back in location and tail a little shorter. Spicula 80—98 μm long, slender, slightly bent. Forked accessory pieces present. Spermatozoa very small, fusiform. Copulatory supplements 11—13+1—2 in number. Tail 185—200 μm, 4—4.5 times anal diameter, 8—10% of entire length of body, provided with 7 pairs of papillae.

In the shape of the buccal cavity and the medium-sized, on its tip finely rounded tail *Anatonchus sympathicus* sp. n. is closely allied to *A. tridentatus* (DE MAN, 1876) and *A. hortensis* ANDRÁSSY, 1973. It differs from *tridentatus* by the shorter body, the smaller buccal cavity, the longitudinal vulva, the less number and other shape of the eggs and the shorter tail, from *hortensis* by the longer body, the longitudinal vulva, the longer and slenderer female tail, the other shaped male tail and the larger spicula.

Holotype: ♀ on the slide No. 12200/H. Paratypes: 2 ♀, 1 ♂ and 2 juveniles. Other population: 1 ♀, 2 ♂.

Type locality: Hungary, Bátorliget, wet soil around the roots of an ash-tree, September, 1988.

Other locality: Germany, Köln, wet soil from a garden, with grass roots. July, 1991.

Appendix

At first I intended to order also the genus *Tectonchus* TSALOLIKHIN, 1974 (with four species) to the family Anatonchidae since the original descriptions reported on tuberculate junctions at the proximal end of the oesophagus.

Meanwhile I received type/paratype specimens from DR. TSALOLIKHIN for comparison. All they show that *Tectonchus* does possess a simple — non-tuberculate — structure in the oesophago-intestinal junction, consequently it may not be ordered to Anatonchidae. The genus is a distinct member of the family Mononchidae.

I will discuss *Tectonchus* and its species in a separate paper.

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