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A TAXONOMIC REVIEW OF THE SUBORDER RHABDITINA (NEMATODA : SECERNENTIA)

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En septembre 1980, le Professeur István Andrássy, de l'Université de Budapest (Hongrie) nous adressait, en vue d'une publication dans la Revue de Nématologie, *une mise au point systématique sur le sous-ordre des Rhabditina. Le volume de ce manuscrit dépassait malheureusement celui des articles dont la publication peut être envisagée dans la* Revue de Nématologie. *Fragmenter le texte en plusieurs articles successifs risquait d'autre part de nuire à la compréhension d'ensemble de ce groupe difficile. Considérant le grand intérêt présenté par cette mise au point, le Service des Editions de l'ORSTOM a accepté de la publier sous la forme du présent ouvrage après que l'auteur eut complété et mis à jour son texte grâce aux références les plus récentes.*

Les Rhabditina, ou Rhabditides, constituent un des groupes zoologiques les plus abondants de la faune du sol, et à ce titre doivent retenir l'intérêt de tout chercheur étudiant la biomasse souterraine, et la faune nématologique totale des sols. D'autre part de récents travaux ont montré le rôle important de ces nématodes, généralement bactériophages, dans le transport et la dissémination des bactéries du sol; certaines recherches récentes visent même à en faire des vecteurs de bactéries utiles, telles les Rhizobium *des légumineuses par exemple; en ces derniers cas, une spécificité très nette s'est révélée entre la bactérie et le nématode, conduisant à la nécessité d'une détermination précise de ce dernier.*

Or le groupe des Rhabditides était certainement parmi les nématodes du sol, celui dont la systématique restait la plus difficile à appréhender, par l'ancienneté de beaucoup de descriptions, la dissémination des références, l'absence de travaux de synthèse, celle de clés de détermination etc.....

L'ouvrage du Professeur Andrássy vient donc à point pour compléter une lacune importante.

SUMMARY

This book deals with the Rhabditina, a large and important suborder of free-living nematodes, with a view to facilitating the determination of its members. After a historical review, morphology and taxonomy of the Rhabditina are outlined. Their systematics is discussed in detail and diagnoses of three superfamilies, seven families, fourteen subfamilies, 47 genera and 232 valid species are given. A key is given for each taxonomical category until valid species of Rhabditina described hitherto are reached. Moreover, measurements, geographical distributions, habitats and complete synonymics of the species are also given.

In the course of these works, five new genera are proposed (*Dolichorhabditis*, *Rhomborhabditis*, *Discoditis*, *Rhitis* and *Rhodonema*) as well as 82 new combinations and an attempt is made to facilitate to all nematologists the approach to this difficult group.

RÉSUMÉ

Le présent ouvrage traite du sous-ordre des Rhabditina, un groupe étendu de nématodes libres, dans le dessein de faciliter la détermination des espèces qu'il contient. Après une revue de l'historique du groupe, une vue générale est donnée de la morphologie et de la taxonomie des Rhabditina. Leur systématique est discutée en détail et des diagnoses sont données pour trois superfamilles, sept familles, quatorze sous-familles, 47 genres et 232 espèces valides. Une clé est donnée à chaque niveau taxonomique pour aboutir finalement à toutes les espèces de Rhabditina décrites à ce jour. De plus, pour chaque espèce, des précisions sont données sur ses mensurations, sa distribution géographique, son habitat et sa synonymie complète.

Au cours de ces études, cinq nouveaux genres sont proposés (*Dolichorhabditis*, *Rhomborhabditis*, *Discoditis*, *Rhitis* et *Rhodonema*) ainsi que 82 nouvelles combinaisons et l'auteur tente de faciliter à tous les nématologistes l'approche de ce groupe difficile.

CONTENTS

INTRODUCTION

No other group of free-living nematodes causes so many problems or difficulties, even for specialists, as the family Rhabditidae, or the whole order of the Rhabditida. Their representatives can be found in every terrestrial habitat and are especially abundant in biotopes which abound in decaying organic matter. The recognition of species is very difficult and the number of nematologists who venture to identify these animals is very small. While the quantity of species described is considerable, hardly any papers deal with the taxonomy of the Rhabditida as a whole. Furthermore, a modern handbook or a system of keys with which anybody fundamentally at home in nematology could identify members of this ominous group is absent.

The Editor of the " *Revue de Nématologie* " suggested to me that I attempt, within the scope of an essay, to bring the large group of the Rhabditina nearer to all of us working on nematodes, to present an up-to-date and thorough classification of these nematodes and, where possible, to compile keys to species and supraspecific taxa. Well, I am trying herein to fulfil this honouring but difficult request. However, what follows is merely a critical summing up of the present situation. A thorough classification and system of keys to this group is impossible since descriptions and knowledge of the species of the Rhabditina are too often inadequate. Nevertheless, I hope this work elucidates somewhat this difficult group and makes identification in it easier.

HISTORICAL REVIEW

The genus *Rhabditis* was established by Dujardin (1845) but diagnosed rather scantily, especially by modern standards. Dujardin listed four species, the type species *Rhabditis terricola* was not however clearly defined until more than one hundred years later (Dougherty, 1955).

Bastian (1865) described four new species and suggested that Dujardin had probably included more than one species in his definition of *R. terricola*.

Bütschli (1873) was the first to analize the genus *Rhabditis* in detail. He gave good descriptions and drawings of twelve species, seven of which were new to science.

Schneider (1866) in his monograph rejected the name *Rhabditis*, and divided Dujardin's genus into two genera: *Leptodera* and *Pelodera*.He redefined a number of old species, and described twelve species new to science.

De Man (1876, 1880, 1884) described some more new species and recognized 37 species in the genus *Rhabditis*. Also in several other papers he made further contributions to knowledge of the genus.

Örley (1880) was the first to try to fit the genus *Rhabditis* into the system of Nematoda, and proposed a family, Rhabditidae, for the genera *Anguillula, Cephalobus, Oxyuris, Rhabditis and Teratocephalus*. He placed this family in the higher category " Rhabditi formae " (sic!) which formed a connecting link between free-living and animal-parasitic nematodes. Örley compiled a synopsis of 42

Rhabditis species described by Dujardin, Linstow, Schneider, Rudolf, Claus, Bastian, Bütschli, De Man and Örley, and was the first to provide a key to the species. In his monograph (1885) he published several new data on the biology, taxonomy and pathology of the genus *Rhabditis* and listed 36 species.

Maupas (1900, 1915, 1916, 1919) followed Örley in publishing valuable data on biology and reproduction of the Rhabditidae and added sixteen further new species to the group.

Micoletzky (1922) described seven new species. His system was, however, rather artificial in so far as he united all nematodes having a prismatic, unarmed (toothless) stoma under the family name Rhabditidae, viz. the subfamilies Cylindrolaiminae, Plectinae, Rhabditinae and Bunoneminae (sic). The subfamily Rhabditinae was itself heterogeneous, and composed of the following genera: *Rhabditis*, *Diploscapter*, *Cephalobus*, *Chambersiella*, *Teratocephalus* and *Rhabdolaimus*. Micoletzky listed 55 species in the genus *Rhabditis*.

Baylis and Daubney (1926) divided the family Rhabditidae into three subfamilies (Rhabditinae, Cylindrolaiminae, Bunoneminae) containing 64 genera in all (53 free-living and eleven animal-parasitic genera).

Reiter's paper of 1928 similarly ranks as a classic on the subject: it contains detailed descriptions and good drawings of sixteen species and varieties.

Fuchs, in a considerable series of papers (e.g. 1915, 1929, 1930, 1931, 1933, 1937) studied the nematode fauna of the mines and galleries of bark beetles - a practically unexamined biotope up to that time - and described 31 species and forms.

Schneider (1939) placed the rhabditids in the subfamily Rhabditinae of family Anguillulidae, and distinguished four genera (*Cheilobus*, *Diploscapter*, *Rhabditis*, *Poikilolaimus*).

T.Goodey (1951) distinguished three subfamilies - Rhabditinae, Diploscapterinae, Bunonematinae - and nine genera within the family Rhabditidae. His son J.B. Goodey (1963) raised the bunonematids to family rank and added two further subfamilies - Protorhabditinae,Alloionematinae - to the Rhabditidae. The younger Goodey already distinguished sixteen genera in the latter family.

The scientists of the University of Erlangen added greatly to knowledge of Rhabditidae. During studies of saprobiotic habitats and breeding of rhabditids, they described 60 new species in all, and published some new data on ecology and biology of the Rhabditidae. They were Völk (1950), Sachs (1949 , 1950), Osche (1952, 1954), Hirschmann (1952), Körner (1954) and Rühm (1956). Osche deserves special mention as the one who laid the foundation of the modern system of the Rhabditidae. In his phylogenetic grouping, he divided the old genus *Rhabditis* into the following subgenera: *Rhabditis*, *Choriorhabditis*, *Pelorhabditis*, *Caenorhabditis*, *Mesorhabditis*, *Teratorhabditis* and *Protorhabditis*. At the same time he synonymized ten other genera with *Rhabditis*. As a basis for his systematization, Osche underlined the significance of the fine structure of the stoma. He listed altogether 163 species as valid and seven species as *inquirendae*.It is worth mention that most of Osche's subgenera have subsequently been raised to generic rank.

Continuing Osche's work, Dougherty (1953, 1955) developed the system of the Rhabditidae and made order in their nomenclature. He distinguished the following subfamilies: Poikilolaiminae, Protorhabditinae, Diploscapterinae, Rhabditinae and Bunonematinae. Within the subfamily Rhabditinae he recognized nine genera, viz. *Pelodera* (with four subgenera), *Rhabditis* (with five subgenera), *Rhabditoides*, *Caenorhabditis*, *Mesorhabditis*, *Teratorhabditis*, *Protorhabditis*, *Parasitorhabditis*, *Brevibucca*, and listed 140 species.

Meyl (1961) dealt with eighteen genera of the family and enumerated 121 species from Central Europe. In the same year, Thorne (1961) divided the Rhabditidae into five subfamilies (Rhabditinae, Protorhabditinae, Poikilolaiminae, Diploscapterinae, Bunonematinae) and sixteen genera.

Baker in his check list (1962) recognized five subfamilies - Rhabditinae, Poikilolaiminae, Protorhabditinae, Diploscapterinae, Bunonematinae - and eighteen genera in the family Rhabditidae. The subfamily Rhabditinae included the greatest number of species, viz. 158 valid taxa.

Paramonov (1964) placed two free-living families (Bunonematidae, Rhabditidae) and five zooparasitic ones (Rhabdiasidae, Neoaplectanidae, Carabonematidae, Angiostomatidae, Strongyloididae) in the superfamily Rhabditoidea. According to his system, the family Bunonematidae included five genera and 27 species, the family Rhabditidae twelve genera and 203 species.

Undoudtedly, apart from Osche, Sudhaus has made the greatest contribution to knowledge of the morphology, phylogeny, ecology, biology and taxonomy of the Rhabditidae. In his works (1974 *a*, 1974 *b*, 1974c, 1976 *a*, 1976*b*, 1977, 1978, 1980) and especially in his excellent monograph (1976*a*),he summarized and revalued all that had been published about these nematodes to the present time. Besides, he enlarged our knowledge with many new observations and theories.During his studies twenty new species were described, and many of the previously known species of Rhabditidae were cultured and examined.

The fact that Sudhaus was a disciple of Osche can be recognized by the former's conservatism in systematization. There is however one point in which I cannot agree with him, namely in the interpretation of modern systematization. Sudhaus is a follower of the school that prefers large generic categories and a reduction of genera. Working up the subfamily Rhabditinae, the valid species - 185 in number - were grouped in only four (!) genera, viz. *Parasitorhabditis*

(27 species), *Protorhabditis* (twelve species), *Prodontorhabditis* (three species) and *Rhabditis* (143 species). On the other hand, no less than fifteen genera were synonymized by him with the genus *Rhabditis*, i.e. all except those genera named above. In addition, fifteen other generic taxa were included in the genus *Rhabditis* as subgenera. According to Sudhaus, the genus *Rhabditis* can be distinguished essentially by the glottoid apparatus (" durch eine charakteristische Übergangstelle zwischen Mundrohr und Pharynx") from the other three genera of Rhabditinae. Further characteristics are as follows (Sudhaus, 1976,p. 53) : " Kleine bis fast 4 mm lange Arten, Lippen geschlossen oder vom Vorderende abgesetzt und offen, Pharynxmanschette und Mittelbulbus fehlend oder vorhanden, Vulva hinter-oder mittelständig, Ovarien entsprechend pro-oder amphidelphisch, Schwanz des Weibchens konisch oder kuppelförmig, Bursa des Männchens peloder oder leptoder, offen oder geschlossen, in der Regel mit 10 oder 9 Paar Papillen, davon 2 oder 3 präkloakal, Spicula getrennt oder distal verwachsen. " In other words :

Body small to almost 4 mm long,
Lips either closed or open,
Oesophageal collar either present or absent,
Median bulb either present or absent,
Vulva either postmedian or median,
Ovaries either monodelphic or amphidelphic,
Female tail either conical or cupola shaped,
Bursa either peloderan or leptoderan,
Bursa margin either open or closed,
Spicules either paired or fused distally.

Consequently, in this way the genus *Rhabditis* would be diagnosed mainly by a number of contradictory alternatives. It is clearly no longer acceptable to use such a contradictory diagnosis in characterizing one genus.

To conclude this short history of the rhabditid

nematodes, some of my own papers may be mentioned. Besides descriptions of new species, I proposed some new families and subfamilies within the Rhabditina, viz. Stomachorhabditinae(Andrássy, 1970), Craspedonematinae (1971), Rhabditonematidae (1974), and Mesorhabditinae, Peloderinae, Ablechroiulinae (1976). In my book (Andrássy, 1976) can be found the most recent system of the Rhabditina proposed as follows :

Suborder : Rhabditina

Superfamily: Alloionematoidea

Family : Alloionematidae (Subfamily: Alloionematinae)

Superfamily: Rhabditoidea

Family : Rhabditonematidae (Subfamily: Rhabditonematinae)

Family : Rhabditidae (Subfamilies : Protorhabditinae, Mesorhabditinae, Peloderinae, Rhabditinae, Ablechroiulinae, Stomachorhabditinae, Diploscapterinae)

Family : Odontorhabditidae (Subfamily : Odontorhabditinae)

Superfamily : Bunonematoidea

Family : Pterygorhabditidae (Subfamily: Pterygorhabditinae)

Family : Bunonematidae (Subfamilies: Bunonematinae, Craspedonematinae)

In the present paper, I shall try to develop the above system.

POSITION OF THE RHABDITINA IN THE SYSTEM OF NEMATODES

According to my recent system (Andrássy, 1976), the group of the Rhabditina belongs to the Secernentia, the second subclass of the Nematoda. This subclass is composed by two orders, viz. Rhabditida and Tylenchida, and our group, the Rhabditina is a suborder of the former. The order Rhabditida Chitwood, 1933 can be characterized in brief as follows :

Definition of the Rhabditida. An order of the subclass Secernentia. Lips three or six, rarely four. Amphids mostly pore-like, on the lateral lips, rarely circular or elliptical and further back. Stoma generally narrow, longer than wide, composed by five basic elements or rings, viz. cheilo-, pro,- meso-, meta- and telostom (Fig.1); never forming a protrudable stylet. Metastom with fine setae or denticles, or with well developed teeth. Valvular bulb of oesophagus median or terminal in position. Intestinal lumen wide. Three rectal glands generally present. Excretory system consisting of a double collecting canal and a common leading duct. Female gonads amphi- or monodelphic, in the latter case prodelphic. Males with paired genital papillae. Bursa, if present, always bearing papillae. Spicules occasionally fused distally. Phasmids distinct.

The order Rhabditida can be divided into four suborders, viz. Teratocephalina Andrássy, 1974; Cephalobina

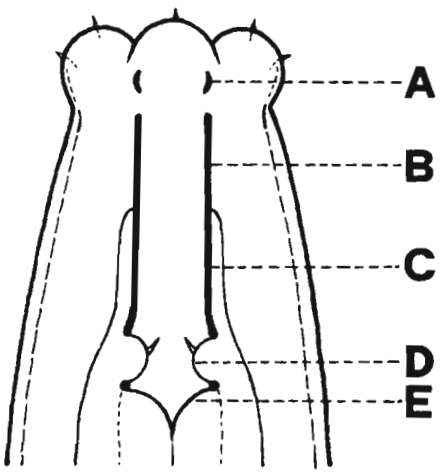

Fig.1. Anterior end of a rhabitid nematode showing the general structure of stoma (mouth cavity). A: cheilostom, B: prostom, C: mesostom (B+C : promesostom), D: metastom, E: telostom.

Andrássy, 1974; Rhabditina Chitwood, 1933; and Diplogastrina Micoletzky, 1922.*

Key to the suborders of the Rhabditida

1 Stoma well developed, either long, tubular, or wide, spacious, metastom with small denticles or large teeth; oesophagus in almost every case with a median bulb or swelling; female gonads generally didelphic; bursa present or secondarily reduced.....2

\- Stoma small, mostly quite narrow, consisting of small dots in optical view; oesophagus without a median bulb or swelling; female gonads generally monodelphic; bursa lacking primarily.....3

2 Oesophagus with two bulbs: with a muscular median bulb and a glandular terminal one**; valvular apparatus in the median bulb; stoma often wide, teeth conspicuous, usually large; bursa reduced in most cases.....Diplogastrina

\- Oesophagus with one bulb: only a terminal bulb present; valvular apparatus in the terminal bulb; stoma usually tubular, denticles small, often minucious; bursa well developed, only occasionally reduced.....Rhabditina

3 Head margin strongly cuticularized and notched, or head bearing six bristles; female gonads amphi- or monodelphic; amphids behind the labial region, mostly well discernible..Teratocephalina

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*I cannot agree with Siddiqi's most recent appreciation (1980) regarding both Cephalobina and Diplogastrina as separate orders. And on the other hand, I do not feel to be felicitous to increase excessively the number of high categories in the system of nematodes.

**The genus *Odontopharynx* has no median bulb but its oesophagus does consist of two parts : an anterior muscular part and a posterior non-muscular one.

- Head margin not cuticularized and only rarely notched, bristles never present; female gonads always monodelphic; amphids on the labial region (only exceptionally behind it), hardly discernible..... Cephalobina

SUBORDER RHABDITINA

Rhabditida. Cuticle usually striated. Head margin smooth, exceptionally notched, lips three or six, rarely four. Labial papillae very small or setiform. Amphids pore-like, on the lateral lips, discernible in general from oral view only, rarely enlarged, circular and shifted behind the labial region. Stoma prismatic, in almost every case longer than wide (Fig.1). Cheilostom generally not cuticularized; pro- and mesostom usually fused and forming the buccal tube (=promesostom).Metastom with three swellings (glottoid apparatus) each bearing two, three or five small teeth or tubercles; telostom short, insignificant. Oesophagus with three distinct sections: corpus, isthmus and bulb; corpus cylindrical or somewhat swollen proximally but never forming a true, valvular bulb. Terminal bulb muscular, with distinct valve plates. Posterior part of stoma (mesostom) often surrounded by a thin oesophageal collar. Excretory pore usually visible, at level with the posterior part of oesophagus. Female gonads mostly two, rarely one, prodelphic, vulva median or posterior. Ovaries reflexed. Spicules separate or fused distally (Fig.3); gubernaculum present. Bursa present, usually well developed, occasionally more or less reduced; male tail either completely surrounded by the bursa (peloderan, Fig.4) or projected beyong it (leptoderan; Fig.5). Bursal edges open or closed ante-

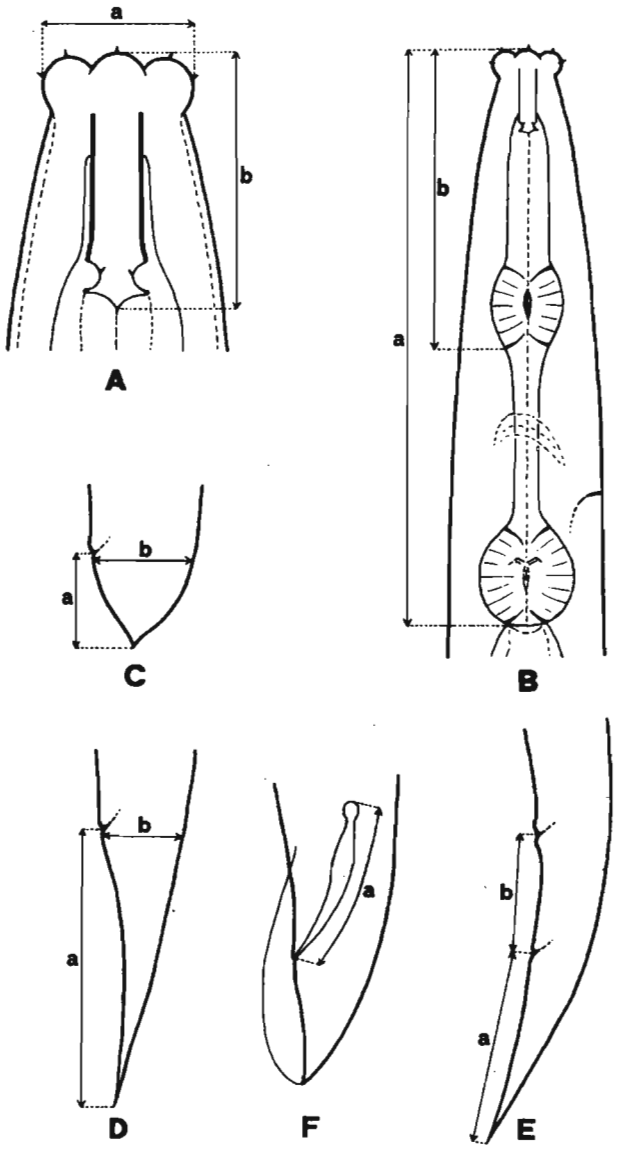

Fig.2. How to take some of measurements on rhabditid nematodes? A: head region (a: width of head or labial region, b: total length of stoma); B: oesophageal region (a: length of oesophagus, b: length of anterior part of oesophagus);C-D: female tails (a: length of tail, b: diameter of anal region); E: female posterior body (a: length of tail, b: distance between vulva and anus); F: male posterior end (a: length of spiculum).

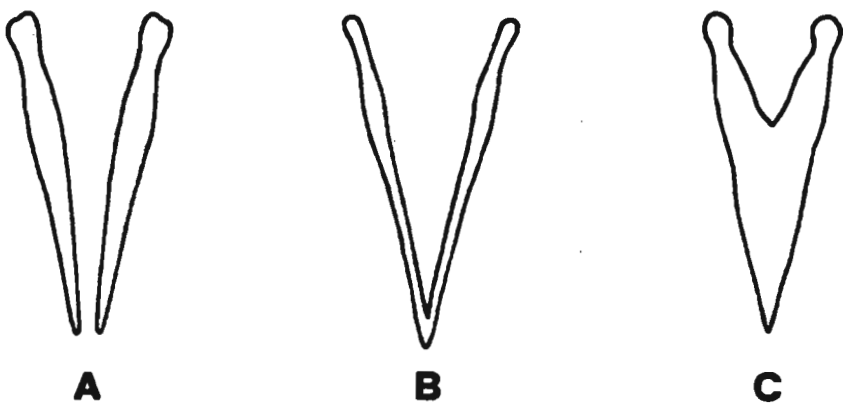

Fig.3. Spicules in medial view. A: free or separate spicules; B–C: distally fused spicules (B: spicules fused on their tip, C: spicules fused to about 2/3 of their length).

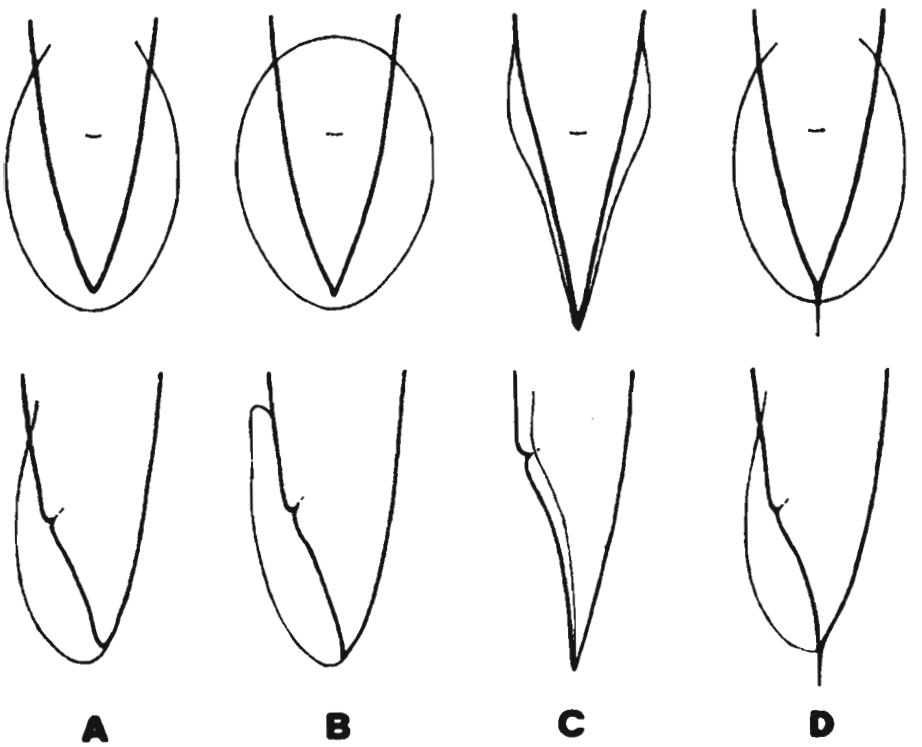

Fig.4. Some types of peloderan bursae (above in medial, below in lateral view). A: bursa proximally open; B: bursa proximally closed; C: bursa reduced; D: bursa pseudopeloderan (leaving a short and thin tail filament free).

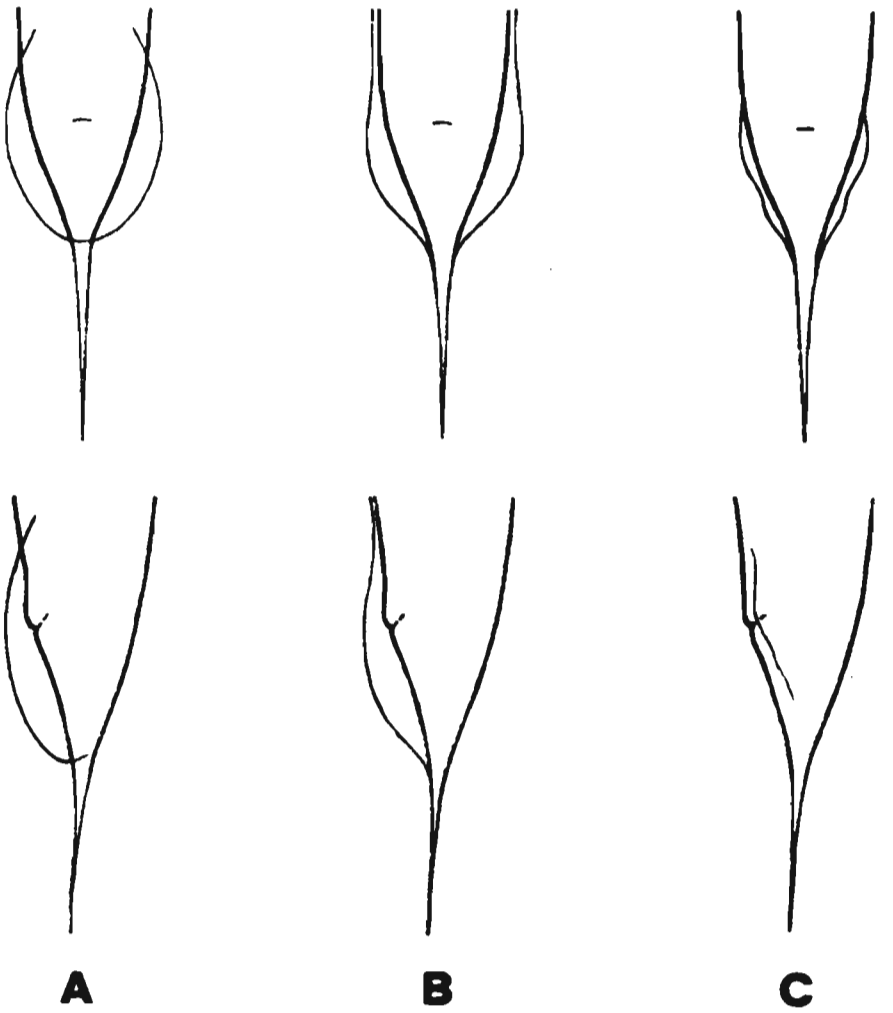

Fig.5. Some types of leptoderan bursae (above in medial, below in lateral view). A: bursa normally developed; b: bursa proximally with radial margin; C: bursa reduced (rudimentary).

riorly. Bursa with nine or ten pairs of rod-like papillae. Tails of both sexes similar, or tail of females longer than that of males in the same species. Phasmids always distinct.

Saprophagous animals, feeding on bacteria. Oviparous, ovoviviparous or viviparous. Males are generally common but hermaphroditism and parthenogenesis may occur.

The suborder Rhabditina includes three superfamilies, seven families, fourteen subfamilies, 47 genera and 241 valid species. The system of the Rhabditina discussed in the present work is as follows :

Superfamily : Alloionematoidea
Family : Alloionematidae
Subfamily : Alloionematinae
Genus : *Rhabditophanes*

Superfamily : Rhabditoidea
Family : Rhabditonematida
Subfamily : Rhabditonematinae
Genera : *Rhabditonema, Saprorhabditis*

Family : Rhabditidae
Subfamily : Protorhabditinae
Genera : *Protorhabditis, Prodontorhabditis, Parasitorhabditis, Paradoxorhabditis*
Subfamily : Mesorhabditinae
Genera : *Rhabpanus, Mesorhabditis, Crustorhabditis, Operculorhabditis, Marispelodera, Bursilla, Teratorhabditis, Cruznema*
Subfamily : Peloderinae
Genera : *Dolichorhabditis, Phasmarhabditis, Caenorhabditis, Xylorhabditis, Pelliditis, Pelodera, Coarctadera, Rhomborhabditis*

Subfamily: Rhabditinae
Genera: *Khabditis, Discoditis, Oscheuius, Colporhabditis, Rhabditella, Curviditis, Khitis, Cuticularia, Poikilolaimus*
Subfamily: Ablechoiulinae
Genera: *Ablechroiulus, Khabditoides*
Subfamily: Amphidirhabditinae
Genus : *Amphidirhabditis*
Subfamily: Stomachorhabditinae
Genus: *Stomachorhabditis*
Family : Odontorhabditidae
Subfamily: Odontorhabditinae
Genera : *Diploscapteroides, Cephaloboides*
Family: Diploscapteridae
Subfamily : Diploscapterinae
Genus: *Diploscapter*
Superfamily : Bunonematoidea
Family: Pterygorhabditidae
Subfamily: Pterygorhabditinae
Genus: *Pterygorhabditis*
Family: Bunonematidae
Subfamily: Bunonematinae
Genera : *Serronema, Rhodolaimus, Bunonema Rhodonema*
Subfamily: Craspedonematinae
Genera : *Aspidonema, Sachsium, Craspedonema*

Key to the superfamilies of the Rhabditina

1 Stoma of *Panagrolaimus* type, i.e. composed of short, weakly cuticularized rhabdions (rings); bursa not present..... ..... A (Alloinematoidea) (p.30)
- Stoma of *Rhabditis* type, i.e. well cuticularized and on the whole tubular; bursa present, only rarely reduced.....2

2. Body distinctly asymmetrical : left side with longitudinal ridges, right side with various ornamentation (network, tubercles, warts, fins) ..... C (Bunonematoidea) (p.175)
- Body symmetrical bilaterally, without such as an ornamentation .....B (Rhabditoidea) (p.35)

SUPERFAMILY ALLOIONEMATOIDEA

Rhabditina (Fig.6). Lips four. Stoma still *Panagrolaimus*-like, i.e. not prismatic or tubular but small, weakly cuticularized and consisting of short rings. Anterior part of oesophagus with two or three swellings. Female gonads paired. Spicules separate. Bursa primarily lacking.

The superfamily comprises on one hand primitive representatives of the Rhabditina, on the other hand such forms that are connecting links between free-living and zoo-parasitic types. The free-living species belong to the following family.

Family Alloionematidae

Alloionematoidea (Fig.6). Cuticle usually striated. Lips four, hardly separate. Stoma small, composed of short rings, weakly cuticularized. Amphids pore-like. Oesophagus with more swellings in its anterior portion. Female gonads amphidelphic, well developed. Spicules paired. Bursa completely lacking. Tail conical.

An only free-living genus, belonging to the subfamily Alloionematinae Chitwood & McIntosh, 1934.

Genus: *Rhabditophanes* Fuchs, 1930

Syn. *Cheilobus* Cobb, 1924, nec Rafinesque, 1817; *Altherrnema* Brzeski, 1961.

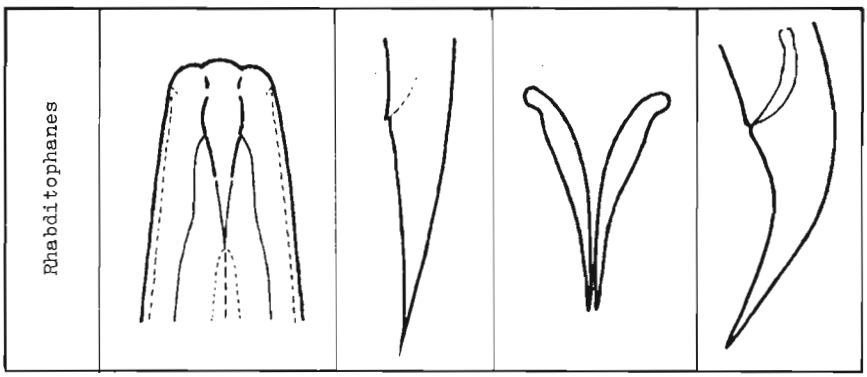

Fig.6. Alloionematidae: Alloionematinae. The only free-living genus of the subfamily (head, female tail, spicules,male tail).

DEFINITION: Alloionematoidea, Alloionematidae, Alloionematinae (Fig.6). Body 0.4 to 1.4 mm long, females fairly robust. Cuticle smooth or only weakly striated, lateral fields simple. Head not or slightly offset, lips four, hardly separate, labial papillae very small. Amphids indiscernible. Stoma short, nearly as wide as long, with slightly cuticularized rhabdions. Cheilostom cuticularized, promesostom quite short, ring-like, metastom without any conspicuous denticles. Oesophagus corpus showing three swellings, the posterior one of wich being bulb-like. No oesophageal collar around the posterior part of stoma.Excretory pore opposite the isthmus. Female gonads amphidelphic, well developed; eggs often in great number in the uteri. Vulva median. Spicules separate, arched, gubernaculum well developed. No bursa. Male genital papillae four or five pairs. Tails of both sexes similar, conoid, pointed or finely rounded.

BIONOMICS: Terrestrial species, saprophagous in habit, occuring in mould, rotting wood, excrements and frass of bark beetles. In cow dung they are frequently associated with species of *Aphodius*.

DISTRIBUTION: The species of *Rhabditophanes* have been reported from Europe, Asia and North America.

TYPES SPECIES : *Rhabditis schneideri* Bütschli, 1873 = *Rhabditophanes schneideri* (Bütschli, 1873) Goodey, 1953.

THREE SPECIES :

R. aphodii (Sachs, 1950) Baker, 1962
Syn.*Cheilobus aphodii* Sachs, 1950

R. cobbi (Hnatewytsch, 1929) n.comb.
Syn.*Rhabditis cobbi* (Hnatewytsch, 1929)
Cephalobus cobbi(Hnatewytsch, 1929) Osche, 1952
Rhabditophanes brassicae Fuchs, 1930
Cheilobus brassicae (Fuchs,1930) Bovien,1937
Altherrnema dibulbosum Brzeski, 1961

R. schneiaeri (Bütschli,1873) Goodey, 1953
Syn.*Rhabditis schneideri* Bütschli, 1873
Cheilobus quadrilabiatus Cobb, 1924
Rhabditophanes insolitus Fuchs, 1930
Cheilobus insolitus (Fuchs,1930) Goodey, 1951

SPECIES INQUIRENDAE:

R. leuckarti (Vernet, 1872) Dougherty, 1955
Syn.*Rhabditis leuckarti* Vernet, 1872
R. russi (Penso, 1941) n. comb.
Syn.*Cheilobus russi* Penso, 1941

Key to the species of Rhabditophanes

1 Spicules longer than 50 µm, nearly twice as long as anal body diameter; gubernaculum comparatively large,more than half as long as spicules.
♀: L = 0.93-1.37 mm; a = 14-17; b = 5.8-7.9; c = 9-12; V = 52-55%.
♂: L = 0.73-0.81 mm; a = 14-19; b = 4.1-6.4; c = 9-11.
Germany, Austria, Czechoslovakia; in cow dung, associated with species of *Aphodius*..... *aphodii* (Sachs)

\- Spicules shorter than 25 µm, shorter than anal body diameter;gubernaculum quite small.....2

2 Spicules plump and straight, 16-18 µm long; tail tip of male finely rounded with a hair-like mucro.
♀ :L = 0.4-0.8 mm; a = 13-18; b = 4.8-7.1; c = 7-11; V = 49-53%.
♂ :L = 0.60-0.67 mm; a = 19-20; b = 4.6; c = 15-16.
Germany, Austria,Hungary, Poland; in saprobic habitats.....
.....*cobbi* (Hnatewytsch)

\- Spicules slender and arched, 21-22 µm long; tail of male uniformly conoid with pointed tip.
♀ :L = 0.65-1.0 mm; a = 12-19; b = 5.3-8.0; c = 9-11; V = 50-53%.
♂ :without data of measurements.
Germany, Austria, Hungary, Bulgaria, Spain, Italy, Poland, Soviet-Union (Estonia,Azerbaizhan,Kazakhstan,Uzbekistan),United States, under saprobic conditions, especially in rotten wood (Fig.7).....
.....*schneideri* (Bütschli)

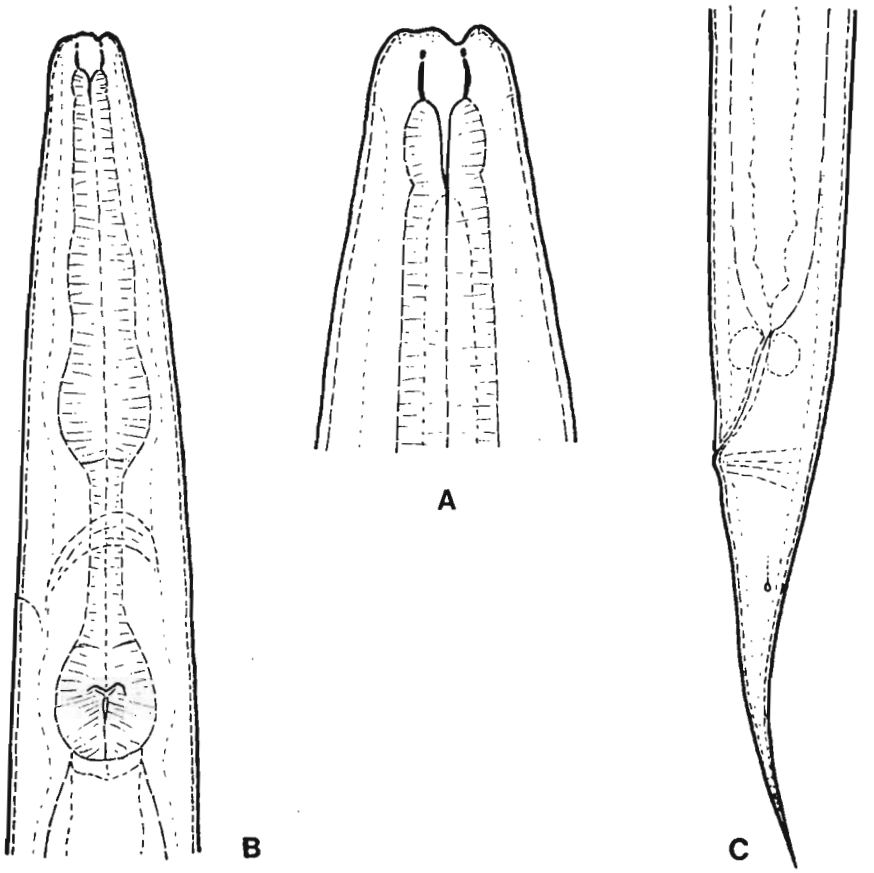

Fig.7. *Rhabditophanes schneideri* (Bütschli, 1873) Goodey, 1953 - a member of the subfamily Alloionematinae, from Szentendre, Hungary. A: anterior end, 1 400X; B: oesophageal region, 700X; C: female tail, 700X.

SUPERFAMILY RHABDITOIDEA

Rhabditina (Fig.8-32). Usually six lips. Stoma tubular or prismatic, longer than wide. Cheilostom mostly insignificant, only rarely cuticularized; prostom and mesostom fused to the buccal tube and strongly cuticularized; metastom with three swellings (glottoid apparatus) and small denticles; telostom short. Oesophagus corpus often swollen proximally. Female gonads paired or umpaired, prodelphic. Spicules separate or fused distally. Bursa present, generally well developed, rarely reduced.

Predominantly terrestrial animals, especially common in decaying organic matters; also some limnic and even marine species occur among them. They live on bacteria.

The species of the Rhabditoidea can be grouped in four families.

Key to the families of Rhabditoidea

1 Dorsal and ventral lips heavily cuticularized and transformed into hook-like structures ..... 4 .Diploscapteridae (p.171)

- Lips normal, not hook-like.....2

2 Buccal tube (promesostom) with a large, transverse, dorsal tooth..... 3.Odontorhabditidae (p.163)

- Buccal tube without tooth, its walls parallel.....3

- Stoma short, only about twice as long as wide; oesophagus corpus cylindrical; bursa primarily absent 1.Rhabditonematidae (p.36)

- Stoma in almost every case more than three times longer than wide; bursa generally well developed, if rudimentary, then oesophagus corpus distinctly swollen, bulb-like 2.Rhabditidae (p.39)

Family Rhabditonematidae

Rhabditoidea (Fig.8). Head with six lips. Stoma comparatively short, only about twice as long as wide. Cheilostom not cuticularized, metastom with or without denticles. Oesophagus corpus cylindrical. Amphids pore-like, on the lateral lips. Female gonads paired. Spicules separate, bursa completely lacking. Tail of both sexes conical.

A small group with two genera, both belonging to the subfamily Rhabditonematinae Andrássy, 1976. Saprophagous animals.

Key to the genera of Rhabditonematidae

1 Metastom with small but visible denticles; female tail relatively long, 1/8-1/9 of the total body length 1.*Rhabditonema* (p.36)

- Metastom without denticles; female tail quite short, only about 1/50 of total body length 2.*Saprorhabditis* (p.38)

Genus: *Rhabditonema* Körner, 1954

DEFINITION: Rhabditoidea, Rhabditonematidae, Rhabditonematinae (Fig.8). Small animals, about 0.5 mm long. Cuticle apparently smooth, lateral fields simple. Head not offset, lips six, fairly separate, labial papillae setiform but short. Amphids indiscernible. Stoma rhabditiform, cheilostom not cutacularized, promesostom relatively short, about twice as long as wide, metastom weakly anisoglottoid, with small denticles. Oesophagus corpus cylindrical; no valid oesophageal collar around the posterior part of stoma. Terminal bulb elongate. Female gonads amphidelphic, ovaries reflexed. Males rare; spicules separate, gubernaculum short. No bursa. Male genital papillae six pairs, small. Tails of

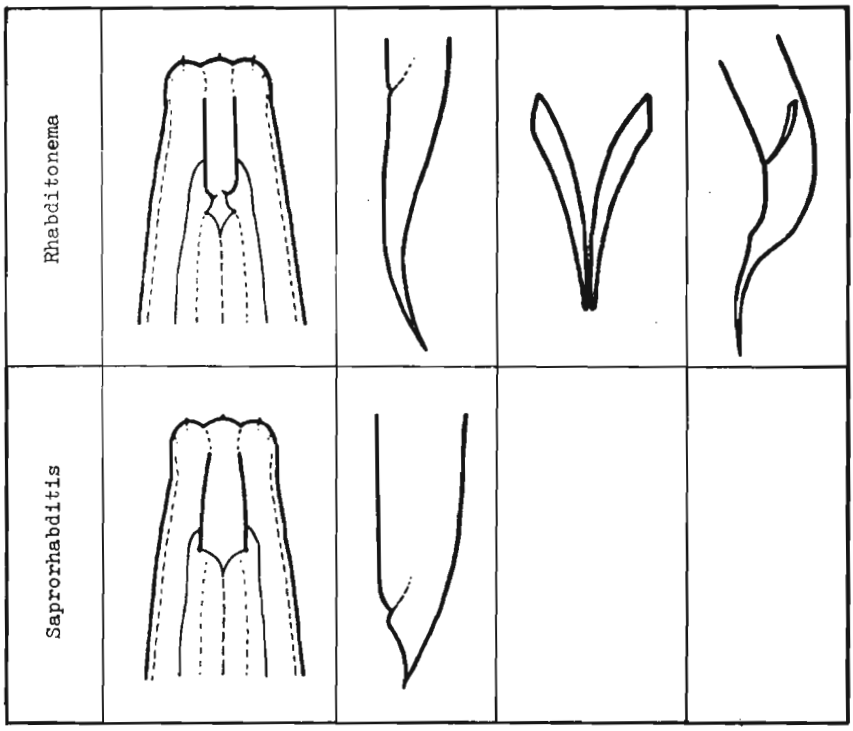

Fig.8. Rhabditonematidae: Rhabditonematinae. The genera of the subfamily (head, female tail, spicules, male tail).

both sexes similar, conical with pointed and slightly dorsally curved tip.

BIONOMICS: Terrestrial nematodes occurring in the frass of capricorn beetles inhabiting tree stumps. Oviparous, possibly hermaphrodites.

DISTRIBUTION: The only species of the genus has been reported hitherto from Central Europe.

TYPES SPECIES: Rhabditonema propinquum Körner, 1954.
No other species.

- Tail of female 5-6 times, that of male 4 times as long as anal body diameter.

  ♀ : L = 0.40-0.53 mm; a = 22-33; b = 3.7-4.7; c = 8-9; V = 51-57 %.

  ♂: L = 0.5 mm; a = 29; b = 3.8; c = 9.

  Germany and Czechoslovakia; in frass of capricorn beetles.....
  ..... *propinquum Körner*

Genus: *Saprorhabditis* Khera, 1969

DEFINITION: Rhabditoidea, Rhabditonematidae, Rhabditonematinae (Fig.8). Body 0.6-0.7 mm long. Cuticle smooth.Head not offset, with six lips hardly separate from one another; labial papillae very small. Amphids situated posterior to lip region. Stoma slightly widened posteriorly. Cheilostom not cuticularized, promesostom about twice as long as wide, metastom simple, without glottoid apparatus. Oesophagus corpus slightly swollen proximally but not forming a median bulb. Terminal bulb elongate. Female gonads amphidelphic, ovaries reflexed.Vulva post-equatorial. Eggs large. Male unknown. Female tail short, conical, pointed.

BIONOMICS: Terricolous nematodes described from the banks of sewer. Oviparous.

DISTRIBUTION: The single species has been reported from India.

TYPE SPECIES: Saprorhabditis adentifera Khera, 1969.
No other species.

- Stoma 15 m long and 6 m wide; tail only slightly longer than anal body diameter.

  ♀ : L = 0.58-0.72 mm; a = 16-19; b = 3.8-4.0; c = 48-53; V = 55-57%.

  ♂ : unknown.

  India; on the banks of sewer..... ..... *adentifera* Khera

Family Rhabditidae

Rhabditoidea (Fig.9-28). Head generally with six distinct lips. Stoma tubular or prismatic, in most cases more than three times as long as wide. Cheilostom only exceptionally cuticularized. Promesostom - the buccal tube - well cuticularized with parallel walls, and in its posterior part often surrounded by a thin oesophageal collar. Metastom bearing three small swellings (glottoid apparatus) and very small tubercles or denticles of different number. Oesophagus corpus often swollen to form a median bulb which does not posses valve plates. Female genital organ didelphic or single, prodelphic; ovaries reflexed. Spicules separate or fused distally. Bursa mostly well developed, peloderan or leptoderan, rarely small, rudimentary. Genital papillae generally nine or ten pairs in number. Tails of both sexes similar or male tail shorter than female tail.

The family Rhabditidae is one of the richest group of nematodes; it includes the following taxa : seven subfamilies, 33 genera and 177 valid species. Its members are predominantly terricolous animals and prefer saprobious habitats, viz. litter, decaying plant tissues, compost, dung and other organic matters. Many species are associates of insects. Aquatic-limnic or marine - species are rare among them. They feed on bacteria, and most species can be well raised on various media. The Rhabditidae are generally bisexual nematodes but hermaphroditism and parthenogenesis may also occur among them.

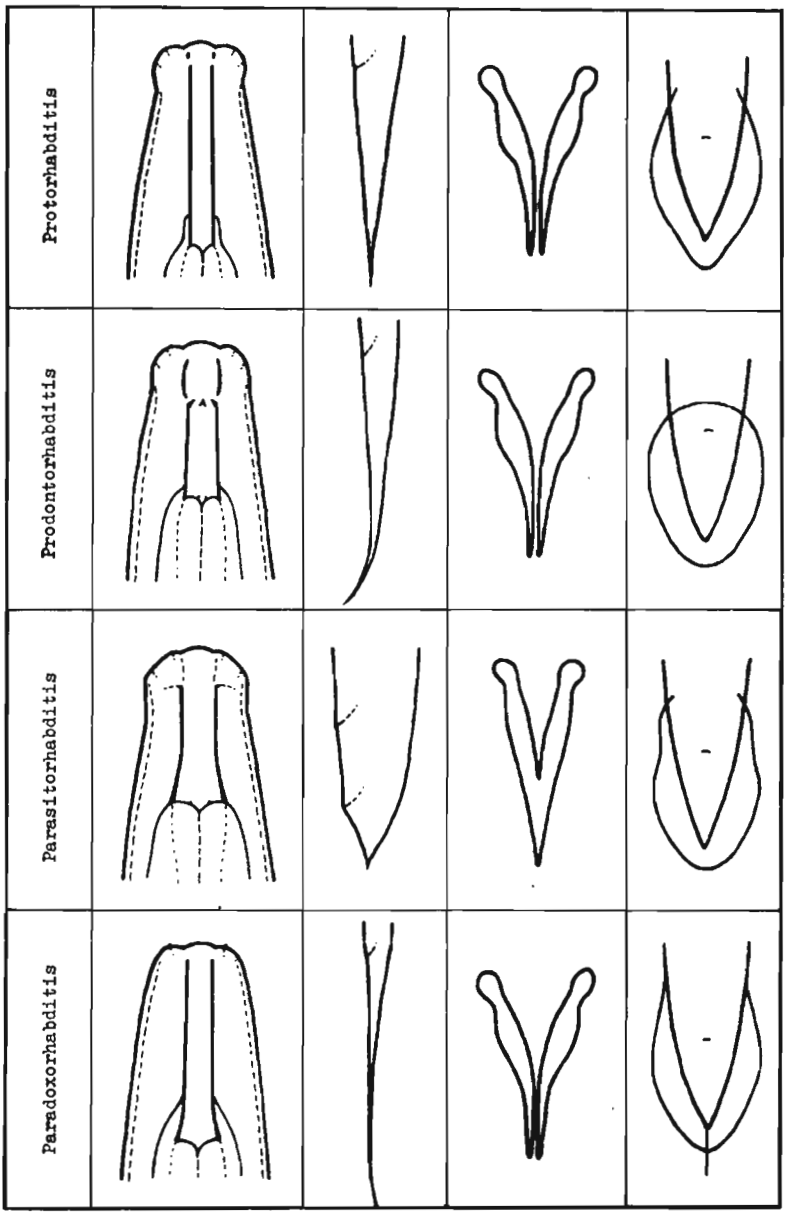

Fig.9. Rhabditidae: Protorhabditinae. The genera of the subfamily (head, female tail, spicules, bursa).

Key to the subfamilies of Rhabditidae

1 Beginning of intestine marked by folds, on the whole stomach-like; no bursa..... Stomachorhabditinae (p.160)

- Beginning of intestine without folds, not stomach-like; bursa present.....2

2 Amphids large, conspicuous, at level of promesostom; cheilostom cuticularized, comparatively large with arched walls..... ..... Amphidirhabditinae (p.156)

- Amphids mostly very small, inconspicuous, on the lateral lips; cheilostom simple, only exceptionally cuticularized..... 3

3 Stoma a simple tube without glottoid apparatus, metastom devoid of denticles..... Protorhabditinae (p.41)

- Stoma differentiated, with distinct glottoid apparatus (swellings) and denticles.....4

4 Female gonad single, prodelphic, vulva far back; lips hemispherical, well separate, mostly with setose papillae....Mesorhabditinae (p.59)

- Female gonad didelphic, vulva at mid-body; lips generally hardly separate, without setose papillae..... 5

5 Bursa peloderan: encircling tail tip.....Peloderinae (p.85)

- Bursa leptoderan: leaving tail tip free.....6

6 Lips bearing numerous fine ciliae or setose projections; oesophageal collar high, longer than half length of stoma..Ablechroiulinae (p.148)

- Lips without ciliae;oesophageal collar usually shorter than half of stoma..... Rhabditinae (p.117)

SUBFAMILY: Protorhabditinae Dougherty,1955

Rhabditidae (Fig.9). Lips low and closed, i.e. hardly separate from one another. Labial papillae minute, not setiform. Amphids very small, on the lateral lips. Stoma mostly long and narrow. Cheilostom cuticularized but short. Metastom weakly developed, without glottoid apparatus and devoid of tubercles or denticles. Oesophageal collar mostly lacking

Corpus of oeosphagus proximally swollen, rarely cylindrical. Female genital organ pro-or amphidelphic, vulva in the former case quite near to anal opening. Spicules often fused in their distal portion. Bursa peloderan or pseudopeloderan (leaving only a very thin terminal filament of tail free), open or closed in its anterior margin. Seven to eight or rarely, nine pairs of bursal papillae are present. Tail often showing sexual dimorphism.

The members of this subfamily live under saprobic conditions or are associated with insects. Four genera belong to it.

Key to the genera of Protorhabditinae

1 Female gonad unpaired, podelphic, vulva quite near to the anus; spicules fused distally.....*Parasitorhabditis* (p.49)
- Female gonads paired, amphidelphic, vulva at mid-body; spicules free..... 2
2 Bursa pseudopeloderan; corpus and isthmus of oesophagus weakly segregated.....*Paradoxorhabditis* (p.59)
- Bursa peloderan; corpus and isthmus of oesophagus well segregated..... 3
3 Anterior end of protostom with three small teeth; bursa closed.....*Prodontorhabditis* (p.46)
- Protostom without teeth; bursa open (in a single species closed).....*Protorhabditis* (p.42)

Genus: *Protorhabditis* (Osche, 1952) Dougherty,1953

Syn. *Rhabditis*(*Protorhabditis*) Osche, 1952.

DEFINITION: Rhabditoidea, Rhabditidae, Protorhabditinae (Fig.9). Body small, 0.3 to 0.9 mm long. Cuticle finely transversely annulated and occasionally longitudinally striated. Lips low, hardly separate (closed) with very small

papillae. Amphids on the lateral lips, point-like. Stoma two to four times as long as head diameter, longer and narrower than in other genera of the family, its walls parallel. Cheilostom mostly cuticularized but quite short. Metastom simple, devoid of glottoid apparatus or any denticles. Oesophageal collar present or absent. Oesophagus corpus proximally swollen to form a median bulb. Female gonads paired, vulva equatorial. Spicules free. Bursa peloderan, open, or rarely, closed, with seven to eight pairs of papillae. Tail of female elongate-conoid to filiform, that of male short.

BIONOMICS: The species of this genus inhabit soil, fresh water, cow and horse dung, other saprobic habitats, and are associates of scolytid, cerambycid and scarabaeid beetles.

DISTRIBUTION: *Protorhabditis* species have been recorded hitherto from Europe and Asia.

TYPE SPECIES: *Rhabditis (Protorhabditis) xylocola* Körner in Osche, 1952 = *Protorhabditis xylocola* (Körner in Osche 1952) Dougherty, 1953.

TEN SPECIES:

P. elaphri (Hirschmann, 1952) Dougherty, 1955
Syn.*Rhabditis (Protorhabditis) elaphri* Hirschmann, 1952.

P. filiformis (Bütschli, 1873) Sudhaus, 1976
Syn.*Rhabditis filiformis* Bütschli, 1873
Rhabditis (Choriorhabditis) filiformis Bütschli, 1873, (Osche, 1952).
Rhabditis agilis Linstow, 1876
Protorhabditis lengerkeni Paetzold, 1958

P. macrovelata Sudhaus, 1974

P. oxyuroides Sudhaus, 1974
Syn.*Rhabditis oxyuris* apud auct., nec Claus, 1862

P. parvovelata (Körner in Osche, 1952) Dougherty,1955
Syn. *Rhabditis (Protorhabditis) parvovelata* Körner in Osche, 1952.

P. postneri (Körner in Osche, 1952) Dougherty, 1955
Syn. *Rhabditis (Protorhabditis) postneri* Körner in Osche, 1952.

P. ruehmi (Körner in Osche, 1952) Dougherty, 1955
Syn.*Rhabditis* (*Protorhabditis*) *ruehmi* Körner in Osche,1952.

P. tristis (Hirschmann, 1952) Dougherty, 1955
Syn.*Rhabditis* (*Protorhabditis*) *tristis* Hirschmann, 1952.

P. virgo (Körner in Osche, 1952) Dougherty, 1955
Syn.*Rhabditis* (*Protorhabditis*) *virgo* Körner in Osche, 1952.

P. xylocola (Körner in Osche, 1952) Dougherty, 1953
Syn.*Rhabditis* (*Protorhabditis*) *xylocola* Körner in Osche, 1952.

SPECIES INQUIRENDAE :

P. lepida (Kreis, 1930) Sudhaus, 1976
Syn.*Rhabditis lepida* Kreis, 1930
Rhabditis (*Choriorhabditis*) *lepida* Kreis, 1930 Osche, 1952.
Rhabditis elegans Kreis, 1929, nec Maupas, 1899.

P. minuta (Cobb, 1893) Dougherty, 1955
Syn.*Rhabditis minuta* Cobb, 1893.

Key to the species of Protorhabditis

1 Female tail very long, 10-14 times longer than the anal body diameter, filiform.....2

- Female tail much shorter, at most 5 times as long as anal body diameter.....4

2 Oesophagus corpus completely cylindrical; oesophageal collar long, surrounding about 3/4 length of buccal tube; longer species, more than 0.5 mm.

♀ : L = 0.63-0.92 mm; a = 20-28; b = 5.7-7.1; c = 4-9; V = 43-51%.

♂: L = 0.54-0.69 mm; a = 18-27; b = 4.7-5.6; c = 17-25.

Germany, Czechoslovakia and Soviet Union (Far East); terrestrial, associated with *Elaphrus riparius*(Carabidae) .....

..... *elaphri* (Hirschmann)

- Oesophagus corpus distinctly swollen; oesophageal collar absent; shorter species, less than 0.5 mm.....3

3 Bursal papillae nine pairs; head not offset.

♀ : L = 0.45-0.55 mm; a = 22-27; b = 4.4-6.2; c = 3.3-4.5; V = 46-47%. ♂ : L = 0.27-0.30 mm; a = 17-21; b = 2.9-3.4; c = 17.

Germany, Czechoslovakia, Hungary, Bulgaria, Poland, Soviet Union (Russia, Lithuania, Uzbekistan); in soil, litter and fresh water (Fig.10).....*tristis* (Hirschmann)

- Bursal papillae seven pairs; head offset.

♀ : L = 0.45-0.60 mm; a = 22-30; b = 4.5-5.3; c = 3.2-4.0; V =42-47%. ♂: L = 0.35 mm.

Holland, Belgium, Germany, Austria, Czechoslovakia, Hungary, Spain, Poland, Denmark, Great Britain, Ireland, Soviet Union (Russia, Estonia, Lithuania, Moldavia, Belorussia, Turkmenia, Kazakhstan, Azerbaizhan, Uzbekistan); Java, Sumatra, Fernando Poo, Zaire; Australia, New Zealand; terrestrial, in soil, litter and moss.....*filiformis* (Bütschli)

4 Small species, up to 0.5 mm long; oesophagus corpus slightly swollen; male unknown.

♀ : L = 0.43-0.53 mm; a = 22-26; b = 4.3-5.5; c = 6-9; V = 53-57%. ♂ : unknown.

Germany; in rotten wood.....*virgo* (Körner in Osche)

- Bigger species, longer than 0.5 mm; oesophagus corpus distinctly swollen; males known.....5

5 Bursa proximally closed.

♀: L = 0.59-0.87 mm; a 17-21; b = 4.3-5.9; c = 6.7-10.8; V = 53-56%. ♂:L = 0.32-0.72 mm; a = 15-25; b = 3.5-5.0; c = 19-27.

Holland, Belgium, Germany, Switzerland, France, Yugoslavia, Poland, Soviet Union (Ukraine, Georgia); terrestrial, in soil, moss, humus, rarely in horse and cow dung.....*oxyuroides* Sudhaus

- Bursa proximally open.....6

6 Bursa quite small, reduced.

♀ : L = 0.58-0.87 mm; a = 20-24; b = 4.0-5.9; c = 11-30; V = 56-62%. ♂: L = 0.52-0.64 mm; a = 20-22; b = 3,8-4.4; c = 20-26.

Germany; in rotten wood.....*parvovelata* (Körner in Osche)

- Bursa well developed.....7

7 Lips ornamented by small outer processes, crown-like.

♀ : L = 0.60-0.75 mm; a = 17-21; b = 4.4-4.9; c = 8-9; V = 54-58%.

♂: L = 0.54-0.66 mm; a = 19-22; b = 4.1-4.6; c = 19-21.

Germany, Czechoslovakia and Soviet Union (Uzbekistan); in the galleries of *Sinodendron cylindricum* and in rotten wood..... ..... *ruehmi* (Körner in Osche)

- Lips simple, not crown-like.....8

8 Spicules 16-21 µm long.

♀ : without measurement data. ♂ : L = 0.49-0.57 mm; a = 14-18; b = 3.5-3.8; c = 22-23.

Germany; associated with scarabaeid larvae..*macrovelata* Sudhaus

- Spicules 21-34 µm long.....9

9 Cheilorhabdions proximally divergent.

♀ : L = 0.63-0.86 mm, a = 16-22; b = 4.3-5.3; c = 7.8-13.5; V = 56-67%. ♂:L = 0.63-0.72 mm; a = 17-25; b = 4.2-4.5; c = 19-23.

Germany, Austria; in frass of the larvae of *Dorcus parallelopipedus* (Lucanidae).....*postneri* (Körner in Osche)

- Cheilorhabdions proximally not divergent.

♀ : L = 0.51-0.68 mm; a = 19-22; b = 4.6-5.7; c = 9.6-13.1; V = 54-58%. ♂ : L = 0.40-0.58 mm; a = 18-23; b = 4.0-5.1; c = 18-21.

Germany, Hungary, Soviet Union (Moldavia); in rotting wood and associated with *Trichius* species (Scarabaeidae)..... .....*xylocola* (Körner in Osche)*

Genus:*Prodontorhabditis* Timm, 1961

DEFINITION: Rhabditoidea, Rhabditidae, Protorhabditinae (Fig.9). Body 0.3 to 1.0 mm long. Cuticle finely transversely annulated and longitudinally striated. Head not offset, lips low, closed with small papillae.Amphids on the lateral lips,very small.Stoma one to three times as long as head

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*Possibly identical with *P. postneri*.

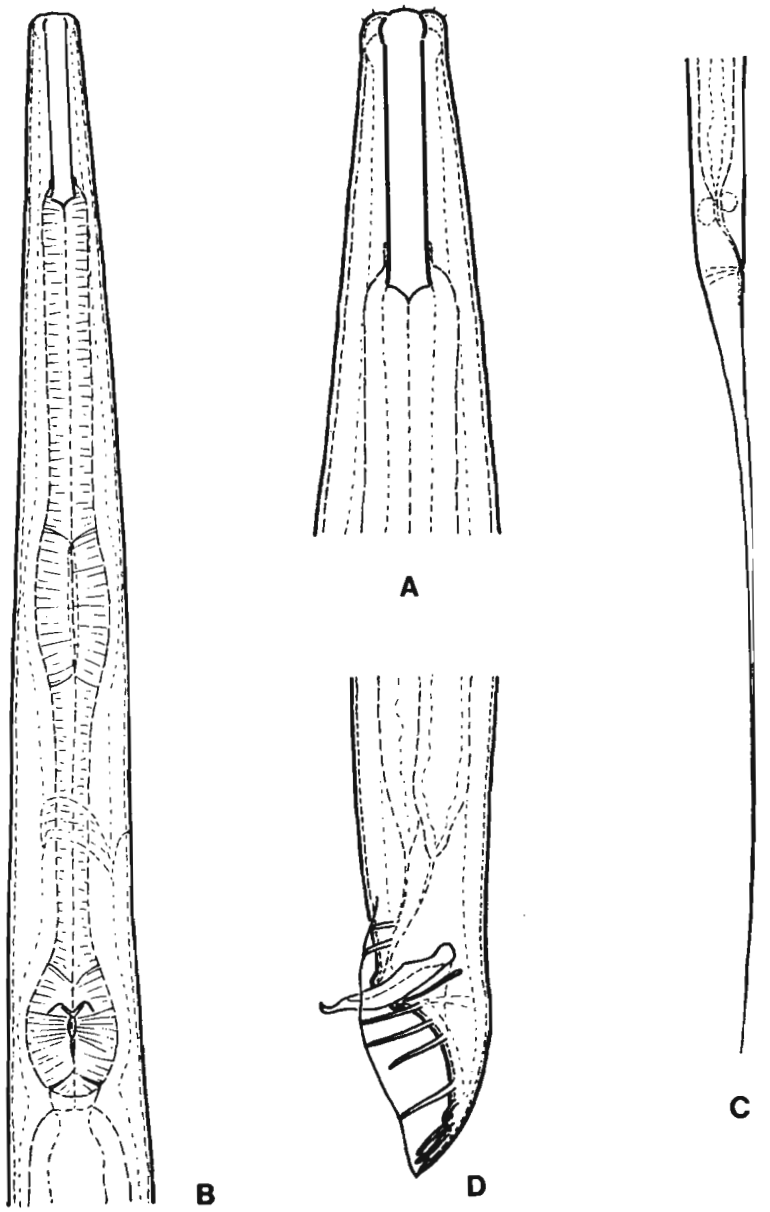

Fig.10. *Protorhabditis tristis* (Hirschmann, 1952) Dougherty, 1955 - a member of the subfamily Protorhabditinae, from Budapest, Hungary. A: anterior end, 2 500X; B: oesophageal region, 1 300X; C: female tail, 700X; D: male posterior end, 1 600X.

diameter. Cheilostom cuticularized, comparatively long, conspicuous. Promesostom with parallel walls and distally with three small teeth. Metastom simple, glottoid apparatus absent. Oesophageal collar lacking completely. Oesophagus corpus proximally swollen, bulb-like. Female gonads paired, vulva at about middle of body length or pre-equatorial. Spicules separate. Bursa peloderan, anteriorly closed,with eight pairs of papillae. Besides these papillae, a pair of prebursal (epibursal) papillae can be found at level with the spicules. Tail of female elongate conoid to filiform, that of male short, conical.

BIONOMICS: Terrestrial and aquatic species, living free also in larval stages. Oviparous.

DISTRIBUTION: The members of the genus have been recorded from Asia, North America and Australia; apparently they do not occur in Europe.

TYPE SPECIES: Prodontorhabditis pluvialis Timm, 1961.

FOUR SPECIES :

P. anthobia (Schneider, 1937) n. comb.
Syn.*Rhabditis anthobia* Schneider, 1937
Rhabditis (Protorhabditis) anthobia Schneider, 1937 (Osche, 1952)
Rhabditis (Caenorhabditis) anthobia Schneider, 1937 (Sudhaus, 1974)
Protorhabditis anthobia (Schneider, 1937) Dougerthy, 1955

P. pluvialis Timm, 1961

P. prodontis Sudhaus, 1974

P. wirthi Sudhaus, 1974

Key to the species of Prodontorhabditis

1 Stoma about three times as long as head diameter, 16-22 µm long... 2

- Stoma only 1 to 1.5 times as long as head diameter, 8-14 µm long... 3

2 Female tail filiform, 16-20 times longer than anal body diameter.
♀: L = 0.58-0.73 mm; a = 25-28; b = 5.3-6.2; c = 2.5-3.1; V = 37-43%. ♂: L = 0.34-0.45 mm; a = 18-25; b = 3.5-4.2; c = 12-18.
Bangladesh; terrestrial.....*pluvialis* Timm

- Female tail much shorter, only 6-7 times longer than anal body diameter.
♀: L = 0.7-1.0 mm; a = 26-33; b = 3.4-3.8; c = 8-9; V = 56-57%.
♂: L = 0.75 mm; a = 30; b = 3.3; c = 22.
Sumatra; in fresh water.....*anthobia* Schneider

3 Stoma extremely short, 8-10 µm, not longer than head diameter.
♀: L = 0.60-0.72 mm; a = 21-28; b = 5.0-5.7; c = 3.0-4.1; V = 44-54%. ♂: L = 0.39-0.60 mm; a = 18-23; b = 3.6-4.7; c = 14-21.
New Zealand; littoral detritus .....*wirthi* Sudhaus

- Stoma 12-14 µm, about 1.5 times as long as head diameter.
♀: L = 0.64-0.93 mm; a = 18-26; b = 4.5-5.7; c = 4.8-5.2; V = 49-52 %. ♂ L = 0.54-0.70 mm; a = 22-27; b = 4.0-4.7; c = 20-28.
United States (Florida); in littoral detritus...*Prodontis* Sudhaus

Genus: *Parasitorhabditis* (Fuchs,1936) Chitwood & Chitwood, 1950

Syn. *Rhadditis* (*Parasitorhabditis*) Fuchs, 1937

DEFINITION: Rhabditoidea, Rhabditidae, Protorhabditinae (Fig.9). Body length between 0.4 and 1.4 mm. Cuticle finely or heavily dotted. Head not or only slightly offset, lips low, hardly differenciated with small papillae. Amphids small, on the lateral lips. Stoma well developed, in general wider than in other members of the family. Cheilostom not cuticularized. Promesostom strongly cuticularized, its walls somewhat divergent on both ends. Metastom simple, glottoid apparatus lacking or present but weak, occasionally with some very fine denticles. Oesophageal collar completely absent. Oesophagus corpus proximally swollen, more or less bulb-like. Terminal bulb strong. Female gonad unpaired, prodelphic, without a postvulval uterine sack.

Vulva quite near to the anus. Spicules slender, distally fused. Bursa peloderan, well developed, anteriorly open. Number of papillae constant : ten pairs (two pairs preanal). Tails of both sexes very short, that of female conoid or rounded.

BIONOMICS: The larvae of the species of *Parasitorhabditis* live in the intestine or body cavity of bark beetles (Scolytidae), the adults occur in frass and rotting wood of the tunnels of the same beetles, especially in conifers.

DISTRIBUTION: The members of this genus are distributed in Europe, the western states of the Soviet Union and North America.

TYPE SPECIES: *Rhabditis obtusa* Fuchs,1915=*Parasitorhabditis obtusa* (Fuchs, 1915) Chitwood & Chitwood, 1950.

Although a fairly great number of *Parasitorhabditis* species have been described, the genus is very homogeneous in morphological and ecological respect; the separation and determination of species is mostly not easy.

THIRTY VALID SPECIES :

P. *acanthocini* Lazarevskaja, 1961

P. *acuminati* (Fuchs, 1937) Skrjabin, Shikhobalova, Sobolev, Paramonov & Sudarikov. 1954

Syn. *Rhabditis* (*Parasitorhabditis*) *obtusa acuminati* Fuchs, 1937

P. *ateri* (Fuchs, 1915) Dougherty, 1955

Syn. *Rhabditis obtusa ateri* Fuchs, 1915
Rhabditis (*Parasitorhabditis*) *obtusa ateri* Fuchs, 1915 (Fuchs, 1937)
Rhabditis (*Parasitorhabditis*) *obtusa cunicularii* Fuchs, 1937
Parasitorhabditis cunicularii (Fuchs, 1937) Skrjabin, Shikhobalova, Sobolev, Paramonov & Sudarikov, 1954

P. *autographi* (Fuchs, 1937) Skrjabin, Shikhobalova, Sobolev, Paramonov & Sudarikov, 1954

Syn. *Rhabditis* (*Parasitorhabditis*) *obtusa autographi* Fuchs, 1937

Rhabditis (Parasitorhabditis) obtusa proximi Fuchs, 1937

Parasitorhabditis proximi (Fuchs,1937) Skrjabin, Shikhobalova, Sobolev,Paramonov & Sudarikov,1954

P.bellifonti Lieutier & Laumond, 1978

P.bicoloris Devdariani & Maglakelidze, 1970

P.bidentati Rühm, 1954

P.chalcographi (Fuchs,1937)Skrjabin, Shikhobalova, Sobolev, Paramonov & Sudarikov, 1954

Syn.*Rhabditis (Parasitorhabditis) obtusa chalcographi* Fuchs, 1937

P.clunicula Massey, 1974

P.cryphalophila Rühm,1956

P.curvidentis (Fuchs,1915) Rühm,1956

Syn.*Rhabditis obtusa curvidentis* Fuchs, 1915

Rhabditis (Parasitorhabditis) obtusa curvidentis (Fuchs,1915) Fuchs, 1937

P.dendroctoni Rühm, 1956

P.fuchsi Blinova & Gurando, 1974

P.gracilis Massey, 1974

P.hastula Massey, 1974

P.hectographi Rühm in Rühm & Chararas, 1957

P.hylurgi Massey, 1974

P.ipini Massey, 1974

P.ligniperdae (Fuchs, 1915) Skrjabin, Shikhobalova, Sobolev, Paramonov & Sudarikov, 1954

Rhabditis obtusa ligniperdae Fuchs, 1915

Rhabditis (Parasitorhabditis) obtusa ligniperdae (Fuchs, 1915) Fuchs, 1937

P.malii Devdariani & Kakulija, 1970

P.obtusa (Fuchs,1915) Chitwood & Chitwood, 1950

Syn.*Rhabditis obtusa* Fuchs, 1915

Rhabditis (Parasitorhabditis) obtusa (Fuchs, 1915) Fuchs, 1937

Rhabditis obtusa typographi Fuchs,1915

Rhabditis (Parasitorhabditis)obtusa typographi

Fuchs, 1915 (Fuchs, 1937)
Parasitorhabditis typographi (Fuchs,1915) Skrjabin, Shikhobalova, Sobolev, Paramonov & Sudarikov, 1954

P.opaci Rühm, 1956
Syn.*Parasitorhabditis crypturgophila* Rühm, 1956

P.palliati (Fuchs, 1937) Skrjabin, Shikhobalova, Sobolev, Paramonov & Sudarikov, 1954
Syn.*Rhabditis (Parasitorhabditis) obtusa palliati* Fuchs, 1937
Rhabditis (Parasitorhabditis) obtusa poligraphi Fuchs, 1937
Parasitorhabditis poligraphi (Fuchs, 1937) Skrjabin, Shikhobalova, Sobolev, Paramonov & Sudarikov, 1954

P.piniperdae (Fuchs, 1937) Skrjabin, Shikhobalova, Sobolev, Paramonov & Sudarikov, 1954
Syn.*Rhabditis (Parasitorhabditis) obtusa piniperdae* Fuchs, 1937

P.sexdentati Rühm, 1960

P.subelongati Slobodjanjuk, 1973
Syn.*Parasitorhabditis masseyi* Sudhaus, 1976

P.terebrana Massey, 1974

P.thornei Sudhaus, 1976
Syn.*Parasitorhabditis ipsophila* Lieutier & Laumond 1978

P.villosi Rühm, 1956

P.welchi Devdariani, 1974

SPECIES INQUIRENDAE

The following species are regarded as such :

P.ali Kakulija, 1963

P.amitini (Fuchs, 1937) Rühm, 1956
Syn.*Rhabditis (Parasitorhabditis) obtusa amitini* Fuchs, 1937

P.cembraei (Fuchs, 1937) Skrjabin, Shikhobalova, Sobolev, Paramonov & Sudarikov, 1954
Syn.*Rhabditis (Parasitorhabditis) obtusa cembraei* Fuchs, 1937

P. *crenati* (Fuchs, 1937) Rühm, 1956
Syn.*Rhabditis (Parasitorhabditis) obtusa crenati* Fuchs, 1937

P. *minoris* (Fuchs, 1937) Rühm, 1956
Syn.*Rhabditis (Parasitorhabditis) obtusa minoris* Fuchs, 1937

P. *montani* (Fuchs, 1915) Sudhaus, 1976
Syn.*Rhabditis obtusa montani* Fuchs, 1915

P. *pini* Lazarevskaja, 1962

Key to the species of Parasitorhabditis

1 Female tail extremely short, only about half as long as anal body diameter, cupola-shaped or broadly rounded.....2

\- Female tail one or two anal body diameters long, conoid or cupola-shaped, with or without tip.....7

2 Anterior portion of oesophagus (from head to proximal end of corpus) longer than the posterior portion; female tail broadly rounded.

♀: L = 0.73-1.11 mm; a = 16-24; b = 4.0-4.7; c = 44-49; V = 94-96%. ♂: L = 0.75-0.85mm; a = 19-21; b = 4.1-4.6; c = 18-22.

Germany, Austria, Czechoslovakia, Switzerland, Soviet Union (Russia, Georgia), United States; associated with *Ips typographus* and *I.cembrae* (Scolytidae).....*obtusa* (Fuchs)

\- Anterior portion of oesophagus distinctly shorter than the posterior portion; female tail with short tip.....3

3 Spicules dorsally curved, convex on its ventral side.

♀: L = 0.42-1.16 mm; a = 11-22; b = 3.0-6.3; c = 40-97; V = 93-97%. ♂: L = 0.42-0.93 mm; a = 15-27; b = 3.1-5.2; c = 12-23.

France, Soviet Union (Russia) and United States (New Mexico); associated with *Ips confusus* and *I. subelongatus* (Scolytidae).....*subelongati* Slobobjanjuk

\- Spicules straight or slightly curved ventrally, convex on their dorsal side 4

4 Spicules about 50 µm long.

♀: L = 1.0-1.4 mm; a = 16-19; b = 5.7-7.1; c = 63-69; V = 96%.

♂: L = 0.73-0.95 mm; a = 17-20; b = 4.7-5.4; c = 19-21.

Germany and Soviet Union (Russia, Georgia); in the frass and the rectum of *Ips sexdentatus*.....*sexdentati* Rühm

\- Spicules up to 40 µm long 5

5 Body 0.6-0.8 mm long; female tail very short, 8-10 µm. ♀ : L = 0.60-0.82 mm; a = 19-21; b = 4.7-4.8, c = 92-96; V = 95-96 %. ♂: L = 0.66-0.75 mm; a = 23-28; b = 4.7-5.4; c = 27-30.

Germany and Soviet Union (Russia, Georgia); the larvae live in the rectum of *Pityogenes chalcographus* (Scolytidae).....

.....*chalcographi* (Fuchs)

\- Body 0.8-1.2 mm long; female tail longer, 14-28 µm.....6

6 Stoma shorter (16-19 µm) and narrower, 7-8 times as long as wide; larvae parasitic in rectum of the host.

♀ : L = 0.94-1.14 mm; a = 19-25; b = 5.1-6.3; c = 54-67; V = 95%. ♂: L = 0.8-1.0 mm; a = 18-22; b = 4.4-5.6; c = 22-23.

Germany and Soviet Union (Russia);associated with *Ips acuminatus*..... *acuminati* (Fuchs)

\- Stoma longer (19-22 µm) and wider, 4-5 times as long as wide; larvae parasitic in body cavity of the host.

♀ : L = 0.94-1.23mm; a = 19-22; b = 4.7-6.1; c = 44-56; V = 94-95%. ♂: L = 0.85-1.1 mm; a = 19-20; b = 5.0-5.4; c = 24-30.

Germany, France, Soviet Union (Russia, Georgia); associated with *Blastophagus piniperdae*..... *piniperdae* (Fuchs)

7 Female tail about twice as long as anal body diameter, conical, distinctly longer than vulva-anus distance.....8

\- Female tail 1 to 1.5 times as long as anal body diameter, not longer (mostly shorter) than vulva-anus distance.....13

8 Stoma 20-28 µm, about twice as long as head diameter..... 9

\- Stoma 14-17 µm, only 1.3-1.5 times as long as head diameter....11

9 Tip of spicules ventrally curved; body 0.9-1.4 mm long. ♀ :L = 0.90-1.44 mm; a = 18-20; b = 4.8-5.2; c = 14-24: V = 89-92%. ♂:L = 0.88-1.1 mm; a = 19-20; b = 4.6-5.1; c = 23-28.

Germany; associated with *Hylurgops ligniperda* (Scolytidae)....

.....*ligniperdae*(Fuchs)

\- Tip of spicules straight ; body 0.8-0.9 mm long.....10

10 Walls of stoma anteriorly convergent; oesophagus corpus cylindrical.

♀ : L = 0.77-0.81 mm; a = 20; b = 4.2-4.3; c = 26-27; V = 93%.
♂ : L = 0.75 mm; a = 19; b = 4.1; c = 27.
United States (Texas); associated with *Dendroctonus terebrans* (Scolytidae).....*terebrana* Massey

- Walls of stoma parallel also anteriorly; oesophagus corpus proximally swollen.
♀ : L = 0.89-0.90 mm; a = 17-19; b = 4.8-5.3; c = 24-25; V = 92%.
♂ : L = 0.77-0.83 mm; a = 19-22; b = 4.4; c = 22-29.
United States (New York); associated with *Hylurgops pinifex* (Scolytidae) ..... *hylurgi* Massey

11 Female tail twice as long as the distance between vulva and anus or longer.
♀ : L = 0.57 mm; a = 19; b = 4.7; c = 24; V = 90%. ♂ : L = 0.69mm; a = 31; b = 5.8; c = 31.
Soviet Union (Georgia); associated with *Taphrorhynchus bicolor* (Scolytidae)..... *bicoloris* Devdariani & Maglakelidze

- Female tail at leat 1.5 times as long as the distance between vulva and anus 12

12 Cuticle finely but distinctly spotted; both oesophagus portions about or the same length.
♀ : L = 0.60-0.78 mm; a = 17-18; b = 4.5-5.4; c = 20-22; V = 91%.
♂ : L = 0.57-0.67 mm; a = 16-19; b = 4.2-4.8; c = 21-27.
Germany; associated with *Ips curvidentis* (Scolytidae).....
.....*curvidentis* (Fuchs)

- Cuticle not spotted; posterior portion of oesophagus longer than the anterior.
♀ : L = 0.8 mm; a = 25; b = 5; c = 27; V = 93%. ♂ : L = 0.76 mm; a = 29; b = 5.1; c = 29.
United States (Arizona); associated with the scolytid species *Pseudohylesinus grandis*.....*gracilis* Massey

13 Female tail cupola-shaped with pointed tip.....14

- Female tail conoid or rounded.....16

14 Stoma comparatively short, 13 µm, about as long as head diameter.
♀ : L = 0.68-0.76 mm; a = 14-17; b = 5.0-5.5; c = 30-67; V = 93-97%. ♂ :L = 0.56-0.63 mm; a = 16-29; b = 4.4-4.6; c = 18-20.
Soviet Union (Georgia); in the galleries of *Scolytus mali*.....
.....*malii* Devdariani & Kakulija

- Stoma 18-21 µm, 1.7-2 times as long as long as head diameter...15

15 Tip of the cupola tail very short, blunt, knob-like; arrangement of bursa papillae: 2+4+2+2 or 2+3+1+2 pairs.

♀: L = 0.86mm; A = 28; b = 5.8; c = 81; V = 97%. ♂: L = 0.79mm; a = 24; b = 5.1; c = 12.

Soviet Union (Georgia); associated with *Monochamus sutor*.(Cerambycidae).... ..... *welchi* Devdariani

- Tip of the cupola tail longer, sharply pointed; arrangement of bursa papillae: 2+3+2+3 pairs.

♀: L = 1.0-1.2mm; a = 24-27; b = 6.0-6.6; c = 57-70; V = 95-96%.

♂: L = 0.8-0.9 mm; a = 26-31; b = 5.1-5.2; c = 26-28.

Germany and Soviet Union (Georgia); larvae parasitic in the rectum of *Pityogenes bidentatus* (Scolytidae)..... *bidentati* Rühm

16 Female tail conical, sharply pointed; spicules straight. (Ten species difficult to distinguish).....17

- Female tail rounded, blunt, occasionally with a very fine mucro; spicules slightly curved dorsally.....26

17 Stoma twice as long as head diameter.....18

- Stoma 1.5 times as long as head diameter.....23

18 Female tail 30-40 µm long.....19

- Female tail 15-25 µm long.....21

19 Body tapering slowly behind vulva: vulval diameter 1.5 times as long as anal diameter.

♀: L = 0.88-1.05 mm; a = 15-19; b = 4.2-4.8; c = 27-32; V = 93%.

♂: L = 0.75-0.98 mm; a = 18-19; b = 4.0-4.8; c = 31-35.

Germany and Soviet Union (Georgia); the larvae live in the rectum of *Dendroctonus micans* (Scolytidae)..... *dendroctoni* Rühm

- Body narrowing rapidly behind vulva: vulval diameter twice as long as anal diameter.....20

20 Arrangement of bursa papillae : 2+5+3 pairs.

♀: L = 0.78 mm; a = 17-24; b = 4.6-5.2; c = 25-27; V = 79-92 %.

♂: L = 0.66-0.78 mm; a = 19-21; b = 4.7-4.9; c = 25.

France; associated with *Dryocoetes hectographus* (Scolytidae). ..... *hectographi* Rühm & Chararas

- Arrangement of bursa papillae : 2+4+4 pairs.

♀: L = 0.82-0.99 mm; a = 15-17; b = 4.9-6.6; c = 23-31; V = 92-94%. ♂: L = 0.70-0.86 mm; a = 16-22; b = 4.7-5.7; c = 19-21.

Germany, Austria; in the galleries of *Hylastes ater* and *H. cunicularius* (Scolytidae)..... *ateri* (Fuchs)

21 Arrangement of bursa papillae : 2+4+4 pairs.

♀: L = 0.55-0.72 mm; a = 17; b = 4.5-4.9; c = 32-39; V = 92-93%.

♂: L = 0.56-0.71 mm; a = 22-23; b = 4.2-5.1; c = 23-24.

Germany; associated with *Dryocoetes villosus* (Scolytidae).. .....*villosi* Rühm

- Arrangement of bursa papillae: 2+5+3 pairs.....22

22 Spicules very slender, almost twice as long as tail.

♀: L = 0.56-0.70 mm; a = 19-26; b = 3.8-5.0; c = 25-37; V = 92-94%.

♂: L = 0.43-0.59 mm; a = 20-26; b = 3.6-4.4; c = 20-24.

France; in the tunnels of *Ips typographus* (Scolytidae..... ....*bellifonti* Lieutier & Laumond

- Spicules not so slender, as long as tail.

♀: L = 0.72-0.92 mm; a = 16-21; b = 4.8-5.3; c = 29-59; V = 92-95%.

♂: L = 0.62-0.80 mm; a = 20-22; b = 4.4-5.1; c = 21-34.

Germany and Soviet Union (Russia); associated with *Dryocoetes autographus* (Scolytidae)..... *autographi* (Fuchs)

23 Spicules 32 µm long.

♀: L = 0.7-1.0 mm; a = 17-18; b = 4.3-5.2; c = 23-29; V = 91-93%.

♂: L = 0.52-0.84 mm; a = 19-20; b = 3.8-4.5; c = 23-29.

Germany, Soviet Union (Russia); in galleries of different *Hylastes* species (Scolytidae)..... *opaci* Rühm

- Spicules 40-50 µm long.....24

24 Spicules 1.5 times as long as tail; stoma 14-16 µm long, 1.3 times longer than head diameter.

♀: L = 0.7-1.1 mm; a = 16; b = 4.7-6.6; c = 28-40; V = 93-94%.

♂: L = 0.63-0.84 mm; a = 18-22; b = 5.1-5.7; c = 24-26.

Germany; associated with *Cryphalus piceae* (Scolytidae).... .....*cryphalophila* Rühm

- Spicules not longer than tail; stoma 16-24 µm long, 1.6 times longer than head diameter.....25

25 Arrangement of bursa papillae: 2+4+4 pairs.

♀: L = 0.75-1.1 mm; a = 16-20; b = 5-6; c = 25-29; V = 92-94%.

♂: L = 0.80-0.95 mm; a = 19-21; b = 4.8-6.0; c = 21-26.

Germany, Soviet Union (Russia, Georgia); associated with

Hylurgops palliatus and *Polygraphus polygraphus* (Scolytidae)....
.....*palliati* (Fuchs)

\- Arrangement of bursa papillae: 2+3+2+3+ pairs.
♀: L = 0.97 mm; a = 20; b = 5.5; c = 69; V = 95%. ♂: L = 0.91 mm; a = 24; b = 5.1; c = 23.
Soviet Union (Russia, Ukraine); associated with *Blastophagus minor* (Scolytidae)..... *fuchsi* Blinova & Gurando

26 Distal end of gubernaculum reflexed, arrow-head like.
♀: L = 0.67-0.75 mm; a = 19-21; b = 4.4-4.8; c = 42-46; V = 95%.
♂: L = 0.62-0.67 mm; a 25-26; b = 4.2-4.6; c = 21-24.
United States (Texas); associated with *Ips grandicollis* (Scolytidae)..... ..... *hastula* Massey

\- Distal end of gubernaculum simple, not reflexed.....27

27 Arrangement of bursa papillae: 2+3+5 pairs; spicules 40-48 µm long; vulva lips plain.
♀: L = 0.73-1.1 mm; a = 18-24; b = 4.0-5.3; c = 43-77; V = 94-98%.
♂: L = 0.60-0.89 mm; a = 22-26; b = 4.3-5.1; c = 18-23.
France and United States (Utah, Colorado): in galleries of different species of *Dendroctonus* (Scolytidae).....
.....*thornei* Sudhaus

\- Bursa papillae in other arrangement, spicules 30-39 µm long; vulva lips protruding.....28

28 Pairs of bursa papillae: 2+2+7.
♀: L = 1.0 mm; a = 20-22; b = 5.1-5.4; c = 56-58; V = 95%. ♂: L = 0.78-0.81 mm; a = 23-24; b = 4.5-5.4; c = 18-21.
United States (Arizona); associated with *Polygraphus hoppingi* (Scolytidae).....*clunicula* Massey

\- Pairs of bursa papillae in other arrangement.....29

29 Ten pairs of papillae : 2+3+2+1+2.
♀: L = 0.52-0.99 mm; a = 18-26; b = 3.6-5.7; c = 37-58; V = 94-97%.
♂: L = 0.62-0.78 mm; a = 15-24; b = 4.0-5.8; c = 20-26.
Soviet Union (Russia); in the frass of *Acanthocinus aedilis* (Cerambycidae).....*acanthocini* Lazarevskaja

\- Nine pairs of papillae: (2+1+3+3)
♀: L = 0.66-0.95 mm; a = 20-23; b = 4.4-5.1; c = 73-108; V = 95%.
♂: L = 0.61-0.75 mm; a = 21; b = 3.9-5.0; c = 19-23.
United States (New York); associated with *Ips pini* (Scoly-

tidae)..... *ipini* Massey

Genus: *Paradoxorhabditis* Khera, 1971

DEFINITION: Rhabditoidea, Rhabditidae, Protorhabditinae (Fig.9). Body length about 1 mm. Cuticle longitudinally striated. Head not offset, lips quite low, hardly differenciated. Labial papillae minucious. Amphids very small, on the lateral lips. Stoma about twice as long as head diameter. Cheilorhabdions cuticularized; promesostom proximally widened; metastom simple, without a true glottoid apparatus. Oesophageal collar present, short. Oesophagus corpus cylindrical. Female gonads paired, ovaries reflexed to the vulva; vulval opening somewhat pre-equatorial. Spicules separate. Bursa pseudopeloderan, leaving a short and very fine tail filament free. Seven pairs of genital papillae in 3+ 3+1 arrangement. Tail of female very long, filiform, that of male short.

BIONOMICS: Terrestrial, oviparous nematodes.

DISTRIBUTION : The single species has been recorded from India.

TYPES SPECIES : *Paradoxorhabditis paradoxa* Khera, 1971. No other species.

- Stoma 21 µm long; female tail 15-20 times as long as anal body diameter.

♀: L = 0.90-0.97 mm; a = 24; b = 5.0-5.1; c = 3.7-4.0; V = 42%.

♂: L = 0.64-0.67 mm; a = 21-24; b = 4.0-4.5; c = 21.

India; from the bak of a pond ..... *paradoxa* khera

SUBFAMILY : Mesorhabditinae Andrássy, 1976

Rhabditidae (Fig.11-12). Lips well developed, separate, each with a setiform papilla. Amphids small, on the lateral lips. Stoma fairly wide, well developed. Cheilostom simple,

not cuticularized (except *Rhabpanus*). Promesostom mostly with prallel walls. Metastom with glottoid apparatus and small denticles. Oesophageal collar generally absent. Oesophagus corpus proximally swollen, bulb-like. Female genital organ always unpaired, prodelphic; vulva far back. Spicules often fused distally, in some cases very long and slender. Bursa peloderan, proximally open, generally well developed, only rarely rudimental. Genital papillae nine to ten pairs if bursa normal,and five to nine pairs if bursa reduced, respectively. Tail of female conoid, occasionally cupola-shaped, that of male short, conoid.

The members of this subfamily live predominantly in terrestrial habitats, only a few per cent of them are aquatic (limnic or marine). Eight genera belong to the Mesorhabditinae.

Key to the genera of Mesorhabditinae

1 Cheilostom cuticularized.....2
- Cheilostom not cuticularized.....4
2 Lips with strongly cuticularized edges, labial region *Teratocephalus*-like..... *Teratorhabditis* (p.79)
- Lips without cuticularized edges, labial region not *Teratocephalus*-like.....3
3 Bursa pseudopeloderan: a short and thin tail filament reaching beyond the bursa.....*Rhabpanus* (p.61)
- Bursa completely surrounding tail, peloderan..... *Cruznema* (p.81)
4 Female tail very short, either broadly rounded or cupola-shaped with fine tip.....5
- Female tail elongate, conical, pointed.....6
5 Vulva covered by a large, flap-like operculum; female tail cupola-shaped with tip.....*Operculorhabditis* (p.74)
- Vulva simple, devoid of operculum; female tail rounded, without tip.....*Marispelodera* (p.75)

6 Bursa rudimentary, narrow, generally not reaching to tail tip; spicules shorter than tail and fused only at their tip..... .....*Bursilla* (p.76)

- Bursa well developed, broad, regulary peloderan; spicules longer than tail and fused at least to 1/3 of their length..... 7

7 Spicules fused to 2/3 of their length; bursa crenate in its anterior half..... *Crustorhabditis* (p.72)

- Spicules fused to 1/3 - exceptionally to 1/2 - of their length; bursa smooth..... *Mesorhabditis* (p.64)

Genus: *Rhabpanus* Massey, 1971

Syn. *Khabditis* (*Rhabpanus* Massey, 1971) Sudhaus, 1976.

DEFINITION: Rhabditoidea, Rhabditidae, Mesorhabditinae (Fig.11). Body 0.6-0.8 mm long. Cuticle annulated. Lips broad, globular, well offset, with small papillae. Amphids small, on the lateral lips. Stoma relatively short, not longer than the head diameter. Cheilostom cuticularized but short; promesostom with parallel walls; metastom swellings each with two small denticles. Oesophageal collar absent. Oesophagus corpus weakly swollen. Female gonad unpaired, prodelphic, with a short postvulval uterine branch; ovary long, reflexed beyond vulva. Vulva far back. Spicules short, separate. Bursa pseudopeloderan, leaving a short and thin caudal filament free. Eight pairs of genital papillae. Tails of both sexes short, more or less conical.

This genus shall be placed provisionally in the subfamily Mesorhabditinae since it distinguishes in some respects (cheilostom cuticularized, a postvulval uterine sac present, bursa pseudopeloderan) from the other representatives of the group.

BIONOMICS: The only species is associated with Isoptera.

DISTRIBUTION : Known from North America.

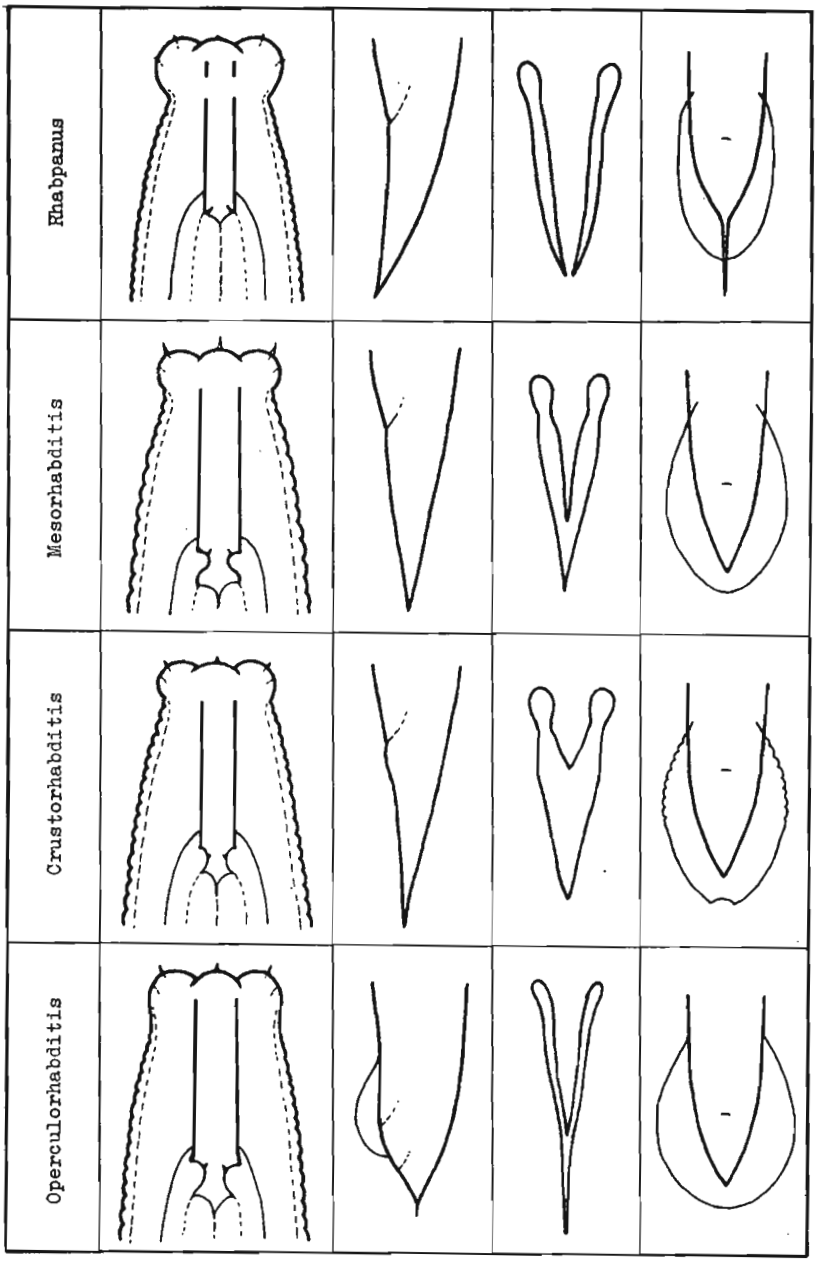

Fig.11. Rhabditidae: Mesorhabditinae. The genera of the subfamily (head, female tail, spicules, bursa).

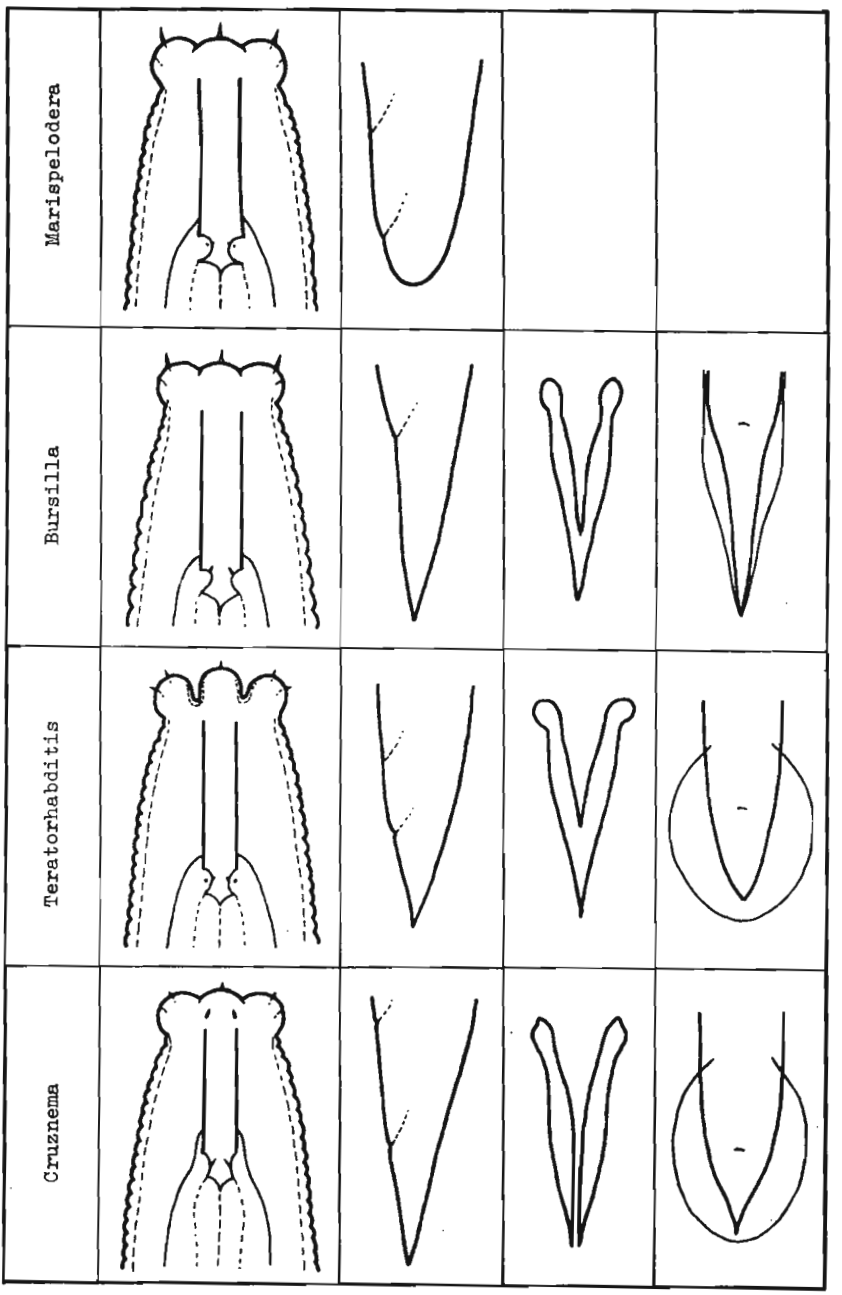

Fig.12. Rhabditidae: Mesorhabditinae. The genera of the subfamily, continuation (head, female tail, spicules, bursa).

TYPE SPECIES : *Rhabpanus ossiculus* Massey, 1971.

Syn. *Rhabditis* (*Rhabpanus*) *ossicula* (Massey, 1971) Sudhaus, 1976.

No other species.

- Cuticle finely spotted; distance between vulva and anus 6 times as long as tail; arrangement of bursa papillae:2+6 pairs. ♀: L = 0.67-0.84 mm; a = 13-14; b = 4.0-4.2; c = 12-14; V = 65-67%. ♂:L = 0.58-0.60 mm; a = 15; b = 3.7-4.0; c = 16.

  United States (Mississippi); associated with *Reticulitermes flavipes* (Isoptera).....*ossiculus* Massey

Genus: *Mesorhabditis* (Osche, 1952) Dougherty, 1953

Syn. *Rhabditis* (*Mesorhabditis* Osche,1952) ; *Rhabditis* (*Uniovaria* Khera, 1968).

DEFINITION: Rhabditoidea, Rhabditidae, Mesorhabditinae (Fig.11). Body length between 0.4 and 1.0 mm. Cuticle conspicuously annulated. Lips well separated, rounded, each with one to three setiform papillae. Head offset. Amphids small, on the lateral lips. Stoma well developed, 2-3 times head diameters long. Cheilostom simple, exceptionally cuticularized but small. Mesostom tubular, with parallel walls; metastom with glottoid apparatus, each swelling bearing two setose denticles. Oesophageal collar absent. Oesophagus corpus proximally swollen. Female gonad unpaired, prodelphic; a short postvulval uterine sac may be present. Vulva far back. Spicules distally fused to 1/3 - sometimes to 1/2-of their length, often very long and slender, to 2-3 times longer than tail. Bursa well developed, peloderan, exceptionally reduced, anteriorly open; genital papillae 9-10 pairs (2 pairs preanal). Tail of female conical, rarely cupola-shaped, moderately long. Phasmids near the anus.

BIONOMICS: The species of the genus *Mesorhabditis* are terrestrial animals. They live in soil, moss, mushrooms,

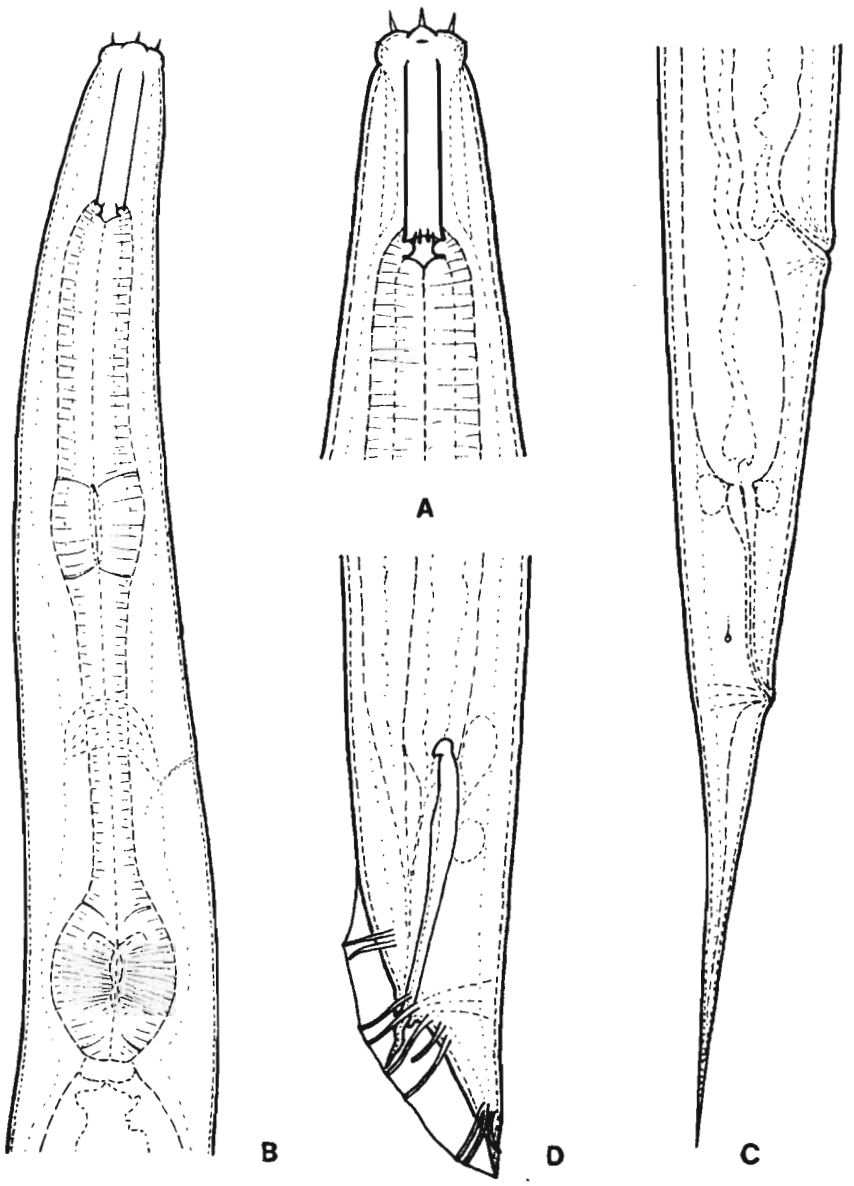

Fig.13. *Mesorhabditis longespiculosa* (Schuurmans Stekhoven,1951) Dougherty, 1955 - a member of the subfamily Mesorhabditinae, from Acaray, Paraguay. A: anterior end, 1 540X;B: oesophageal region, 1 150X;C: female posterior end,1 150X; D: male posterior end,1 150X.

rotten wood, frass of beetles, dung and decaying plant tissues. Oviparous or ovoviviparous species.

DISTRIBUTION: The members of this genus are distributed over the world, thus, they are fairly common in Europe, Asia and Africa, but they occur also in Australia, Oceania and both Americas.

TYPE SPECIES : *Rhabditis spiculigera* Steiner, 1936 = *Mesorhabditis spiculigera* (Steiner, 1936) Dougherty, 1953.

OTHER SPECIES : Seventeen valid and three problematic species can be included in the genus *Mesorhabditis* :

M. africana Andrássy, 1982

M. anisomorpha (Sudhaus, 1978) n. comb.

Syn. *Rhabditis (Mesorhabditis) anisomorpha* Sudhaus, 1978

M. belari (Nigon, 1949) Dougherty, 1953

Syn. *Rhabditis belari* Nigon, 1949
Rhabditis (Mesorhabditis) belari Nigon, 1949 Sudhaus, 1976

M. cranganorensis (Khera, 1968) n. comb.

Syn. *Rhabditis (Uniovaria) cranganorensis* Khera, 1968
Rhabditis (Mesorhabditis) cranganorensis Khera, 1968 (Sudhaus, 1976)

M. graciliformis (Goffart, 1935) Dougherty, 1955

Syn. *Rhabditis gracilis* Goffart, 1935, nec Shingareva, Demidova & Kudriavthev, 1928
Rhabditis graciliformis Goffart, 1935
Rhabditis (Mesorhabditis) graciliformis Goffart, 1935 (Osche, 1952)
Rhabditis (Cruznema) graciliformis Goffart, 1935 (Sudhaus, 1978)

M. inarimensis (Meyl, 1953) Dougherty, 1955

Syn. *Rhabditis inarimensis* Meyl, 1953
Rhabditis (Mesorhabditis) inarimensis Meyl, 1953 (Meyl, 1954).

M.irregularis (Körner in Osche, 1952) Dougherty, 1955.
Syn. *Rhabditis (Mesorhabditis) irregularis* Körner in Osche, 1952
Rhabditis (Mesorhabditis) quercophila Rühm in Osche, 1952
Mesorhabditis quercophila (Rühm in Osche, 1952) Dougherty, 1955

M.juglandicola (Fuchs, 1937) Dougherty, 1955
Syn. *Rhabditis juglandicola* Fuchs, 1937
Rhabditis (Mesorhabditis) juglandicola Fuchs, 1937 (Osche, 1952)

M.longespiculosa (Schuurmans Stekhoven, 1951) Dougherty, 1955
Syn. *Rhabditis longespiculosa*
Rhabditis (Mesorhabditis) longespiculosa

M.megachilis (Sudhaus, 1978) n.comb.
Syn. *Rhabditis (Mesorhabditis) megachilis* Sudhaus 1978

M.miotki (Sudhaus, 1978) n.comb.
Syn. *Rhabditis (Mesorhabditis) miotki* Sudhaus, 1978

M.oschei (Körner in Osche, 1952) Dougherty, 1955
Syn. *Rhabditis (Mesorhabditis) oschei* Körner in Osche, 1952

M.spiculigera (Steiner, 1936) Dougherty, 1953
Syn. *Rhabditis spiculigera* Steiner, 1936
Rhabditis (Mesorhabditis spiculigera Steiner, 1936 (Osche, 1952)
Pseudorhabditis acuminata Kreis, 1929
Asymmetricus acuminatus (Kreis, 1929) Kreis, 1930
Rhabditis acuminata (Kreis, 1929) Nigon, 1949
Tricephalobus acuminatus (Kreis, 1929) Goodey, 1951
Mesorhabditis acuminata (Kreis, 1929) Dougherty, 1955
Trilabiatus acuminatus (Kreis, 1929) Dougherty 1955
Trilabiatus acuminatus (Kreis, 1929) Goodey, 1963

M. sudhausi Andrássy, 1982

M. szunyoghi Andrássy, 1961

Syn.*Rhabditis (Mesorhabditis) szunyoghyi* (Andrássy, 1961) Sudhaus, 1976

Mesorhabditis capitata Loof, 1964

Rhabditis (Mesorhabditis) capitata (Loof, 1964) Sudhaus, 1976

M. tenuispicula (Körner in Osche, 1952) Dougherty, 1955

Syn.*Rhabditis (Mesorhabditis) tenuispicula* Körner in Osche, 1952

M. ultima (Körner in Osche, 1952) Dougherty, 1955

Syn.*Rhabditis (Mesorhabditis) ultima* Körner in Osche, 1952

Rhabditis inarimensis apud Sudhaus, 1978

SPECIES INQUIRENDAE

Owing to the unknown males, the following species must be regarded as such :

M. contaminata (Khera, 1971) n.comb.

Syn.*Rhabditis contaminatus* Khera, 1971

Rhabditis (Mesorhabditis) contaminata (Khera,1971) Sudhaus, 1978

M. longistomis Massey, 1974

M. signifera (Baranovskaja, 1958) Baranovskaja, 1962

Syn.*Rhabditis (Mesorhabditis) signifera* Baranovskaja, 1958

Key to the species of Mesorhabditis

1 Distance between vulva and anus 2 to 4 times as long as tail 2

\- Distance between vulva and anus only slightly longer, or, in most cases, shorter than tail..... 4

2 Female tail cupola-shaped, about as long as anal body diameter. ♀: L = 0.80-0.88 mm; a = 12-15; b = 3.7-5.7; c = 30-38; V = 85-

86%. ♂: L = 0.74-0.76 mm; a = 15-17; b = 4.6-4.9; c = 47-48.

Germany; in the nests of *Megachile nigriventris* (Hymenoptera, Megachilidae). .....*megachilis* (Sudhaus)

- Female tail conical, 1.5 to 3 times longer than anal body diameter.....3

3 Bursa rather small, distally pointed, with 10 pairs of papillae; female tail 1 to 2 anal diameters.

♀: L = 0.54-0.88 mm; a = 12-19; b = 3.9-6.2; c = 16-47; V = 80-85%. ♂: L = 0.48-0.72 mm; a = 14-22; b = 3.6-5.8; c = 30-41.

Germany, Czechoslovakia, Hungary, Bulgaria, Soviet Union (Uzbekistan, Far East); in soil and rotting wood, larvae associated with *Trichius fasciatus* (Scarabaeidae) .... *irregularis* (Körner in Osche)

- Bursa well developed, distally rounded, with 9 pairs of papillae; female tail longer than two anal diameters.

♀: L = 0.49-0.56 mm; a = 18-20; b = 3.7-3.9; c = 19-21; V = 83-85 %. ♂ L = 0.45-0.53 mm; a = 19-22; b = 3.7-3.8; c = 25-30.

Hungary; in soil.....*sudhausi* Andrássy

4 Vulva quite near the anus, distance between vulva and anus at most as long as anal body diameter or 1/4 of tail length, respectively.

♀: L = 0.50-0.74 mm; a = 16-22; b = 4.8-7.0; c = 8.15; V = 87-91%. ♂ L = 0.42-0.50 mm; a = 18-19; b = 4.6-4.8; c = 26-31.

Germany; under bark of tree.....*juglandicola* Fuchs

- Vulva not so close to anus, distance between vulva and anus at least double of anal body diameter, or nearly as long or longer than tail.....5

5 Female tail about 10 anal body diameters long, nearly as long as vulva-anus distance.

♀: L = 0.8-1.0 mm; a = 34-36; b = 5.0-5.7; c = 6-9; V = 78%.

♂: L = 0.53-0.75 mm; a = 26-28; b = 4-5; c = 30-31.

Soviet Union (Far East) and Cameroon; in rotting fruits. The systematic position of this species is somewhat problematic.....

.....*graciliformis* (Goffart)

- Female tail maximum 6 anal body diameters long.....6

6 Dorsal wall of promesostom with tooth-like inner projection, glottoid apparatus anisomorphic.

♀: L = 0.65-0.76 mm; a = 15-22; b = 4.2-4.6; c = 8.4-10.1; V =

78-81%. ♂: L = 0.52-0.65 mm; a = 15-22; b = 3.6-4.3; c = 33-40.

Spain; in mouldy wood.....*anisomorpha* (Sudhaus)

- Dorsal wall of promesostom without tooth-like projection, glottoid apparatus isomorphic.....7

7 Oesophagus unusually long, almost 1/3 of total body length; tail as long as 6 anal body diameters.

♀: L = 0.42-0.50 mm; a = 28-31; b = 3.5-3.7; c = 9-10; V = 73-76%. ♂ unknown.

India; terrestrial.....*cranganorensis*(Khera)

- Oesophagus normal, about 1/4 of total body length or shorter; tail mostly shorter.....8

8 Distance between vulva and anus shorter than tail, and only 1-1.5 times as long as vulval body diameter, respectively.....9

- Distance between vulva and anus as long or longer than tail, and 2-2.5 times as long as vulval body diameter, respectively.....11

9 Spicula large, longer than 50 µm (to 76 µm); vulva far back, in 80-88% of body length.

♀: L = 0.63-0.80 mm; a = 16-19; b = 4.0-4.8; c = 10-13; V = 80-88%. ♂: L = 0.59-0.75 mm; a = 14-18; b = 3.8-4.7; c = 22-51.

Africa: Nigeria, Angola, Tanzania, Venezuela; probably also Soviet-Union (Uzbekistan, Far East); in soil, moss and decaying plant residues.....*szunyoghyi* Andrássy

- Spicula smaller, shorter than 40 µm ; vulva not so far, in 74-79% of body length..... 10

10 Female tail 6 anal body diameters long; genital papillae 10 pairs.

♀: L = 0.49-0.79 mm; a = 15-21; b = 4.1-5.5; c = 6.3-8.5; V = 74-79 %.♂ 0.40-0.61 mm; a = 16-23; b = 3.5-4.9; c = 27-42.

Yugoslavia; in mouldy wood.....*miotki* (sudhaus)

- Female tail 4 anal body diameters long; genital papillae 9 pairs.

♀: L = 0.44-0.46 mm; a = 13-16; b = 3.8-4.2; c = 8.0-8.5; V = 77-78 %. ♂ : L = 0.37-0.42 mm; a = 14-16; b = 3.4-4.0; c = 19-21.

Germany, Hungary, Bulgaria, Italy, Soviet-Union (Russia, Kirghizia, Usbekistan); in soil, hot spring(" fumarola ") and frass of the larvae of *Lucanus cervus* (Lucanidae)....*inarimensis*(Meyl)

11 Spicules relatively thick and fused to 1/2 of their length.

♀: L = 0.74-0.88 mm; a = 17-19; b = 3.8-4.5; c = 10-12;

V = 79-81%. ♂: L = 0.50-0.93 mm; a = 18-21; b = 3.9-4.6; c = 20-23.

Germany, Czechoslovakia; in rotten wood.....
.....*oschei* (Körner in Osche)

\- Spicules slender, often very long and fused to 1/4 or 1/3 of their length.....12

12 Arrangement of bursa papillae: 2+4+3 pairs.....13

\- Arrangement of bursa papillae: 2+5+3 pairs (the 6th pair sometimes very small).....14

13 Stoma 20 µm long, buccal tube (promesostom) narrow, 8-9 times as long as wide.

♀: L = 0.76-0.94 mm; a = 14-18; b = 6.1-7.4; c = 13-17; V = 84-87%. ♂: L = 0.56-0.70 mm; a = 16-24; b = 5.6-6.2; c = 30-34.

Germany; in frass of beetles living in wood.....
.....*tenuispicula* (Körner in Osche)

\- Stoma 13-16 µm long; buccal tube wide, only 4 times as long as wide.

♀: L = 0.7 mm; a = 18; b = 5; c = 10; V = 80%. ♂: L = 0.9mm a = 13; b = 4.3; c = 33.

Germany, France, Fiji Islands, Australia; terrestrial.....
..... *belari* (Nigon)

14 Three papillae of the second group (papillae 4, 5 and 6) proximally fused.

♀: L = 0.41-0.94 mm; a = 15-25; b = 3.4-5.3; c = 8-14; V = 78-84%. ♂: L = 0.37-0.62 mm; a = 15-22; b = 3.4-4.9; c = 28-40.

Holland, Germany, Switzerland, Austria, Hungary, Czechoslovakia, Bulgaria, Spain, France, Greece, Poland, Soviet-Union (Russia, Lithuania, Kazakhstan, Uzbekistan, Far East); Egypt, Canary Islands South Africa; Canada, United States (California, Wisconsin, New Jersey, Pennsylvania); Hawaii, Fiji Islands, New Zeland; in terrestrial habitats, viz. in soil, mushroom, rotten wood, mould, compost, cow- and horse dung.....*spiculigera* (Steiner)

\- The papillae mentioned above not fused proximally.....15

15 Labial papillae distinctly curved inwards; the 5th and 6th bursal papillae shorter than the others.

♀: L = 0.68-0.71 mm; a = 17-21; b = 4.3-4.6; c = 9.0-9.7; V = 78-80%. ♂: L = 0.49-0.55 mm; a = 16-18; b = 3.5-3.9; c = 20-22.

Congo Republic; in soil.....*africana* Andrássy

- Labial papillae straight; either the 6th or the 7th of bursal papillae shorter than the other.....16

16 Spicules proximally hooked; the 6th papilla shorter than the others.

♀: L = 0.65-0.85 mm; a = 13-20; b = 4.1-5.4; c = 10-15; V= 80-84%. ♂: L = 0.46-0.77mm; a = 13-19; b = 3.2-5.3; c = 26-53.

Kenya, Congo Republic, Zaire and Brazil; in soil and mould (Fig.13) .....

..... *longespiculosa* (Schuurmans Stekhoven)

- Spicules not hooked proximally; the 7th papilla shorter than the others.

♀: L = 0.55-0.79mm; a = 12-20; b = 4.2-5.3; c = 12-15; V = 79-85%. ♂: L = 0.45-0.67mm; a = 14-21; b = 3.5-5.0; c = 30-47.

Germany, Czechoslovakia, Hungary, Soviet-Union (Moldavia, Uzbekistan); Egypt; Venezuela; in soil, mould and rotting wood.....*ultima* (Körner in Osche)

Genus: *Crustorhabditis* (Sudhaus, 1974) Andrássy, 1976

Syn. *Rhabditis* (*Crustorhabditis* Sudhaus, 1974)

DEFINITION : Rhabditoidea, Rhabditidae, Mesorhabditinae (Fig.11). Body relatively large, 0.8 to 4 mm long. Cuticle with transverse annules and fine longitudinal striae. Head slightly offset, lips well separate with small rod-like papillae. Amphids very small, on the lateral lips. Stoma 1.5-2 times as long as head diameter. Cheilostom not cuticularized; promesostom tubular with parallel walls; metastom swelling each with two minucious denticles. Oesophageal collar absent. Oesophagus corpus proximally swollen, bulb-like. Female gonad unpaired, prodelphic, devoid of a post-vulval uterine sac. Vulva far back, close to anus. Spicules strong, fused to 2/3 of their length. Bursa peloderan, broad, anteriorly open and finely crenate, distally slightly idented. Ten pairs of genital papillae present, two of

them lying preanal. Tail of female longer than that of male, conical. Phasmids near the anal opening.

BIONOMICS: Littoral nematodes, associated with *Brachyura* crabs. Ovoviviparous.

DISTRIBUTION : The species of *Crustorhabditis* have been reported from the coast of Europe, Eastern Africa, Atlantic North America, and Caribbean and Pacific South America.

TYPE SPECIES: *Rhabditis* (*Crustorhabditis*) *riemanni* Sudhaus, 1974 = *Crustorhabditis riemanni* (Sudhaus, 1974) Andrássy, 1976.

THREE SPECIES :

C. *ocypodis* (Chitwood, 1935) n. com.
Syn. *Rhabditis ocypodis* Chitwood, 1935
Rhabditis (*Mesorhabditis*) *ocypodis* Chitwood, 1935 (Osche, 1952).
Rhabditis (*Crustorhabditis*) *ocypodis* Chitwood, 1935 (Sudhaus, 1974)
Parasitorhabditis ocypodis (Chitwood, 1935) Chitwood, 1951
Mesorhabditis ocypodis (Chitwood, 1935) Dougherty, 1955

C. *riemanni* (Sudhaus, 1974) Andrássy, 1976
Rhabditis (*Crustorhabditis*) *riemanni* Sudhaus, 1974

C. *scanica* (Allgén, 1949) n.comb.
Syn. *Rhabditis scanica* Allgén, 1949
Rhabditis (*Crustorhabditis*) *scanica* Allgén, 1949 (Sudhaus, 1974)

Key to the species of Crustorhabditis

1 Smaller species, 0.8-1.5 mm long; spicules 40-50 µm long. ♀ L = 0.86-1.52 mm; a = 16-24; b = 5.1-7.8; c = 8.7-16.4; V = 88-89 %. ♂: L = 0.78-1.17 mm; a = 15-23; b = 4.0-6.5; c = 31-49.
On the coasts of Denmark, Italy, Egypt, Kenya, Madagascar

and Chile; in groundwater, detritus and associated with *Brachyura* crabs..... *scanica* (Allgén)

- Larger species, 2-4 mm long; spicules longer than 50 µm. 2

2 Arrangement of bursa papillae: 2+1+7 pairs; spicules 65-71 µm long.

♀: L = 1.97-2.87 mm; a = 25-39; b = 6.8-8.7; c = 14-18; V = 89-91 %. ♂: L = 2.0-2.38 mm; a = 27-40; b = 6.1-7.4; c = 71-98.

Atlantic coats of the United States (North Carolina) and Columbia; associated with *Brachyura* crabs .... *ocypodis* (Chitwood)

- Arrangement of bursa papillae: 2+2+6 pairs; spicules 53-62 µm long. ♀: L = 2.42-3.98 mm; a = 14-23; b = 7.9-11.8; c = 20-36; V = 91-94 %. ♂: L = 1.89-2.82 mm; a = 16-22; b = 6.5-9.1; c = 39-65.

On coasts of Kenya; associated with *Brachyura* crabs .... *riemanni* (Sudhaus)

Genus: *Operculorhabditis* Khera, 1969

Syn. *Rhabditis* (*Operculorhabditis* Khera, 1969) Sudhaus, 1976.

DEFINITION: Rhabditoidea, Rhabditidae, Mesorhabditinae (Fig.11). Body about 1 mm long. Cuticle finely annulated. Head not offset, lips hardly separate, with small papillae. Amphids inconspicuous, on the lateral lips. Stoma well developped, 1.5 times as long as head diameter. Cheilostom not cuticularized; promesostom broad-tubular, with parallel walls; metastom isoglottoid, each swelling carrying one (?) setose denticle. Oesophageal collar absent. Oesophagus corpus proximally swollen, terminal bulb elongate. Female gonad unpaired, prodelphic, without postvulval uterine sac. Vulva far back, quite close to anus, covered by a large crescentic flap. Spicules fused distally to almost 1/2 of their length, very long and slender, 2-3 times as long as tail. Bursa well developped, peloderan, open anteriorly, supported by ten pairs of papillae (two pairs preanal). Tails

of both sexes quite short, conical. Phasmids level with anal opening.

BIONOMICS: Terrestrial, oviparous nematodes.

DISTRIBUTION: The single species has been found in Asia (India).

TYPE SPECIES: Operculorhabditis longespiculosa Khera, 1969.

No other species :

O. longespiculosa Khera, 1969
Syn.*Rhabditis (Operculorhabditis) kherai* Sudhaus,1976

- Stoma 24 µm long; distance between vulva and anus nearly as long as tail; spicules 64 µm long; arrangement of bursa papillae: 2+5+3 pairs.

♀: L = 0.9-1.1 mm; a = 18-23; b = 4.5-4.8; c = 39-43; V = 94-96%.
♂: L = 0.8-0.9 mm; a = 22-24; b = 4.2-4.4;c = 34-37.
India; on bank of sewer.....*longespiculosa* Khera

Genus: *Marispelodera* Belogurov, 1977

DEFINITION: Rhabditoidea, Rhabditidae, Mesorhabditinae (Fig.12). Body 1.4-1.8 mm long, fairly robust. Cuticle annulated, only postvulval part of body smooth. Head offset, lips separate, hemispherical, each with a bristle-like papilla . Amphids pore-like, on the lateral lips. Stoma well developped, 1.5 times as long as head diameter. Cheilostom not cuticularized but head provided with an inner skeleton formed by the thickened subcuticle. Promesostom tubular, with somewhat divergent walls. Metastom isoglottoid, each swelling bearing three point-like denticles. Oesophageal collar absent. Oesophagus corpus slightly swollen, terminal bulb more elongate than in other genera of the subfamily. Female genital organ unpaired, prodelphic, uterus unusually large and in mature females filled with larvae of second

stage. No postvulval uterine sac. Vulva far in posterior body region, near anal opening. Tail very short and broadly rounded. Phasmids conspicuous. Male unknown.

BIONOMICS: Terrestrial nematodes living in littoral zone. Viviparous.

DISTRIBUTION: The single representative of the genus was discovered in the Far East Territory of the Soviet Union.

TYPE SPECIES: *Marispelodera stasileonovi* Belogurov, 1977.

NO OTHER SPECIES

- stoma 32 µm long; vulva-anus distance 2-3 times longer than tail, the latter shorter than anal body diameter. ♀ : L = 1.40-1.84 mm; a; 18-20; b = 5.8-6.1; c = 68-69; V = 85-98%. ♂: unknown.
  Soviet Union (Berind Islands); in littoral zone.....
  .....*stasileonovi* Belogurov

Genus: *Bursilla* Andrássy, 1976

DEFINITION: Rhabditoidea, Rhabditidae, Mesorhabditinae (Fig.12). Body small, 0.3 to 0.9 mm. Cuticle annulated, sometimes smooth with striated subcuticle. Head offset, lips well separate, hemispherical, armed with bristle-like papillae. Amphids inconspicuous, on the lateral lips. Stoma well developed, buccal tube strongly cuticularized. Cheilostom not cuticularized, invisible. Promesostom tubular, with parallel walls; metastom swellings isoglottoid and armed with two conspicuous denticles. Stoma 1.5 to 2.5 times as long as head diameter. Oesophageal collar lacking. Oesophagus corpus swollen, bulb-like; terminal bulb strong. Female genital organ unpaired,prodelphic, without postvulval sac. Vulva at 66 to 80% of body length. Spicules relatively short, shorter than tail, fused in their tips. Bursa peloderan but very weakly developed or rudimentary, narrow, with three to nine pairs of papillae. Tails of both sexes similar, conical with pointed tip. Phasmids close to anal opening.

BIONOMICS : The species of *Bursilla* live in terrestrial habitats but in some cases they can occur in aquatic biotopes, too. Oviparous animals.

DISTRIBUTION: The representatives of this genus are distributed over the world, viz. they occur in Europe, Asia, Africa, Australia and the Americas.

TYPE SPECIES : *Rhabditis monhystera* Bütschli, 1873 = *Bursilla monhystera* (Bütschli, 1873) Andrássy, 1976.

SIX SPECIES :

B. labiata (Völk, 1950) n. comb.
Syn.*Rhabditis labiata* Völk, 1950
Rhabditis (Mesorhabditis) labiata Völk, 1950 (Osche, 1952)
Mesorhabditis labiata (Völk, 1950) Dougherty, 1955
Pelodera (Cruznema) labiata (Völk, 1950) Andrássy, 1956.

B. littoralis (Yeates, 1969) n. comb.
Syn.*Mesorhabditis littoralis* Yeates, 1969
Pelodera (Cruznema) sambharensis Khera, 1971

B. microbursaris (Steiner, 1926) n. comb.
Syn.*Rhabditis microbursaris* Steiner, 1926
Tricephalobus microbursaris (Steiner, 1926) Osche, 1952
Rhabditis franseni Fuchs, 1933

B. monhystera (Bütschli, 1973) Andrássy, 1976
Rhabditis monhystera Bütschli, 1873
Rhabditis (Mesorhabditis) monhystera Bütschli, 1873 Osche, 1952
Mesorhabditis monhystera Bütschli, 1873) Dougherty, 1955
Rhabditis simplex Cobb, 1893
Rhabditis (Mesorhabditis) simplex Cobb, 1893 (Osche, 1952).
Pelodera (Cruznema) dunensis Khera, 1971

B. paucipapillata (Paetzold, 1955) n. comb.
Syn.*Rhabditis (Mesorhabditis) paucipapillata* Paetzold, 1955
Mesorhabditis paucipapillata (Paetzold, 1955) Paetzold, 1958
B. vernalis Andrássy, 1982

Key to the species of Bursilla

1 Tail of male short, 1.5 times as long as anal body diameter; spicules nearly as long as tail..... 2
- Tail of male at least 3 times as long as anal body diameter; spicules much shorter than tail (1/3 to 1/2 of the latter)..... 3

2 Bursa completely surrounding tail tip, with 6 pairs of papillae.
♀: L = 0.56-0.94 mm; a = 11-21; b = 5.0-6.3; c = 6-11; V = 72-80%
♂: L = 0.3-0.5 mm; a = 13-15; b = 3.5-4.8; c = 14-21.
Germany and Czechoslovakia; terrestrial, also in saprobic habitats..... *labiata* (Völk)
- Bursa not reaching to tail tip, with seven pairs of papillae.
♀: L = 0.54-0.65 mm; a = 17-20; b = 4.1-4.8; c = 8-10; V = 73-76%. ♂ L = 0.32-0.44 mm; a = 14-18; b = 3.0-3.9; c = 15-17.
Germany, Hungary, Soviet Union (Uzbekistan) Mauretania, Venezuela; mostly terrestrial but also in saline waters.....
.....*paucipapillata* (Paetzold)

3 Spicules nearly half as long as tail; medial swelling of oesophagus weak..... 4
♀: L = 0.35-0.52 mm; a = 14-18; b = 4.0-5.1; c = 8-11; V = 72-80%
♂: L = 0.35-0.42 mm; a = 18-22; b = 5.1-6.2; c = 10-11.
Germany and South Africa; terrestrial.....
.....*microbursaris* (Steiner)
- Spicules 1/3 of tail length; medial swelling of oesophagus strong 5

4 Number of bursal papillae 3 pairs.
♀: L = 0.35-0.52 mm; a = 14-18; b = 4.0-5.1; c = 8-11; V = 72-80%
♂: L = 0.35-0.42 mm; a = 18-22; b = 5.1-6.2; c = 10-11.

Germany and South Africa; Terrestrial .....
.....*microbursaris* (Steiner)

- Number of bursal papillae 5 pairs
♀ : L = 0.41-0.56 mm; a = 16-21; b = 3.7-4.4; c = 7.8-8.7; V = 72-74%. ♂ L = 0.30 mm; a = 14; b = 3.4; c = 7.1.
Viet nam; in garden soil.....*vernalis* Andrássy

4 Tail of female 7, that of male 4-5 anal body diameters long; bursa papillae 5 pairs.
♀ : L = 0.60-0.72 mm; a = 15-18; b = 5.2-6.0; c = 7.4-8.7; V = 72-82%. ♂ : L = 0.33-0.44mm; a = 17-20; b = 3.6-4.2; c = 6.6-7.0.
New Zealand; in dune sand..... *littoralis* (Yeates)

- Tail of female 3-5, that of male 3-3.5 anal body diameters long; bursa papillae 9 pairs.
♀: L = 0.60-0.85 mm; a = 19-21; b = 3.5-5.0; c = 8-9; V = 66-80%. ♂ : L = 0.35-0.50 mm; a = 18; b = 3.2-4.6; c = 6-9.
Holland, Belgium, Germany, Switzerland, Austria, Hungary, Czechoslovakia, Rumania, France, Yugoslavia, Bulgaria, Italy, Denmark, Sweden, Poland, Soviet Union (Russia, Latvia, Lithuania, Belorussia, Georgia, Azerbaizhan, Kazakhstan, Kirghizia, Tadzhikistan, Uzbekistan, Far East), India, Bali, Zaire, United States (New York), Brazil, Paraguay, Australia, Fiji Islands, New Zealand; terrestrial but occasionally also in aquatic habitats.....
.....*monhystera* (Bütschli)

Genus: *Teratorhabditis* (Osche, 1952) Dougherty, 1955

Syn. *Rhabditis* (*Teratorhabditis* Osche, 1952).

DEFINITION: Rhabditoidea, Rhabditidae, Mesorhabditinae (Fig.12). Body length between 0.7 and 1.5 mm. Cuticle annulated. Head continuous with neck contour or slightly offset. Lip margins strongly cuticularized, refractive; axils separating lips tubular at base. Dorsal and ventral lips differently shaped than lateral lips.Amphids minute, on the lateral lips. Stoma 1.5 to 2.5 times as long as head diameter. Cheilostom cuticularized, homologous with cuticularization of lip margins. Promesostom tubular, with parallel

walls. Metastom mostly anisomorphic, bearing very small wart-like denticles various in number. Oesophageal collar absent. Oesophagus corpus with bulb-like swelling, terminal bulb strong. Female gonad unpaired, monodelphic, without postvulval uterine branch. Vulva far back on body, near anal opening. Spicules fused in distal ends. Bursa peloderan, open, with nine or ten pairs of papillae. Tail of female conoid or cupola-shaped, spicate, that of male short, conical. Phasmids level with anus.

BIONOMICS: Terrestrial animals living in soil, mushroom beds and decayed plant residues. Oviparous or ovoviviparous

DISTRIBUTION:The *Teratorhabditis* species have been recorded hitherto from Europe and North America.

TYPE SPECIES: *Rhabditis dentifera* Völk, 1950 = *Teratorhabditis dentifera* (Völk, 1950) Dougherty, 1953.

FOUR SPECIES :

T. dentifera (Völk, 1950) Dougherty, 1953
Syn.*Rhabditis dentifera* Völk, 1950
Rhabditis (*Teratorhabditis*) *dentifera* Völk, 1950 (Osche, 1953)

T. mariannae Farkas, 1973
Syn.*Rhabditis* (*Teratorhabditis*) *mariannae* (Farkas, 1973) Sudhaus, 1980

T. rovinjensis (Sudhaus, 1974) n. comb.
Syn. *Rhabditis* (*Teratorhabditis*) *rovinjensis* Sudhaus, 1974

T. stiannula Anderson, 1979

Key to the species of Teratorhabditis

1 Tail of female conical..... 2
- Tail of female cupola-shaped, spicate..... 3
2 Spicules fused distally for 1/2 or their length; metastom with small bristle-like denticles.

♀ : L = 1.0-1.3 mm; a = 13-27; b = 4.7-7.1; c = 10-34; V = 83-94%.
♂ : L = 0.66-1.0 mm; a = 19-21; b = 3.6-5.2; c = 10-24.
Germany and Bulgaria; terrestrial, in plant residus..... ..... *dentifera* (Völk)

- Spicules fused distally for 1/5 of their length; metastom with fine rasp-like structure.
♀: L = 0.7-1.0 mm; a = 20-26; b = 3.6-5.1; c = 10-14; V = 86-91%.
♂: L = 0.52-0.76 mm; a = 23-27; b = 3.3-4.4; c = 27-48.
Canada; in soil, from roots.....*stiannula* Anderson

3 Lips of two shapes: lateral lips large, triangular, pointed anteriorly, subventral and subdorsal lips small and narrow, spicules fused for 3/4 of their length.
♀: L = 0.74-1.35 mm; a = 17-20; b = 3.4-6.0; c = 22-28; V = 93%.
♂: L = 0.70-0.87 mm; a 17-22; b = 3.4-4.7;c = 29-40.
Hungary; in mushroom beds..... *mariannae* Farkas

- Lips nearly uniform in shape; spicules fused for 40 % of their length.
♀: L = 0.92-1.55 mm; a = 15-21; b = 4-6; c = 13-26; V = 67 (?)-93%. ♂ : L = 0.81-1.09mm; a = 11-22; b = 3.7-5.1; c = 27-42.
Yugoslavia; in dung.....*rovinjensis* (Sudhaus)*

Genus: *Cruznema* Artigas, 1927

Syn. *Pelodera* (*Cruznema* Artigas, 1927) Dougherty, 1953; *Rhabditis* (*Cruznema* Artigas, 1927) Sudhaus, 1974; *Epimenides* Gutiérrez, 1949.

DEFINITION: Rhabditoidea, Rhabditidae, Mesorhabditinae (Fig.12). Body 0.6 to 2.2 mm long, fairly robust. Cuticle transversely annulated and longitudinally striated. Head offset, lips well separate, globular, with small papillae. Amphids pore-like, on the lateral lips. Stoma to twice as long as head diameter. Cheilostom cuticularized but small. Promesostom tubular, with parallel walls. Metastom isoglottoid, each swelling carrying three small denticles. Oeso-

* Maybe identical with the foregoing species.

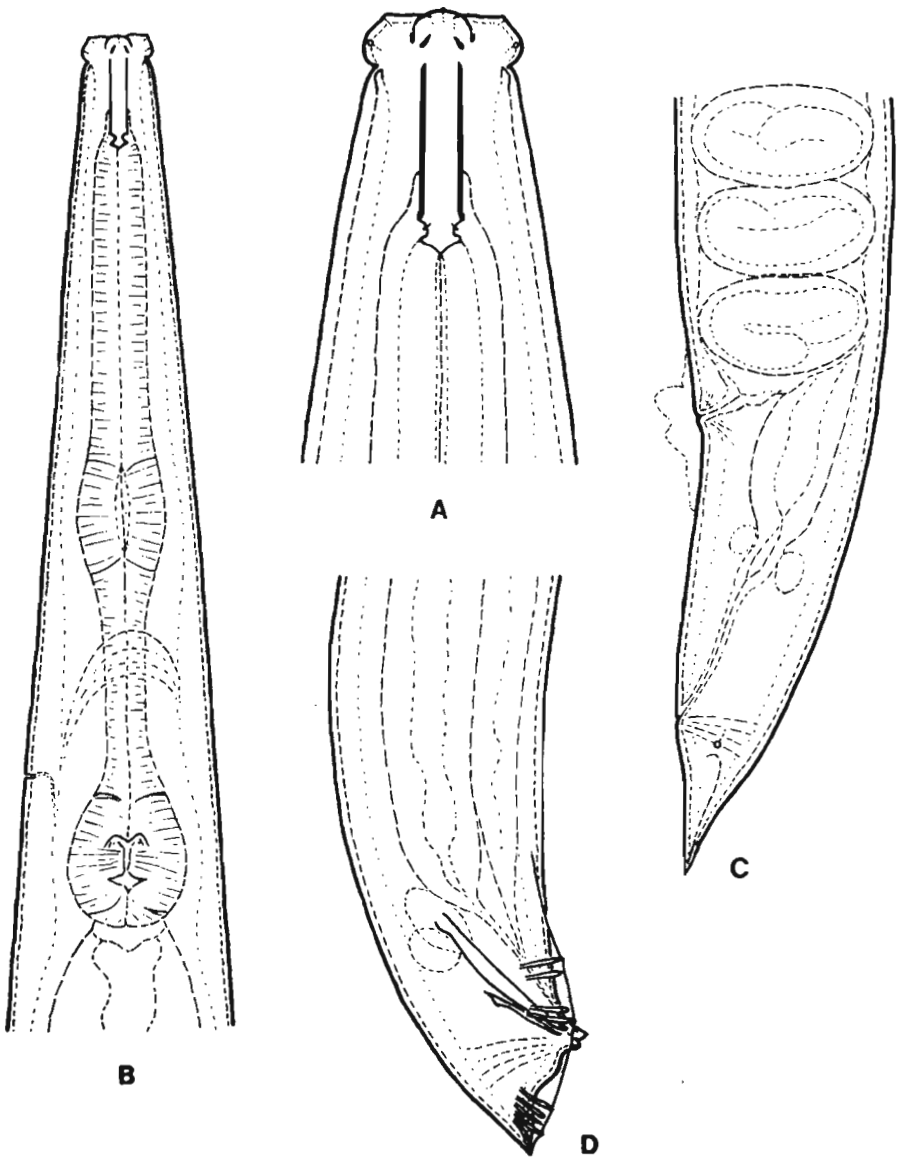

Fig.14. *Cruznema tripartitum* (Linstow, 1906) Zullini,1982. - a member of the subfamily Mesorhabditinae, from Budapest, Hungary. A: anterior end, 1 100X; B: oesophageal region, 520X; C: female posterior end, 520X; D: male posterior end, 520X.

phageal collar around posterior part of promesostom present. Oesophagus with well developed median bulb. Female gonad unpaired, prodelphic; vulva in the posterior fifth of body length. No postvulval uterine sac. Spicules simple, not fused distally. Bursa peloderan, anteriorly open, provided with nine pairs of papillae* . Tails conoid,that of female longer than that of male. Phasmids near anal opening.

BIONOMICS: Terrestrial nematodes, fairly common in decayed plant material. One of the species was found on *Scarabaeus sacer*.Ovoviviparous or, rarely, oviparous.

DISTRIBUTION: The species of this genus have been recorded from Europe, Asia, Africa, Oceania and both Americas.

TYPE SPECIES: *Cruznema cruznema* Artigas, 1927 = *Cruznema tripartitum* (Linstow, 1906) Zullini, 1982

TWO SPECIES:**

C. *scarabaeum* (Sudhaus, 1978) n. comb.
Syn.*Rhabditis* (*Cruznema*) *scarabaea* Sudhaus, 1978
Mesorhabditis spiculigera apud Ali, Wahab ElKifel, 1972

C. *tripartitum* (Linstow, 1906) Zullini, 1982
Syn.*Rhabditis tripartita* Linstow, 1906
Rhabditis (*Cruznema*) *tripartita* Linstow, 1906 (Sudhaus, 1974)
Rhabditis lambdiensis Maupas, 1919
Pelodera (*Cruznema*) *lambdiensis* (Maupas, 1919) Dougherty, 1953
Cruznema lambdiensis (Maupas, 1919) Thorne, 1961
Rhabditis monohysteroides Skwarra, 1921

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* *Cruznema scarabaeum* has ten pairs of papillae but the taxonomic position of this species is rather uncertain.

** The description of *Cruznema brevicaudatum* Latheef & Seshadri, 1972 - Syn. *Rhabditis (Cruznema)brevicaudata* (Latheef & Seshadri,1972) Sudhaus, 1976, could not be obtained by the author.

Pelodera (*Cruznema*) *monohysteroides* (Skwarra,1921) Dougherty, 1955
Rhabditis cryptocercoides Wollenweber, 1921
Rhabditis (*Mesorhabditis*) *cryptocercoides* Wollenweber, 1921 (Osche,1952)
Mesorhabditis cryptocercoides (Wollenweber,1921) Dougherty, 1955
Rhabditis (*Mesorhabditis*) *macrocheila* Kreis,1932
Mesorhabditis macrocheila (Kreis,1932) Dougherty, 1955
Cruznema cruznema Artigas, 1927
Epimenides extricatus Gutiérrez, 1949
Pelodera melisi Marinari, 1957
Pelodera (*Cruznema*) *melisi* Marinari, 1957 (Meyl, 1961)

Key to the species of Cruznema

1 Genital papillae nine pairs: 2+2+5 or 2+2+1+4.
♀: L = 0.9-2.2 mm; a = 10-20; b = 3.6-7.7; c = 8-24; V = 80-87%.
♂: L = 0.6-1.5 mm; a = 10-22; b = 3.3-7.0; c = 25-50.
Holland, Germany, Switzerland, Hungary, England, Bulgaria, Italy, Soviet Union (Russia, Moldavia, Georgia, Tadzhikistan, Kazakhstan, Uzbekistan, Far East); China; Algeria, Congo Republic, South Africa; United States (Washington D.C., Utah, Missouri), Venezuela, Argentina, Brazil; Fiji Islands; terrestrial, generally in plant residues (Fig.14).....*tripartitum* (Linstow)

- Genital papillae ten pairs: 2+1+4+3.
♀: L = 1.37-1.64 mm; a = 19-23; b = 6.8-6.9; c = 14.5-14.6; V = 87-89%. ♂ L = 1.17-1.89 mm; a = 18-19; b = 5.5-5.6; c = 37-69.
Egypt; on the beetle *Scarabaeus sacer*.....*Scarabaeum* (Sudhaus)

SUBFAMILY : Peloderinae Andrássy, 1976

Rhabditidae (Fig.15-16). Lips generally hardly separate, papillae usually very small. Amphids small, on the lateral lips. Stoma well developed, fairly long. Cheilostom only exceptionally cuticularized; promesostom parallel-walled. Metastom with glottoid apparatus and either with small warts or with bristle-like denticles. Oesophageal collar around proximal part of promesostom usually present. Oesophagus corpus more or less swollen, bulb-like. Female genital organ paired, amphidelphic; vulva at or near midbody region. Spicules free or fused distally. Bursa well developed, peloderan or, rarely, pseudopeloderan, provided with nine or ten pairs of papillae. Tail of female conoid or cupola-shaped, that of male short, conoid.

Predominantly terrestrial nematodes, living in soil, humus, plant residues and other saprobic habitats. Eight genera belong to the Peloderinae.

Key to the genera of Peloderinae

1 Bursa anteriorly closed, sucker-shaped..... 2
- Bursa anteriorly open..... 3
2 Tail of female conoid; spicules free; nine pairs of bursa papillae present..... 3. *Caenorhabditis* (p.94)
- Tail of female cupola-shaped, rounded or spicate; spicules distally fused; ten pairs of bursa papillae present..... .....7. *Coarctadera* (p.112)
3 Buccal tube short, only once or twice as long as wide, cheilostom cuticularized; phasmids very prominent, dot-like..... .....2.*Phasmarhabditis* (p.91)
- Buccal tube normal, at least 4 times as long as wide, cheilostom usually not cuticularized; phasmids small, point-like..... 4

4 Spicules free; bursa papillae 9 pairs..... 5
- Spicules distally fused; bursa papillae 10 pairs..... 7
5 Glottoid apparatus each with 2 or 3 bristle-like denticles..... 6
- Glottoid apparatus each with 3 or 5 minucious warts.....5
..... *Pellioditis* (p.99)
6 Cheilostom cuticularized; oesophagus corpus swollen, bulb-like..
.....4 *Xylorhabditis* (p.97)
- Cheilostom not cuticularized; oesophagus corpus not swollen, cylindrical..... .....1 *Dolichorhabditis* (p.86)
7 Two first pairs of genital papillae lying out of bursa; tail of female rounded..... .....8 *Rhomborhabditis* (p.116)
- Every pair of genital papillae lying on the bursa; tail of female spicate..... .....6 *Pelodera* (p.107)

Genus: *Dolichorhabditis* n.gen.

DEFINITION: Rhabditoidea, Rhabditidae, Peloderinae (Fig.15). Body length varying from 0.3 to 1.1 mm. Head not or only slightly offset, lips weakly separate each with a relatively long, setiform papilla. Amphids very small, on the lateral lips. Stoma 1.2 to 2 times as long as head diameter. Cheilostom not cuticularized. Buccal tube (promesostom) well developed, with parallel walls. Metastom swellings isoglottoid, each with two bristle-like denticles. Oesophageal collar present. Oesophagus corpus usually cylindrical or only slightly swollen. Female gonads paired, vulva on mid-body. Spicules separate. Bursa peloderan, open, broad, distally rounded. Genital papillae always in nine pairs present (three pairs preanal; postanal pairs arranged in two groups). Tail of female conoid, that of male also conoid but shorter.

BIONOMICS: Terrestrial nematodes preferring rotten wood; one species inhabits *Sphagnum* moors. Oviparous.

DISTRIBUTION: The species of *Dolichorhabditis* occur primarily in Europe; however they have also been recorded,

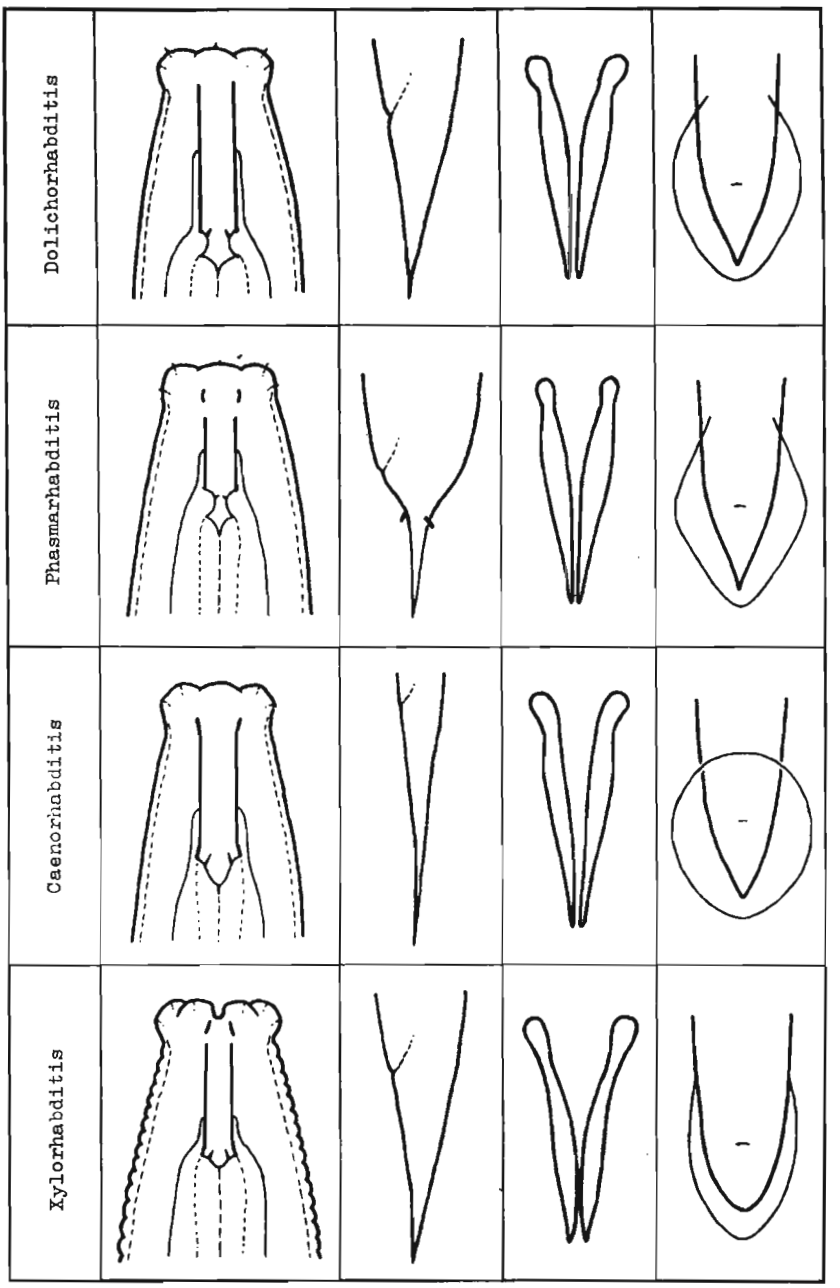

Fig.15. Rhabditidae: Peloderinae. The genera of the subfamily (head, female tail, spicules, bursa).

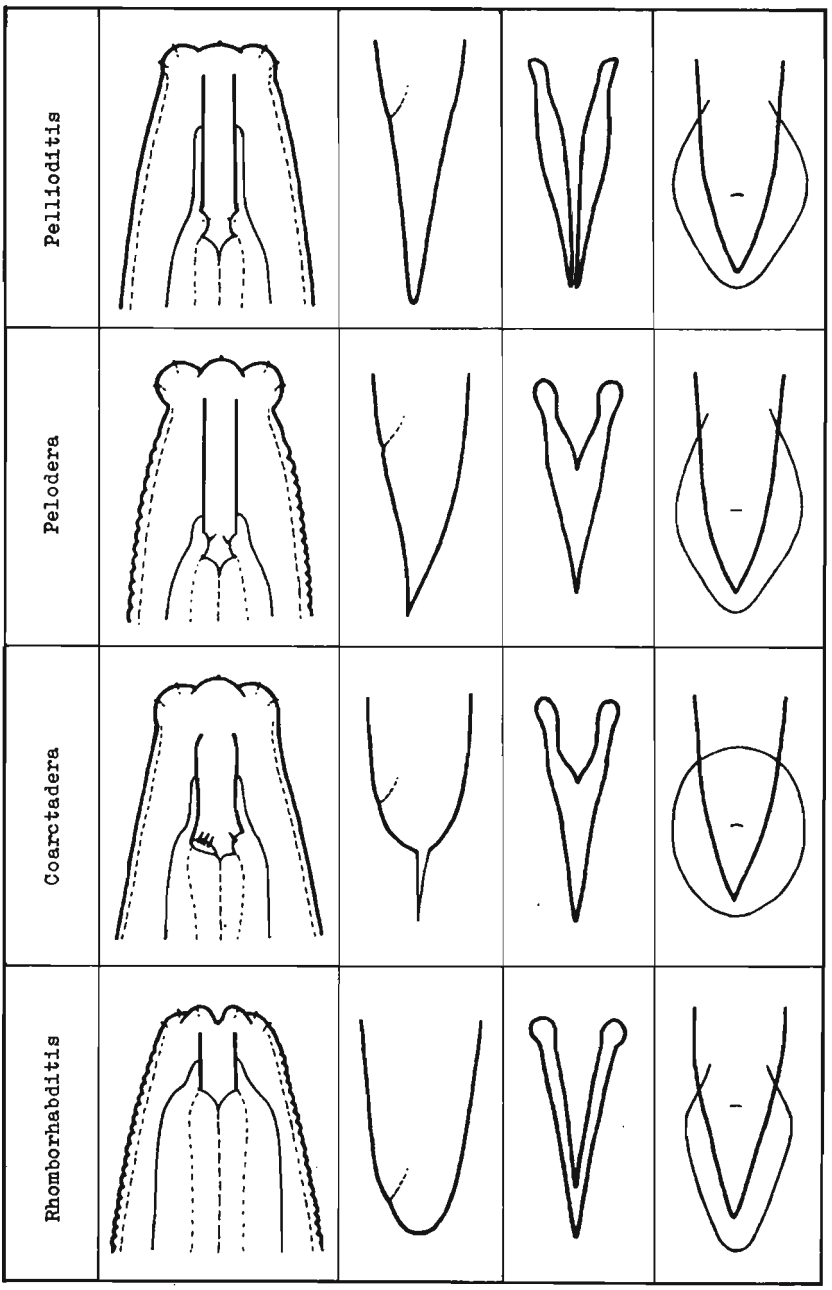

Fig.16. Rhabditidae: Peloderinae. The genera of the subfamily, continuation (head, female tail, spicules, bursa).

from the other continents except South America and Antarctica.

TYPE SPECIES: Leptodera dolichura Schneider, 1866 = *Dolichorhabditis dolichura* (Schneider, 1866) n.comb.

FOUR SPECIES:

D. carpatica (Soos, 1941) n.comb.

Syn.*Rhabditis carpathica* Soos, 1941

Rhabditis (Pelliodítis) carpathica Soos, 1941 (Sudhaus, 1976)

Caenorhabditis carpathica (Soos,1941) Dougherty, 1955

D. debilicauda

Rhabditis debilicauda

Rhabditis (Caenorhabditis) debilicauda Fuchs, 1937 (Osche, 1952)

Caenorhabditis debilicauda (Fuchs, 1937) Dougherty, 1955

D. dolichura (Schneider, 1866) n.comb.

Syn.*Leptodera dolichura* Schneider, 1866

Rhabditis dolichura (Schneider,1866)Bütschli,1873

Rhabditis (Caenorhabditis) dolichura (Schneider, 1866) Bütschli, 1873 (Osche, 1952)

Rhabditis (Pelliodítis) dolichura (Schneider, 1866) Bütschli, 1873 (Sudhaus, 1976)

Caenorhabditis dolichura (Schneider,1866) Dougherty, 1955

Pelliodítis dolichura(Schneider,1866)Zullini,1982

Anguillula oxyuris Claus, 1862

Rhabditis oxyuris (Claus, 1862) Bütschli, 1873

Rhabditis (Protorhabditis) oxyuris (Claus, 1862) Bütschli, 1873 (Osche, 1952)

Protorhabditis oxyuris (Claus, 1862)Dougherty,1955

Pelodera janeti De Lacaze-Duthiers *in* Janet,1893

Rhabditis janeti (De Lacaze-Duthiers *in* Janet,1893) De Man,1894

Rhabditis (Protorhabditis) janeti (de Lacaze-Duthiers, 1893) De Man, 1894 (Osche, 1952)
Protorhabditis janeti (de Lacaze-Duthiers,1893) Dougherty, 1955
Rhabditis herfsi Rahm, 1925

D. rara (Körner *in* Osche, 1952) n.comb.
Syn.*Rhabditis (Caenorhabditis) rara* Körner *in* Osche, 1952
Rhabditis (Pelliodita) rara Körner *in* Osche, 1952 (Sudhaus, 1976)
Caenorhabditis rara (Körner *in* Osche, 1952) Dougherty, 1955

Key to the species of Dolichorhabditis

1 Rectum of female unusually long, about 3 times as long as anal body diameter.
♀ : L = 0.7-1.1 mm; a = 14-20; b = 5.3-8.6; c = 8-11; V = 49-55%
♂ : L = 0.5-0.9 mm; a = 16-22; b = 4.5-5.8; c = 19-30.
Germany, Austria, Czechoslovakia, Hungary, Poland, Bulgaria, Italy, Soviet Union (Russia, Kazakhstan, Uzbekistan, Far East); Sri Lanka; Algeria, Egypt; United States; New Zealand; in soil, decayed plant material and especially in rotten wood.....
.....*dolichura* (Schneider)

\- Rectum of female of normal length, 1 to 1.5 times as long as anal body diameter..... 2

2 Tail of female about three anal body diameters long.
♀ : L = 0.43-0.70 mm; a = 17-20; b = 3.6-4.2; c = 9-12; V = 50-53%
♂ : unknown.
Czechoslovakia and Soviet Union (Far East); in *Sphagnum* moors...
.....*carpathica* (Soós)

\- Tail of female about six anal body diameters long 3

3 Very small species, to 0.5 mm; labial papillae setose.
♀ : L = 0.30-0.46 mm; a = 17-24; b = 3.9-4.6; c = 3.5-7.0; V =45-56%
♂ : unknown.

Germany, Switzerland, Bulgaria, Corsica, Soviet Union (Far East) New Zealand; terrestrial, mostly in rotten wood.....
.....*rara* (Körner *in* Osche)

- Body longer, about 3/4 mm; labial papillae minute.
  ♀: L = 0.75 mm; a = 21; b = 6.4; c = 10; V = 51%.
  ♂: L = 0.53 mm; a = 19; b = 4.7; c = 24.
  Germany, Austria, Soviet Union (Russia, Lithuania, Uzbekistan); in litter and under bark.....*debilicauda* (Fuchs)

Genus: *Phasmarhabditis* Andrássy, 1976

DEFINITION: Rhabditoidea, Rhabditidae, Peloderinae (Fig. 15). Mostly large species, 0.9 to 3.4 mm. Cuticle smooth or finely annulated and longitudinally striated. Head slightly offset, lips separate, labial papillae minute. Amphids very small, on the lateral lips. Stoma 1.2 to 2 times as long as head diameter. Cheilostom cuticularized, promesostom prismatic. Metastom isoglottoid, each swelling bearing three minute denticles. Oesophageal collar present, relatively high. Oesophagus corpus swollen proximally. Female genital organ paired, vulva in mid-body region. Spicules separate, slightly arcuate. Bursa peloderan, moderately developed, open, with nine pairs of genital papillae. Tail of female conoid to cupola-shaped, spicate, sharply pointed, that of male shorter, conoid. Phasmids large, papilliform, protruding.

BIONOMICS: Inland or littoral nematodes, living in terrestrial or marine habitats. The larvae of some species are parasitic in snails.

DISTRIBUTION: This genus is distributed in Europe, Asia, Africa and Australia.

TYPE SPECIES : *Pelodera papillosa* Schneider, 1866 = *Phasmarhabditis papillosa* (Schneider, 1866) Andrássy, 1976

FIVE SPECIES :

P. *hermaphrodita* (Schneider, 1859) n.comb.
Syn.*Pelodytes hermaphroditus* Schneider, 1859
Rhabditis (*Pelliditis*) *hermaphrodita* (Schneider, 1859) Dougherty, 1955
Rhabditis caussaneli Maupas, 1899
Rhabditis (*Choriorhabditis*) *caussaneli* Maupas, 1899 (Osche, 1952)

P. *neopapillosa* (Mengert *in* Osche, 1952) n. comb.
Syn.*Rhabditis* (*Choriorhabditis*) *neopapillosa* Mengert *in* Osche, 1952
Rhabditis (*Pelliditis*) *neopapillosa* Mengert *in* Osche, 1952 (Dougherty, 1955)

P. *nidrosiensis* (Allgén, 1933) n. comb.
Syn.*Rhabditis nidrosiensis* Allgén, 1933
Rhabditis marina nidrosiensis Allgén, 1933
Rhabditis (*Cephaloboides*) *nidrosiensis* Allgén,1933 Sudhaus, 1976
Rhabditis ehrenbaumi Bresslau & Schuurmans Stekhoven, 1935
Rhabditis (*Choriorhabditis*) *ehrenbaumi* Bresslau & Schuurmans Stekhoven, 1935 (Osche, 1952)
Rhabditis (*Pelliditis*) *ehrenbaumi* Bresslau & Schuurmans Stekhoven, 1935 (Dougherty, 1955)

P. *papillosa* (Schneider, 1966) Andrássy, 1976
Syn.*Pelodera papillosa* Schneider, 1866
Rhabditis papillosa (Schneider, 1866) Örley, 1880
Rhabditis (*Choriorhabditis*) *papillosa* (Schneider, 1866) Örley, 1880 (Osche, 1952)
Rhabditis (*Pelliditis*) *papillosa* (Schneider,1866) Örley 1880 (Dougherty, 1955)
Rhabditis ikedai Tadano, 1950

P. *valida* (Sudhaus, 1974) n.comb.
Syn.*Rhabditis* (*Cephaloboides*)*valida* Sudhaus, 1974

Key to the species of Phasmarhabditis

1 Tail of female cupola-shaped with pointed tip, 1.5-2 anal body diameters long..... 2

\- Tail of female elongate-conoid, 3-4 anal body diameters long.... 4

2 Bursa small and narrow, hardly protruding from body contour; spicules twice as long as tail.

♀ : L = 1.0-1.75 mm; a = 14-21; b = 3.6-4.6; c = 17-25; V=52-60%.

♂: L = 0.90-1.72 mm; a = 14-21; b = 3.2-4.7; c = 25-53.

On the coasts of Germany and Great Britain; marine.....

.....*nidrosiensis* (Allgén)

\- Bursa normal, well developed; spicules 1-1.5 times as long as tail..... 3

3 Three pairs of bursa papillae lying preanal.

♀ : L = 1.6-3.4 mm; a = 17-24; b = 7.0-9.8; c = 23-35; V= 49-53%.

♂: L = 1.2-2.4 mm; a = 17-26; b = 6.6-9.0; c = 30-43.

Germany, Austria, Hungary, Spain, Japan, Zaire; in soil and saprobic biotopes; larvae parasitic in snails (Arionidae and Limacidae)..... *papillosa* (Schneider)

\- One pair of bursa papillae lying preanal.

No measurements.

New Zealand; in littoral detritus..... *valida* (Sudhaus)

4 Females and males equally common.

♀ : L = 1.4-2.6 mm; a = 14-20; b = 7-10; c = 9-15; V= 47-53%.

♂: L = 1.3-1.5 mm; a = 19-21; b = 6-7; c = 25-28.

Germany; terrestrial,larvae parasitic in Limacidae snails.....

.....*neopapillosa* (Mengert *in* Osche)

\- Males extraordinarily rare* , reproduction by hermaphroditism.

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*Maupas found only 21 males among 15 000 individuals. Wether *Phasmarhabditis hermaphrodita* is a separate species or only a biological variety of *P. neopapillosa* cannot be settled for the moment.

♀ : L = 3.1 mm; a = 18; b = 9; c = 24; V = 50 %.

♂: L = 2.0 mm; a = 19; b = 7; c = 34.

Germany and France (Corsica); in saprobic habitats, larvae in snails (Arionidae)..... *hermaphrodita* (Schneider)

Genus: *Caenorhabditis* (Osche,1952) Dougherty, 1953
Syn.*Rhabditis* (*Caenorhabditis*) Osche, 1952

DEFINITION: Rhabditoidea, Rhabditidae, Peloderinae (Fig.15). Body length varying between 0.6 and 1.8 mm. Cuticle finely annulated to smooth. Head continuous with body contour, lips hardly separate, low. Labial papillae minute. Amphids insignificant, on the lateral lips. Stoma of moderate length, as long as head diameter or a little longer.Cheilostom not cuticularized, promesostom relatively narrow, tubular. Metastom isoglottoid, each swelling armed with two fine bristle-like denticles. Oesophageal collar around buccal tube present but generally short. Oesophagus corpus proximally swollen, terminal bulb strong, spherical. Female gonads paired, vulva on mid-body region. Spicules separate. Bursa broad, peloderan, anteriorly closed, sucker-shaped, often with wavy edges. Nine pairs of genital papillae present, two of them lying preanal. Tail of female conoid, mostly long. Phasmids small but visible.

BIONOMICS: Terrestrial species, larvae associated with snails. One species was described from the intestine of a thrush.

DISTRIBUTION:The *Caenorhabditis* species are distributed in every continent except South America and Antarctica.

TYPE SPECIES: *Rhabditis elegans* Maupas,1899 = *Caenorhabditis elegans* (Maupas, 1900) Dougherty, 1953

EIGHT SPECIES:

C. *avicola* Schmidt & Kuntz, 1972
Syn.*Rhabditis* (*Caenorhabditis*) *avicola* Schmidt & Kuntz, 1972 (Sudhaus, 1974)

C. briggsae (Dougherty & Nigon, 1949) Dougherty, 1953
Syn.*Rhabditis briggsae* Dougherty & Nigon, 1949
Rhabditis (Caenorhabditis) brigssae Dougherty & Nigon, 1949 (Sudhaus, 1976)

C. clavopapillata (Kreis & Faust, 1933) Dougherty, 1955
Syn.*Rhabditis clavopapillata* Kreis & Faust, 1933
Rhabditis (Caenorhabditis) clavopapillata Kreis & Faust, 1933 (Osche, 1952)

C. elegans (Maupas, 1900) Dougherty, 1953
Syn.*Rhabditis elegans* Maupas, 1900
Rhabditis (Caenorhabditis) elegans Maupas, 1900 (Osche, 1952)
Rhabditis kowalewskyi Golovin, 1901
Caenorhabditis kowalewskyi (Golovin, 1901) Dougherty, 1955
Rhabditis craspedocerca Völk, 1950
Rhabditis (Choriorhabditis) craspedocerca Völk, 1950 (Osche, 1952)
Rhabditis (Pelliodita) craspedocerca Völk, 1950 (Dougherty,1955)
Rhabditis (Caenorhabditis) craspedocerca Völk,1950 (Sudhaus, 1976)

C. formosana (Yokoo & Okabe, 1968) n.comb.
Syn.*Rhabditis formosana* Yokoo & Okabe, 1968
Rhabditis (Caenorhabditis) formosana Yokoo & Okabe, 1968 (Sudhaus, 1976)

C. perrieri (Maupas, 1900) Dougherty, 1955
Syn.*Rhabditis perrieri* Maupas, 1900
Rhabditis (Caenorhabditis) perrieri Maupas, 1900 (Osche, 1952)

C. plicata (Völk, 1950) n. comb.
Syn.*Rhabditis plicata* Völk, 1950
Rhabditis (Caenorhabditis) plicata Völk, 1950 (Sudhaus, 1974)
Pelodera plicata (Völk, 1950) Dougherty, 1955

C. remanei (Sudhaus,1974) n. comb.
Syn.*Rhabditis (Caenorhabditis) remanei* Sudhaus, 1974

Note : The original description of *Caenorhabditis bovis* (Kreis, 1964) n. comb., Syn. *Rhabditis bovis* Kreis, 1964; *Rhabditis (Caenorhabditis) bovis* Kreis, 1964 (Sudhaus, 1976), could not be obtained by the author.

Key to the species of Caenorhabditis

1 Spicules unusually long, 95 µm; bursa arrow-shaped.
Taiwan; from intestine of a thrush.....*avicola* Schmidt & Kuntz
\- Spicules much shorter, to 60 µm; bursa of usual shape..... 2
2 Tail of female short, as long as 1.5-2 anal body diameters; bursa velum finely gathered, with waved margin.
♀ : L = 1.24-1.85 mm; a = 16-22; b = 5.9-8.4; c = 23-35; V=56-66%.
♂: L = 1.0-1.7 mm; a = 17-24; b = 5.6-8.0; c = 27-51.
Germany and Kenya; terrestrial, especially in carcass.....
..... *plicata* (Völk)
\- Tail of female 8 to 10 anal body diameters long; bursa velum not gathered, mostly with smooth margin..... 3
3 Spicules about 50 µm long; bursa distally obtuse.
♀: L = 1.0-1.5 mm; a = 16-27; b = 5.0-9.8; c = 5.6-7.0; V=46-51%.
♂: L = 0.63-1.4 mm; a = 14-28; b = 3.3-6.6; c = 13-28.
Taiwan; associated with snails (Truncatellidae).....
.....*formosana* (Yokoo & Okabe)
\- Spicules about 35 µm long; bursa heart-shaped, distally more or less pointed..... 4
4 First group of bursa papillae consisting of three papillae.
♀: L = 1.3 -1.4 mm; a = 24; b = 7; c = 8; V=53%.
♂: L = 0.9 mm; a = 24; b = 5; c = 22.
Algeria; terrestrial.....*perrieri* (Maupas)
\- First group of bursa papillae consisting of two papillae..... 5

5 Arrangement of papillae : 2+4+3 pairs*

♀ : L = 1.1-1.5 mm; a = 12-17; V = 52%.

♂: L = 0.95-1.2 mm; a = 17-22.

Belgium, Great Britain, Israel, Canada, United States (California), Australia; terrestrial. This species is reared for laboratory investigations.....*briggsae* (Dougherty & Nigon)

- Arrangement of papillae : 2+1+3+3 pairs 6

6 Bursa with finely waved margins anteriorly; females and males nearly equally common.

♀ : L = 0.83-1.43 mm; a = 16-24; b = 4.0-6.5; c = 4.9-8.5; V=48-56%.

♂: L = 0.60-1.19 mm; a = 16-24; b = 3.6-6.6; c = 17-30.

Germany; associated with snails (*Arion* sp)..... .....*remanei* (Sudhaus)**

- Bursa with smooth margins; males very rare.

♀: L = 1.0-1.8 mm; a = 17-21; b = 5.1-8.5; c = 5.6-10; V=42-52%.

♂: L = 0.7-1.3 mm; a = 20-27; b = 4.5-6.7; c = 15-34.

Germany, Czechoslovakia, France, Bulgaria, Italy, England, Denmark, Soviet Union (Russia, Georgia, Turkmenia, Kazakhstan, Kirghizia, Uzbekistan, Far East), China, Algeria, United States; terrestrial. Like *C. briggsae*, this species is very suitable for experimental purposes..... *elegans* (Maupas)

Genus: *Xylorhabditis* (Sudhaus, 1976) n. grad.

Syn. *Rhabditis* (*Xylorhabditis* Sudhaus, 1976).

DEFINITION: Rhabditoidea, Rhabditidae, Peloderinae (Fig. 15). Body 0.7-1.0 mm long. Cuticle annulated. Head continuous with neck contour or slightly offset, lips hardly separate. Labial papillae very small. Amphids pore-like

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* The species *Caenorhabditis clavopapillata* (Kreis & Faust, 1933) Dougherty, 1955 - Syn. *Rhabditis clavopapillata* Kreis & Faust, 1933; *Rhabditis (Caenorhabditis) clavopapillata* Kreis & Faust, 1933 (Osche, 1952) from the United States belongs to this group.

** Maybe identical with *C. briggsae*

on the lateral lips. Stoma a little longer than head diameter. Cheilostom cuticularized, proximally divergent. Promesostom strongly cuticularized, with parallel walls; surrounded by a short oesophageal collar. Glottoid apparatus weak, each swelling bearing three setose denticles. Oesophagus corpus weakly swollen proximally. Female gonads paired, vulva near middle of body. Spicules free, gubernaculum thicker than in other genera of the subfamily. Bursa peloderan, open, moderately developed, with nine pairs of fairly thick papillae. Tail of female conical, sharply pointed. Phasmids well behind anal opening.

BIONOMICS: Terrestrial nematodes inhabiting soil or associates of curculionid beetles.

DISTRIBUTION: The species of *Xylorhabditis* have been found hitherto in Europe, Asia and South America.

TYPE SPECIES : *Pelodera bakeri* Rühm, 1964 = *Xylorhabditis bakeri* (Rühm, 1964) n.comb.

TWO SPECIES :

X. bakeri (Rühm, 1964) n. comb.
Syn. *Pelodera bakeri* Rühm, 1964
Rhabditis (Xylorhabditis) bakeri (Rühm, 1964) Sudhaus, 1976

X. operosa (Andrássy, 1962) n.comb.
Syn. *Pelodera operosa* Andrássy, 1962
Rhabditis (Pelodera) operosa (Andrássy, 1962) Sudhaus, 1974

Key to the species of Xylorhabditis

1 Lips broad, anteriorly flattened, head offset.
♀: L = 0.8-1.0 mm; a = 14-18; b = 5.2-5.9; c = 10-11; V = 50-51%.
♂: L = 0.75-0.96 mm; a = 13-17; b = 3.8-5.3; c = 21-39.

Hungary and Soviet Union (Moldavia, Turkmenia, Kirghizia, Kazakhstan, Uzbekistan, Far East); in soil around roots.....
..... *operosa* (Andrássy)

- Lips narrow, conoid, head not offset.

♀: L = 0.75-1.0 mm; a = 18-19; b = 4.3-4.9; c = 11-12; V =56-60%.

♂: L = 0.70-0.92 mm; a = 18-19; b = 3.8-4.4; c = 27.

Chile; associated with *Calvertius tuberosus* (Curculionidae)....
.....*bakeri* (Rühm)

Genus: *Pelliodítis* (Dougherty,1953) Timm, 1960

Syn.*Rhabditis* (*Pelliodítis* Dougherty, 1953)

DEFINITION: Rhabditoidea, Rhabditidae, Peloderinae (Fig. 16). Body length strongly variable, 0.5 to 3.0 mm. Cuticle more or less annulated. Head not or only slightly offset, lips moderately developed, slightly separate; labial papillae mostly minute, sometimes setose. Amphids pore-like, on the lateral lips. Stoma generally long and narrow, 1.5 to 2 times as long as head diameter, rarely shorter. Cheilostom not cuticularized. Promesostom tubular, with parallel walls. Metastom isoglottoid, with hemispherical swellings each bearing three or five minute warts. Oesophageal collar present.Oesophagus corpus swollen, bulb-like. Female gonads paired,vulva on mid-body region.Spicules separate. Bursa peloderan, open, well developed, always with nine pairs of papillae (three pairs lying preanal). Tail of female conoid, sometimes very long or cupola-shaped,spicate; that of male short,conoid.Phasmids behind anal opening

BIONOMICS: The species of this genus live in a wide range of biotopes. They are terrestrial or aquatic. The former species inhabit soil, litter, detritus, cow and horse dung or other saprobic biotopes, the latter ones marine or limnic. Predominantly oviparous.

DISTRIBUTION: The *Pelliodítis* species are world-wide distributed: they occur in every continent except Antarctica.

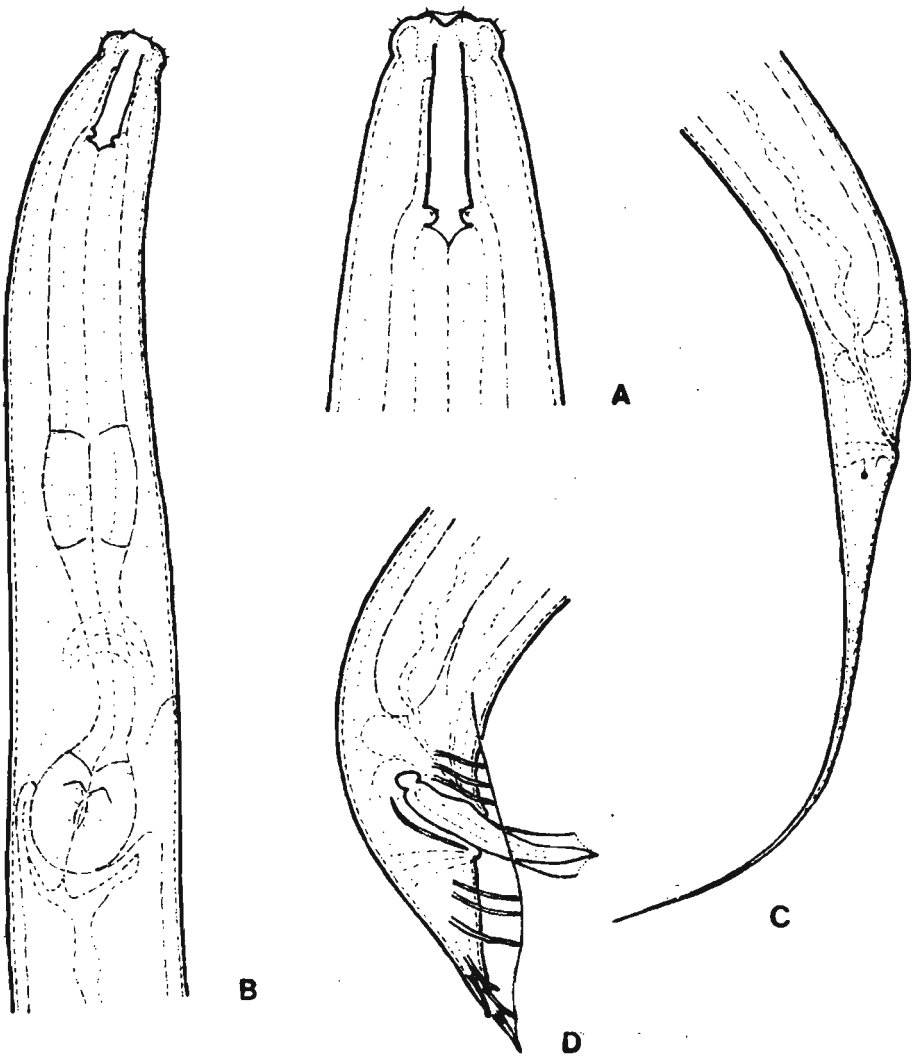

Fig.17. *Pellioditis pellioides* (Bütschli, 1873) n.comb.- a member of the subfamily Peloderinae, from Cuc Phuong, Vietnam. A: anterior end, 1 200X; B: oesophageal region, 700X; C: female tail, 550X; D: male posterior end, 800X.

TYPE SPECIES: Pelodera pellio Schneider, 1866 =*Pelliodi-tis pellio* (Schneider, 1866) Timm, 1960

SIXTEEN SPECIES:

P. bengalensis (Timm, 1956) Timm, 1960
Syn.*Rhabditis (Choriorhabditis)marina bengalensis* Timm, 1956
Rhabditis bengalensis Timm, 1956
Rhabditis (Pelliodítis) bengalensis Timm, 1956 (Sudhaus, 1974)
Pelliodítis marina bengalensis (Timm, 1956) Timm, 1960
Rhabditis bengalensis mexicana Hopper, 1963

P. buetschlii (De Man, 1876) n. comb.
Syn.*Rhabditis buetschlii* De Man, 1876
Rhabditis (Choriorhabditis) buetschlii De Man, 1876 (Osche, 1952)
Rhabditis (Pelliodítis) buetschlii De Man, 1876 (Dougherty, 1955)
Rhabditis ploenensis Schneider, 1925

P. coffeae (Rahm, 1928) n.comb.
Syn.*Rhabditis coffeae* Rahm, 1928
Rhabditis (Pelliodítis) coffeae Rahm, 1928 (Dougherty, 1955)

P. friderici (Hirschmann, 1952) n.comb.
Syn.*Rhabditis (Choriorhabditis) friderici* Hirschmann, 1952
Rhabditis (Pelliorhabditis) friderici Hirschmann, 1952 (Dougherty, 1955)

P. guenini (Altherr, 1960) n.comb.
Syn.*Rhabditis guenini* Altherr, 1960

P. hartmanni (Sachs, 1950) n.comb.
Syn.*Rhabditis hartmanni* Sachs, 1950
Rhabditis (Choriorhabditis) hartmanni Sachs, 1950 (Osche, 1952)

Rhabditis (Pelliodítis) hartmanni Sachs, 1950 (Dougherty,1955)

P. insolita (Paesler, 1941) n. comb.

Syn.*Rhabditis insolita* Paesler, 1941

Rhabditis (Pelliodítis) insolita Paesler, 1941 (Dougherty, 1955)

P. marina (Bastian, 1865) n.comb.

Syn.*Rhabditis marina* Bastian, 1865

Rhabditis (Caenorhabditis) marina Bastian, 1865 (Osche, 1952)

Rhabditis (Choriorhabditis) marina Bastian, 1865 (Osche, 1954)

Rhabditis (Pelliodítis) marina Bastian, 1865 (Dougherty, 1955)

Rhabditis marina septentrionalis Steiner, 1916

Rhabditis (Choriorhabditis) marina septentrionalis Steiner, 1916 (Meyl, 1954)

Rhabditis marina typica Steiner, 1921

Rhabditis marina kielensis Schulz, 1932

Rhabditis marina norwegica Allgén, 1933

Rhabditis marina danica Allgén, 1933

Rhabditis fluviatilis Bütschli, 1876

Rhabditis (Choriorhabditis) fluviatilis Bütschli, 1876 (Osche, 1952)

Rhabditis (Pelliodítis) fluviatilis Bütschli,1876 (Dougherty, 1955)

Rhabditis australis Allgén, 1932, *nec* Cobb, 1893

Rhabditis allgeni Johnston, 1938

Rhabditis velata Bresslau & Schuurmans Stekhoven *in* Schuurmans Stekhoven, 1935

Rhabditis (Choriorhabditis) velata Bresslau & Schuurmans Stekhoven *in* Schuurmans Stekhoven, 1935 (Osche, 1952)

Rhabditis (Pelliodítis) velata Bresslau & Schuurmans Stekhoven *in* Schuurmans Stekhoven, 1935 (Dougherty, 1955)

P. mediterranea (Sudhaus, 1974) n. comb.
Syn.*Rhabditis marina mediterranea* Sudhaus, 1974

P. ninomiyai (Yokoo,1968) n.comb.
Syn.*Rhabditis ninomiyai* Yokoo, 1968

P. pellioides (Bütschli, 1873) n.comb.
Syn.*Rhabditis pellioides* Bütschli, 1873
Rhabditis (Choriorhabditis) pellioides Bütschli, 1873 (Osche, 1952)
Rhabditis (Pellioditis) pellioides Bütschli,1873 (Dougherty, 1955)
Rhabditis oncomelaniae Yokoo & Okabe, 1968
Rhabditis (Caenorhabditis) oncomelaniae Yokoo & Okabe, 1968 (Sudhaus, 1976)

P. pellio (Schneider, 1866) Timm, 1960
Syn.*Pelodera pellio* Schneider, 1866
Rhabditis pellio (Schneider, 1866) Bütschli, 1873
Rhabditis (Choriorhabditis) pellio (Schneider, 1866) Bütschli, 1873 (Osche, 1952)
Rhabditis (Pellioditis) pellio (Schneider, 1866) Bütschli, 1873 (Dougherty, 1953)
Leptodera pellio (Schneider, 1866) Ward, 1903

P. pseudodolichura (Körner *in* Osche, 1952) n. comb.
Syn.*Rhabditis (Caenorhabditis) pseudodolichura* Körner *in* Osche, 1952
Rhabditis (Choriorhabditis) pseudodolichura Körner *in* Osche, 1952 (Mengert, 1953)
Caenorhabditis pseudodolichura (Körner *in* Osche, 1952) Dougherty, 1955

P. seurati (Maupas, 1916) n.comb.
Syn.*Rhabditis seurati* Maupas, 1916
Rhabditis (Choriorhabditis) seurati Maupas, 1916 (Osche, 1952)
Rhabditis (Pellioditis) seurati Maupas, 1916 (Dougherty, 1955)

P. typica (Stefanski, 1922) n.comb.
Syn.*Rhabditis typica* Stefanski, 1922
Rhabditis (Pelliditis) typica Stefanski, 1922 (Sudhaus, 1976)
Pelodera typica (Stefanski, 1922) Dougherty, 1955

P. viguieri (Maupas, 1900) n.comb.
Syn.*Rhabditis viguieri* Maupas, 1900
Rhabditis (Choriorhabditis) viguieri Maupas, 1900 (Osche, 1952)
Rhabditis (Pelliditis) viguieri Maupas, 1900 (Dougherty, 1955)
Rhabditis foecalis Watanabe, 1920

SPECIES INQUIREDAE:

The following species must be considered as such :

P. mairei (Maupas, 1919) n.comb.
Syn.*Rhabditis mairei* Maupas, 1919
Rhabditis (Choriorhabditis) mairei Maupas, 1919 (Osche, 1952)
Rhabditis (Pelliditis) mairei Maupas, 1919 (Dougherty, 1955)

Key to the species of Pelliditis

1 Rectum of female 2 to 3 times as long as anal body diameter.... 2
- Rectum of female about as long as anal body diameter..... 3
2 Anterior part of oesophagus with bulb-like swelling; tail tip of female sharply pointed.
♀: L = 0.9-1.2 mm; a = 15-20; b = 6.6-8.0; c = 7-8; V = 45-49%.
♂: L = 0.76 mm; a = 20; b = 6.4; c = 25.
Germany and Soviet Union (Uzbekistan); in rotten wood.....
..... *pseudodolichura* (Körner *in* Osche)
- Anterior part of oesophagus cylindrical; tail tip of female swollen.

♀: L = 1.16-1.64 mm; a = 17-23; b; 5.5-7.5; c = 12-17; V=48-52%.

♂: L = 0.84-1.37 mm; a = 19-29; b = 4.8-6.7; c = 27-48.

On the coasts of Bangladesh, Kenya and Mexico; marine.....
.....*bengalensis* (Timm)

3 Oesophagus corpus cylindrical

♀: L = 1.0-1.2mm; a = 19-24; b = 3.9-5.8; c =3.4-6.0; V = 59-64%.

♂: L = 0.83-0.90 mm; a = 19-21; b = 4-5; c = 30-31.

Brazil; on plant roots.....*coffeae* (Rahm)

- Oesophagus corpus proximally swollen..... 4

4 Tail of female cupola-shaped with tip..... 5

- Tail of female conical..... 7

5 Tail of female as long as anal body diameter, both cupola and tip equal in length.

♀: L = 1.0-1.54 mm; a = 10-20; b = 5.3-7.0; c = 20-26; V = 50-53%.

♂: L = 0.77-1.3 mm; a = 12-26; b = 3.8-6.2; c = 20-33.

Japan; terrestrial..... *ninomiyai* (Yokoo)

- Tail of female 4-5 times as long as anal body diameter, tip 5-6 times longer than cupola..... 6

6 Spicules 23-30 µm long.

♀: L = 1.1-1.5 mm; a = 17-24; b = 7-8; c = 6.0-7.5; V = 40-46 %.

♂: L = 0.45-0.75 mm; a = 21-23; b = 4.0-5.6; c = 23-24.

Algeria; in decayed plant tissues.....*seurati* (Maupas)

- Spicules 40-50 µm long.

: L = 1.0-1.4 mm; a = 20-23; b = 5-6; c = 5.6-9.5; V = 50-55%.

: L = 1.0-1.2 mm; a = 20-23; b = 5.0-6.8; c = 17-25.

Holland, Germany, Austria, Hungary, Bulgaria, Poland, Brazil, New Zealand; mostly in cow and horse dung.....*buetschlii* (De Man)

7 Tail of female more than 6 anal body diameters long (to 20 anal body diameters) 8

- Tail of female at most 4 anal body diameters long..... 11

8 Distance between the 1st and 2nd bursa papillae unusually long, about equal with anal body diameter..... 9

- Distance between the 1st and 2nd bursa papillae quite short.... 10

9 Three pairs of papillae lying preanal; vulva behind middle of body.

♀: L = 0.8-1.4 mm; a = 25-35; b = 4.5-6.5; c = 8-17; V = 56%.

♂: L = 1.0-1.36 mm; a = 24-28; b = 5-7; c = 25-35.

Switzerland; in soil..... *guenini* (Altherr)

- One pair of papillae lying preanal; vulva before middle of body.
  ♀ : L = 0.9-1.6 mm; a = 25-32; b = 6.4-9.4; c = 4-7; V = 41-49%.
  ♂ : L = 0.44-0.65 mm; a = 16-27; b = 3.8-5.0; c = 21-31.
  Germany, Italy, Soviet Union (Far East), Algeria; in soil and decayed plants materials.....*viguieri* (Maupas)

10 Tail of female very long: 15-20 times longer than anal body diameter; spicules 26-31 µm long, gubernaculum lacking (?)
  ♀ : L = 0.92-1.44 mm; a = 14-33; b = 5.9-8.7; c = 2.7-3.9; V = 40-41%. ♂ : L = 0.80-0.96 mm; a = 21-25; b = 5.0-6.2; c = 20-26.
  Germany and Italy; mostly on river-sides... *friderici* (Hirschmann)

- Tail of female shorter, 6-7 times as long as anal body diameter; spicules 45-60 µm long, gubernaculum present.
  ♀ : L = 0.8-1.8 mm; a = 18-23; b = 4.2-8.0; c = 6-8; V = 49-52%.
  ♂: L = 0.5-0.8 mm; a = 19-25; b = 4.2-8.0; c = 17-25.
  Germany, Austria, Poland, Soviet Union (Russia, Uzbekistan), Japan, United States, Cuba, Fiji, Australia; in saprobic biotopes, especially in dung (Fig.17).....*pellioides* (Bütschli)

11 Tip of female tail swollen, rounded.
  ♀ : L = 1.0-3.0 mm; a = 14-27; b = 4.6-10.0; c = 11-22; V =50-57%.
  ♂: L = 0.8-2.6 mm; a = 21-32; b = 4.5-8.2; c = 17-31.
  On the coasts of Europe, North Africa, the both Americas, Australia and New Zealand, but also in freshwater biotopes in Germany, Hungary, Czechoslovakia and the Soviet Union (Russia) .....
  .....*marina* (Bastian)

- Tip of female tail pointed, not swollen..... 12

12 Two pairs of bursa papillae lying preanal.
  ♀ : L = 1.3 mm; a = 21; b = 9; c = 8; V = 50 %.
  ♂: L = 1.2 mm; a = 20; b = 9; c = 9.
  Germany, Poland, South-West Africa, United States (Wisconsin); terrestrial, mostly in saprobic habitats.....*typica* (Stefanski)

- Three pairs bursa papillae lying preanal..... 13

13 Distance between the 1st and 2nd papillae 4-6 times longer than that between the 2nd and 3rd papillae..... 14

- Distance between the 1st and 2nd papillae at most twice as long as as that between the 2nd and 3rd papillae.
  ♀ : L = 1.3-2.2 mm; a = 18-23; b = 8-10; c = 13-17; V = 50-53%.
  ♂: L = 1.1-1.6 mm; a = 18-24; b = 6.5-9.0; c = 40-45.

Germany, Austria, Czechoslovakia, Switzerland, Spain (Menorca), France, Denmark, Soviet Union (Georgia), Canary Islands, United States, Chile; in soil and decayed plant material, but also associated with earthworms (Lumbricidae).....*Pellio* (Schneider)

14 Postanal bursa papillae separate, about in equal distance from one another.

♀: L = 0.80-1.85 mm; a = 14-18; b = 5.1-8.9; c = 9-12; V=51-54%.

♂: L = 0.64-1.23 mm; a = 15-19; b = 4.4-6.9; c = 17-20.

Germany and Soviet Union (Far East); in cow dung.....
.....*hartmanni* (Sachs)*

- Postanal bursa papillae arranged in two groups each containing three papillae..... 15

15 Stoma twice as long as labial diameter; anterior part of oesophagus (from head to posterior end of median bulb) 1.3-1.4 times as long as posterior part.

♀: L = 1.30-1.45 mm; a = 19-21; b = 8; c = 15-16; V = 49-54%.

♂: L = 1.0-1.45 mm; a = 21-29; b = 6; c = 30-34.

Germany; found in a puddle.....*insolita* (Paesler)

- Stoma nearly as long as labial diameter; anterior part of oesophagus almost twice as long as posterior part.

♀: L = 0.85-1.74 mm; a = 18-29; b = 5.2-8.5; c = 11-25;V= 51-55%.

♂: L = 0.67-1.3 mm; a = 19-35; b = 3.9-6.6; c = 21-42.

On the coasts of the Mediterranea (Yugoslavia, Italy, Algeria), as well as in Germany and the Canary Islands; marine and terrestrial.....*mediterranea* (Sudhaus)

Genus: *Pelodera* Schneider, 1866

Syn.*Rhabditis* (*Pelodera* Schneider, 1866) Sudhaus, 1974; *Rhabditis* (*Rhabditis apud* Osche, 1952).

DEFINITION: Rhabditoidea, Rhabditidae, Peloderinae (Fig.16). Body length varying between 0.7 and 2.3 mm. Cuticle annulated and usually also finely longitudinally striated. Head continuous with neck contour or more or less

*Maybe identical with *Pellioditis insolita*.

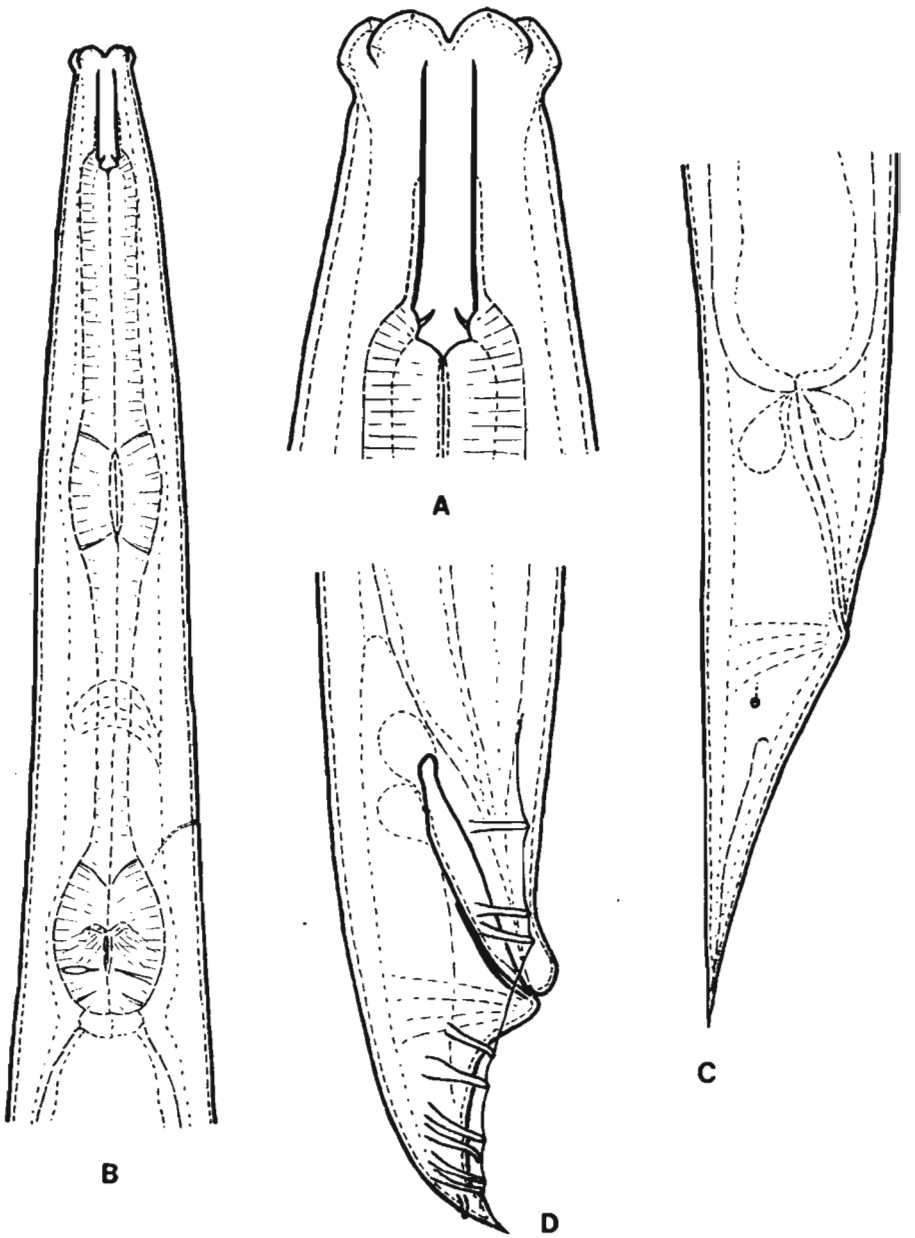

Fig.18. *Pelodera conica* (Reiter,1928) Dougherty, 1955 - a member of the subfamily Peloderinae, from Budapest, Hungary. A: anterior end, 1 520X; B: oesophageal region, 520X; C: female tail, 670X; D: male posterior end, 670X.

offset. Lips separate or moderately differentiated, labial papillae minute. Amphids pore-like, small, on the lateral lips. Stoma varying in length: as long as head diameter to more than twice as long as that. Cheilostom not cuticularized, promesostom with parallel walls. Each swelling of metastom armed with three setose denticles. Oesophageal collar present. Oesophagus corpus strongly swollen. Female gonads paired, vulva in or a little behind middle of body. Spicules proximally fused. Bursa peloderan, open, fairly wide, supplied with 10 pairs of papillae. Tail of female of various shape : conoid to cupola-like.

BIONOMICS: Terrestrial, aquatic or semiaquatic nematodes, primarily inhabiting saprobic biotopes. A species is associated with snails. Mostly viviparous.

DISTRIBUTION: The representatives of *Pelodera* occur in Europe, Asia, Africa and the Americas. They belong to the frequent rhabditids.

TYPE SPECIES: Pelodytes strongyloides Schneider, 1860 = *Pelodera strongyloides* (Schneider, 1860) Schneider, 1866.

FIVE SPECIES:

P. conica (Reiter, 1928) Dougherty, 1955
Syn. *Rhabditis pellio conica* Reiter, 1928
Rhabditis conica Reiter, 1928
Rhabditis (*Pelodera*) *conica* Reiter, 1928 (Sudhaus, 1976)

P. incilaria (Yokoo & Shinohara, 1958) n. comb.
Syn. *Rhabditis incilaria* Yokoo & Shinohara, 1958
Rhabditis fruticicola Kreis, 1967
Rhabditis (*Pellioditis*) *fruticicola* Kreis, 1967 (Sudhaus, 1976)

P. punctata (Cobb, 1914) Dougherty, 1955
Syn. *Rhabditis punctata* Cobb, 1914
Rhabditis (*Pelodera*) *punctata* Cobb, 1914 (Sudhaus, 1976)

Rhabditis chitwoodi Bassen, 1940
Pelodera chitwoodi (Bassen,1940) Dougherty, 1955
Rhabditis limicola Hirschmann, 1952
Teratorhabditis vivipara Gagarin, 1977

P. strongyloides (Schneider, 1860) Schneider, 1866
Syn.*Pelodytes strongyloides* Schneider, 1866
Leptodera strongyloides (Schneider, 1860) Schneider, 1866
Rhabditis strongyloides (Schneider, 1860) Linstow, 1878
Rhabditis (Pelodera) strongyloides (Schneider, 1860) Linstow, 1878 (Sudhaus, 1976)
Rhabditis teroides Micoletzky,1915
Rhabditis taurica Mirethkij & Skrjabin, 1965
Pelodera comandorica Belogurov, Mukhina & Churikova, 1977

P. teres Schneider, 1866
Syn. *Leptodera teres* (Schneider,1866) Schneider, 1866
Rhabditis teres (Schneider, 1866) Bütschli, 1873
Rhabditis (Pelodera) teres (Schneider, 1866) Bütschli,1873 (Sudhaus, 1976)
Anguillula mucronata Grube, 1849 [*nomen oblitum*]
Rhabditis mucronata (Grube, 1849) Bastian, 1865
Pelodera mucronata (Grube,1849) Schneider,1866
Rhabditis donbass Skrjabin, Shults & Serbinov, 1926
Pelodera donbass (Skrjabin, Shults & Serbinov, 1926 (Dougherty, 1955)

Note: The original paper containing the description of *Pelodera rhynchophori* Muthukrishnan, 1971 could not be obtained by the author.

Key to the species of Pelodera

1 Number of preanal bursa papillae 4-5 pairs.

♀: L = 1.0-1.2 mm; a = 15; b = 5.0-6.6; c = 30-38; V = 52-55%.

♂: L = 0.74-0.90 mm; a = 15-16; b = 6.6-6.9; c = 27-31.

Japan; from intestine of snails .....

.....*incilaria* (Yokoo & Shinohara)

- Number of preanal bursa papillae 2-3 pairs..... 2

2 Bursa with 3 pairs of preanal papillae; spicules fused for 1/4 of their length..... 3

- Bursa with 2 pairs of preanal papillae; spicules fused for 2/3 of their length..... 4

3 Tail of female conical; the 5th pair of bursa papillae considerably thicker than the other.

♀: L = 1.2-2.0 mm; a = 16-23; b = 5.6-8.4; c = 14-26; V = 55-58%.

♂: L = 1.0-1.3 mm; a = 18-21; b = 5.0-6.5; c = 20-32.

Germany, Austria, Hungary, United States (Utah), Venezuela; terrestrial, generally in decayed plant material (Fig.18).....

.....*conica* (Reiter)*

- Tail of female cupola-shaped with tip (occasionally showing a form being intermediate between conoid and cupola types); the 5th pair of bursa papillae not thickened.

♀: L = 1.0-1.6 mm; a = 15-20; b = 5-7; c = 20-30; V = 53-60%.

♂: L = 1.0-1.3 mm; a = 15-25; b = 5-7; c = 20-25.

Holland, Germany, Austria, Czechoslovakia, Bulgaria, Italy, England, Poland, Sweden, Soviet Union (Russia, Estonia, Lithuania, Moldavia, Georgia, Kazakhstan, Kirghizia, Uzbekistan, Far East), Canary Islands, Egypt, Zaire; terrestrial, in soil and especially in saprobic habitats.....*teres* (Schneider)

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* The species *Pelodera litoralis* (Skwarra, 1921) Dougherty, 1955 - Syn. *Rhabditis litoralis* Skwarra, 1921; *Rhabditis (Pelodera) litoralis* Skwarra, 1921 (Sudhaus,1976) - is probably identical with *Pelodera conica*.Skwarra described this nematode species without any illustrations.

4 Tail of female elongate-conoid, 4 anal body diameters long.
♀: L = 1.2-2.5 mm; a = 15-28; b = 5.2-7.9; c = 11-18; V= 49-59%.
♂: L = 0.98-1.55 mm; a = 18-35; b = 5.2-7.8; c = 33-45.
Holland, Germany, Czechoslovakia, Hungary, Italy, Soviet Union, United States (New York, Washington, Wisconsin); aquatic or semi-aquatic, in detritus and on water plants.....*punctata* (Cobb)

- Tail of female either cupola-shaped with tip or conical, 1-1.5 times as long as anal body diameter.
♀: L = 1.0-2.3 mm; a = 14-20; b = 4.9-8.4; c = 22-35; V = 55-58%.
♂: L = 0.8-1.6 mm; a = 15-23; b = 4.9-6.3; c = 20-44.
Holland, Germany, Austria, Hungary, England, Bulgaria, Poland, Soviet Union (Russia, Estonia, Lithuania, Moldavia, Uzbekistan, Far East), Zaire, Canada, United States; terrestrial, in saprobic biotopes; larvae in the fell of rodents.....
.....*strongyloides* (Schneider)

Genus: *Coarctadera* (Dougherty, 1953) Andrássy, 1976

Syn.*Pelodera* (*Coarctadera* Dougherty, 1953); *Pelodera* (*Cylindridera* Dougherty, 1953).

DEFINITION: Rhabditoidea, Rhabditidae, Peloderinae (Fig. 16). Body length fairly variable, betwwen 0.6 and 3.6 mm. Cuticle finely annulated. Head offset or continuous with neck. Lips well separate, hemispherical, labial papillae setose but very fine. Amphids minute, on the lateral lips. Stoma 1.2 to 1.8 times as long as head diameter.Cheilostom not cuticularized, promesostom well developed, with walls somewhat diverged proximally. Metastom isoglottoid, each swelling bearing three setiform denticles. Oesophageal collar present but occasionally quite short. Oesophagus corpus strongly swollen, bulb-like. Female gonads paired, vulva on mid-body region; ovaries well developed. Spicules distally fused. Bursa peloderan, anteriorly closed, sucker-shaped, always with ten pairs of papillae.The 7th, 8th and 9th papillae mostly fused on their basis. Tail of female cupola-shaped with or without tip. Phasmids conspicuous.

BIONOMICS:Terrestrial species living in saprobic habitats. They occur especially often in cow dung. Oviparous, ovoviviparous or viviparous.

DISTRIBUTION:*Coarctadera* species have been recorded hitherto from Europe, Asia, Africa, North America, Australia, and Oceania.

TYPE SPECIES: *Rhabditis coarctata* Leuckart, 1891 = *Coarctadera coarctata* (Leuckart, 1891) Andrássy, 1976.

NINE SPECIES:

C. coarctata (Leuckart, 1891) Andrássy, 1976
Syn.*Rhabditis coarctata* Leuckart, 1891
Rhabditis (*Pelodera*) *coarctata* Leuckart, 1891 (Sudhaus, 1976)
Pelodera (*Coarctadera*) *coarctata* (Leuckart, 1891) Dougherty, 1953
Criconema lepidotum Skwarra, 1921

C. cylindrica (Cobb, 1898) n.comb.
Syn.*Rhabditis cylindrica* Cobb, 1898
Rhabditis (*Pelodera*) *cylindrica* Cobb, 1898 (Sudhaus, 1976)
Pelodera (*Cylindridera*) *cylindrica* (Cobb, 1898) Dougherty, 1953
Rhabditis neuhausi Sachs, 1950

C. cystilarva (Völk, 1950) n. comb.
Syn.*Rhabditis cystilarva* Völk, 1950
Rhabditis (*Pelodera*) *cystilarva* Völk,1950 (Sudhaus, 1976)
Pelodera (*Coarctadera*) *cystilarva* (Völk, 1950) Dougherty, 1955
Pelodera (*Coarctadera*) *acarambates* Poinar, 1965

C. icosiensis (Maupas, 1916) n.comb.
Syn.*Rhabditis icosiensis* Maupas, 1916
Rhabditis (*Pelodera*) *icosiensis* Maupas, 1916 (Sudhaus, 1976)

Pelodera (*Cylindridera*) *icosiensis* (Maupas, 1916) Dougherty, 1955

Rhabditis mutatoris Fuchs, 1931

C. *kolbi* (Sachs, 1950) n. comb.

Syn. *Rhabditis kolbi* Sachs, 1950

Rhabditis (*Pelodera*) *kolbi* Sachs, 1950 (Sudhaus, 1876)

Pelodera (*Cylindridera*) *kolbi* (Sachs, 1950) Dougherty, 1955

C. *par* (Andrássy, 1962) n.comb.

Syn. *Pelodera* (*Coarctadera*) *par* Andrássy, 1962

Rhabditis (*Pelodera*) *par* (Andrássy, 1962) Sudhaus, 1976

C. *serrata* (Körner *in* Osche, 1952) n.comb.

Syn. *Rhabditis serrata* Körner *in* Osche, 1952

Rhabditis (*Pelodera*) *serrata* Körner *in* Osche, 1952 (Sudhaus, 1976)

Pelodera (*Coarctadera*) *serrata* (Körner *in* Osche, 1952) Dougherty, 1955

C. *tretzeli* (Sachs, 1950) n.comb.

Syn. *Rhabditis tretzeli* Sachs, 1950

Rhabditis (*Pelodera*) *tretzeli* Sachs, 1950 (Sudhaus, 1976)

Pelodera (*Coarctadera*) *tretzeli* (Sachs, 1950) Dougherty, 1955

C. *voelki* (Sachs, 1950) n.comb.

Syn. *Rhabditis voelki* Sachs, 1950

Rhabditis (*Pelodera*) *voelki* Sachs, 1950 (Sudhaus, 1976)

Pelodera (*Coarctadera*) *voelki* (Sachs, 1950) Dougherty, 1955.

Key to the species of Coarctadera

1 Tail of female bluntly rounded, hemispherical, without tip.
♀ : L = 0.9-1.5mm; a = 12-19; b = 4.1-7.1; c = 40-80; V=59-64%.

♂: L = 0.6-1.2 mm; a = 16-22; b = 4.6-6.0; c = 17-33.

Germany, Austria, Hungary, Bulgaria, Poland, Spain, Soviet Union (Russia, Lithuania, Moldavia, Uzbekistan, Far East), India, China, Egypt, Kenya, United States (California), Australia, New Zealand; in cow dung and rotting plant tissues, larvae associated with acari ..... *cylindrica* (Cobb)

- Tail of female cupola-shaped with tip..... 2

2 Tip of tail longer than cupola..... 3

- Tip of tail shorter than cupola 7

3 Three pairs of papillae lying preanal..... 4

- Two pairs of papillae lying preanal..... 5

4 Head showing sexual dimorphism: lips of male inconspicuous.

♀: L = 1.5-3.3 mm; a = 12-17; b = 8-12; c = 28-33; V = 57-59%.

♂: L = 0.64-0.76 mm; a = 15-18; b = 4.9-5.9; c = 28-36.

Germany, Austria, Bulgaria and Soviet Union (Uzbekistan); mostly in cow dung..... *tretzeli* (Sachs)

- Head not showing sexual dimorphism, lips of both sexes conspicuous, similar.

♀: L = 1.0 mm; a = 18; b = 7.1; c = 27.5; V = 59%.

♂: L = 0.66 mm; a = 23; b = 4.3; c = 21

Hungary; in horse dung..... *par* (Andrássy)

5 Tail of female 4-5 anal body diameters long; vulva in middle of body length.

♀: L = 1.20-1.74 mm; a = 12-16; b = 6.2-7.6; c = 7.5-9.1; V=49-52%.

♂: L = 0.88-1.0 mm; a = 11-12; b = 5.0-5.4; c = 24-46.

Germany; in forest soil.....*cystilarva* (Völk)

- Tail of female at most 2 anal body diameters long; vulva well behind middle of body..... 6

6 Lateral lips conoid, anteriorly pointed, higher than submedian lips; labial region of both sexes similar in shape.

♀: L = 1.5-3.6 mm; a = 15-18; b = 7.6-9.6; c = 26-36; V = 59-61%.

♂: L = 0.88-1.6 mm; a = 16-20; b = 5.3-6.1; c = 22-27.

Germany, Austria, Czechoslovakia; terrestrial, mostly in cow dung.....*voelki* (Sachs)

- All lips rounded; labial region of both sexes showing sexual dimorphism: lips of male larger with setose papillae.
  ♀: L = 1.2-1.6 mm; a = 14-17; b = 5.8-7.9; c = 17-21; V = 57-59%.
  ♂: L = 0.9-1.0 mm; a = 14-21; b = 4.3-5.5; c = 27-37.
  Germany, Austria, Hungary, Czechoslovakia, Soviet Union (Far East) United States (Virginia), Fiji, Marquesas Islands; in cow dung and other saprobies.....*coarctata* (Leuckart)

7 The first pair of papillae lying out of bursa.
  ♀: L = 1.2-1.3 mm; a = 15-16; b = 5.9-7.9; c = 22-28; V=56-58%.
  ♂: L = 0.75-0.80 mm; a = 16-18; b = 4.4-4.6; c = 16-20.
  Germany and Austria; in cow dung.....*kolbi* (Sachs)

- The first pair of papillae lying within the bursa..... 8

8 Spicules 40-60 µm; stoma proximally bulging.
  ♀: L = 0.80-1.86 mm; a = 11-18; b = 5.3-8.7; c = 24-40; V = 56-62%.
  ♂: L = 0.7-1.3 mm; a = 14-21; b = 4.0-6.6; c = 14-20.
  Holland, Germany, Austria, Hungary, Poland, Soviet Union (Far East), Algeria, United States; mostly in manure.....
  .....*icosiensis* (Maupas)

- Spicules 70-80 µm; stoma proximally not bulging.
  ♀: L = 1.1-1.4 mm; a = 11-13; b = 4.6-5.9; c = 37-51; V = 57-61%.
  ♂: L = 1.0-1.2 mm; a = 13-16; b = 4.8-5.9; c = 29-41.
  Germany, Hungary, England, Soviet Union (Kazakhstan, Uzbekistan); in soil and humus..... *serrata* (Körner *in* Osche)

Genus: *Rhomborhabditis* n. gen.

DEFINITION: Rhabditoidea, Rhabditidae, Peloderinae (Fig. 16). Body 1.0 to 2.6 mm long. Cuticle annulated and longitudinally striated. Head not offset, lips closed. Labial papillae minute. Amphids very small, on the lateral lips. Stoma shorter than head diameter. Cheilostom not cuticularized, promesostom thick-walled, short, only twice as long as wide. Metastom with weak swellings each bearing three setose denticles. Oesophageal collar present but short. Anterior part of oesophagus completely cylindrical.

Female gonads paired, vulva a little behind middle of body. Spicules distally fused for a short part. Bursa pelo-deran; open, rhombus-shaped. Two of the ten pairs of genital papillae lying out of bursa. Tail of female very short, broadly rounded, that of male conoid.

BIONOMICS: Associates of carrion beetles. Viviparous.

DISTRIBUTION: The only species of the genus is known from Central Europe.

TYPE SPECIES: *Rhabditis stammeri* Völk, 1950 = *Rhombo-rhabditis stammeri* (Völk, 1950) n.comb.

NO OTHER SPECIES:

R. stammeri (Völk, 1950) n. comb.

Syn.*Rhabditis stammeri* Völk, 1950

Rhabditis (Pelodera) stammeri Völk, 1950 (Sudhaus, 1876)

Pelodera stammeri (Völk, 1950) Dougherty, 1955

- Stoma 20 µm long; spicules 43-68 µm long; bursa finely wawed; tail of female much shorter than anal body diameter.

♀: L = 1.0-2.6 mm; a = 11-15; b = 6.8-10.6; c = 23-48; V =53-59%.

♂: L = 1.16 mm; a = 16; b = 8.3; c = 21.

Germany and Hungary; in carrion and carrion beetles.....

..... *stammeri* (Völk)

SUBFAMILY : Rhabditinae Örley, 1880

Rhabditidae (Fig.19-20). Lips closed or only slightly separate, usually with very small papillae. Amphids generally pore-like, on the lateral lips, rarely large, oval, behind labial region. Stoma well developed, tubular, exceptionally short. Cheilostom not cuticularized, promesostom parallel-walled, metastom with glottoid apparatus bearing minute warts or setiform denticles. Oesophageal collar around buccal tube mostly present. Oesophagus corpus often bulb-like. Female genital organ paired, amphidelphic;

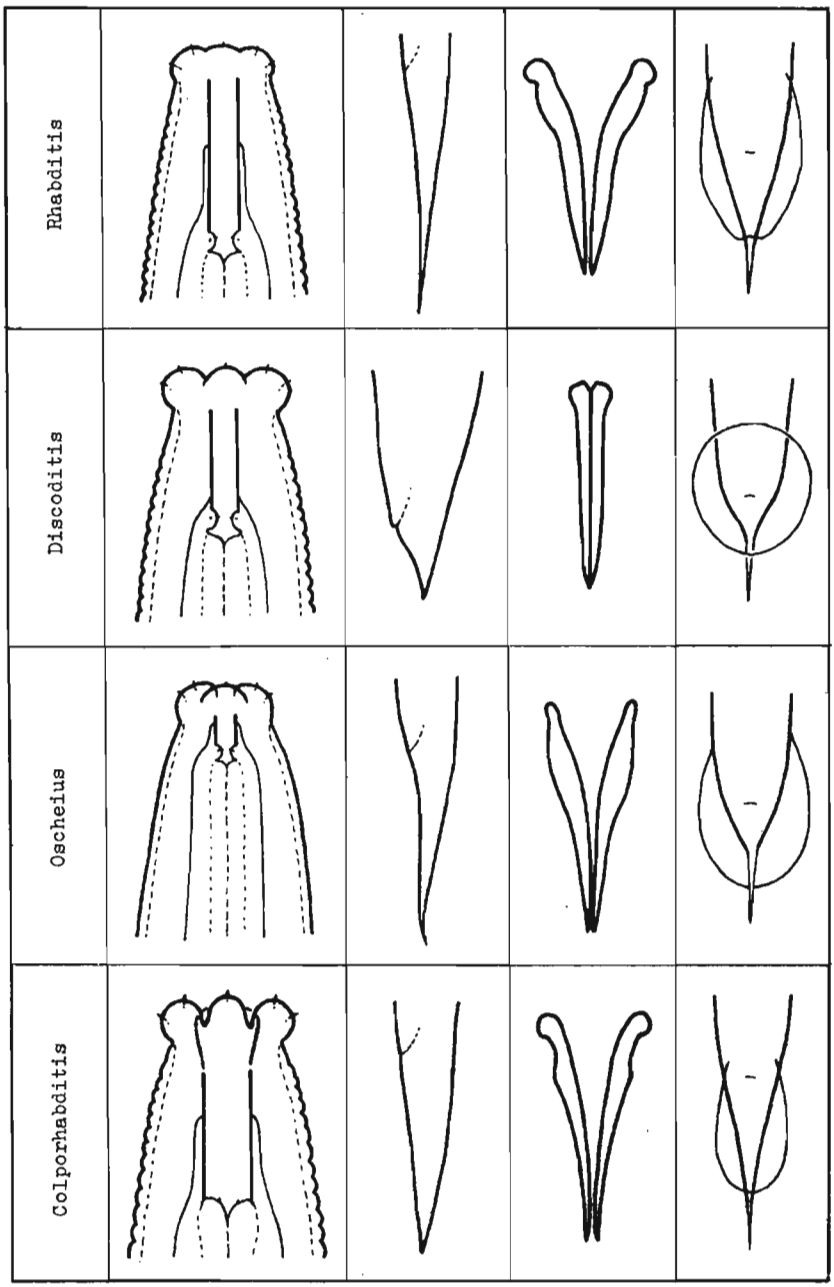

Fig.19. Rhabditidae: Rhabditinae. The genera of the subfamily (head, female tail, spicules, bursa).

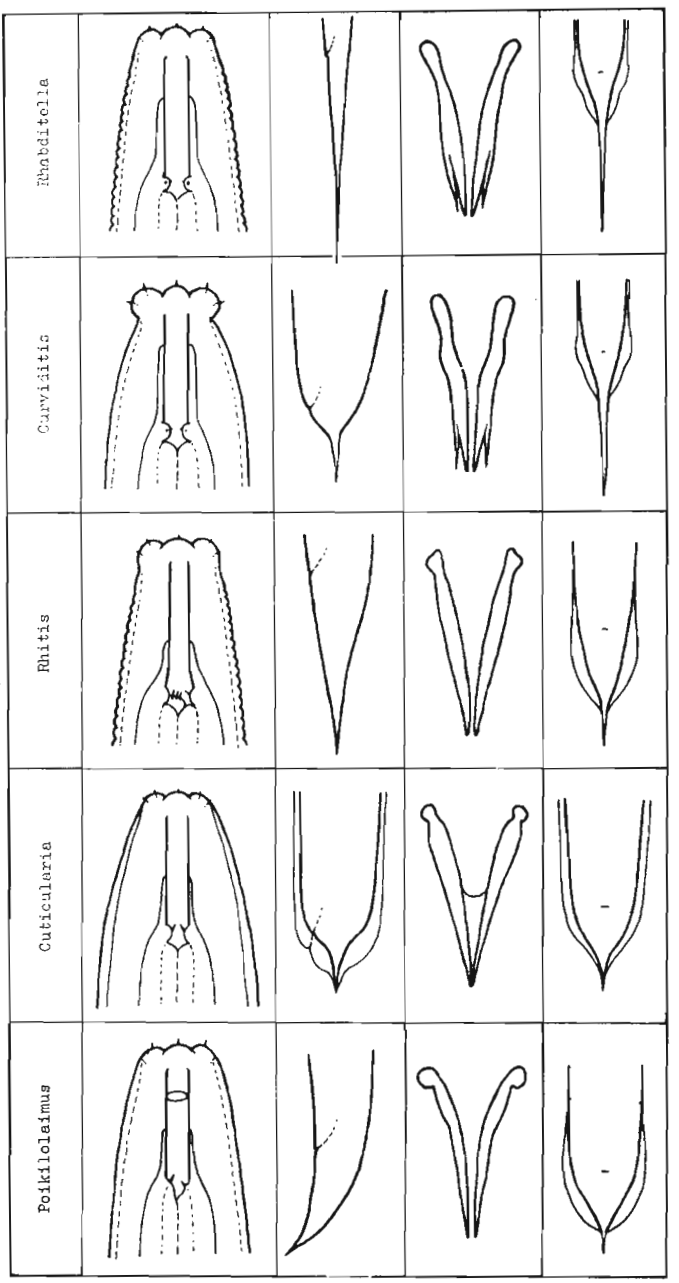

Fig.20.Rhabditidae: Rhabditinae. The genera of the subfamily, continuation (head, female tail, spicules, bursa).

vulva medial. Spicules practically always separate.Bursa leptoderan, not reaching tail lip, open, or rarely, closed, generally narrower than in the previous subfamily, occasionally quite rudimentary. Number of genital papillae 9 or 10 pairs. Tail of female mostly conical, sometimes cupola-shaped and spicate, that of male similar in shape and length.

Predominantly terrestrial animals, inhabiting soil,humus, decayed plant material, dung and other saprobic habitats, but there are also a few aquatic species among them. Nine genera can be ordered to this subfamily.

Key to the genera of Rhabditinae

1 Head *Teratocephalus*-like, i.e. lip margins strongly cuticularized, refractive, axils separating lips tubular..... ..... *Colporhabditis* (p.134)

\- Head not *Teratocephalus*-like, lips normal, without cuticularized margins..... 2

2 Stoma unusually short, promesostom (buccal tube) as long as, or only a little longer than wide.....*Oscheius* (p.133)

\- Stoma well developed, promesostom at least twice as long as wide but generally much longer..... 3

3 Bursa rudimentary, short and very narrow..... 4

\- Bursa normal, conspicuous..... 8

4 Each spicule with a long dorsal thorn; metastom provided with minute warts..... 5

\- Spicules without dorsal thorns; metastom provided with setose denticles..... 6

5 Tail of female cupola-shaped with pointed tip; bursa papillae 10 pairs.....*Curviditis* (p.138)

\- Tail of female conoid; bursa papillae 9 pairs...*Rhabditella* (p.135)

6 Amphids comparatively large, oval, behind lip region; genital papillae 7 pairs.....*Poikilolaimus* (p.146)

\- Amphids very small, pore-like, on the lateral lips; genital papillae 9 pairs..... 7

7 Cuticle strikingly loose, sack-like, bursa not separated from cuticle; tail cupola-shaped.....*Cuticularia* (p.143)

- Cuticle thin and tight, with separated bursa; tail conical... .....*Rhitis* (p.140)

8 Bursa anteriorly closed, sucker-shaped..... .....*Discoditis* (p.131)

- Bursa anteriorly open, not sucker-shaped..... .....*Rhabditis* (p.121)

Genus: *Rhabditis* Dujardin, 1845

Syn. *Tribactis* Dujardin, 1945; *Rhabditis* (*Choriorhabditis* Osche, 1952); *Rhabditis* (*Indorhabditis* Chaturvedi & Khera, 1979).

DEFINITION: Rhabditoidea, Rhabditidae, Rhabditinae (Fig. 19). Body length varying from 0.5 to 2.9 mm. Cuticle either smooth or annulated and finely longitudinally striated. Head continuous with neck or offset, lips low, closed or hardly separate, labial papillae minute, occasionally setose. Stoma of moderate length, cheilostom not cuticularized, metastom with relatively large swellings provided with fine warts. Oesophageal collar present. Oesophagus corpus either cylindrical or swollen, bulb-like. Female gonads paired, vulva near middle of body. Spicules free, simple. Bursa leptoderan, open, or rarely pseudopeloderan. Number of genital papillae 9 (exceptionally 8) pairs; usually three pairs lying preanal. Tail of both sexes conical, or that of female cupola-shaped with tip.Phasmids distinct.

BIONOMICS: Predominantly terrestrial species living in soil, detritus, plant residues, dung, cadavers, mushrooms, or associates of earthworms (Lumbricidae). Exceptionally aquatic. Ovi- or viviparous.

DISTRIBUTION: The members of the genus *Rhabditis* occur in Europe, Asia, Africa, North and South America; we have

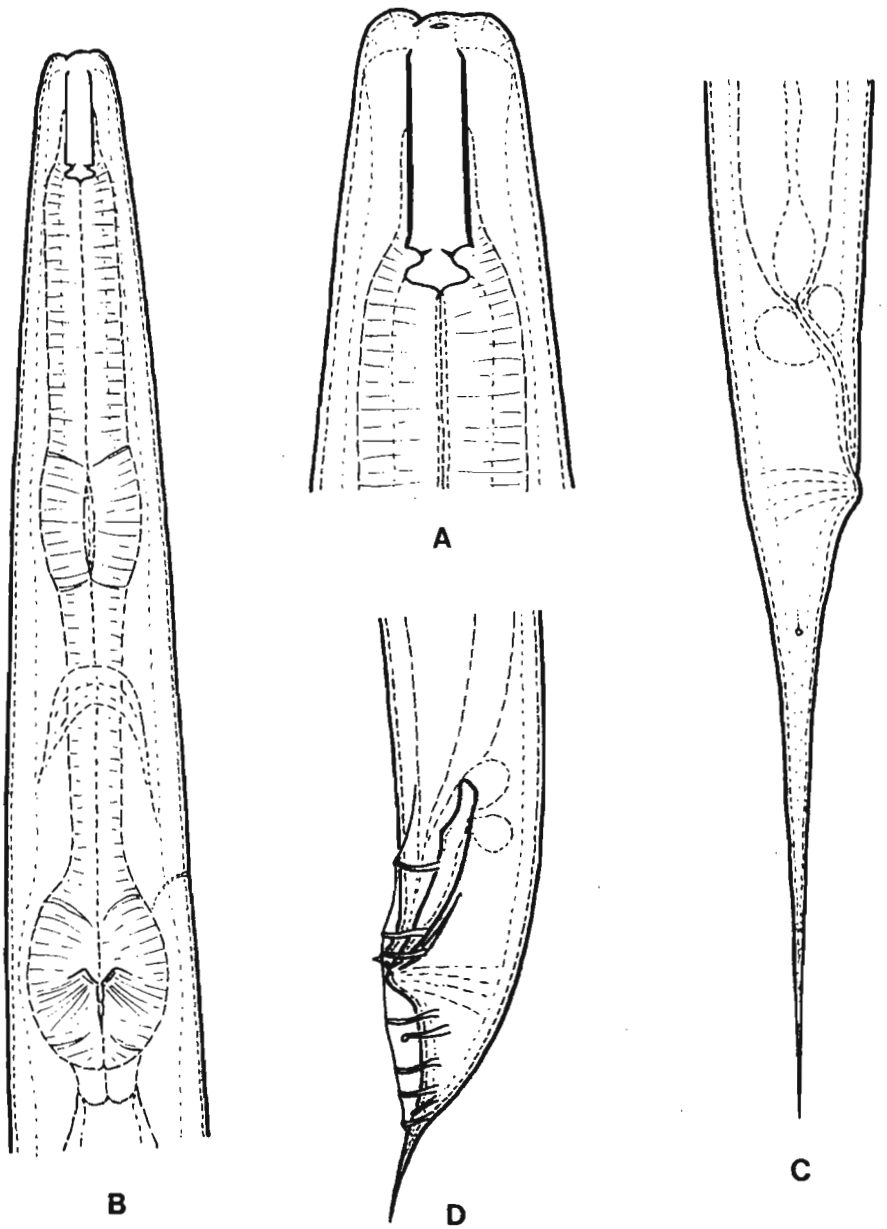

Fig.21. *Rhabditis terricola* Dujardin, 1845 - a member of the subfamily Rhabditinae, from Budapest, Hungary. A: anterior end, 1 600X; B: oesophageal region, 700X; C: female tail, 700X; D: male posterior end, 700X.

no definite data from Australia.

TYPE SPECIES : *Rhabditis terricola* Dujardin, 1845.

NINETEEN SPECIES :

R. anomala Hertwig, 1922
Syn.*Rhabditis* (*Choriorhabditis*) *anomala* Hertwig, 1922 (Osche, 1952)

R. blumi Sudhaus, 1974

R. caulleryi Maupas, 1919
Syn.*Rhabditis* (*Choriorhabditis*) *caulleryi* Maupas, 1919 (Osche, 1952)

R. cucumeris (Marcinowski, 1909) n.comb.
Syn.*Leptodera cucumeris* Marcinowski, 1909
Rhabditis brevispina minor Goffart, 1931
Rhabditis (*Indorhabditis*) *olitorius* Chaturvedi & Khera, 1979

R. gracilicauda De Man, 1876
Syn.*Rhabditis* (*Choriorhabditis*) *gracilicauda* De Man, 1876 (Osche, 1952)

R. guignardi Maupas, 1900
Syn.*Rhabditis* (*Choriorhabditis*) *guignardi* Maupas, 1900 (Osche, 1952)

R. heteruroides Altherr, 1938
Syn.*Rhabditis* (*Choriorhabditis*) *heteruroides* Altherr, 1938 (Osche, 1952)

R. heterurus Örley, 1880
Syn.*Rhabditis* (*Choriorhabditis*) *heterurus* Örley, 1880 (Osche, 1952)

R. intermedia De Man, 1880
Syn.*Rhabditis* (*Choriorhabditis*) *intermedia* De Man, 1880 (Osche, 1952)

R. longicaudata Bastian, 1865
Syn.*Rhabditis* (*Choriorhabditis*) *longicaudata* Bastian, 1865 (Osche, 1952)
Rhabditis longicaudata Bütschli, 1873

R. lucianii Maupas, 1919

Syn.*Rhabditis* (*Choriorhabditis*) *lucianii* Maupas,1919 (Osche, 1952)

R. marionis Maupas, 1899

Syn.*Rhabditis* (*Choriorhabditis*) *marionis* Maupas, 1899 (Osche, 1952)

Rhabditis terrestris Stephenson, 1942

Rhabditis (*Choriorhabditis*) *terrestris* Stephenson, 1942 (Osche, 1952)

R. maupasi Seurat *in* Maupas, 1919

Syn.*Rhabditis* (*Choriorhabditis*) *maupasi* Seurat *in* Maupas, 1919 (Osche, 1952)

Rhabditis johnsoni Micoletzky, 1922

Rhabditis (*Choriorhabditis*) *johnsoni* Micoletzky, 1922 (Osche, 1952)

Rhabditis leptodera Hertwig, 1922

Rhabditis (*Choriorhabditis*) *leptodera* Hertwig, 1922

R. producta (Schneider, 1866) Linstow, 1878

Syn.*Leptodera producta* Schneider, 1866

Rhabditis (*Choriorhabditis*) *producta* (Schneider, 1866) Linstow, 1878 (Osche, 1952)

R. reciproca Sudhaus, 1974

R. seychellensis Potts, 1910

Syn.*Rhabditis* (*Choriorhabditis*) *seychellensis* Potts, 1910 (Osche, 1952)

Rhabditis (*Pelliodítis*) *seychellensis* Potts, 1910 (Sudhaus, 1976)

Rhabditis paraelongata Micoletzky, 1915

Rhabditis (*Choriorhabditis*) *paraelongata* Micoletzky, 1915 (Osche, 1952)

R. terricola Dujardin, 1845

Syn.*Angiostoma terricola* (Dujardin, 1845) Diesing,1851

Leptodera terricola (Dujardin, 1845) Chatin, 1888

Rhabditis terricola spiculofusa Abuladze, 1934

Rhabditis ornata Bastian, 1865

Rhabditis (*Protorhabditis*) *ornata* Bastian, 1865 (Osche, 1952)

Protorhabditis ornata (Bastian, 1865) Dougherty, 1955
Rhabditis aspera Bütschli, 1873
Rhabditis (Choriorhabditis) aspera Bütschli, 1873 (Osche, 1952)
Rhabditis duthiersi Maupas, 1900
Rhabditis (Choriorhabditis) duthiersi Maupas, 1900 (Osche, 1952)

R. uliginosa Soós, 1938
Syn. *Rhabditis (Choriorhabditis) uliginosa* Soós, 1938 (Osche, 1952)

R. wohlgemuthi Völk, 1950
Syn. *Rhabditis (Choriorhabditis) wohlgemuthi* Völk, 1950 (Osche, 1952)

SPECIES INQUIRENDAE :

The *Rhabditis* species listed below have been described insufficiently, hence they must be regarded as such :

R. aberrans Krüger, 1913
Syn. *Rhabditis aspera aberrans* Krüger, 1913
Rhabditis (Choriorhabditis) aberrans Krüger, 1913 (Osche, 1952)

R. acris Bastian, 1865*
Syn. *Rhabditis (Mesorhabditis) acris* Bastian, 1865 (Osche, 1952)
Mesorhabditis acris (Bastian, 1865) Dougherty, 1955

R. aphodiorum Wülker, 1921

R. brassicae Southern, 1909
Syn. *Rhabditis (Choriorhabditis) brassicae* Southern, 1909 (Osche, 1952)

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*Sudhaus' opinion that this species would be a representative of the genus *Rhabditis* s. str. cannot be accepted here. Bastian illustrated the bursa as distinctly peloderan.

R. dentata (Schneider, 1866) Linstow, 1878
Syn.*Leptodera dentata* Schneider, 1866
R. erschowi Abuladze, 1934
Syn.*Rhabditis (Choriorhabditis) erschowi* Abuladze,1934 (Dougherty, 1955)
R. genitalis Scheiber, 1880
Syn. *Rhabditis (Caenorhabditis) genitalis* Scheiber, 1880 (Sudhaus, 1976)
R. glauxi Allgén, 1951
R. guerneyi Potts, 1910
Syn.*Rhabditis (Choriorhabditis) guerneyi* Potts, 1910 (Osche, 1952)
R. macroura Linstow, 1879
Syn.*Rhabditis (Rhabditoides) macroura* Linstow, 1879 (Sudhaus, 1976)
R. niellyi (Blanchard, 1885) Blanchard, 1890
Syn.*Leptodera niellyi* Blanchard, 1885
Filaria niellyi(Blanchard, 1885)Moniez, 1889
R. oculiequini Willach, 1892
R. parateres Cobb, 1924
Syn.*Rhabditis (Pelodera) parateres* Cobb, 1924 (Sudhaus, 1976)
R. recticauda (Ehrenberg *in* Hemprich & Ehrenberg, 1831) Micoletzky, 1922
Syn.*Anguillula recticauda* Ehrenberg *in* Hemprich & Ehrenberg, 1831
R. resistens Meyl, 1954
Syn.*Rhabditis (Rhabditoides) resistens* Meyl, 1954 (Sudhaus, 1976)
R. rhabditiformis (Rahm, 1924) Schneider, 1939
Syn.*Diphtherophora rhabditiformis* Rahm, 1924
R. sergenti Maupas, 1916
Syn.*Rhabditis (Choriorhabditis) sergenti* Maupas, 1916 (Osche, 1952)

R. silvatica Volz, 1951
Syn.*Rhabditis (Choriorhabditis) silvatica* Volz, 1951 (Osche, 1952)
R.(Rhabditella)tipulae Lam & Webster, 1971
R. uncinata (Schneider, 1866) Örley, 1885
Syn.*Leptodera uncinata* Schneider, 1866
R. varsaviensis Stefanski, 1922
R. verneti Maupas, 1900
R. vespillonis (Linstow, 1878) Sudhaus, 1976
Syn.*Agamonematodum vespillonis* Linstow, 1878
R. voigti Rahm, 1924
Syn.*Rhabditis (Choriorhabditis) voigti* Rahm, 1924 (Osche, 1952)
Rhabditis (Pelliodítis) voigti Rahm, 1924 (Dougherty, 1955)

Key to the species of Rhabditis

1 Bursa pseudopeloderan, leaving a very short and thin tail tip free..... 2
- Bursa typical leptoderan, the free tip of tail conspicuous and usually long..... 6
2 One pair of papillae lying preanal
♀: L = 1.5 mm; a = 21; b = 7; c = 11; V= 52%.
♂: L = 0.86-1.1 mm; a = 20-21; b = 5-6; c = 15-19.
Germany and Algeria; in soil and associated with earthworms.. ..... *Guignardi* Maupas
- Three pairs of papillae lying preanal.....3
3 Stoma short, about as long as head diameter; tail of female 2.5-3 anal body diameters long..... 4
- Stoma distinctly (1.5 times) longer than head diameter; tail of female 4-8 anal body diameters long..... 5
4 Spicules 70-86 µm long.
♀: L = 1.9-2.1 mm; a = 12-14; b = 8.6-9.6; c = 19-20; V= 52-54%
♂: L = 1.2-1.7 mm; a = 12-18; b = 6.3-8.0; c = 19-25.

Germany, Austria, Hungary, Algeria, Zaire; in soil, saprobic habitats, also in earthworms.....*maupasi* Seurat *in* Maupas

- Spicules 55-60 µm long.

♀: L = 1.85-2.05 mm; a = 20; b = 8; c = 16; V = 51%

♂: L = 1.30-1.45 mm; a = 26; b = 6; c = 26.

Germany, England, France; mostly in earthworms.....

.....*marionis* Maupas

5 Tail of female 6-8 anal body diameters long; rectum 1.5-2 times as long as diameter; median bulb of oesophagus strong.

♀: L = 1.2-2.0;a = 16-25; b = 6.2-8.8; c = 7-13; V=47-51%

♂: L = 0.8-1.4 mm; a = 13-22; b = 5.7-7.4; c = 17-22.

Holland, Belgium, Germany, Austria, Hungary, Denmark, Poland, Spain, France, Italy, Soviet-Union (Russia, Estonia, Lithuania, Georgia, Kazakhstan, Uzbekistan), Japan, Algeria, United States, Brazil; in soil, compost and other saprobic matters (Fig.21).....*terricola* Dujardin

- Tail of female 4-5 anal body diameters long; rectum as long as three anal diameters; median bulb of oesophagus quite weak.

♀: L = 1.6-2.1 mm; a = 16-19; b = 6.4-7.6; c = 10-14;V=48-53%

♂: L = 1.2-1.5 mm; a = 18-20; b = 5.6-7.3; c = 22-30.

Germany; in saprobic biotopes.....*wohlgemuthi* Völk

6 Tail of female very long, filiform, 12-15 times longer than anal body diameter.....7

- Tail of female maximum 8 times as long as anal body diameter but generally shorter..... 8

7 Head offset; spicules stout; stoma almost twice as long as head diameter.

♀: L = 0.9 mm; a = 30; b = 4-6; c = 3.5-3.8; V = 42%

♂: L = 0.75 mm; a = 20; b = 4-6; c = 4.8-6.0.

Holland, Germany, Austria, Hungary, Czechoslovakia, Sweden, Soviet Union (Russia); mostly in cow dung.....

.....*gracilicauda* De Man

- Head not offset; spicules slender; stoma only as long as head diameter.

♀: L = 0.60-0.65 mm; a = 25; b = 4.8-5.1; c = 3.5-4.5; V = 44-46% . ♂: L = 0.65 mm; a = 31; b = 5; c = 3.5.

Switzerland; terrestrial, in wet wood.....
.....*heteruroides* Altherr

8 Tail of female cupola-shaped with pointed tip 9

- Tail of female conical 11

9 Cupola part of tail twice as long as anal body diameter.
♀: L = 1.53 mm; a = 25; b = 6; c = 4. ♂: without measurements.

Hungary; in liquid manure.....*heterura* Örley

- Cupola part of tail at most as long as anal body diameter.... 10

10 Female tail 4 anal body diameters long; oesophagus with distinct medial bulb.
♀: L = 1.2-2.2 mm; a = 14-23; b = 5.5-7.3; c = 7-13; V =48-52%.
♂: L = 1.0-1.5 mm; a = 13-22; b = 5.0-6.8; c = 13-21.

Holland, Germany, Austria, Poland, France, Yugoslavia, Spain, Soviet Union (Russia), Nepal, Taïwan, Zaïre, Annobon; in soil and humus.....*producta* (Schneider)

- Female tail 2-2.5 anal body diameters long; oesophagus without medial bulb.
♀: L = 0.7-0.9 mm; a = 17-19; b = 4.3-4.5; c = 13-14; V = somewhat behind mid-body. ♂: L = 0.7 mm; a = 17-19; b = 4.3-4.5; c = 11-12.

Holland, Czechoslovakia, Hungary, Bulgaria, Soviet Union (Russia, Georgia, Turkmenia, Kirghizia, Azerbaizhan, Uzbekistan, Far East); in soil and humus..... *intermedia* De Man

11 Tail of female 6-8 times longer than anal body diameter..... 12

- Tail of female 3-4 times longer than anal body diameter..... 16

12 Buccal tube (promesostom) convergent in its middle.
♀: L = 0.63-0.78 mm; a = 18-30; b = 3.8-4.5; c = 4.0-4.6; V = 47-53%. ♂: unknown.

Czechoslovakia; in *Sphagnum* moss.....*uliginosa* Soós

- Buccal tube with parallel walls.....13

13 Tail tip of male as long as bursa or longer.....14

- Tail tip of male much shorter than bursa.....15

14 Larger species, above 1 mm.

♀ : L = 1.1-1.8 mm; a = 15-21; b = 5-8; c = 4.6-7.0; V = 47-55%.

♂: L = 0.9-1.4 mm; a = 17-30; b = 4.6-5.5; c = 9-14.

Holland, Germany, Austria, Hungary, Czechoslovakia, Bulgaria, Italy, Poland, Great Britain, Soviet Union (Russia, Lithuania, Moldavia, Kazakhstan, Tadzhikistan, Uzbekistan), United States, Cuba; in soil, mushroom, compost and dung.....

.....*longicaudata* Bastian

- smaller species, under 1 mm.

♀: L = 0.68-0.85 mm; a = 21-22; b = 5-6; c = 5-6; V = 50%.

♂: L = 0.50-0.62 mm; a = 21-22; b = 5-6; c = 7.

Germany, Austria, Seychelles Islands; aquatic.....

.....*seychellensis* Potts

15 Anterior portion of oesophagus cylindrical; three papillae lying preanal; larger species : 1.3 to 1.8 mm.

♀ : L = 1.32-1.82 mm; a = 18-23; b = 4.8-6.1; c = 7.0-9.7; V=48-52 %. ♂ : L = 0.99-1.41 mm; a = 17-22; b = 4.2-5.9; c = 17-27.

Spain; in dung .....*blumi* Sudhaus*

- Anterior portion of oesophagus proximally swollen; two papillae lying preanal; smaller species : 0.8 to 1.1 mm.

♀ : L = 0.77-1.10 mm; a = 13-17; b = 5.2-7.5; c = 5.2-6.9; V = 46-49%. ♂ : L = 0.52-0.73 mm; a = 16-24; b = 4.6-5.8; c = 20-26.

Germany, probably on carrion.....*reciproca* Sudhaus

16 Stoma relatively short, 1/15-1/25 of oesophagus length.

♀ : L = 1.6-2.8 mm; a = 16-20; b = 5-10; c = 14-17; V = 48-54%.

♂: L = 1.2-1.9 mm; a = 24-29; b = 6.6-8.0; c = 29-45.

Algeria; in soil.....*lucianii* Maupas

- Stoma longer, 1/8-1/12 of oesophagus length..... 17

17 The first pair of papillae lying out of bursa, before it.

♀ : L = 0.8-1.2 mm; a = 17-25; b = 5-7; c = 9-14; vulva slightly post-equatorial.

Holland, Belgium, Germany, Switzerland, Austria, Hungary,

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* Maybe identical with *Rhabditis adenobia* Poinar, 1971 described from West Africa.

Czechoslovakia, Denmark, Poland, Sweden, Bulgaria, Soviet Union (Russia, Estonia, Belorussia, Lithuania, Moldavia, Georgia, Turkmenia, Kirghizia, Azerbaizhan, Kazakhstan, Uzbekistan), India, Hainan, Brazil; terrestrial.....*cucumeris* (Marcinowski)*

- The first pair of papillae lying on the bursa.....18

18 Tail of female 4 anal body diameters long; spicules 54-58 µm long.
♀: L = 1.0-2.0 mm; a = 14-17; b = 6.6-7.5; c = 13-14; V = 48-53%.
♂: L = 1.3-1.5 mm; a = 16; b = 6.6; c = 28.
Germany, Austria, and United States; in earthworms.....
.....*anomala* Hertwig

- Tail of female 2.5 to 3 anal body diameters long; spicules 39-48 µm long.
♀: L = 1.9-2.4 mm; 17-19; b = 9; c = 21-26; V = 50-52 %.
♂: L = 1.05-1.3 mm; a = 17-20; b = 6; c = 23-30.
Algeria; in soil.....*caulleryi* Maupas

Genus: *Discoditis* n. gen.

DEFINITION: Rhabditoidea, Rhabditidae, Rhabditinae (Fig. 19). Large and robust animals, body 1.0-3.7 mm long. Cuticle weakly annulated, thick. Head offset or continuous with neck; lips well separate, hemispherical, with minute papillae. Amphids pore-like, on the lateral lips. Stoma moderately developed, about as long as head diameter. Cheilostom not cuticularized, promesostom parallel-walled, metastom isoglottoid, with fine warts. Oesophageal collar lacking. Oesophagus corpus not or only slightly swollen, posterior bulb large. Female gonads paired, vulva medial or somewhat postmedial. Spicules either free or distally fused. Bursa

* This widely distributed species has been recorded in literature in most cases as " *Rhabditis brevispina* ". As pointed out by Sudhaus (1976), it may not be identical with the " true " *R. brevispina* described by Claus the latter species synonymous with *Cuticularia oxycerca* (De Man, 1895).

leptoderan, anteriorly closed, sucker-shaped; arrangement of papillae: 1+2+1+2+3 pairs. Tail of female conical, long or short. Phasmids behind anal region.

BIONOMICS: In heavily saprobic habitats, larvae on flies and beetles. Oviparous or ovoviviparous, uterus generally packed with numerous eggs and embryos.

DISTRIBUTION: European nematodes.

TYPES SPECIES: Rhabditis maxima Völk, 1950 = *Discoditis maxima* (Völk, 1950) n.comb.

TWO SPECIES:

D. dubia (Bovien, 1937) n.comb.
Syn.*Rhabditis dubia* Bovien, 1937
Rhabditis (Chorionhabditis) dubia Bovien, 1937 (Osche, 1952).

D. maxima (Völk, 1950) n. comb.
Syn.*Rhabditis maxima* Völk, 1950
Rhabditis (Chorionhabditis) maxima Völk, 1950 (Osche, 1952)

Key to the species of Discoditis

1 Tail of female 5 anal body diameters long; spicules free.
♀: L = 1.06-1.12 mm; a = 17-24; b = 5.5-6.8; c = 9-12; V = 50%.
♂: L = 1.0-1.1 mm; a = 20-24; b = 6; c = 10.5.
Germany and Denmark; in cow dung, larvae (" Dauerlarven ") on flies.....*dubia* (Bovien)

\- Tail of female as long as anal body diameter or only slightly longer; spicules fused; large species.
♀: L = 1.7-3.7 mm; a = 10-32; b = 8-10; c = 26-64; V = 53-59%.
♂: L = 2.6 mm; a = 21; b = 6.7; c = 43.
Germany and Bulgaria; on carrion beetles.....
..... *maxima* (Völk)

Genus: *Oscheius* Andrássy, 1976

DEFINITION: Rhabditoidea, Rhabditidae, Rhabditinae (Fig. 19). Body length between 1.2 and 3.2 mm. Cuticle finely annulated. Head not or only slightly offset, lips separate with minute papillae. Amphids pore-like, on the lateral lips. Stoma unusually short, buccal tube not or only slightly longer than wide. Cheilostom not cuticularized, promesostom with parallel walls, metastomatal swellings each with three minute denticles or warts. Oesophageal collar present, short. Oeophagus corpus practically cylindrical, terminal bulb strong. Female gonads paired, vulva medial in position. Spicules separate. Bursa open, leptoderan, provided with nine pairs of papillae (of which three pairs lying preanal). Tail of both sexes conical, sharply pointed. Phasmids distinct, behind anal region.

BIONOMICS: In saprobic biotopes (detritus, dung), occasionally associated with beetles (Lucanidae).

DISTRIBUTION: A European genus.

TYPE SPECIES: Rhabditis (Choriorhabditis) insectivora Körner *in* Osche, 1952 = *Oscheius insectivora* (Körner *in* Osche, 1952) Andrássy, 1976.

TWO SPECIES:

O.insectivora (Körner in Osche, 1952) Andrássy, 1976
Syn.*Rhabditis (Choriorhabditis) insectivora* Körner *in* Osche, 1952

O.koerneri (Osche, 1952) n. comb.
Syn.*Rhabditis (Choriorhabditis) koerneri* Osche, 1952

Key to the species of Oscheius

1 Tail of female shorter, 1/12-1/15 of entire body length; rectum

3-4 times as long as anal body diameter; body large, 2-3 mm.

♀: L = 2.0-3.2 mm; a = 14-19; b = 8.8-13.5 ; c = 12-15; V = 47-50%.

♂: L = 1.6-3.2 mm; a = 20-28; b = 7.3-13; c = 21-47.

Germany, France; associated with Lucanidae beetles *Lucanus cervus* and *Dorus parallelopipedus... insectivora* (Körner *in* Osche)

- Tail of female longer, 1/5-1/8 of entire body length; rectum as long as anal body diameter or so; body smaller, 1-2 mm.

♀: L = 1.2-2.0 mm; a = 17-28; b = 6.2-9.8; c = 5-8; V = 46-48%.

♂: L = 1.3-1.5 mm; a = 20-21; b = 6.2-8.1; c = 7-8.

Germany and Bulgaria; in cow dung.....*koerneri* (Osche)

Genus: *Colporhabditis* Andrássy, 1976

DEFINITION: Rhabditoidea, Rhabditidae, Rhabditinae (Fig. 19). Body small, 0.4 to 0.9 mm. Cuticle finely annulated. Head offset, lips hemispherical, separate with strongly cuticularized, refractive margins, *Teratocephalus*-like. Labial papillae minute. Amphids pore-like, on the lateral lips. Stoma fairly wide, as long as head diameter. Cheilostom cuticularized, metastom swellings small, without discernible denticles. Oesophageal collar present. Oesophagus corpus proximally swollen. Female gonads paired, vulva medial. Spicules separate. Bursa leptoderan, relatively broad, provided with ten pairs of papillae. Tail of female conical, sharply pointed.

BIONOMICS: Terrestrial and aquatic species; oviparous.

DISTRIBUTION: The representatives of *Colporhabditis* are distributed in Europe and East Asia.

TYPE SPECIES: *Rhabditis coronigera* Altherr, 1938 = *Colporhabditis coronigera* (Altherr, 1938) Andrássy, 1976.

NO OTHER SPECIES:

C. *coronigera* (Altherr, 1938) Andrássy, 1976

Syn.*Rhabditis coronigera* Altherr, 1938

Rhabditis (*Teratorhabditis*) *coronigera* Altherr, 1938 (Osche, 1952)

Rhabditis (*Diploscapteroides*) *coronigera* Altherr, 1938 (Sudhaus, 1976)

Teratorhabditis coronigera (Altherr, 1938) Dougherty, 1955

- Arrangement of bursal papillae: 3+4+3 pairs; bursa enveloping 2/3 of tail length.

♀ : L = 0.40-0.85 mm; a = 19-34; b = 3.4-4.1, c = 6.5-14; V=54-63%.

♂: L = 0.57-0.75 mm; a = 24-29; b = 3.4-4.1; c = 14-18.

Switzerland and perhaps Soviet Union (Far East); terrestrial..

.....*coronigera*(Altherr)

Genus: *Rhabditella* (Cobb, 1929) Chitwood, 1933

Syn.*Rhabditis* (*Rhabditella* Cobb, 1929).

DEFINITION: Rhabditoidea, Rhabditidae, Rhabditinae (Fig. 20). Body length varying from 0.6 to 2.9 mm. Cuticle finely annulated. Head not or sligtly offset, lips hardly with minute papillae. Amphids quite small, on the lateral lips. Stoma long, encircled by a tall oesophageal collar; stoma length equal with 1.5 to 3.8 head diameters. Cheilostom not cuticularized, promesostom with parallel walls. Metastom iso- or anisoglottoid, with very small denticles. Oesophagus with bulb-like medial swelling and large terminal bulb. Female genital organ paired, vulva equatorial or preequatorial in position. Spicules free with large dorsal projection. Bursa leptoderan, very narrow, rudimentary,hardly discernible. Number of genital papillae nine pairs (3 pairs preanal, 1 pairadanal and 5 pairs postanal). Tail in both sexes long, finely pointed. Phasmids recognizable.

BIONOMICS: Terrestrial nematodes, inhabiting soil, dung and other saprobic habitats.

DISTRIBUTION: The species of the genus *Rhabditella* occur in Europe, Asia, Africa and the Americas.

TYPE SPECIES: Rhabditis (Rhabditella) leptura Cobb,1929 = *Rhabditella leptura* (Cobb, 1929) Chitwood, 1933.

THREE SPECIES:

R. *leptura* (Cobb, 1929) Chitwood, 1933
Syn.*Rhabditis (Rhabditella) leptura* Cobb, 1929

R. *octopleura* (Steiner, 1929) Chitwood, 1933
Syn.*Rhabditis octopleura* Steiner, 1929
Rhabditis (Choriorhabditis) octopleura Steiner,1929 (Osche, 1952)
Rhabditis (Rhabditella) octopleura Steiner, 1929 (Dougherty, 1953)
Rhabditella chilensis Steiner, 1943

R. *pseudoelongata* (Micoletzky, 1913) n. comb.
Rhabditis pseudoelongata Micoletzky, 1913
Rhabditis (Rhabditella) pseudoelongata Micoletzky, 1913 (Sudhaus, 1976)
Leptodera elongata Schneider, 1866, *nec* Baird,1858
Rhabditis elongata (Schneider, 1866) Bütschli, 1876
Rhabditis (Choriorhabditis) elongata (Schneider, 1866) Bütschli, 1876 (Osche, 1952)
Rhabditis tenuicaudata Menzel & Stefanski *in* Stefanski, 1917
Rhabditella tenuicaudata (Menzel & Stefanski *in* Stefanski, 1917) Chitwood, 1933
Rhabditis usui Watanabe, 1927
Rhabditis gracilis Shingareva, Demidova & Kudriavthev, 1928
Rhabditella gracilis (Shingareva, Demidova & Kudriavthev, 1928) Chitwood, 1933
Rhabditis macrocerca Kreis & Faust, 1933

Rhabditella macrocerca (Kreis & Faust, 1933) Steiner, 1943
Rhabditis tricincta Paesler, 1946
Rhabditella multipara Li, 1951

SPECIES INQUIRENDAE

The following species belong probably to the genus *Rhabditella*, owing to the meagre descriptions they must, however, be regarded as such :

R. *frugicola* (Goodey, 1942) n. comb.
Syn.*Brevibucca frugicola* Goodey, 1942
Rhabditoides frugicola (Goodey, 1942) Goodey,1963

R. *macrospiculata* (Stefanski, 1916) n. comb.
Syn.*Rhabditis macrospiculata* Stefanski, 1916
Rhabditis (Chiorhabditis) macrospiculata Stefanski, 1916 (Osche, 1952)

Key to the species of Rhabditella

1 Glottoid apparatus of metastom anisoglottoid, dorsal wall of buccal tube longer than the ventral one.
♀ : L = 0.8-1.5 mm; a = 33-36; b = 5.8-6.0; c = 5-6; V = 43-48%.
♂: L = 0.6-1.0 mm; a = 29-32; b = 5.7-6.3; c = 4.5-6.0
Germany, United States, Honduras, Brazil; terrestrial, usually in saprobic habitats.....*leptura* (Cobb)

\- Glottoid apparatus of metastom isoglottoid, both dorsal and ventral wall of buccal tube equally long..... 2

2 Stoma unusually long, 3.5-3.8 times longer than head diameter and 12-15 times longer than wide, respectively.
♀ : L = 0.8-2.9 mm; a = 20-32; b = 4-9; c = 3.0-5.5; V = 38-50%.
♂: L = 0.7-1.5 mm; a = 21-29; b = 4.0-6.5; c = 3.5-6.0
Germany, Switzerland, Austria, Hungary, Yugoslavia, Bulgaria, Spain, Italy, Poland, Soviet Union (Russia, Estonia, Lithuania, Moldavia, Turkmenia, Uzbekistan, Far East); Iran, India, China, Japan; Zaire, Zimbabwe; United States, Cuba, Venezuela, Chile; in

saprobic biotopes, predominantly in dung.....
.....*pseudoelongata* (Micoletzky)

- Stoma 2.3-2.5 times longer than head diameter and 7 times longer than wide, respectively.
♀ : L = 0.76-1.2 mm; a = 20-32; b = 4.1-6.5; c = 3.6-6.0; V = 38-50%. ♂ : L = 0.74-0.94 mm; a = 21-29; b = 4.0-5.4; c = 3.5-7.0.
Germany, India, Egypt, United States, Chile; in plant and animal residues, occasionally on beetles.....
.....*octopleura* (Steiner)

Genus: *Curviditis* (Dougherty, 1953) n. grad.
Syn. *Rhabditis* (*Curviditis* Dougherty, 1953).

DEFINITION: Rhabditoidea, Rhabditidae, Rhabditinae (Fig. 20). Body 0.8 to 2 mm long. Cuticle finely annulated or almost smooth. Head offset, lips separate. Labial papillae either minute or the lateral ones - especially on females- unusually elongate, tentacle-like. Amphids very small, on the lateral lips. Stoma of medial length, about twice as long as head diameter. Cheilostom not cuticularized, walls of promesostom parallel. Metastom isoglottoid, each swelling bearing three fine warts. Oesophageal collar present, tall. Medial swelling of oesophagus bulb-like. Female gonads paired, vulva generally behind mid-body. Spicules separate, provided with a thorn-like dorsal projection. Bursa leptoderan, open, weakly developed, with ten pairs of papillae. Tails of both sexes cupola-shaped with conical tip. Phasmids large, at base of tail tip.

BIONOMICS: Terrestrial, aquatic or semiaquatic nematodes. Oviparous.

DISTRIBUTION: The members of the genus *Curviditis* have been primarily observed in Europe but they also occur in South-East Asia.

TYPE SPECIES: *Leptodera curvicaudata* Schneider, 1966 = *Curviditis curvicaudata* (Schneider, 1866) n. comb.

TWO SPECIES:

C. *curvicaudata* (Schneider, 1866) n. comb.
Syn.*Leptodera curvicaudata* Schneider, 1866
Rhabditis curvicaudata (Schneider,1866)Linstow,1878
Rhabditis (Choriorhabditis) curvicaudata (Schneider, 1866) Linstow, 1878 (Osche, 1952)
Rhabditis (Curviditis) curvicaudata (Schneider,1866) Linstow, 1878 (Dougherty, 1953)
Rhabditis (Cephaloboides) curvicaudata (Schneider, 1866) Linstow, 1878 (Dougherty, 1955)
Cephaloboides curvicaudata (Schneider,1866) Zullini, 1982
Rhabditis micoletzkyi Schneider, 1923
Rhabditis insulana Ditlevsen, 1928
Rhabditis armata Fuchs, 1931
Rhabditis (Choriorhabditis) armata Fuchs, 1931 (Osche, 1952)
Rhabditis (Cephaloboides) armata Fuchs, 1931 (Dougherty, 1955)

C. *dimorpha* (Sudhaus, 1976) n. comb.
Syn.*Rhabditis (Cephaloboides) dimorpha* Sudhaus, 1976

Key to the species of Curviditis

1 Lateral papillae in head - especially those of female - abnormally long, tentacle-like.
♀: L = 0.85-0.99 mm; a = 13-22; b = 3.7-4.6; c = 26-30; V = 61-64 %. ♂:L = 0.68-1.05 mm; a = 15-23; b = 3.8-5.0; c = 20-28.
Greece; in rotten wood.....*dimorpha* (Sudhaus)

- Lateral papillae on head normal, minute.
♀: L = 1.1-1.8 mm; a = 15-24; b = 4.4-6.0; c = 13-22; V = 53-61%. ♂: L = 1.0-1.6 mm; a = 17-25; b = 4.2-6.0; c = 12-20.
Germany, Austria, Hungary, Yugoslavia, Italy, England, Poland, Faeroer Islands, Soviet Union (Russia, Estonia, Lithuania), Malaysia; terrestrial (in compost) and aquatic.....
.....*curvicaudata* (Schneider)

Genus: *Rhitis* n. gen.

DEFINITION: Rhabditoidea, Rhabditidae, Rhabditinae (Fig.20). Body length varying between 0.5 and 2.0 mm. Cuticle finely annulated or smooth. Head not or only slightly offset, lips low, hardly separate, labial papillae small. Amphids pore-like, on the lateral lips. Stoma 1.2 to 2 times as long as head diameter, narrow, proximally slightly curved. Cheilostom not cuticularized, metastom anisoglottoid, each swelling bearing three small denticles. Oesophageal collar around promesostom present. Oesophagus corpus swollen, bulb-like. Female genital organ paired, vulva medial, pre- or postmedial. Spicules free, simple. Bursa leptoderan, rudimentary, often hardly discernible. Papillae nine pairs, the first pair often lying far before spicules. Tail of female elongate-conical,that of male short-conical. Phasmids small but distinct.

BIONOMICS: Terrestrial or aquatic nematodes, inhabiting soil, moss, humus, plant residues, dung and mud. Ovi- or ovoviviparous.

DISTRIBUTION: Species of the genus *Rhitis* have been observed hitherto in Europe, Asia, Africa and Australia. They seem to be lacking in the Americas.

TYPE SPECIES: Leptodera inermis Schneider, 1866 = *Rhitis inermis* (Schneider, 1866) n. comb.

FIVE SPECIES :

R. hanuskai (Kokordak, 1969) n. comb.
Syn.*Protorhabditis hanuskai* Kokordak, 1969
Rhabditis (Rhabditoides) hanuskai (Kokordak, 1969) Sudhaus, 1976

R. hermaphrodita (Osche, 1954) n. comb.
Syn.*Rhabditis (Telorhabditis) hermaphrodita* Osche,1954

Rhabditoides hermaphrodita (Osche, 1954) Dougherty, 1955
Rhabditis (*Rhabditoides*) *helversenorum* Sudhaus, 1974

R. *inermiformis* (Osche, 1952) n. comb.
Syn.*Rhabditis* (*Telorhabditis*) *inermiformis* Osche,1952
Rhabditis (*Rhabditoides*) *inermiformis* Osche, 1952 (Sudhaus, 1976)
Rhabditoides inermiformis (Osche, 1952) Dougherty, 1955
Protorhabditis multiovata Slepetiene, 1961
Rhabditoides zocchii Marinari-Palmisano, 1967

R. *inermis* (Schneider, 1866) n. comb.
Syn.*Leptodera inermis* Schneider, 1866
Rhabditis inermis (Schneider, 1866) Linstow,1878
Rhabditis (*Telornabaitis*) *inermis* (Schneider,1866) Linstow, 1878 (Osche, 1952)
Rhabditis (*Rhabditoides*) *inermis* (Schneider,1866) Linstow, 1878 (Sudhaus, 1976)
Rhabditoides inermis (Schneider,1866) Dougherty, 1955
Rhabditis faecalis Watanabe, 1920
Rhabditis hominis Kobayashi, 1920
Rhabditis schachtiella Skrjabin & Shults, 1926
Rhabditoides schachtiella (Skrjabin & Schults, 1926) Dougherty, 1955
Rhabditis inermoides Völk, 1950
Rhabditis (*Telorhabditis*) *inermoides* Völk, 1950 (Osche, 1952)

R. *luci* Andrássy, 1982

SPECIES INQUIRENDAE

The following species may also belong to the genus *Khitis* :

R. *giardi* (Maupas, 1915) n. comb.
Syn.*Rhabditis giardi* Maupas, 1915
Rhabditis (*Telorhabditis*) *giardi* Maupas, 1915 (Osche, 1952)

Rhabditis (Rhabditoides) giardi Maupas, 1915
(Sudhaus, 1976)
Rhabditoides giardi (Maupas, 1915) Dougherty, 1955

Key to the species of Rhitis

1 Tail of female very long, about 1/4 of total body length, with cuticle shrunken characteristically behind anus.
♀: L = 0.90-1.07 mm; a = 18-26; b = 7.0-8.1; c = 3.6-5.3; V= 38-45%
♂: unknown.
Holland, Germany, Kenya; mostly in dung.....
.....*hermaphrodita* (Osche)*

\- Tail of female shorter, its cuticle not shrunken..... 2

2 Spicules 50-60 µm long, longer than tail.
♀: L = 0.94-1.5 mm; a = 17-24; b = 5.7-7.1; c = 9-13; V=52-60%.
♂: L = 0.82-1.1 mm; a = 18-25; b = 5.7-7.9; c = 19-23.
Germany, Italy, Soviet Union (Russia, Lithuania), New Zealand; terrestrial.....*inermiformis* (Osche)

\- Spicules 32-50 µm long, shorter than tail.....3

3 Arrangement of postanal bursa papillae: 3+5 pairs; bursa almost reaching to tail tip.
♀: L = 1.47-1.87 mm; a = 23-28; b = 5.4-7.5; c = 10-14; V=50-53%.
♂: L = 0.84-1.06 mm; a = 21-26; b = 4.3-5.3; c = 8-17.
Czechoslovakia; in mud.....*hanuskai* (Kokordak)

\- Arrangement of postanal papillae other; bursa leaving the half length of tail free..... 4

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* Since the male is unknown this species shall be placed provisionally in the genus *Rhitis*.

4 First pair of genital papillae lying far before spicules; oesophagus with strong and rounded medial swelling.
♀: L = 0.6-2.0 mm; a = 14-22; b = 4-11; c = 8-14; V =50-55%.
♂: L = 0.46-1.4 mm; a = 13-23; b = 4-7; c = 13-20.
Germany, Austria, Hungary, Spain (Menorca), Poland, Soviet Union (Lithuania, Far East), Japan, Zaire; terrestrial, mostly in dung.....*inermis* (Schneider)

- First pair of genital papillae lying at proximal end of spicules; oesophagus with an oblong medial swelling.
♀: L = 0.88-1.0 mm; a = 17-21; b = 5.2-5.9; c = 9.5-10.2; V = 50-53%. ♂: L = 0.79-0.95 mm; a = 17-20; b = 4.7-5.5; c = 10-15.
India; in soil.....*luci* Andrássy

Genus: *Cuticularia* Van der Linde,1938
Syn.*Peplorhabditis* Ivanova,1960; *Praeputirhabditis* Khera, 1969.

DEFINITION: Rhabditoidea, Rhabditidae, Rhabditinae (Fig.20). Body 0.5 to 1.2 mm long. Cuticle unusually loose, sack-like. Head not offset, lips low, not separate, labial papillae small. Amphids small, pore-like, on the lateral lips. Stoma wide, 1.5 to 2 times longer than head diameter. Cheilostom not cuticularized, promesostom tubular, metastom slightly anisoglottoid, each swelling carrying two setose denticles. Oesophageal collar present. Oesophageal corpus not or sligtly swollen, terminal bulb large.Female genital apparatus paired, vulva slightly postmedial. Spicules separate. Bursa leptoderan, rudimentary, hardly discernible. Nine pairs of papillae present, of which the first pair lying far before spicules. Tail of both sexes short, cupola-shaped with conoid tip. Phasmids small.

BIONOMICS: Terrestrial animals, inhabiting soil, detritus and organic residues. Oviparous.

DISTRIBUTION: The genus has been recorded from Europe, Asia, Africa, North America and Australia.

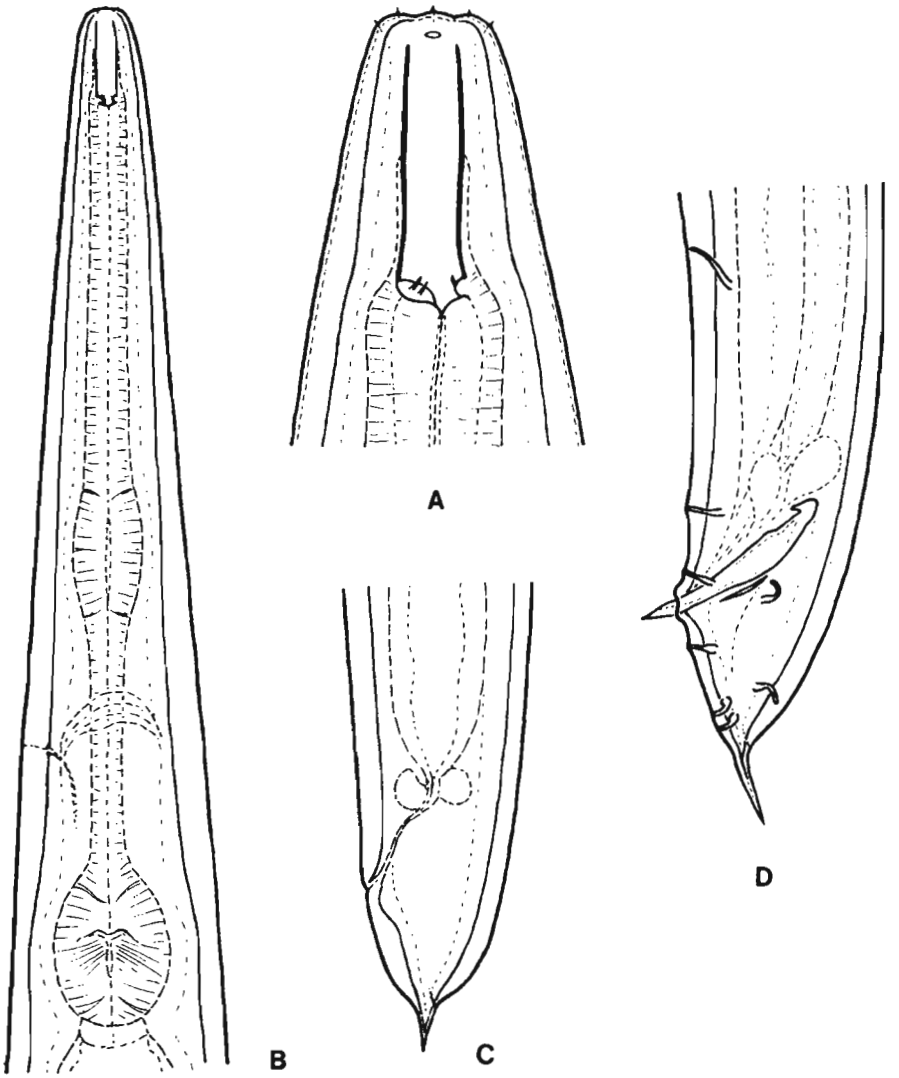

Fig.22. *Cuticularia oxycerca* (De Man, 1895) n.comb. - a member of the subfamily Rhabditinae, from Budapest, Hungary. A: anterior end, 1 500X B: oesophageal region, 510X; C: female posterior end, 650X;D: male posterior end, 650X.

TYPE SPECIES: Cuticularia mathesoni Van der Linde,1938 = *Cuticularia oxycerca* (De Man, 1895) n. comb.

TWO SPECIES:

C. *oxycerca* (De Man, 1895) n. comb.

Syn.*Rhabditis oxycerca* De Man, 1895

Rhabditis (*Choriorhabditis*) *oxycerca* De Man, 1895 (Osche, 1952)

Rhabditis (*Cephaloboides*) *oxycerca* De Man, 1895 (Dougherty, 1955)

Cephaloboides oxycerca (De Man,1895) Zullini,1982

Anguillula brevispina Claus, 1862 (*nomen oblitum* !)

Rhabditis brevispina (Claus, 1862)Bütschli, 1873

Rhabditis (*Choriorhabditis*) *brevispina* (Claus,1862) (Osche, 1952)

Rhabditis nudicapitata Stefanski, 1922

Rhabditis demani Hnatewytsch, 1929

Rhabditis (*Choriorhabditis*) *demani* Hnatewytsch,1929 (Meyl, 1954)

Rhabditis succaris Clapham, 1930

Rhabditis (*Choriorhabditis*) *succaris* Clapham,1930 (Osche, 1952)

Rhabditis variabilis Fuchs, 1931

Cuticularia mathesoni Van der Linde, 1938

Rhabditis mathesoni (Van der Linde, 1938) Goodey, 1951

Rhabditis (*Choriorhabditis*) *mathesoni* (Van der Linde, 1938) Goodey, 1951 (Dougherty, 1953)

Rhabditis stalbergi Allgen, 1950

Rhabditis oerleyi Völk, 1950

Rhabditis parapapillosa Schuurmans Stekhoven, 1951

Peplorhabditis vestibularis Ivanova, 1960

Protorhabditis cuneocaudata Slepetiene, 1961

Praeputirhabditis jodhpurensis Khera, 1969

Rhabditis (*Cephaloboides*) *jodhpurensis* (Khera,1969) Sudhaus, 1976

C. *regenfussi* (Sudhaus, 1980) n. comb.
Syn.*Rhabditis* (*Poikilolaimus*) *regenfussi* Sudhaus,1980

Key to the species of Cuticularia

1 Female tail distinctly longer than anal body diameter; cuticle with longitudinal rows of fine dots; only females known.
♀: L = 0.68-1.31 mm; a = 15-30; b = 3.4-5.7; c = 13-21; V = 52-57%. ♂ : unknown.
Sumatra; in compost.....*regenfussi* (Sudhaus)

- Female tail shorter than anal body diameter; cuticle without dots; males frequent.
♀ : L = 0.5-1.1 mm; a = 14-20; b = 4-5; c = 30-60; V = 55-59%.
♂: L = 0.54-1.17 mm; a = 13-18; b = 4-5; c = 18-30.
Holland, Germany, Austria, Switzerland, Czechoslovakia, Hungary, Italy, Poland, England, Sweden, Soviet Union (Russia, Moldavia, Georgia, Uzbekistan, Far East), Zaire, Trinidad, Australia; terrestrial, mostly in organic residues (Fig.22).....
.....*oxycerca* (De Man)

Genus: *Poikilolaimus* Fuchs, 1930

DEFINITION: Rhabditoidea, Rhabditidae, Rhabditinae (Fig.20). Body 0.4 to 1 mm long. Cuticle finely annulated. Head not offset, lips closed, with short bristle-like papillae. Amphids relatively large, oval, level with buccal tube. Stoma about 1.5 times as long as head diameter, tubular. Cheilostom not cuticularized, promesostom moderately developed, metastom slightly asymmetrical, with small denticles. No oesophageal collar around promesostom. Oesophageal corpus bulb-like. Female gonads paired, vulva postmedial. Spicules free. Bursa adanal, leptoderan, narrow, with nine pairs of papillae. Tail of female conical or

cupola-shaped. Phamsids pore-like.

BIONOMICS: Associates of scolytid beetles.

DISTRIBUTION: The *Poikilolaimus* species are recorded from Europe and North America.

TYPE SPECIES: *Poikilolaimus micoletzkyi* Fuchs, 1930
Poikilolaimus piniperdae Fuchs, 1930

TREE SPECIES:

P. *incisocaudatus* (De Coninck, 1935) n. comb.
Syn.*Rhabditis incisocaudata* De Coninck, 1935
Rhabditis (Telorhabditis) incisocaudata De Coninck, 1935 (Osche, 1952)
Rhabditis (Rhabditoides) incisocaudata De Coninck, 1935 (Sudhaus, 1976)
Rhabditis (Poikilolaimus) incisocaudata De Coninck, 1935 (Sudhaus, 1980)
Rhabditoides incisocaudatus (De Coninck, 1935) Dougherty, 1955

P. *piniperdae* Fuchs, 1930
Syn.*Rhabditis (Poikilolaimus) piniperdae* (Fuchs,1930) Sudhaus, 1980
Poikilolaimus micoletzkyi Fuchs, 1930

P. *rotundus* (Massey, 1974) n. comb.
Syn.*Cephaloboides rotundus* Massey, 1974

Key to the species of Poikilolaimus

1 Tail of female cupola-shaped with tip; larger species, 0.8-1.0 mm.
♀: L = 0.82-1.0 mm; a = 20-22; b = 4.4-5.0; c = 20-31; V =55-56%.
♂: L = 0.81 mm; a = 18-20; b = 4.1-4.5; c = 15-25.
United States (Arizona); associated with *Dendroctonus adjunctus* (Scolytidae)..... *rotundus* (Massey)

\- Tail of female conical; smaller species, 0.4-0.6 mm..... 2

2 Tail 3 anal diameters, about 1/10 of body length.

♀: L = 0.56 mm; a = 20; b = 3.1; c = 9; V = 54 %.

♂: L = 0.60 mm; a = 27; b = 3.0-3.1; c = 11-13.

Zaire; in liver moss.....*incisocaudatus* (De Coninck)

- Tail 1.5-2 anal diameters, about 1/20 of body length.

: L = 0.4-0.6 mm; a = 18-23; b = 3.3-4.5; c = 18-26; V = 50-61%.

: L = 0.35-0.60 mm; a = 19-30; b = 3.0-4.6; c = 18-27.

Germany, Spain, United States (Wisconsin); associated with certain species of Curculionidae, Scolytidae, Cerambycidae and Buprestidae (Coleoptera).

The subspecies *P. piniperdae panagrocerca* Sudhaus, 1980 has a little larger body, longer female tail and a more reduced bursa. Found in Austria, on *Sinodendron cylindricum* (Lucanidae).....

.....*piniperdae* Fuchs

SUBFAMILY: Ablechroiulinae Andrássy, 1976

Rhabditidae (Fig.23). Lips closed or hardly separate, provided with tufts of fine ciliae or with setose projections. Amphids small, pore-like. Stoma well developed, tubular; cheilostom not cuticularized, promesostom parallel-walled, metastom with small denticles or warts. Oesophageal collar around promesostom present, longer than half length of buccal tube. Oesophageal corpus often bulb-like. Female genital organ paired, amphidelphic. Spicules free or distally fused. Bursa leptoderan, narrow, open. Number of genital papillae 9 or 10 pairs. Tail of female conoid or cupola-shaped.

Terrestrial nematodes, occurring in soil, compost, forest litter, mushroom and detritus. The subfamily includes two genera.

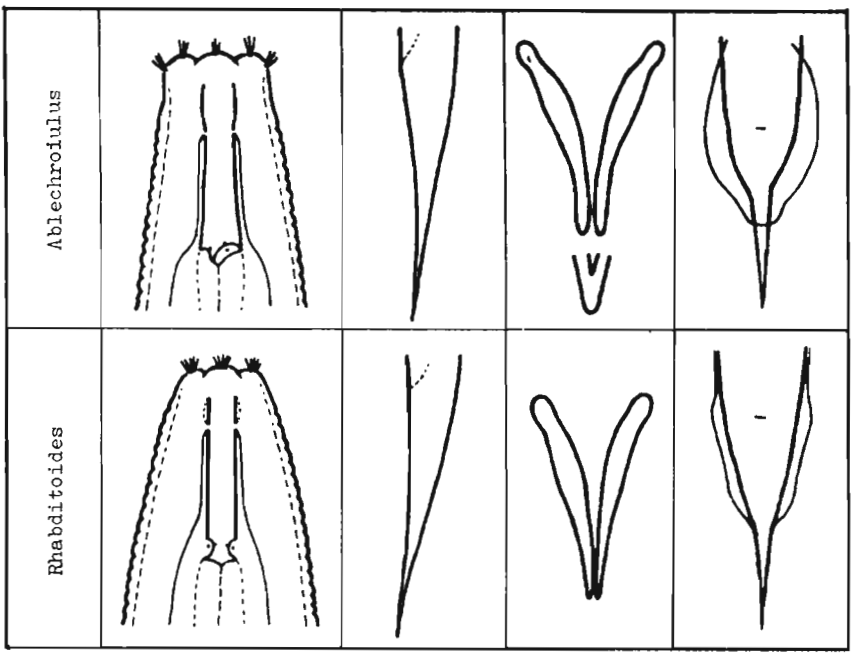

Fig.23. Rhabditidae: Ablechroiulinae. The genera of the subfamily (head, female tail, spicules, bursa).

Key to the genera of Ablechroiulinae

1 Bursa quite narrow, rudimentary, observable only from medial view, with then pairs of papillae.....*Rhabditoides* (p.155)

- Bursa normally developed, observable also from lateral view, with nine pairs of papillae.....*Ablechroiulus* (p.150)

Genus: *Ablechroiulus* Andrássy, 1966

DEFINITION: Rhabditoidea, Rhabditidae, Ablechroiulinae (Fig.23). Body varying in length between 0.5 and 2.8 mm. Cuticle smooth or finely annulated. Head offset or continuous with adjacent body; lips closed or separate, with small papillae and tufts of fine ciliae. Amphids small, on the lateral lips. Stoma 1.2 to 2.6 times longer than head diameter. Cheilostom not cuticularized, metastomatal swellings each with three or five denticles or warts. Oesophageal collar present, long. Oesophagus corpus moderately swollen. Female gonads paired, vulva medial or slightly pre- or postmedial. Spicules separate or distally fused, generally plump. Bursa leoptoderan, anteriorly open,mostly narrow but well recognizable. Papillae nine pairs in number, generally arranged in four groups (1+2 pairs preanal, 3+3 pairs postanal). Tail of female conical or cupola-shaped. Phasmids small but distinct.

BIONOMICS: Terrestrial animals, inhabiting soil, forest litter, decayed plant material, detritus and fungi. Oviparous or ovoviviparous.

DISTRIBUTION: Mostly European nematodes but their representatives occur also in Asia and Africa.

TYPE SPECIES: Rhabditis ciliata Fuchs, 1931 = *Ablechroiulus ciliatus* (Fuchs, 1931) Andrássy, 1966.

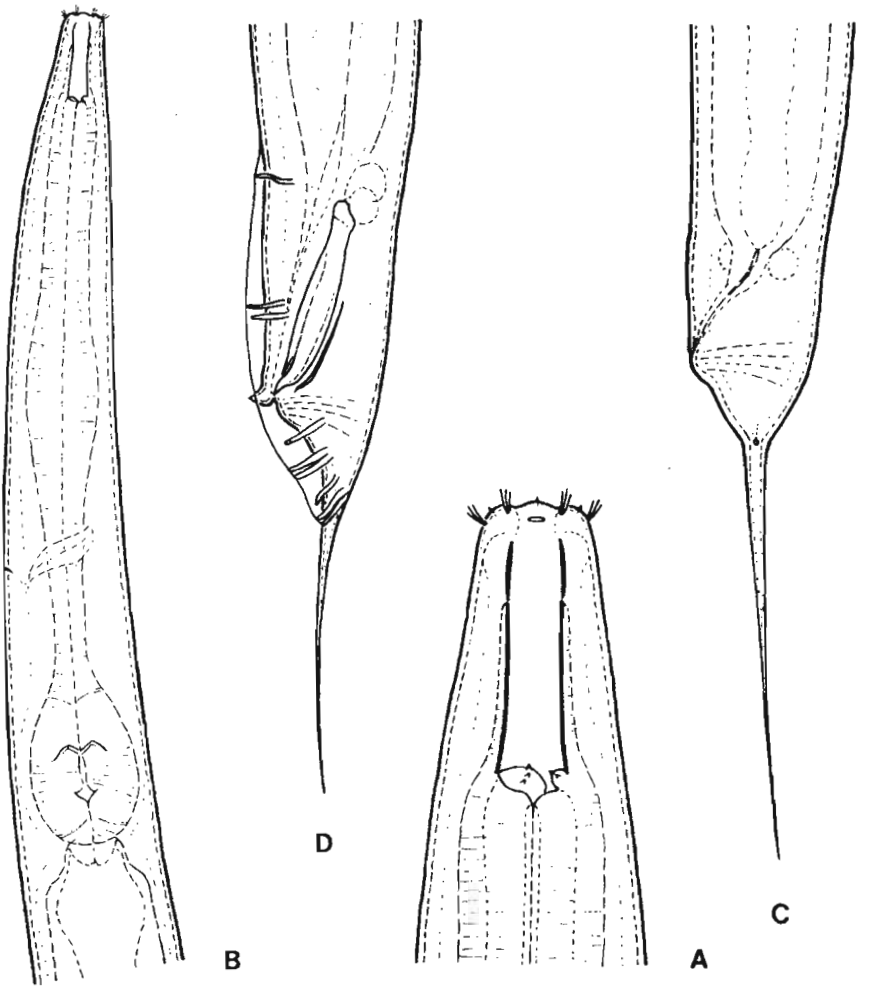

Fig.24. *Ablechroiulus anchisporus* Andrássy, 1966 - a member of the subfamily Ablechroiulinae, from Ghana. A: anterior end, 1 500X; B: oesophageal region, 510X; C: female posterior end, 650X; D: male posterior end, 650X.

TEN SPECIES:

A. *acartus* (Rühm *in* Osche, 1952) Andrássy, 1966
Syn.*Rhabditis (Choriorhabditis) acarta* Rühm *in* Osche, 1952
Rhabditis (Rhabitis) acarta Rühm *in* Osche, 1952 (Sudhaus, 1976)

A. *anchisporus* (Andrássy, 1966)
Syn.*Rhabditis anchispora* (Andrássy, 1966) Sudhaus,1976

A. *broughtonalcocki* (Buckley, 1931) n. comb.
Syn.*Rhabditis broughtonalcocki* Buckley, 1931

A. *ciliatus* (Fuchs, 1931) Andrássy, 1966
Syn.*Rhabditis ciliata* Fuchs, 1931
Rhabditis (Choriorhabditis) ciliata Fuchs, 1931 (Osche, 1952)
Rhabditis (Cephaloboides) ciliata Fuchs, 1931 (Dougherty, 1955)

A. *crenatus* Paesler, 1946) Andrássy, 1966
Syn.*Rhabditis crenata* Paesler, 1946
Rhabditis longicaudata apud Reiter, 1928

A. *cristatus* (Hirschmann, 1952) Andrássy, 1966
Syn.*Rhabditis (Choriorhabditis)cristata* Hirschmann,1952

A. *dudichi* Andrássy, 1970
Syn.*Rhabditis dudichi* (Andrássy, 1970) Sudhaus, 1976

A. *gongyloides* (Reiter, 1928) Andrássy, 1966
Syn.*Rhabditis maupasi gongyloides* Reiter, 1928
Rhabditis gongyloides Reiter, 1928
Rhabditis (Choriorhabditis) gongyloides Reiter,1928 (Osche, 1952)

A. *maculosus* Andrássy, 1982

A. *paraciliatus* (Goodey, 1943) Andrássy, 1966
Syn.*Rhabditis paraciliata* Goodey, 1943
Rhabditis (Choriorhabditis) paraciliata Goodey,1943 (Osche, 1952)
Rhabditis (Cephaloboides) paraciliata Goodey,1943 (Dougherty, 1955)

SPECIES INQUIRENDA

Owing to the unknown male the following species must be regarded as such.

A. *lacustris* (Micoletzky, 1913) Andrássy, 1966
Syn.*Rhabditis lacustris* Micoletzky, 1913
Rhabditis (Chorionhabditis) lacustris Micotletzky, 1913 (Osche, 1952)

Key to the species of Ablechroiulus

1 Tail of female cupola-shaped with tip..... 2
- Tail of female conoid..... 4
2 Head continuous with neck region; tail 4-6 anal body diameters long.
♀ : L = 0.8-1.0 mm; a = 18-20; b = 4.1-4.4; c = 6-11; V=51-55%.
♂: L = 1.0-1.1 mm; a = 22-24; b = 5.0-5.2; c = 12-14.
Ghana; in soil (Fig.24).....*anchisporus* Andrássy
- Head well offset; tail maximum 3 anal body diameters long.....3
3 Tail longer than double anal body diameters.
♀ : L = 0.76-0.94 mm; a = 18-19; b = 4-5; c = 16-19; V = 55-57%.
♂: L = 0.65-0.86 mm; a = 15-17; b = 3.6-5.2; c = 12-14.
Germany, England, Malaysia, terrestrial .....
..... *paraciliatus* (Goodey)
- Tail as long as anal body diameter.
♀ : L = 1.0 mm; a = 16-18; b = 5.6; c = 21; V = 57%.
♂: L = 0.9 mm; a = 16-20; b = 5-6; c = 16.
Germany; in rotting plant residues..... *ciliatus*(Fuchs)
4 Tail of female about 3 anal body diameters; distance between 1st and 2nd papillae about equal with that between 2nd and 3rd papillae.
♀ : L = 1.0-2.8 mm; a = 16-23; b = 4.8-8.0; c = 11-17; V =53-57%.
♂: L = 1.0-1.6 mm; a = 16-22; b = 4.8-6.5; c = 21-27.
Germany, Hungary and Poland; in soil and compost.....
.....*gongyloides*(Reiter)

- Tail of female at least 5-6 times longer than anal body diameter; distance between 1st and 2nd papillae greater than that between 2nd and 3rd papillae..... 5

5 Bursa papillae 2 and 3 as well as 5 and 6 fused at base..... 6

- Bursa papillae all free..... 7

6 Body small, 0.5-0.6 mm; spicules fused distally; a bisexual species.

♀: L = 0.53-0.63 mm; a = 19-25; b = 4.0-4.6; c = 5.0-5.7; V=43-49%.

♂: L = 0.47-0.56 mm; a = 18-23; b = 3.5-4.2; c = 10-11.

Vietnam; in fungi..... *dudichi* Andrássy

- Body larger, 0.7-1.1 mm; spicules separate; a hermaphrodite species*.

♀: L = 0.72-1.14 mm; a = 20-24; b = 4.7-6.8; c = 4-6; V =43-51%.

♂: not measured.

Germany and Czechoslovakia; in soil.....*cristatus* (Hirschmann)

7 Head offset; cuticle, at least on the anterior region, coarsely annulated and longitudinally striated; spicules distally pointed... 8

- Head practically not offset; cuticle hardly structurized; spicules distally rounded.....9

8 Two pairs of papillae lying preanal; distance between papillae 2 and 3 times longer than that between papillae 3 and 4; body small, about 1/2 mm.

♀: L = 0.54-0.62 mm; a = 18-19; b = 4.5-5.0; c = 5.5-5.6; V = 43- 45%. ♂ : L = 0.49 mm; a = 17; b = 4.7; c = 8.3.

Congo Republic; in forest soil..... *maculosus* Andrássy

- Three pairs of papillae lying preanal; distance between papillae 2 and 3 shorter than that between papillae 3 and 4; body larger, 1 mm or more.

♀: L = 1.0-1.6 mm; a = 15-21; b = 4.9-6.5; c = 5-7; V = 47-51%.

♂: L = 0.8-1.4 mm; a = 17-20; b = 4.6-5.5; c = 9-14.

Germany; in saprobic habitats..... *crenatus*(Paesler)

9 Tail of female 10 anal body diameters; body length about 1 mm.

♀: L = 0.9-1.05 mm; a = 23; b = 5.6-6.0; c = 5; V = 47%.

♂: L = 0.67-0.85 mm; a = 21-22; b = 4.8-5.6; c = 5-6.

Germany; in rotten wood ..... *acartus* (Rühm *in* Osche)

---

* Hirschmann found a single male among 1842 specimens !

- Tail of female 5-6 anal body diameters; body length 1.2 to 1.9 mm.
  ♀: L = 1.2-1.9 mm; a = 22-27; b = 4.9-6.2; c = 7-12; V = 50 %.
  ♂: L = 0.75-1.72 mm; a = 23-28; b = 4.2-5.8; c = 13-22.
  England; in the fungous mass of an ice-chest.....
  .....*broughtonalcocki* (Buckley)

Genus: *Rhabditoides* Goodey, 1929

Syn. *Rhabditis* (*Rhabditoides* Goodey, 1929) Sudhaus, 1974; *Rhabditis* (*Telorhabditis* Osche, 1952); *Telorhabditis* (Osche, 1952) Schuurmans Stekhoven, 1957.

DEFINITION: Rhabditoidea, Rhabditidae, Ablechroiulinae (Fig.23). Body 0.9 to 1.9 mm long. Cuticle strongly annulated. Head not offset; lips hardly separate, with small papillae and fine ciliae. Amphids pore-like, on the lateral lips. Stoma 1.8 times longer than head diameter, with convergent walls. Cheilostom not cuticularized, metastomatal swellings each with three small denticles. Oesophageal collar present, long. Oesophagus corpus with bulb-like swelling, terminal bulb large. Female gonads paired, vulva at mid-body. Spicules free. Bursa leptoderan, open, very narrow, visible only from medial view. Ten pairs of genital papillae present, of which two pairs lying before spicules. Tail of both sexes elongate-conoid, sharply pointed. Phasmids small.

BIONOMICS: Predominantly compost inhabiting nematodes. Oviparous.

DISTRIBUTION : This genus has been recorded hitherto from Europe only.

TYPE SPECIES : *Rhabditoides coprophagus* Goodey, 1929 = *Rhabditoides longispina* (Reiter, 1928) Dougherty, 1953.

NO OTHER SPECIES

R. longispina (Reiter, 1928) Dougherty, 1953
Syn.*Rhabditis longispina* Reiter, 1928
Rhabditis (Telorhabditis) longispina Reiter, 1928 (Osche, 1952)
Rhabditis (Rhabditoides) longispina Reiter, 1928 (Sudhaus, 1976)
Telorhabditis longispina (Reiter, 1928) Schuurmans Stekhoven, 1957
Khabditoides coprophagus Goodey, 1929
Rhabditis kornejevi Kokordak, 1969
Khabditis (Rhabditoides) kornejevi Kokordak, 1969 (Sudhaus, 1976)

- Labial cilie about 30 in number; spicules 30 µm; tail of female 4-5 anal body diameters.

♀: L = 1.2-1.9 mm; a = 15-20; b = 6.3-9.2; c = 7-12; V = 43-50%.

♂: L = 0.9-1.3 mm; a = 14-21; b = 5.5-8.0; c = 8-11.

Germany, Austria, Czechoslovakia, Poland, England, Soviet Union (Russia); in compost and cow dung..... *longispina* (Reiter)*

SUBFAMILY: Amphidirhabditinae Andrássy, 1978

Rhabditidae (Fig.25). Lips hardly separate, papillae setose. Amphids large, behind labial region. Stoma short; cheilostom large, cuticularized; metastom with spoon-shaped denticles. Oesophageal collar present. Oesophagus corpus not bulb-like. Female genital organ paired, amphidelphic. Spicules fused. Bursa leptoderan, genital papillae long. Tail of both sexes filiform.

A terrestrial genus.

*Owing to the too laconic description the subspecies *Rhabditoides coprophagus longicaudatus* Kannan, 1960 cannot be appreciated.

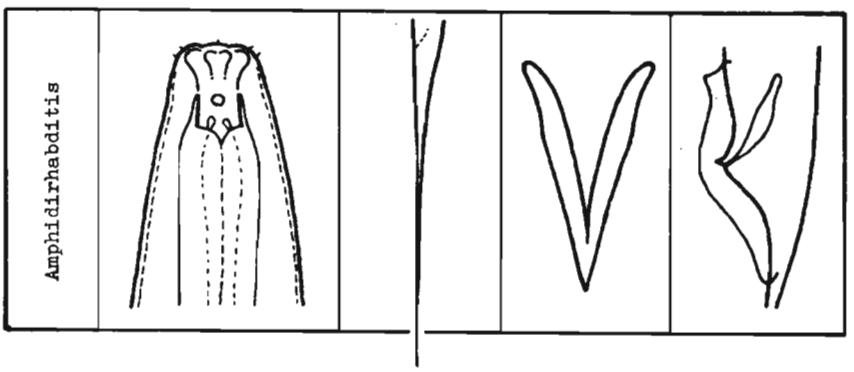

Fig.25. Rhabditidae: Amphidirhabditinae. The only genus of the subfamily (head, female tail, spicules, bursa).

Genus: *Amphidirhabditis* Andrássy, 1978

DEFINITION: Rhabditoidea, Rhabditidae, Amphidirhabditinae (Fig. 25). Body about 1 mm long. Cuticle smooth. Head not offset, lips closed, papillae setose, short. Amphids relatively large, oval, level with promesostom. Stoma short, about as long as head diameter. Cheilostom cuticularized, with arched rhabdions. Promesostom short, metastom isoglottoid, each swelling bearing a comparatively large, spoon-shaped tooth. Oesophageal corpus proximally swollen but non-bulbous. Female gonads paired, vulva a little premedial. Spicules fused distally. Bursa well developed, leptoderan, both anteriorly and posteriorly closed. Genital papillae nine pairs, long, arranged in three groups. Tail filiform. Phasmids large, postanal.

BIONOMICS: Terrestrial nematodes, living in forest litter. Oviparous.

DISTRIBUTION: The single species was found in Oceania.

TYPE SPECIES: Amphidirhabditis longipapillata Andrássy, 1978.

NO OTHER SPECIES.

- Labial papillae in two circles of which the posterior ones directed on female forward, on male backward; spicules 23-24 µm long; tail of female 15 times longer than anal body diameter.
  ♀: L = 1.02 mm; a = 30; b = 4.4; c = 3.8; V = 46%.
  ♂: L = 0.92 mm; a = 28; b = 4.6; c = 4.6.
  New Caledonia; in forest litter (Fig.26).....
  .....*longipapillata* Andrássy

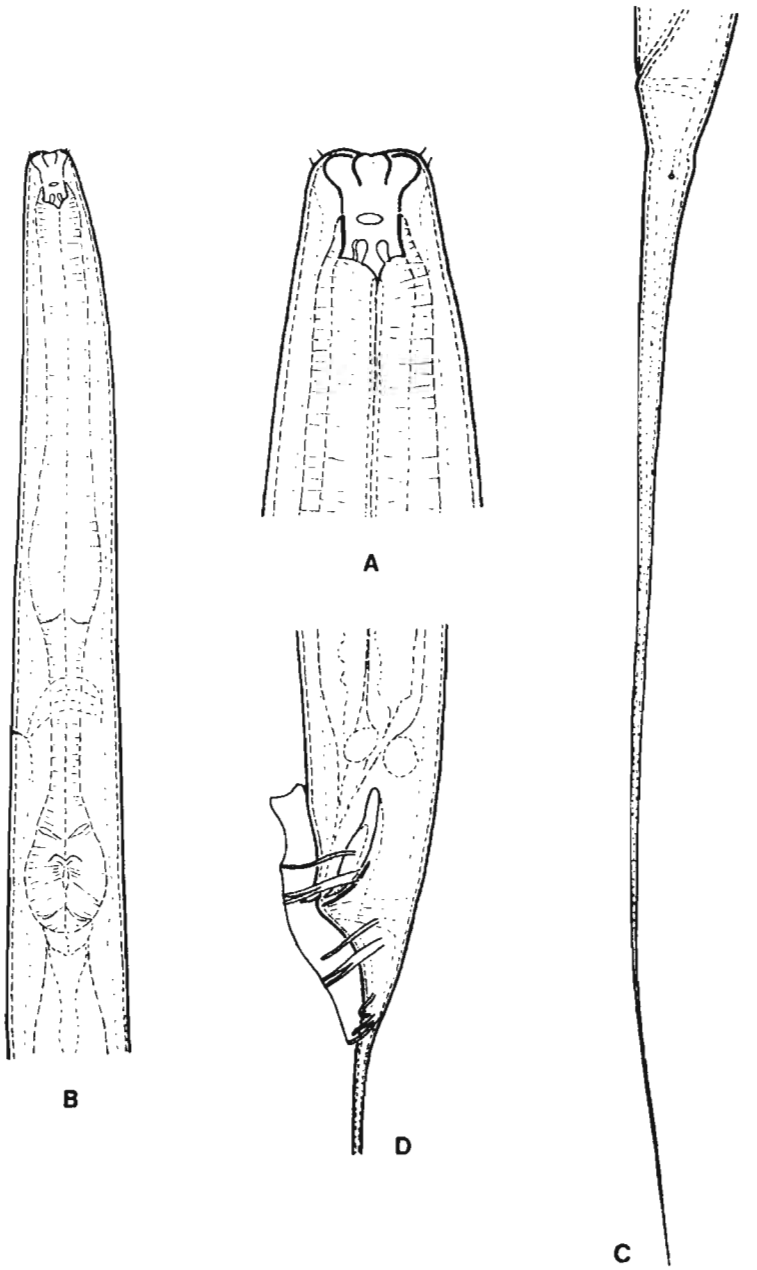

Fig.26.*Amphidirhabditis longipapillata* Andrássy, 1978 - a member of the subfamily Amphidirhabditinae, from Ponerihue, New Caledonia. A: anterior end, 1 100X; B: oesophageal region, 470X; C: female tail, 470X; D: bursal region of male, 600X.

SUBFAMILY: Stomachorhabditinae Andrássy, 1970

Rhabditidae (Fig.27). Three lips. Amphids small but visible, behind labial region. Stoma long; cheilostom cuticularized; metastom with fine warts. Oesophageal collar present, corpus strongly swollen. Beginning of intestine marked by folds, offset. Female genital organ amphidelphic. Spicules free. Bursa lacking, genital papillae small. Tails of both sexes filiform.

A terrestrial genus.

Genus: *Stomachorhabditis* Andrássy, 1970

Syn.*Termirhabditis* Massey, 1971.

DEFINITION: Rhabditoidea, Rhabditidae, Stomachorhabditinae (Fig.27). Body shorter than 1 mm. Cuticle smooth or finely annulated. Head not offset, lips three, low, papillae small. Amphids fairly small, level with stoma, oval. Stoma long, 2 to 3.5 times longer than head diameter, slightly cuticularized. Cheilostom cuticularized, short; metastomatal swellings low, with small denticles. Oesophageal collar short. Oesophagus corpus strongly swollen but not bulb-like. Ovaries two, vulva medial or premedial. Spicules separate. Bursa completely lacking, papillae small. Beginning of intestine folded, stomach-like. Tail long, finely pointed.

BIONOMICS: Soil inhabitants or associates of termites.

DISTRIBUTION: The *Stomachorhabditis* species occur in Europe, Asia and North America.

TYPE SPECIES: Stomachorhabditis vietnamica Andrássy,1970.

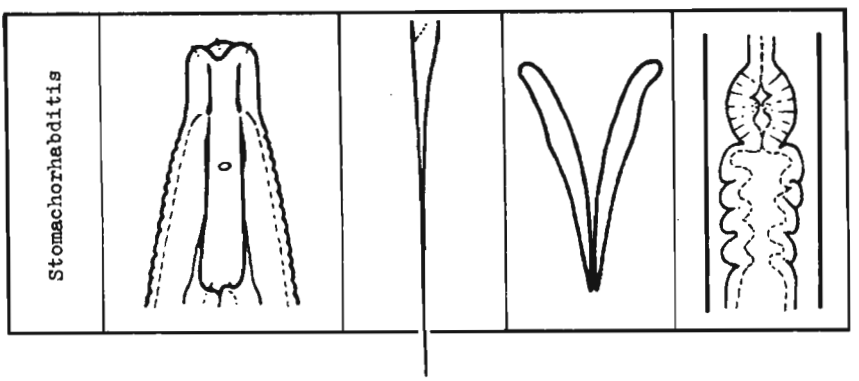

Fig.27. Rhabditidae: Stomachorhabditinae. The genus of the subfamily (head, female tail, spicules, oesophago-intestinal region).

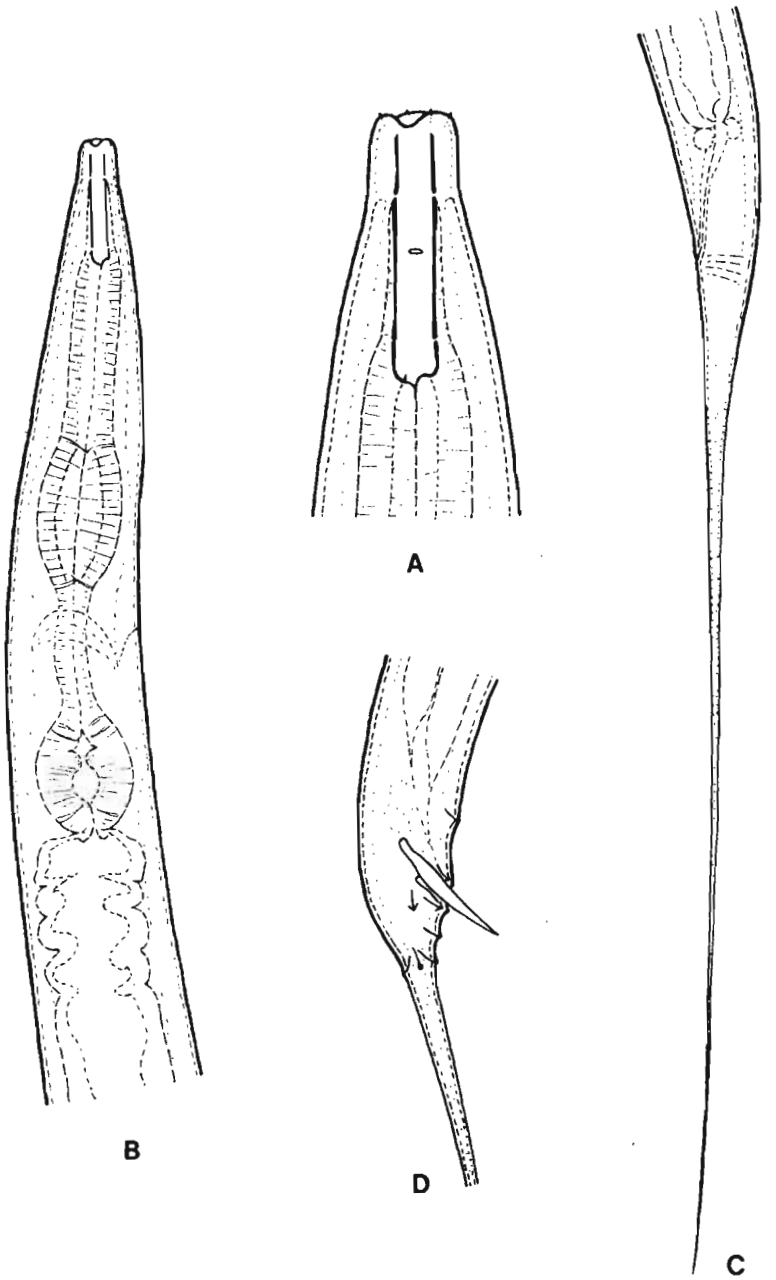

Fig.28. *Stomachorhabditis vietnamica* Andrássy, 1970 - a member of the subfamily Stomachorhabditinae , from Cuc Phuong, Vietnam. A: anterior end, 1 220X; B: oesophageal region, 660X; C: female tail, 660X; D:cloacal region of male, 660X.

THREE SPECIES:

S. borealis (Kreis, 1963) n. comb.
Syn.*Rhabditis borealis* Kreis, 1963
S. fastidiosa (Massey, 1971) n. comb.
Syn.*Termirhabditis fastidiosa* Massey, 1971
Rhabditonema fastidiosum (Massey, 1971) Sudhaus, 1976
S. vietnamica Andrássy, 1970

Key to the species of Stomachorhabditis

1 Tail shorter, about 5 anal body diameters; vulva a little postmedial.
♀: L = 0.91-0.97 mm; a = 16-23; b = 4.3-5.2; c = 9.4-10.7; V = 55%.
♂unknown.
Iceland; in soil of the coastal region.....*borealis* (Kreis)
- Tail longer, about 20 anal body diameters; vulva far premedial... 2
2 The 1st pair of papillae one spiculum length before spicules.
♀: L = 0.79-0.81 mm; a = 22-27; b = 5.4-5.8; c = 4.4 (3.5 calculated from Massey's drawing); V = 42%. ♂: L = 0.62-0.64 mm; a=20-23; b; 4.1-4.8; c = 3.3-5.2.
United States (Mississippi); associated with *Reticulitermes flavipes* (Isoptera).....*fastidiosa* (Massey)
- The 1st pair of papillae level with spicules.
♀: L = 0.72mm; a = 25; b = 5.1; c = 2.7; V = 38%.
♂: L = 0.65-0.78 mm; a = 24-27; b = 5.0-5.2; c = 2.4-2.9.
Vietnam; terrestrial (Fig.28).....*vietnamica* Andrássy

Family Odontorhabditidae

Rhabditoidea (Fig.29). Head offset, with 6 lips and setose papillae.Amphids small, on the lateral lips. Stoma rhabditiform, tubular. Cheilostom cuticularized, promesostom with a large tooth-like projection, metastom unarmed,

with or without definite glottoid apparatus. Oesophagus corpus strongly swollen. Female genital apparatus paired, gonads amphidelphic. Spicules separate. Bursa present, leptoderan, short. Genital papillae 9 or 10 pairs in number. Tails of both sexes similar, elongate.

A small group containing two genera, both belonging to the subfamily Odontorhabditinae Paramonov, 1964. Terrestrial nematodes.

Key to the genera of Odontorhabditidae

1 Cheilorhabdions strongly cuticularized; tail of female conoid.... ..... *Diploscapteroides* (p.164)

\- Cheilorhabdions slightly cuticularized; tail of female cupola-shaped..... *Cephaloboides* (p.167)

Genus: *Diploscapteroides* Rahm, 1928

Syn. *Rhabditis* (*Diploscapteroides* Rahm, 1928) Sudhaus, 1976; *Cheilorhabditis* Timm, 1959.

DEFINITION: Rhabditoidea, Odontorhabditidae, Odontorhabditinae (Fig.29). Body length varying between 0.6 and 1.7 mm. Cuticle smooth or very finely annulated. Head sharply offset, lips separate with small, setose papillae. Amphids pore-like, on the lateral lips. Stoma about 1.5 times as long as head diameter. Cheilostom heavily cuticularized, with arched rhabdions. Promesostom tubular, with a large, ridge-like dorsal tooth. Metastom somewhat anisoglottoid, without denticles. Oesophageal collar present, fine. Oesophagus corpus with bulb-like swelling. Ovaries two, vulva medial or postmedial. Spicules free. Bursa leptoderan, closed, very short; genital papillae nine in number all lying postcloacal. Tail in both sexes elongate-conical, sharply pointed. Phasmids small.

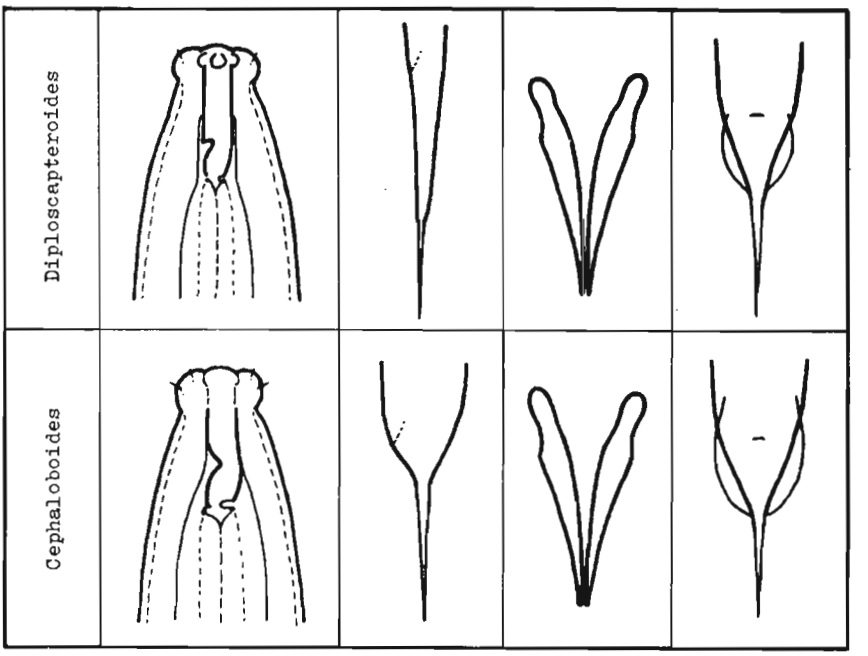

Fig.29. Odontorhabditidae: Odontorhabditinae. The genera of the subfamily (head, female tail, spicules, bursa).

BIONOMICS: Terrestrial or aquatic nematodes, inhabiting rotting plant materials. Oviparous.

DISTRIBUTION: This peculiar genus is known from Asia and South America.

TYPE SPECIES: *Diploscapteroides brevicauda* Rahm, 1928.

THREE SPECIES:

D. brevicauda Rahm, 1928
Syn.*Rhabditis* (*Diploscapteroides*) *brevicauda* (Rahm,1928) Sudhaus, 1976

D. chitinolabiatus (Schneider, 1937) n. comb.
Syn.*Rhabditis chitinolabiata* Schneider, 1937
Rhabditis (*Teratorhabditis*) *chitinolabiata* Schneider, 1937 (Osche, 1952)
Rhabditis (*Diploscapteroides*) *chitinolabiata* Schneider, 1937 (Sudhaus, 1976)
Teratorhabditis chitinolabiata (Schneider,1937) Dougherty, 1955

D. dacchensis (Timm, 1959) n. comb.
Syn.*Cheilorhabditis dacchensis* (Timm, 1959)
Rhabditis (*Diploscapteroides*) *dacchensis*(Timm, 1959) Sudhaus, 1976.

Key to the species of Diploscapteroides

1 Tail short, only 1/30-1/40 of entire body length; dorsal tooth lying in the mid-region of promesostom.
♀ : L = 1.6-1.7 mm; a = 18-20; b = 3.5-4.0; c = 36-37; V =56-66%.
♂ unknown.
Brazil; in soil..... *brevicauda* Rahm

\- Tail longer, 1/5-1/15 of entire body length; dorsal tooth lying in the posterior third of promesostom..... 2

2 Tail of female 8-10 anal diameters long; arrangement of genital papillae 3+1+3+2 pairs.

♀ : L = 0.77-1.2 mm; a = 19-24; b = 4.2-4.7; c = 4.5-7; V = 50-52%.

♂ : L = 0.60-0.74 mm; a = 19-30; b = 3.6-4.3; c = 7.4-12.

Bangladesh and Viet-Nam; found in rotting banana.....

..... *dacchensis* (Timm)

- Tail of female 4-5 anal diameters long; arrangement of genital papillae 4+3+2 pairs.

♀ : L = 0.8 mm; a = 24-25; b = 3.8; c = 12; V = 55%.

♂ : L = 0.7 mm; a = 30; b = 3.2; c = 15.

Sumatra; in phytothermae..... *chitinolabiatus* (Schneider)

Genus: *Cephaloboides* (Rahm, 1928) Massey, 1974

Syn. *Rhabditis* (*Cephaloboides* Rahm, 1928); *Odontorhabditis* Timm, 1959.

DEFINITION: Rhabditoidea, Odontorhabditidae, Odontorhabtitinae (Fig.29). Body 0.6-1.2 mm long. Cuticle very finely annulated. Head sharply differenciated from neck, lips separate, papillae short, setose. Amphids on the lateral lips, minute. Stoma about twice as long as head diameter. Cheilostom slightly cuticularized. Promesostom provided with a large dorsal, tooth-like projection. Metastom slightly anisoglottoid, without denticles. Oesophageal collar present, thin. Oesophagus corpus with large, bulb-like swelling. Female gonads double, vulva medial to postmedial. Spicules separate. Bursa narrow, leptoderan, open. Genital papillae small, ten pairs in number. Tail of both sexes cupola-shaped with a pointed tip. Phasmids small.

BIONOMICS: Terrestrial nematodes, preferring dung and rotted plant residues. Oviparous animals.

DISTRIBUTION: The *Cephaloboides* species are known from Europe, Asia and South America.

TYPE SPECIES: Rhabditis (*Cephaloboides*) *musicola* Rahm, 1928 = *Cephaloboides musicola* (Rahm, 1928) Massey, 1974.

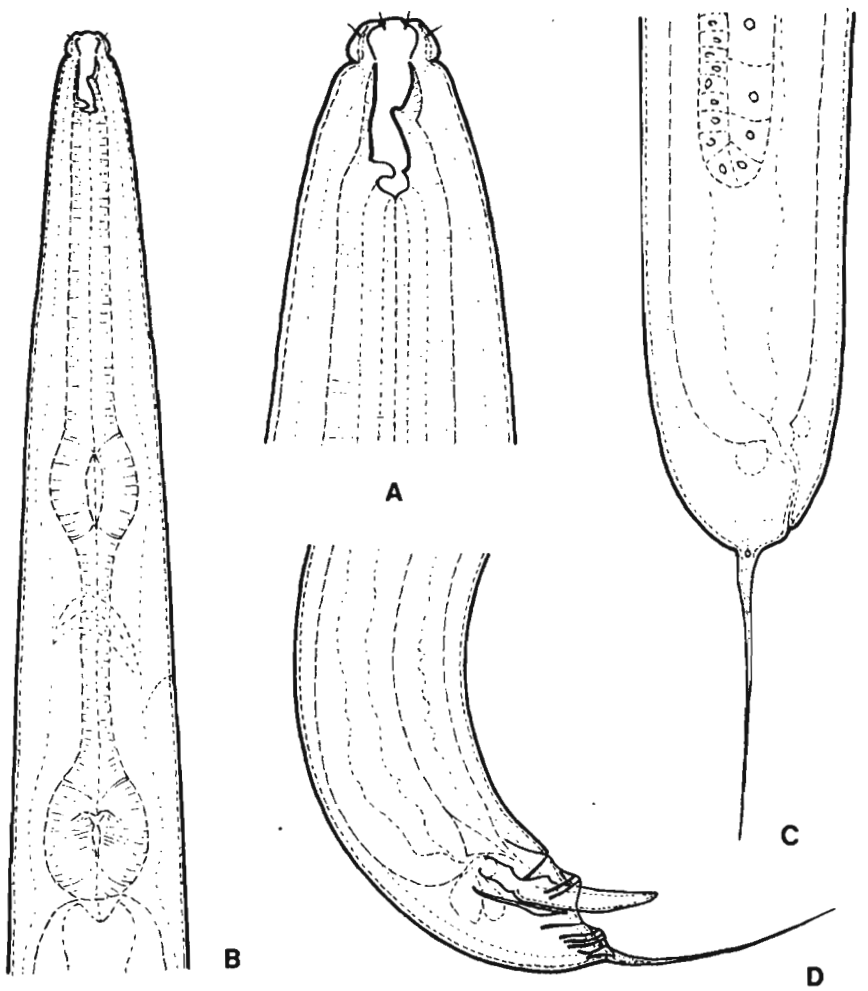

Fig.30. *Cephaloboides musicola* (Rahm, 1928) Massey, 1974 - a member of the subfamily Odontorhabditinae, from Dacca, Bangladesh. A: anterior end, 1 220X;B: oesophageal region, 520X; C: female posterior end, 520X; D: male posterior end, 520X.

TWO SPECIES:

C. musicola (Rahm, 1928) Massey, 1974
Syn.*Rhabditis (Cephaloboides) musicola* Rahm, 1928
Odontorhabditis musicola Timm, 1959

C. pseudoxycerca (Goodey, 1929) n. comb.
Syn.*Rhabditis pseudoxycerca* Goodey, 1929
Rhabditis (Chorionhabditis) pseudoxycerca Goodey, 1929 (Osche, 1952)

SPECIES INQUIRENDA

The following species was described after a single female.

C. boettgeri (Meyl, 1953) n.comb.
Syn.*Rhabditis boettgeri* Meyl, 1953
Rhabditis (Teratorhabditis) boettgeri Meyl, 1953 (Meyl, 1954)
Teratorhabditis boettgeri (Meyl, 1953) Dougherty, 1955

Key to the species of Cephaloboides

1 Buccal tube broad, only 2-2.5 times longer than wide; female tail about 3 anal body diameters.
♀: L = 0.8-1.1 mm; a = 16-21; b = 3.8-4.5; c = 11-15; V=54-57%.
♂: L = 0.64-1.0 mm; a = 15-25; b = 3.3-4.5; c = 8-14.
Bangladesh and Brazil; in and around rotting banana residues (Fig.30).....*musicola* (Rahm)

– Buccal tube narrow, 6-8 times longer than wide; female tail 1.5-2 anal body diameters.
♀: L = 0.96-1.2 mm; a = 13-20; b = 3.8-5.0; c = 17-19; V= 56-59%.
♂: L = 0.8-1.1 mm; a = 13-15; b = 4.0-5.5; c = 13-21.
Germany and England; in dung.....*pseudoxycerca* (Goodey)

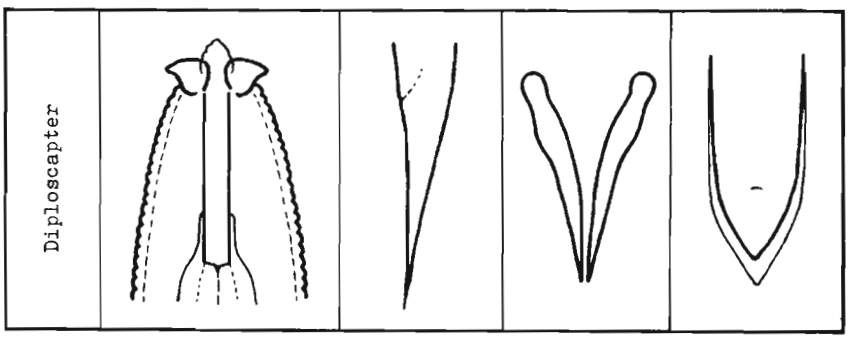

Fig.31. Diploscapteridae:Diploscapterinae. The genus of the subfamily (head, female tail, spicules, bursa).

Family Diploscapteridae

Rhabditoidea (Fig.31). Head bilaterally symmetrical; dorsal and ventral lips with paired, hook-like structures. Amphids on the lateral lips, small. Stoma rhabditiform, tubular. Cheilostom not cuticularized, promesostom with parallel walls, metastom small, unarmed, without glottoid apparatus. Oesophagus corpus cylindrical or slightly swollen. Female genital organ paired. Spicules separate. Bursa narrow, peloderan. Genital papillae nine pairs or less. Tails of both sexes similar, conical.

The family includes one subfamily, Diploscapterinae Micoletzky, 1922, and one genus.

Genus: *Diploscapter* Cobb, 1913

DEFINITION: Rhabditoidea, Diploscapteridae, Diploscapterinae (Fig.31). Small nematodes, between 0.3 and 1.1 mm. Cuticle smooth or finely annulated, occasionally with fine longitudinal striae. Head unusual among the Rhabditoidea: bilaterally symmetrical, ventral and dorsal with paired, cuticularized, hook-like appendages; lateral lips also modified, mebran-like. Amphids small, on the lateral lips. Stoma long, tubular, 3-4 times longer than head diameter. Cheilostom not cuticularized, walls of promesostom parallel. Metastom isoglottoid, unarmed. Oesophageal collar present. Oesophagus corpus cylindrical or slightly swollen. Ovaries paired, vulva medial or postmedial. Spicules free. Bursa peloderan, open, moderately developed with six to nine pairs of papillae. Tail conoid.

BIONOMICS: Terrestrial species living in soil, moss, litter, plant residues and occasionally in saprobic habitats.

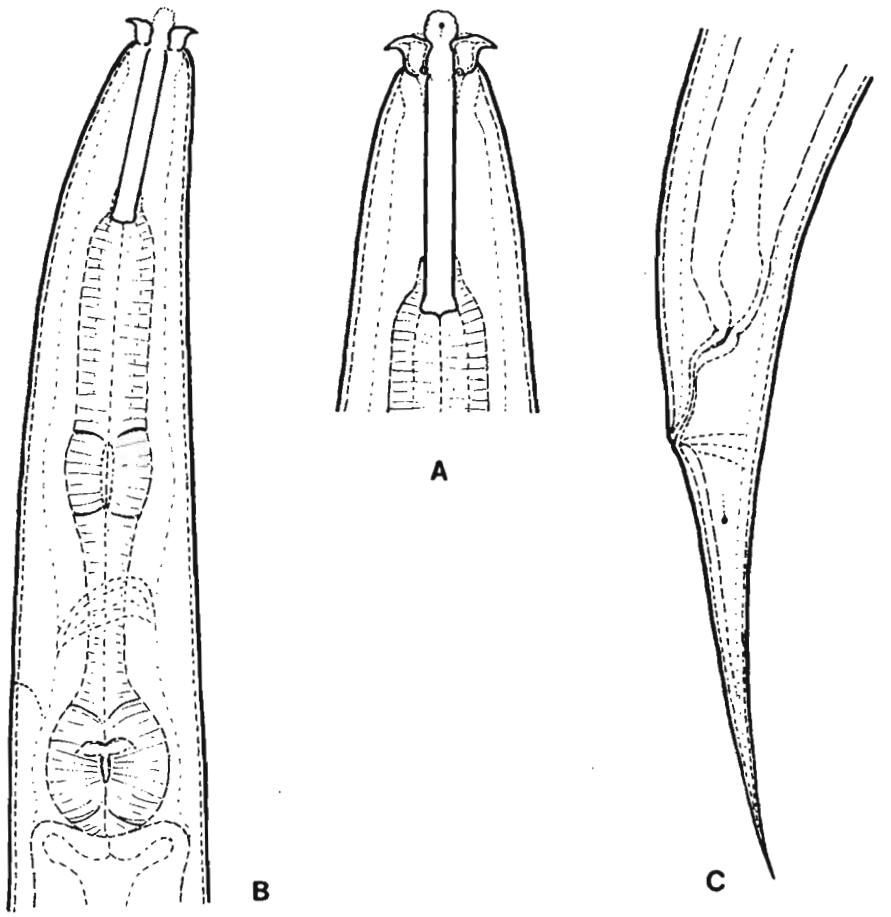

Fig.32. *Diploscapter coronatus* (Cobb,1893) Cobb, 1913 - a member of the subfamily Diploscapterinae, from Azapa, Chile. A: anterior end, 1 500X; B: oesophageal region, 1 250X; C: female posterior end, 1 250X.

DISTRIBUTION: This genus is worldwide distributed; *Diploscapter* species have been recorded from Europe, Asia, Africa, North and South America and Oceania.

TYPE SPECIES: *Rhabditis coronata* Cobb, 1893 = *Diploscapter coronata* (Cobb, 1893) Cobb, 1913.

NINE SPECIES:

D. cannae Rahm, 1928
Syn.*Diploscapter rhizophilus cannae* Rahm, 1928
D. coronatus (Cobb, 1893) Cobb, 1913
Syn.*Rhabditis coronata* Cobb, 1893
Khabditis bicornis Zimmermann, 1898
Diploscapter bicornis (Zimmerman, 1898) Goodey, 1963
Rhabditis cephaloides Stefanski, 1922
Acrobeles armatus Kreis, 1929
D. cylindricus Rahm, 1929
Syn.*Diploscapter rhizophilus cylindricus* Rahm, 1929
D. libycus Penso, 1938
D. lycostoma Völk, 1950
D. nodifer Mihelčič, 1953
D. orientalis Kannan, 1960
D. pachys Steiner, 1942
D. rhizophilus Rahm, 1928

Key to the species of Diploscapter

1 Vulva far back, about 3/4 of body length..... 2
- Vulva in 1/2 to 2/3 of body length..... 3
2 Tail of female 9-10 anal body diameters.
♀ : L = 0.56-0.76 mm; a = 15-21; b = 3.5-4.1; c = 7.9-9.3; V=66-80%.
♂: L = 0.76-0.92 mm; a = 17-25; b = 3.4-4.3; c = 21-23.
Czechoslovakia, Bulgaria, Soviet Union (Lithuania, Ukraine, Moldavia, Georgie, Tadzhikistan, Azerbaizhan, Kazakhstan, Uzbekistan), Brazil; in soil and plant residues.....*rhizophilus* Rahm

- Tail of female 4 anal body diameters.

  ♀ : L = 0.40-0.45 mm; a = 20; b = 4; c = 5.3; V = 70-85%.

  ♂:unknown.

  Austria; terrestrial..... *nodifer* Mihelčič

3 Oesophageal corpus continuous with isthmus.

  ♀: L = ? ; a = 12; b = 3.7; c = 8; V = 60%. (All data calculated from Rahm's drawing). ♂ :unknown.

  Brazil; in soil.....*cylindricus* Rahm

- Oesophageal corpus separated from isthmus..... 4

4 Stoma short, about as long as head diameter..... 5

- Stoma longer, minimum 1.5 times longer than head diameter..... 6

5 Tail of female 4 times longer than anal body diameter; stomatal walls parallel.

  ♀: L = 0.65mm; a = 36-41; V = 66%. ♂: L = 0.50-0.55 mm.

  Libya; terrestrial.....*libycus* Penso

- Tail of female 2.5-3 times longer than anal body diameter; stomatal walls slightly concave.

  ♀: L = 0.5 mm; a = 12; b = 4.9; c = 10.7; V = 56%. ♂ :unknown.

  India; terrestrial.....*orientalis* Kannan

6 Cuticle smooth; oesophageal corpus cylindrical, longer than isthmus and terminal bulb together.

  ♀: L = 0.46-0.58 mm; a = 13-17; b = 5.5-6.1; c = 6.6-7.5; V= 48-59%.

  ♂: L = 0.35-0.42 mm; a = 12-15; b = 4.5-5.5; c = 11-17.

  Germany, Soviet Union (Far East), United States; in soil and compost, larvae in ants (*Iridomyrmex* sp.).....*lycostoma* Völk

- Cuticle finely annulated; oesophageal corpus proximally swollen, shorter than isthmus and terminal bulb together..... 7

7 Stoma 36 µm long; vulva in 2/3 of body length; body longer than 1/2 mm.

  ♀ : L = 0.63-0.66 mm; a = 16-17;b = 3.5; c = 6.5-6.6; V = 66%.

  ♂: L = 1.12 (?) mm; a = 19; b = 3.8; c = 25.

  Brazil; in soil..... *cannae* Rahm

- Stoma 16-25 µm long; vulva not so far back; body 1/2 mm or shorter.. 8

8 Labial hooks with pointed tip, labial membranes with zigzag borders.

  ♀ : L = 0.3-0.5 mm; a = 15-18; b = 3.5-5.0; c = 6-10; V =51-57%.

  ♂: L = 0.3-0.5 mm; a = 15-18; b = 4.0-4.5; c = 14-23.

The commonest species of the genus: Holland, Germany, Austria, Hungary, Czechoslovakia, Bulgaria, Yugoslavia,Italy, Poland,England, Soviet Union (Russia, Ukraine, Estonia, Lithuania, Moldavia,Georgia, Turkmenia, Kazakhstan, Kirghizia, Uzbekistan); China, Japan, Java; Algeria, Zaire; United States, Panama, Venezuela, Brazil, Peru, Paraguay; Fiji; in various terrestrial habitats, viz. in soil, litter, humus, moss, compost, decayed plant material (Fig.32).....
.....*coronatus* (Cobb)

- Labial hooks with rounded tip, labial membranes smoothly bordered. ♀ : L = 0.3-0.4 mm; a = 12-14; b = 3.8-4.5; c = 7.6-9.2; V=55-58%. ♂ unknown.
  Soviet Union (Uzbekistan) and United States (Kentucky); terrestrial..... *pachys* Steiner

SUPERFAMILY BUNONEMATOIDEA

Rhabditina (Fig.33-37). Small nematodes. Head and body distinctly asymmetrical. Right side ornamented with a network and/or with warts, papillae, tubercles, fins or ridges, left side with fine longitudinal ridges. Labial region provided with setae or other projections of different shape. Amphids pore-like. Stoma and oesophagus *Rhabditis*-like. Female genital apparatus paired, amphidelphic. Spicules very long, separate. Bursa present, strongly asymmetrical, with papillae. Female with a pointed anal appendage.

The species of Rhabditoidea may be ordered in two families.

Key to the families of Bunonematoidea

1 Right side of body ornamented with network and papillae, tubercles or shields, left side bearing five thin longitudinal ridges.....
..... Bunonematidae (p.179)

- Right side of body without network or papilla -like structures

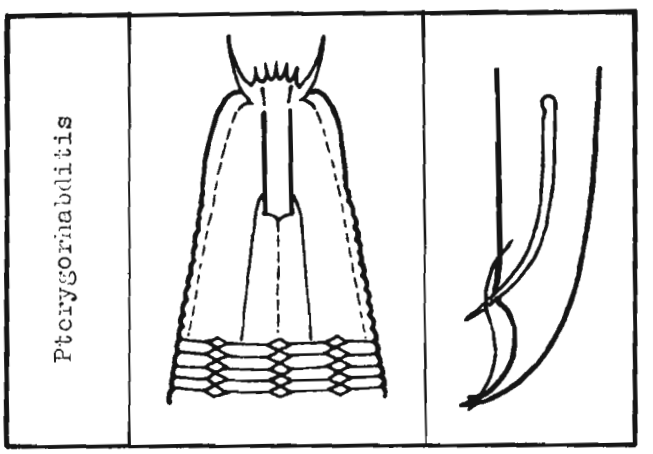

Fig.33.Pterygorhabditidae: Pterygorhabditinae. The only genus of the subfamily (anterior region, male posterior end).

but ornamented with small rhomboidal fields, left side bearing four longitudinal ridges..... Pterygorhabditidae (p.177)

Family Pterigorhabditidae

Bunonematoidea (Fig.33). Cuticle transversely striated and on the right side interrupted by longitudinal ridges and small rhomboidal fields. Left side bearing four longitudinal ridges. Head provided with seta-like structures. Stoma rhabditiform, tubular; cheilostom cuticularized, metastom unarmed. Oesophageal corpus cylindrical or swollen. Female gonads paired. Spicules long. Bursa asymmetrical, with papillae. Tails of both sexes different in shape. Female with an anal appendage.

Rare, peculiar nematodes inhabiting soil and organic detritus. One subfamily : Pterygorhabditinae Goodey, 1963 and one genus.

Genus: *Pterygorhabditis* Timm, 1957

DEFINITION: Bunonematoidea, Pterygorhabditidae, Pterygorhabditinae (Fig.33). Body 0.5-0.8 mm long, fairly robust. Cuticle transversely annulated or striated, annulation of right side interrupted by seven or nine longitudinal ridges and small rhomboidal ornaments. Left body side bearing four or six longitudinal ridges: two or four wide and two narrow ones. Head also symmetrical : on the right side with longer and on the left side with shorter seta-like appendages. Amphids small, pore-like. Stoma rhabditiform, longer than head diameter. Cheilostom weakly cuticularized, promesostom tubular, metastom simple, with very small denticles. No oesophageal collar. Oesophagus corpus cylindrical or bearing a medial bulb; terminal bulb very strong. Female with two ovaries, vulva medial or postmedial. Spicules

long, separate. Bursa asymmetrical, genital papillae 7-8 pairs with some small supplementary warts. Tail of female longer than that of male; both conical. Phasmids indistinct.

BIONOMICS: Rare animals living in soil, under bark of trees or in detritus. Oviparous animals.

DISTRIBUTION: *Pterygorhabditis* species have been reported from Europe, Asia and North America.

TYPE SPECIES: *Pterygorhabditis pakistanensis* Timm, 1957.

THREE SPECIES:

P. hungarica Andrássy, 1982
P. pakistanensis Timm, 1957
P. panopla Bernard, 1979

Key to the species of Pterygorhabditis

1 Neck region simply striated; oesophageal corpus cylindrical; larger species.
♀: L = 0.70-0.85 mm; a = 11-13; b = 3.7-4.4; c = 8-9; V=64-65%.
♂: L = 0.54-0.67 mm; a = 10-13; b = 3.4-4.2; c = 10-12.
Bangladesh; in damp straw.....*pakistanensis* Timm
– Neck region provided with large oval shields formed by flattened transverse striae; oesophageal corpus with bulb-like swelling; smaller species.....2
2 One oval shield on the neck region; right body side with longitudinal ridges; bursa papillae all postanal.
♀: L = 0.47-0.57 mm; a = 12-13; b = 3.5-4.2; c = 13-16; V=50-58%.
♂: L = 0.44-0.51 mm; a = 14-18; b = 3.4-3.9; c = 15-20.
United States (Tennessee); in litter and under bark.....
.....*panopla* Bernard

- Three oval shields on the neck region; right body side without discernible longitudinal ridges; four pairs of bursa papillae lying preanal.

  ♀ : L = 0.50-0.52 mm; a = 13-16; b = 4.2-4.3; c = 8.2-9.5;V=53-54%.

  ♂ : L = 0.49 mm; a = 16; b = 4.2; c = 21.

  Hungary; under bark of hornbeam tree.....*hungarica* Andrássy

Family Bunonematidae

Bunonematoidea (Fig.34-37). Cuticle neither annulated nor striated. Right body side ornamented with network and/or with paired or unpaired papilla-like projections, fins, ridges or shields.Left side provided with five thin longitudinal ridges. Head also asymmetrical, right and left side differing in structure, with various setae. Amphids inconspicuous. Stoma prismatic, rhabditoid; cheilostom cuticularized but small, metastom unarmed. Oesophagus with median swelling and terminal bulb. Female gonads double, amphidelphic. Rectum very long. Spicules long and slender, free. Bursa narrow, asymmetrical, with papillae. Tail of female mostly longer than that of male.

Small, terrestrial nematodes belonging to two subfamilies.

Key to the subfamilies of Bunonematidae

1 Right body side either with large shield-like structures or with crust-like swellings..... Craspedonematinae (p.193)

1 Right body side with network and with warts, papillae or longitudinal striae; no shields or crust-like swellings.....
..... Bunonematinae (p.182)

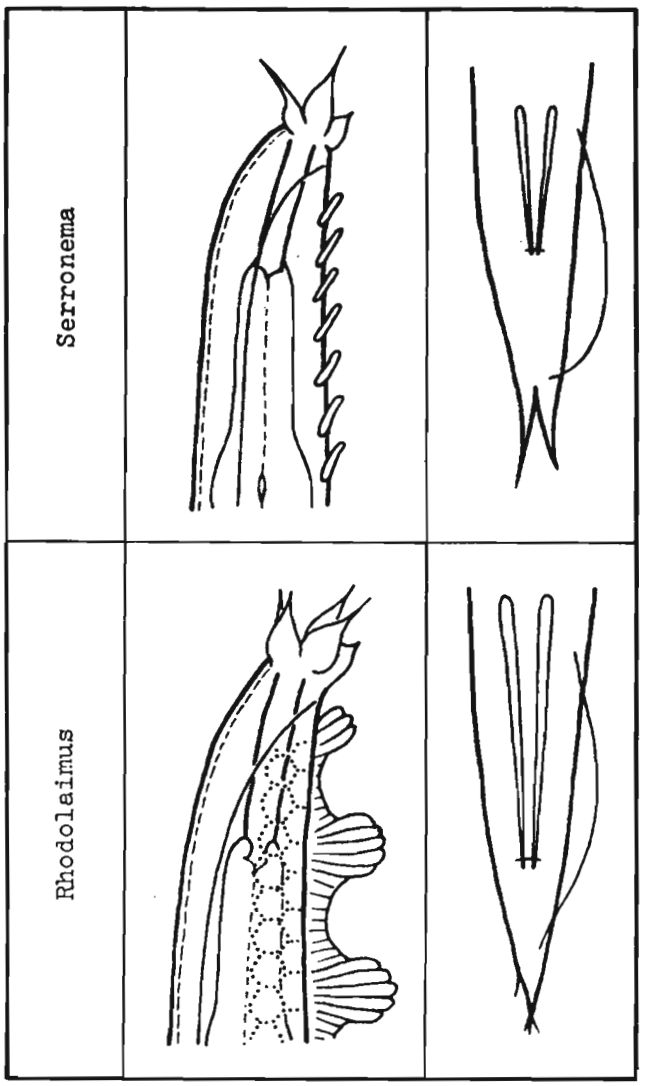

Fig.34. Bunonematidae: Bunonematinae. The genera of the subfamily (anterior end, male posterior end).

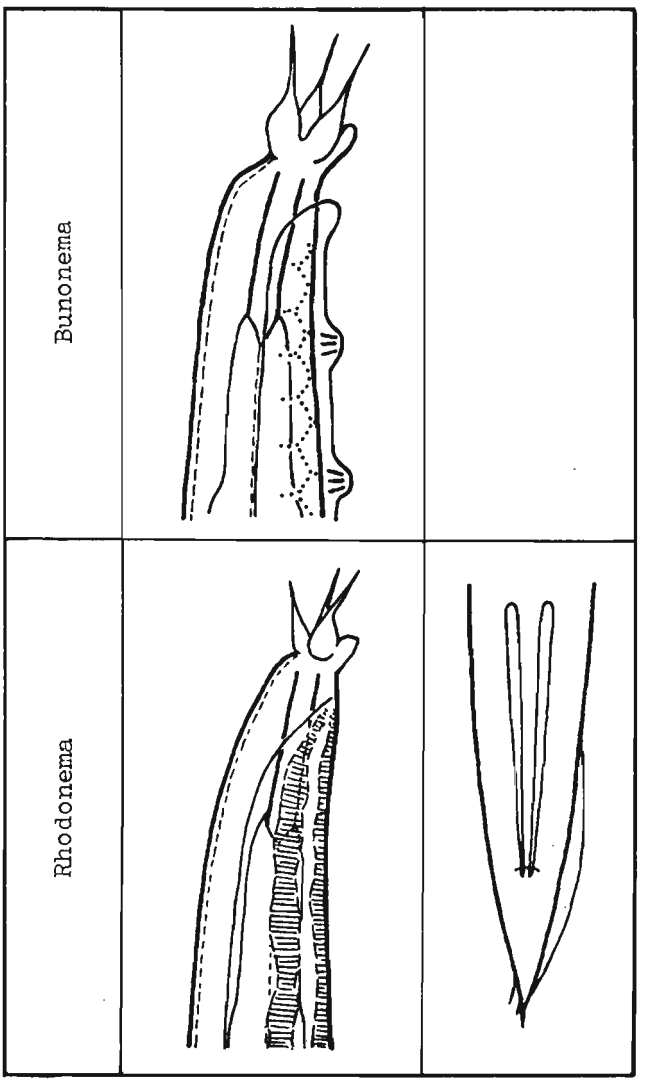

Fig.35. Bunonematidae: Bunonematinae. The genera of the subfamily, continuation (anterior end, male posterior end).

SUBFAMILY : Bunonematinae Micoletzky,1922

Bunonematidae (Fig. 34-35). Right side ornamented with network and paired or unpaired warts or papillae, in some cases with network and longitudinal striae. Neck on right side often with Adam's apple-like collar.

The representatives of this subfamily live in soil,moss and saprobic habitats. They belong to four genera.

Key to the genera of Bunonematinae

1 Right side of neck with Adam's apple-like collar; warts paired and provided with internal thickened rods; only females known..... ..... *Bunonema* (p.187)

\- Right side of neck without collar; warts paired or unpaired, sometimes lacking, without internal rods; bisexual forms..... 2

2 Warts or papillae absent, right body side, instead of them, ornamented with irregular, longitudinal striae.....*Rhodonema* (p.192)

\- Warts or papillae present, no longitudinal striae on the right side.....3

3 Warts simple, papilla- or rod-like, arranged in a single row..... ..... *Serronema* (p.182)

\- Warts composed of more than one element, forming wart-groups or fins, paired or unpaired, or building continuous rows..... ..... *Rhodolaimus* (p.183)

Genus: *Serronema* (Paesler, 1957) Goodey, 1963

Syn. *Bunonema* (*Serronema* Paesler, 1957).

DEFINITION: Bunonematoidea, Bunonematidae, Bunonematinae (Fig.34). Body extremely small, to 0.3 mm. Right side ornamented by a single row of simple, peg- or rod-like projections (warts), similar to teeth of a saw,of which the

anterior ones level with oesophagus are directed forwards and the other ones backwards. Number of warts about 50.Head bearing four long, setiform appendages. Neck without collar. Stoma rhabditoid, metastom small, unarmed. Amphids inconspicuous. Oesophagus corpus with bulb-like swelling. No oesophageal collar. Female gonads paired, vulva medial or postmedial. Spicules separate, long and slender. Bursa leptoderan, strongly asymmetrical, only with left wing. Five pairs of genital papillae present. Tail in both sexes conoid, sharply pointed, in male with double tip.

BIONOMICS: The single species was found in mushroom beds.

DISTRIBUTION: An European genus.

TYPE SPECIES: Bunonema (Serronema) dentatum Paesler, 1957 = *Serronema dentatum* (Paesler, 1957) Goodey, 1963.

NO OTHER SPECIES

- Tail of female about four anal body diameters, vulva-anus distance 4 times longer than tail; spicules 21 µm long.
  ♀: L = 0.24-0.30 mm; a = 13-16; b = 3.3-4.0; c = 6-12; V = 50-57%.
  ♂: L = 0.23-0.25 mm; a = 15-16; b = 3.8; c = 7.5.
  Germany and Bulgaria; in mushroom cultures.....*dentatum* (Paesler)

Genus: *Rhodolaimus* Fuchs, 1930

Syn.*Bunonema* (*Rhodolaimus* Fuchs, 1930) Sachs, 1949; *Bunonema* (*Stammeria* Sachs, 1949); *Stammeria* (Sachs, 1949) Andrássy, 1958.

DEFINITION: Bunonematoidea, Bunonematidae, Bunonematinae (Fig.34). Body small to very small, 0.2-0.5 mm. Right side ornamented with network and papillae or warts composed of more elements (small papillae). Warts paired or unpaired, arranged in a single row or two rows, lying in groups or in continuous rows. No internal thickened rods in warts. Head relatively small, with setose appendages of various shape. Amphids indistinct. Stoma 1.5-3 times longer than

head diameter, tubular. Cheilostom cuticularized, promesostom parallel-walled, metastom unarmed. Oesophageal collar lacking as well as subcephalic collar. Oesophagus corpus with bulb-like swelling. Female gonads paired, vulva at mid-body, mostly somewhat postmedial. Spicules long and very slender, separate. Bursa leptoderan, asymmetrical, rudimentary on right side, with 4-8 pairs of papillae.Tail conoid, in male with two or three tips. Phasmids inconspicuous.

BIONOMICS: The *Rhodolaimus* species are found in saprobic habitats: in detritus, rotting plant materials, animal remains, dung, compost or in tunnels of bark beetles.

DISTRIBUTION: The genus is known from Europe and both Americas.

TYPE SPECIES: *Rhodolaimus poligraphi* Fuchs, 1930.

TWELVE SPECIES:

R. dimorphus Bernard, 1979

R. estonicus (Krall, 1959) Andrássy, 1971
Syn.*Bunonema* (*Rhodolaimus*) *estonicum* Krall, 1959

R. goffarti (Sachs, 1949) Andrássy, 1971
Syn.*Bunonema* (*Stammeria*) *goffarti* Sachs, 1949
Bunonema (*Rhodolaimus*) *goffarti* Sachs, 1949 (Rühm, 1962)
Stammeria goffarti (Sachs, 1949) Andrássy, 1958

R. impar (Cobb, 1915) Andrássy, 1971
Syn.*Bunonema impar* Cobb, 1915
Stammeria impar (Cobb, 1915) Goodey, 1963

R. inequalis (Cobb, 1915) Andrássy, 1971
Syn.*Bunonema inequale* Cobb, 1915
Bunonema (*Rhodolaimus*) *inequale* Cobb, 1915 (Rühm, 1962)
Stammeria inequalis (Cobb, 1915) Goodey, 1963

R. jakobii (Sachs, 1949) Andrássy, 1971
Syn.*Bunonema* (*Stammeria*) *jakobii* Sachs, 1949

Bunonema (Rhodolaimus) jakobii Sachs, 1949 (Rühm,1962)
Stammeria jakobii (Sachs, 1949) Goodey, 1963

R.pannonicus Andrássy, 1971

R.pini Fuchs, 1930
Syn.*Bunonema (Rhodolaimus) pini* (Fuchs,1930) Sachs,1949
Rhodolaimus pterygiosoma Fuchs, 1930
Bunonema (Rhodolaimus) pterygiosoma (Fuchs, 1930) Sachs, 1949

R.poligraphi Fuchs, 1930
Syn.*Bunonema (Rhodolaimus) poligraphi* (Fuchs,1930) Sachs, 1949

R.pusillus
Bunonema (Rhodolaimus) pusillus (Fuchs, 1930) Sachs, 1949

R.stoeckherti (Sachs, 1949) Andrássy, 1958
Syn.*Bunonema (Rhodolaimus) stoeckherti* Sachs, 1949

R.voulliemi (Rühm, 1962) Andrássy, 1971
Syn.*Bunonema (Rhodolaimus) voulliemi* Rühm, 1962

SPECIES INQUIRENDA:

The following species may also belong to this genus;unfortunately, Massey did not give the exact number and arrangement of warts.

R.newmexicanus (Massey, 1964) n.comb.
Syn.*Bunonema newmexicanum* Massey,1964

Key to the species of Rhodolaimus

1 Warts or wart-groups arranged in a single row..... 2
- At least a part of warts or wart-groups arranged in pairs..... 3
2 Warts 13 µm high, higher than half body diameter, cylindrical.
♀: L = 0.37-0.43 mm; a = 12-15; b = 4.7-6.0; c = 12-16; V=58-61%.
♂: L = 0.32-0.38 mm; a = 16-17; b = 5.2-6.1; c = 9-11.
Germany and Austria; in animal residues.....*goffarti* (Sachs)

- Warts lower than half body diameter, rounded.
  ♀: L = 0.3 mm; a = 14; b = 4.2; c = 17; V = 57%.
  ♂: L = 0.25 mm; a = 15; b = 3.6; c = 9.
  United States (Washington D.C.) and Brazil; in rotting wood.....
  .....*inequalis* (Cobb)

3 36-45 separate warts, partly arranged in pairs.....4

- Only 1-7 separate warts, or all warts arranged in continuous.....6

4 The majority of warts arranged in two alternative rows.
  ♀: L = 0.26-0.30 mm; a = 16-20; b = 3.3-3.8; c = 13-16; V=57-64%.
  ♂: L = 0.25-0.26 mm; a = 19-23; b = 3.3-3.8; c = 7.1-9.2.
  United States (Georgia); in organic litter....*dimorphus* Bernard

- The majority of warts grouped in pairs.....5

5 One unpaired wart before the paired ones.
  ♀ unknown. ♂: L = 0.32 mm; a = 14; b = 3.9; c = 10.
  United States (Washington D.C.); in rotting wood.....*impar* (Cobb)

- Three to five unpaired warts before the paired ones.
  ♀: L = 0.32-0.48 mm; a = 12-15; b = 4.8-5.3; c = 16-17;V= 57-59%.
  ♂: L = 0.3-0.5 mm; a = 15-17; b = 4.7-5.4; c = 8.10.
  Germany; in animal remains.....*jakobii* (Sachs)

6 All warts lying in two continuous rows.....7

- Besides the continuous rows also 4-7 separate warts or fins (wart-groups) present.....8

7 Warts forming some - mostly 4 - large fins at anterior body.
  ♀: L = 0.25-0.42 mm; a = 10-14; b = 4.2-5.4; c = 13-17;V=53-58%.
  ♂: L = 0.33-0.35 mm; a = 16-18; b = 4.6-4.9; c = 10.
  Germany, Austria, France; in galleries of bark beetles.....
  .....*pini* Fuchs

- No large fins at anterior body.
  ♀ unknown. ♂: L = 0.21 mm; a = 8.4; b = 3.7; c = 8.4.
  Germany; in detritus..... *pusillus* Fuchs

8 Some of fins unpaired.....9

- All fins paired.....10

9 Fins higher than half body diameter, beginning just behind head; network sharply expressed.
  ♀: L = 0.38-0.43 mm; a = 12-14; b = 3.9-4.1; c = 13-16;V= 52-53%.
  ♂: L = 0.36-0.38 mm; a = 18-22; b = 4.0-4.2; c = 11-12.

Hungary; in plant remains.....*pannonicus* Andrássy

- Fins lower than half body diameter, beginning behind stoma; network fine.

♀: L = 0.40-0.45 mm; a = 14-17; b = 4.6-5.3; c = 13-15; V= 45%.

♂: L = 0.34-0.40 mm; a = 17-18; b = 4.6-5.0; c = 10-13.

Chile; in tunnels of bark beetles.....*voulliemei* (Rühm)

10 Anterior body with 4-6 pairs of fins; the latter composed each of 7-16 elements.

♀: L = 0.32-0.40 mm; a = 12-14; b = 5.4-5.9; c = 13-18;V=58-65%.

♂: L = 0.27-0.34 mm; a = 16-21; b = 5.1-5.3; c = 8-10.

Holland and Germany; in detritus under bark.....
.....*poligraphi* Fuchs

- Anterior body with 2-4 pairs of fins; the latter composed each of 2-4 elements..... 11

11 Dots on cuticle forming a network; mostly three pairs of fins.

♀: L = 0.37-0.50 mm; a = 13-14; b = 5.4-6.6; c = 10-13;V=56-57%.

♂: L = 0.28-0.35 mm; a = 13-18; b = 4.8-5.2; c = 8-9.

Germany, Austria, Hungary; in cow- and horse dung.....
.....*stoeckherti* (Sachs)

- Dots on cuticle arranged in transversal rows; four pairs of fins.

♀: L = 0.30-0.47 mm; a = 9-14; b = 3.5-4.0; c = 13-19; V=56-58%.

♂unknown.

Soviet Union (Estonia); in potato tubers.....*estonicus* (Krall)

Genus: *Bunonema* Jägerskiöld, 1905

DEFINITION: Bunonematoidea, Bunonematidae, Bunonematinae (Fig.35). Very small, monosexual nematodes; body 0.2-0.4mm. Right side ornamented with network and simple (not composed) tubercles or warts. Warts always paired, variously developed, occasionally reduced, generally with internal thickened rods; they are always free, do not form continuous rows. Left side bearing five fine longitudinal ridges. Head relatively large, with setose appendages. Neck with Adam's apple-like collar. Amphids indistinct. Stoma tubular, 1-1.5 times longer than head diameter. Cheilostom

cuticularized, short, metastom unarmed. Oesophageal collar absent. Oesophagus with strong medial swelling. Rectum very long. Female gonads paired, vulva more or less postmedial. Males completely unknown. Tail conoid, sharply pointed.

BIONOMICS: Terrestrial species, inhabiting soil, humus, detritus and especially moss.

DISTRIBUTION: The genus *Bunonema* is distributed in Europe, Asia, Africa, North and South America.

TYPE SPECIES: Bunonema richtersi Jägerskiöld, 1905.

TEN SPECIES:

B. *ditlevseni* Micoletzky, 1925
B. *franzi* Andrássy, 1971
B. *hessi* Steiner, 1914
B. *husseyi* Bernard, 1979
B. *multipapillatum* Stefanski, 1914
B. *penardi* Stefanski, 1914
B. *reticulatum* Richters, 1905
Syn.*Bunonema bogdanovi* Zograf, 1913
B. *richtersi* Jägerskiöld, 1905
Syn.*Bunonema richtersi aberrans* Steiner, 1914
B. *steineri* Stefanski, 1924
B. *tuerkorum* Sachs, 1949

SPECIES INQUIRENDAE *

The following species are regarded as such:
B. *dactylicum* Cobb, 1915
B. *madrasicum* Kannan, 1960
B. *richtersi cantareirense* Rahm, 1928

* The descriptions of the first and second species are too laconic. As for the species of Rahm, there is a contradiction between definition and illustration: Rahm says that 20 warts are present; however, on the photo (Fig. 129), about 50 warts can be counted.

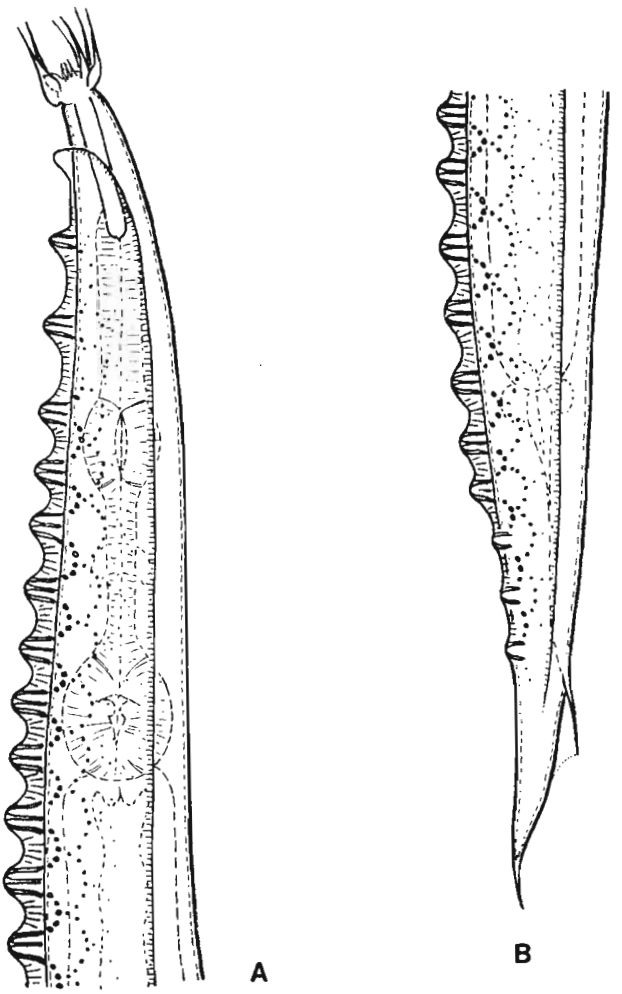

Fig.36. *Bunonema reticulatum* Richters, 1905 - a member of the subfamily Bunonematinae, from Pécs, Hungary. A: anterior region, 1 300X; B: female posterior region, 1 300X.

Key to the species of Bunonema

1 Warts well developed at least on the oesophageal region..... 2

- Warts indistinct, rudimentary..... 8

2 More than 25 pairs of warts present..... 3

- Less than 25 pairs of warts present..... 5

3 Network on the right side very prominent.

♀ : L = 0.22-0.36 mm; a = 11-14; b = 3-4; c = 9-16; V =56-61%.

♂unknown.

Holland, Belgium, Germany, Switzerland, Austria, Hungary, Czechoslovakia, Denmark, Poland, England, Scotland, Ireland, Spitzbergen, Rumania, Bulgaria, Soviet Union (Russia, Estonia), Japan, Possession Islands, Canary Islands, St. Helen, Ghana, United States, Columbia; in moss and detritus (Fig.36).....

.....*reticulatum* Richters

- Network on the right side quite fine.....4

4 Each wart with 5-6 internal thickened rods; female gonads symmetrical.

♀ : L = 0.30-0.38 mm; a = 13-18; b = 3.3-4.0; c = 11-18; V=59-66%.

♂unknown.

Germany, Switzerland, Czechoslovakia, Hungary; in moss.....

.....*multipapillatum* Stefanski

- Warts without internal rods; anterior gonad shorter than posterior.

♀ : L = 0.37-0.40 mm; a = 18-19; b = 3.6-3.8; c = 15-16; V = ?

♂unknown.

Poland;in moss.....*steineri* Stefanski

5 Warts in 6-10 pairs, located in the oesophageal region.

♀ : L = 0.22-0.25 mm; a = 13-14; b = 3.0-3.2; c = 18-21; V=58-60%.

♂unknown.

Holland and Denmark; in moss.....*ditlevseni* Micoletzky

- Warts in 12-21 pairs, distributed on the whole body..... 6

6 Four weakly thickened rods in each wart.

♀: L = 0.19-0.31 mm; a = 8-15; b = 3.0-4.3; c = 6-13; V= 58-61%.

♂unknown.

Holland, Germany, Switzerland, Austria, France, Rumania, Bulgaria, Poland, Denmark, England, Soviet Union (Estonia, Lithuania), Canary Islands, Possession Islands, St. Helen, United States (Georgia, Michigan), Brazil, Kerguelen Islands; in moss and humus.....
.....*richtersi* Jägerskiöld

\- Two strongly thickened rods in each wart..... 7

7 Oesophageal region with four pairs of warts.

♀: L = 0.21 mm; a = 15; b = 3.7; c = 15; V = 55%.
♂unknown.

Réunion; in humus.....*franzi* Andrássy

\- Oesophageal region with five pairs of warts.

♀: L = 0.26-0.28 mm; a = 11-15; b = 3.4-3.7; c = 13.9-17.2; V = 50.8-56.8 %. ♂ unknown.

United States (Georgia, Tennessee, Michigan); in rotten wood....
.....*husseyi* Bernard*

8 Network consisting of relatively large quadrangles arranged in 2 or 3 longitudinal rows.

♀: L = 0.20-0.27 mm; a = 13-15; b = 3.1-3.4; c = 10-11; V=56-58%.
♂unknown.

Switzerland, Austria, Rumania, Soviet Union (Nojava Zemlja); in moss and humus.....*hessi* Steiner

\- Network consisting of small and dense blocks not arranged in longitudinal rows..... 9

9 Network with some stronger dotted oval spots.

♀: L = 0.30-0.35 mm; a = 13-15; b = 4.0-4.4; c = 14-15;V=57-58%.
♂unknown.

Germany and Bulgaria; in *Sphagnum* moss.....*tuerkorum* Sachs

\- Network very fine, without oval spots.

♀: L = 0.30-0.37 mm; a = 14-18; b = 3.5-4.1; c = 14-19; V=57-58%.
♂unknown.

Holland, Germany, Switzerland, Austria, Rumania, Italy, Poland; in soil, humus and moss.....*penardi* Stefanski

---

* Possibly identical with *B. franzi*.

Genus: *Rhodonema* n. gen.

DEFINITION: Bunonematoidea, Bunonematidae, Bunonematinae (Fig.35). Body small, 0.3-0.4 mm. Right side ornamented with network and two or four irregular longitudinal striae; these latter are composed of dense transversal rows of fine striae or dots. Warts or papilla-like structures absent. Left side bearing five fine longitudinal ridges. Head relatively large, provided with setose appendages. Subcephalic collar indistinct. Amphids pore-like. Stoma tubular, cheilostom cuticularized, metastom simple. No oesophageal collar around promesostom. Oesophagus corpus proximally swollen. Rectum long. Female gonads paired,vulva more or less postmedial. Spicules very long and slender, separate.Bursa asymmetrical, with left wing only; genital papillae eight pairs. Tail conoid in both sexes.

BIONOMICS: Saprophagous nematodes, inhabiting rotten plant materials.

DISTRIBUTION: An American genus, occurring both in the Northern and in the Southern continent.

TYPE SPECIES: Rhodolaimus stephaniae Bernard, 1979 = *Rhodonema stephaniae* (Bernard, 1979) n. comb.

TWO SPECIES:

R. *stephaniae* (Bernard, 1979) n.comb.
Syn.*Rhodolaimus stephaniae* Bernard, 1979

R. *striatum* (Andrássy, 1968) n.comb.
Syn.*Bunonema striatum* Andrássy, 1968

Key to the species of Rhodonema

1 Right side with two longitudinal striae; tail of female three anal body diameters.

♀: L = 0.39 mm; a = 17; b = 4.2; c = 11; V = 54%. ♂ unknown.

Paraguay; in plant remains.....*striatum* (Andrássy)

- Right side with four longitudinal striae; tail of female two anal body diameters.

♀: L = 0.29-0.33 mm; a = 10.5-12.2; b = 3.9-4.5; c = 16.2-19.5; V = 53-63%. ♂ L = 0.24-0.26 mm; a = 11.8-15.7; b = 3.6-3.9; c = 7.2-8.3.

United States (Georgia, Tennessee); in rotten wood.....
.....*stephaniae* (Bernard)

SUBFAMILY: Craspedonematinae Andrássy, 1971

Bunonematidae (Fig.37). Right side ornamented with large shields or crust-like swellings, and, occasionally, with paired or unpaired warts. Network fine or lacking. Neck on right side without Adam's apple-like collar.

The subfamily includes three genera inhabiting soil, moss or, predominantly, cow- and horse dung.

Key to the genera of Craspedonematinae

1 Right side with several shields or crust-like swellings but without warts.....*Craspedonema* (p.198)

- Right side with warts and shields..... 2

2 Warts paired, in two longitudinal rows; striae in medial membranes forked.....*Aspidonema* (p.195)

- Warts unpaired, in a single row; striae in medial membranes simple.....*Sachsium* (p.197)

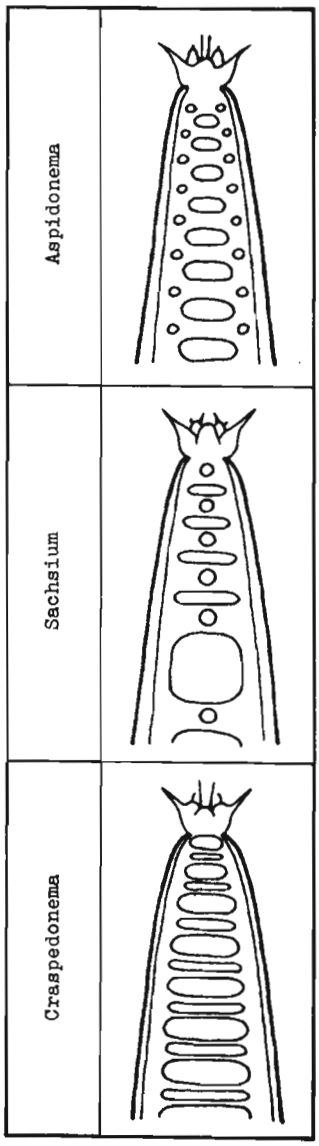

Fig.37. Bunonematidae: Craspedonematinae . The genera of the subfamily (anterior end).

Genus: *Aspidonema* (Sachs, 1949) Andrássy, 1958

Syn. *Bunonema* (*Aspidonema* Sachs, 1949).

DEFINITION: Bunonematoidea, Bunonematidae, Craspedonematinae (Fig.37). Very small nematodes, body length between 0.2 and 0.4 mm. Right side ornamented with fine network and two rows of cuticularized warts, 20-60 pairs in number. Between warts and alternating with them a single row of shield is present. These latter rounded or oval. Medial membranes - between ornamentation of right and left sides - with forked transverse striae. Left side bearing five thin ridges. Head small, without collar. Amphids inconspicuous. Stoma rhabditiform; cheilostom short, cuticularized, metastom without denticles. Oesophageal collar around promesostom absent. Oesophagus also with medial swelling. Female gonads paired, vulva medial or postmedial. Spicules slender. Bursa asymmetrical, leptoderan, with papillae. Rectum very long. Tails of both sexes conoid, in male with forked tip.

BIONOMICS: Saprobious nematodes living in plant remains, compost and dung.

DISTRIBUTION: A European genus, all five species have been recorded from Germany.

TYPE SPECIES: Bunonema (*Aspidonema*) *stammeri* Sachs, 1949 = *Aspidonema stammeri* (Sachs, 1949) Andrássy, 1958.

FIVE SPECIES:

A. ruehmi (Sachs, 1949) Goodey, 1963
Syn.*Bunonema* (*Aspidonema*) *ruehmi* Sachs, 1949

A. sachsi (Meyl, 1961) Andrássy, 1971
Syn.*Bunonema* (*Aspidonema*) *sachsi* Meyl, 1961

A. scheucherae (Sachs, 1949) Goodey, 1963
Syn.*Bunonema* (*Aspidonema*) *scheucherae* Sachs, 1949

A. *stammeri* (Sachs, 1949) Andrássy, 1958
Syn.*Bunonema* (*Aspidonema*) *stammeri* Sachs, 1949
A. *weingaertnerae* (Sachs, 1949) Andrássy, 1958
Syn.*Bunonema* (*Aspidonema*) *weingaertnerae* Sachs, 1949

Key to the species of Aspidonema

1 Warts in 20-35 pairs, and, at least in the anterior body, consisting of several elements; shields rounded..... 2
- Warts in 40-60 pairs, small and simple; shields oval..... 3
2 Warts in 20-26 pairs, those in anterior body consisting of 3-6 elements.
♀: L = 0.28-0.33 mm; a = 11-12; b = 4.3-4.7; c = 9-11; V = 55-57%.
♂: L = 0.27-0.31 mm; a = 11-14; b = 4.2-4.8; c = 6.
Germany; in cow dung..... *scheucherae* (Sachs)
- Warts in 30-35 pairs, those in anterior body consisting of two elements.
♀: L = 0.27-0.40 mm; a = 11-13; b = 4.4-6.4; c = 11-13; V=52-56%.
♂: L = 0.23-0.26 mm; a = 10-12; b = 3.4-4.0; c = 5-6.
Germany; in compost and cow dung.....*ruehmi* (Sachs)
3 Warts rounded, 50-60 pairs in number.
♀: L = 0.30-0.43 mm; a = 11-13; b = 4.1-6.0; c = 9-12; V=59-64%.
♂: L = 0.26-0.33 mm; a = 13-15; b = 4.6-5.3; c = 6-7.
Germany; in compost and dung.....*stammeri* (Sachs)
- Warts oval, 40-45 pairs in number..... 4
4 Left bursal wing bearing eight papillae.
♀ unknown. ♂ L = 0.24-0.29 mm; a = 10-13; b = 3.8-4.9; c = 7-8.
Germany; in cow dung.....*sachsi* (Meyl)
- Left bursal wing bearing three papillae.
♀: L = 0.27-0.31 mm; a = 11-13; b = 4.1-5.9; c = 9-11; V=55-59%.
♂: L = 0.24-0.29 mm; a = 10-13; b = 3.8-4.9; c = 7-8.
Germany; in cow dung.....*weingaertnerae* (Sachs)

Genus: *Sachsium* Andrássy, 1971

DEFINITION: Bunonematoidea, Bunonematidae, Craspedonematinae (Fig.37). Body length to 0.4 mm. Right side ornamented with very fine network and a single row of warts alternating with large, cuticularized shields. Warts composed of 4-6 elements. Medial membranes with fine, simple transverse striae. Left side bearing five thin longitudinal ridges. Head small, provided with setose appendages. No subcephalic collar. Amphids indistinct. Stoma rhabditiform; cheilostom short, cuticularized, promesostom without collar, metastom unarmed. Oesophagus with large medial swelling. Female gonads paired, vulva postmedial. Spicules long and slender. Bursa leptoderan, asymmetrical. Eleven genital papillae present. Rectum long. Tail in both sexes conoid, in male with three tips.

BIONOMICS: Dung inhabiting nematodes.

DISTRIBUTION: The single species is known from Germany.

TYPE SPECIES: *Bunonema* (*Stammeria*) *helenae* Sachs, 1949 = *Sachsium helenae* (Sachs, 1949) Andrássy, 1971.

NO OTHER SPECIES.

S. helenae (Sachs, 1949) Andrássy, 1971

Syn. *Bunonema* (*Stammeria*) *helenae* Sachs, 1949

Bunonema (*Aspidonema*) *helenae* Sachs, 1949 (Rühm, 1962)

Stammeria helenae (Sachs, 1949) Goodey, 1963

- 22-29 warts; spicules 30-36 µm long.

  ♀: L = 0.28-0.38 mm; a = 13-15; b = 4.1-5.5; c = 15-16; V=61-63%.

  ♂: L = 0.26-0.30 mm; a = 16-18; b = 4.2-5.1; c = 8-9.

  Germany; in dung.....*helenae* (Sachs)

Genus: *Craspedonema* Richters, 1908

Syn.*Bunonema* (*Craspedonema* Richters, 1908) Sachs,1949.

DEFINITION: Bunonematoidea, Bunonematidae, Craspedonematinae (Fig.37). Body 0.2-0.65 mm long, only one species is longer, to 1.3 mm. Right side ornamented with a series of transverse shields or saddles, or with crust-like swellings all over the surface. Warts absent. Medial membranes broader than in other bunonematids and finely striated.Left side bearing five longitudinal ridges. Head small, with setose appendages. Subcephalic collar absent. Amphids indistinct. Stoma prismatic; cheilostom cuticularized, short, promesostom without oesophageal collar, metastom unarmed. Oesophagus with bulb-like medial swelling. Female gonads paired, vulva sligtly postmedial. Spicules long and slender. Bursa leptoderan, asymmetrical, often reduced. Rectum in both sexes very long. Tail conoid.

BIONOMICS: Terrestrial and semi-aquatic species living in soil; moss, moors and dung.

DISTRIBUTION: Rare nematodes recorded hitherto from Europe, Far Eastern Asia and South America.

TYPE SPECIES: *Craspedonema javanicum* Richters, 1908

NO OTHER SPECIES.

SPECIES INQUIRENDAE:

Under the generic name *Craspedonema* four species have been described. Owing to the insufficient descriptions it cannot be decided whether they all belong to the same genus.

C. elegans Rahm, 1928

Syn.*Bunonema elegans* (Rahm, 1928) Baker, 1962

Craspedonema elegans paulistanum Rahm, 1928

C. javanicum Richters, 1908

Syn.*Bunonema* (*Craspedonema*) *javanicum* (Richters, 1908) Sachs, 1949

C. styriacum Micoletzky, 1922

Syn.*Bunonema* (*Craspedonema*) *styriacum* (Micoletzky,1922) Sachs, 1949

C. zeelandicum De Man, 1926

Syn.*Bunonema* (*Craspedonema*) *zeelandicum* (De Man, 1926) Sachs, 1949

Key to the species of Craspedonema

1 Right side with semi-circular shields ornamented with pearl-shaped dots.

♀: L = 0.35-0.50 mm; a = 12-16; b = 4.0-6.5; c = 15-18; V =54-56%.

♂: L = 0.36-0.44 mm; a = 14-18; b = 4.5-6.0; c = 8-10.

Holland, Germany; in cow and horse dung.....*Zeelandicum* DE Man

\- Right side instead of shields with crust-like swellings..... 2

2 Body small, shorter than 1/3 mm; right side coarsely crusted.

♀ and ♂: L = 0.20-0.32 mm; no other measurements.

Java; in moss.....*javanicum* Richters

\- Body longer, 0.6 to 1.3 mm; right side finely crsuted.....3

3 Right side ornamented with dense rods or dots.

♀: L = 0.65 mm; a = 19; b = 3.2; c = 17; V = 57%.

♂: unknown.

Austria; in moor.....*styriacum* Micoletzky

\- Right side ornamented with small tubercles.

♀: L = 0.81 mm; a = 15; b = 5.5; c = 8; V = 56 %. ♂ : L = 0.56-1.25 mm; a = 14-18; b = 3.1-4.0; c = 6-9.

Brazil; in soil..... elegans Rahm

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