

ACTA ZOOLOGICA
CRACOVIENSIA

Tom XXI

Kraków, 30. XI. 1976

Nr 10

KRZYSZTOF KASPRZAK

Contribution to the Knowledge of Aquatic *Oligochaeta* of Italy

[Pp. 331—350, 8 text-figs., pl. XVII]

Materiały do znajomości skąposzczetów (*Oligochaeta*) wodnych Włoch

Материалы к изучению фауны малощетинковых червей Италии

Abstract. The author informs of 20 species of *Oligochaeta* found in Fosso Contesora in Monti d'Oltreserchio (Italy). For several species author describes less known details of taxonomical features.

The knowledge of the aquatic *Oligochaeta* of Italy is till now comparatively poor. The most extensive data on the fauna of these animals come mainly from the oligotrophic Maggiore Lake in Alpes Occidentales. About 70 species of *Oligochaeta*, representing seven families, are known from the lake (BRINKHURST 1963a). Up to now there are no data on the fauna of *Oligochaeta* in the lakes and streams of many other regions of Italy.

The materials of *Oligochaeta* elaborated herein were collected within the years 1973—1974 by Dr J. KOLASA, during his investigations on the *Turbellaria* in the Fosso Contesora stream in Monti d'Oltreserchio. The whole material comes from 40 samples taken from five stations situated along the course of the stream (Fig. 1).

Station No. I. Stream is situated in woodland with prevailing chestnut tree in the valley and pines on the slopes. Higher up typical mediterranean macchia is developed. Down stream from the reocrene spring beginning, the water is uninterrupted. Stream is wide about 0.5 m. Sandy and gravelly bottom with detritus and small stones.

Station No. II. Permanent and approximately stable water flow. The stream wide about 1 m. Woodland with chestnut and fir trees rich brushwood. Stony, gravely and sandy bottom with heterogeneous organic sediments.

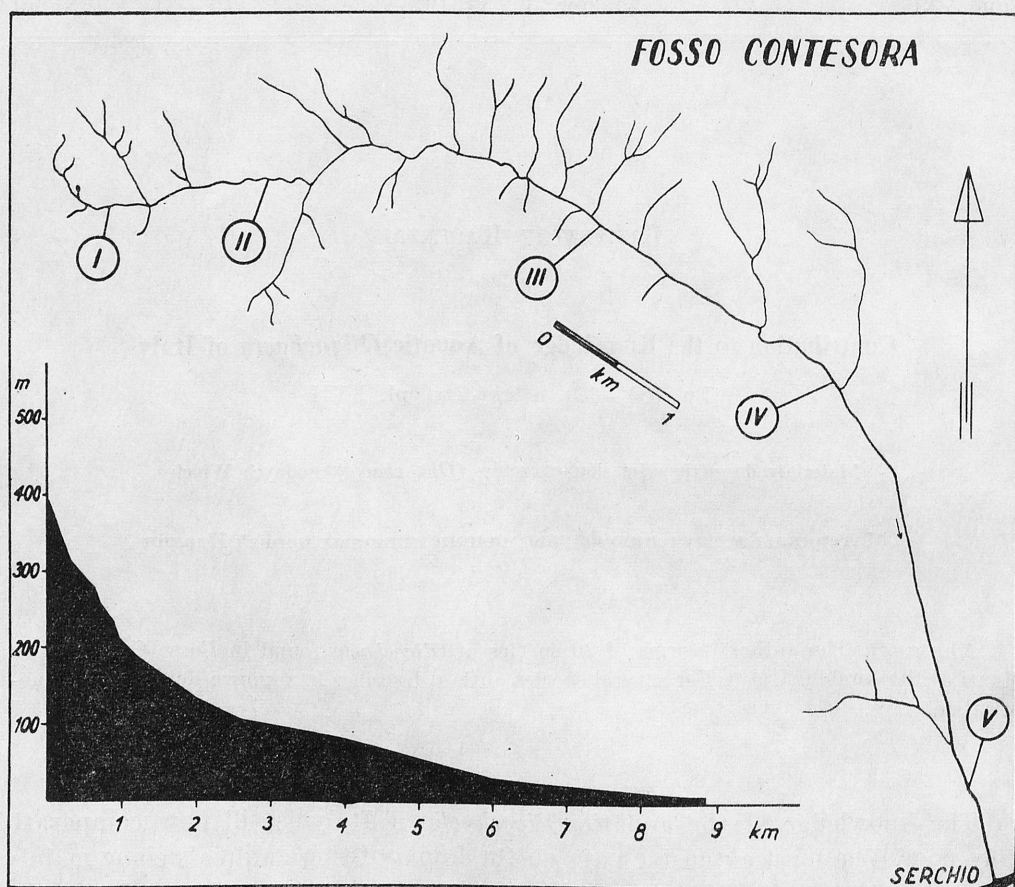


Fig. 1. Distribution of stations in the Fosso Contesora stream

Station No. III. Permanent water flow with distinct seasonal variations; the stream is 0.5—1.5 m wide. Woodland composed of olive and cedar trees chiefly. Gravely and sandy bottom with small stones and organic sediments.

Station No. IV. Temporary flow with great instability of conditions. The width of the stream varies from 0.5 to 2 m. This station runs mostly through a grassland with bushes growing over the banks. A few farms release their sewages into the stream. Stony bottom with organic sediments.

Station No. V. Temporary section up to 4 m wide at maximum culmination of water. Stony and sandy bottom with detritus. Stones sometimes partly overgrown by algae.

CHARACTERISTICS OF THE COLLECTED MATERIAL

The number of 514 individuals belonging to the species listed below was found in the stations investigated.

Naididae

1. *Ophidonais serpentina* (MÜLLER, 1774)
2. *Nais barbata* MÜLLER, 1774
3. *Nais elinguis* MÜLLER, 1774
4. *Nais bretscheri* MICHAELSEN, 1899
5. *Nais pardalis* PIGUET, 1906
6. *Nais communis* PIGUET, 1906
7. *Chaetogaster diaphanus* (GRUITHUISEN, 1828)
8. *Pristina aequisetula* BOURNE, 1891
9. *Pristina longistea* EHRENBERG, 1828
10. *Pristina foreli* PIGUET, 1906
11. *Pristina rosea* (PIGUET, 1906)
12. *Pristina menoni* (AIYER, 1929)
13. *Pristina idrensis* SPERBER, 1948

Tubificidae

14. *Psammoryctides barbatus* (GRUBE, 1861)
15. *Limnodrilus hoffmeisteri* CLAPARÈDE, 1862
16. *Peloscolex velutinus* (GRUBE, 1879)

Enchytraeidae

17. *Fridericia bulboides* NIELSEN et CHRISTENSEN, 1959
18. *Marionina argentea* (MICHAELSEN, 1889)

Lubriculidae

19. *Bichaeta sanguinea* BRETSCHER, 1900
20. *Bythonomus lemani* (GRUBE, 1879)

The *Naididae* family is the most numerous represented in the collected material, as regards the number of species as well as of gathered individuals. Thirteen species belong to this family, the most numerous being the representatives of the *Pristina* EHRENBERG, 1828 genus, *P. menoni* (AIYER) and *Nais elinguis* MÜLL. in particular.

Certain differences in the species composition of the *Oligochaeta* fauna of the particular stream section may be pointed out on ground of the Table I,

Table I

Distribution on *Oligochaeta* in the station of the Fosso Contesora stream

Station No.	I	II	III	IV	V
Species					
<i>Bythonomus lemani</i>	4				
<i>Bichaeta sanguinea</i>	6				
<i>Peloscolex velutinus</i>	10				
<i>Nais communis</i>	2		26	4	
<i>Pristina foreli</i>		5			
<i>Fridericia bulboides</i>		2			
<i>Marionina argentea</i>		1			
<i>Pristina aquiseta</i>		1			
<i>Nais bretscheri</i>		1			
<i>Pristina idrensis</i>		1			
<i>Pristina menoni</i>		3	36	169	
<i>Nais elinguis</i>		3	27	1	75
<i>Pristina rosea</i>			1		
<i>Psammoryctides barbatus</i>				11	
<i>Nais barbata</i>					70
<i>Nais pardalis</i>					46
<i>Ophidonais serpentina</i>					5
<i>Pristina longiseta</i>					1
<i>Chaetogaster diaphanus</i>					1
<i>Limnodrilus hoffmeisteri</i>					1
Total:	22	17	91	185	199

that represents the participation of the species of *Oligochaeta* on the investigated stations. The representation of the species arrangement along the course of the stream is however approximative, in consideration of the scarcity of the material and the short duration of observations. The most numerous *Oligochaeta* were found at the station No. V where the representatives of the *Nais* MÜLLER, 1774 genus, *N. elinguis* MÜLL., *N. barbata* MÜLL. and *N. pardalis* FIG. were predominant. The *Oligochaeta* were considerably numerous also at the stations No. IV and No. III where *Pristina menoni* (AIYER) was predominant while the fauna of *Oligochaeta* of the station No. I situated in the spring section of the stream was represented mainly by the Lumbriculidae family — *Bythonomus lemani* (GRUBE), *Bichaeta sanguinea* BRET. and *Peloscolex velutinus* (GRUBE).

NOTES ON THE MORPHOLOGY AND TAXONOMY OF SOME SPECIES

Taking into consideration the great variability of some morphological features and the difficulties in the proper identification of species resulting from it, I have presented the notes on the morphology and on the taxonomy of the four *Oligochaeta* species, basing exclusively on the collected material.

Pristina idrensis SPERB.

SPERBER (1948) described the species in question basing mainly on the occurrence of the needle setae with long parallel teeth in the dorsal bundles. According to the data of the same author (SPERBER 1948, 1950), to the keys of HRABĚ (1954) and BRINKHURST (1971) and to the work of POP (1973) this feature, together with the occurrence of the equally toothed setae in all ventral bundles, is the main taxonomical features of this species.



Fig. 2—6. Needle setae: 2, 3 — *Pristina idrensis* SPERB.; 4, 5 — *Pristina menoni* (AIYER); 6 — ventral seta of segment XV of the *Peloscolex velutinus* (GRUBE)

In individuals *P. idrensis* SPERB. found in the Fosso Contesora stream the teeth of the characteristically curved, in its distal part, needle setae are long and parallel (Fig. 2, 3). Higher tooth (distal) is slightly longer than the lower one (proximal). Both teeth were, however, longer than in the figure of the needle seta of this species published in the SPERBER'S (1948) monograph. The distal part of the needle seta of the both found individuals is straight. This features is also very important for distinguishing *P. idrensis* SPERB. from the other species of *Pristina* EHREN. genus since, according to POP (1973), the

very similarly built needle setae occur also in *P. arcaliae* POP, 1973. The distal part of the needle setae of this species is, however, distinctly curved.

Length of the needle setae: about 60 μ , length of the teeth: about 7 μ .

Pristina menoni (AIYER)

The structure of the needle setae and existence of setae with a higher tooth (distal) distinctly shorter than the lower tooth (proximal) in the ventral bundles of the posterior part of body is the most essential feature that permits to distinguish this species from the other representatives of *Pristina* EHREN. genus, mainly from *P. rosea* (FIG). However individuals *P. menoni* (AIYER) from Italy show very high variability of these features, particularly of structure of the needle setae.

The majority of the found individuals fully corresponded to the diagnostic features of this species. In the typical individuals of *P. menoni* (AIYER) the two teeth of the needle setae were distinctly developed and ramified at an acute angle (Fig. 4, 5). There were also found entirely straight setae with only one tooth developed. Some individuals however, also assigned by me to *P. menoni* (AIYER), differed considerably from the typical representatives of this species and showed a certain mixing of features. The observed differences referred above all to the structure of distal part of the needle setae, and to some extent, also to the structure of the ventral setae. The features of such individuals corresponded to a certain degree to the features of *P. jenkinsae* (STEPHENSON, 1931) according to the BRINKHURST'S (1971) key. The variability of the taxonomic features of *P. menoni* (AIYER) makes the designation of that species very difficult. I believe it to be also found in many other species of the *Pristina* EHREN. genus and to be different within the local populations. Therefore it should be supposed that some of the species distinguished to are barely the subspecies or the morphological forms of the some species. It was already mentioned by POP (1973) whose opinion is, that *P. arcaliae* POP, *P. idrensis* SPERB. and *P. jenkinsae* (STEPH.) may be considered as the subspecies of *P. rosea* (FIG.). It is not unlikely that this possibility refers to *P. menoni* (AIYER) as well.

Peloscolex velutinus (GRUBE)

All found individuals of the *P. velutinus* (GRUBE) had ventral setae pointed simply (Fig. 6). Number of ventral setae varying from 1 to 2. Ventral setae in segment II—VIII distinctly thinner and shorter than other. Length of setae of the segment II varying from 88 μ to 128 μ ; in segments XX—XXV: 120—132 μ . Dorsal setal bundles containing 1—2 hair setae and one short needle setae.

According to the data of the several authors (ČEKANOVSKAYA 1962; BRINKHURST 1963b, 1966; HRABĚ 1964) in ventral bundles of *P. velutinus* (GRUBE) there exist beside simple pointed setae also bifid setae with a strongly reduced higher tooth (distal).

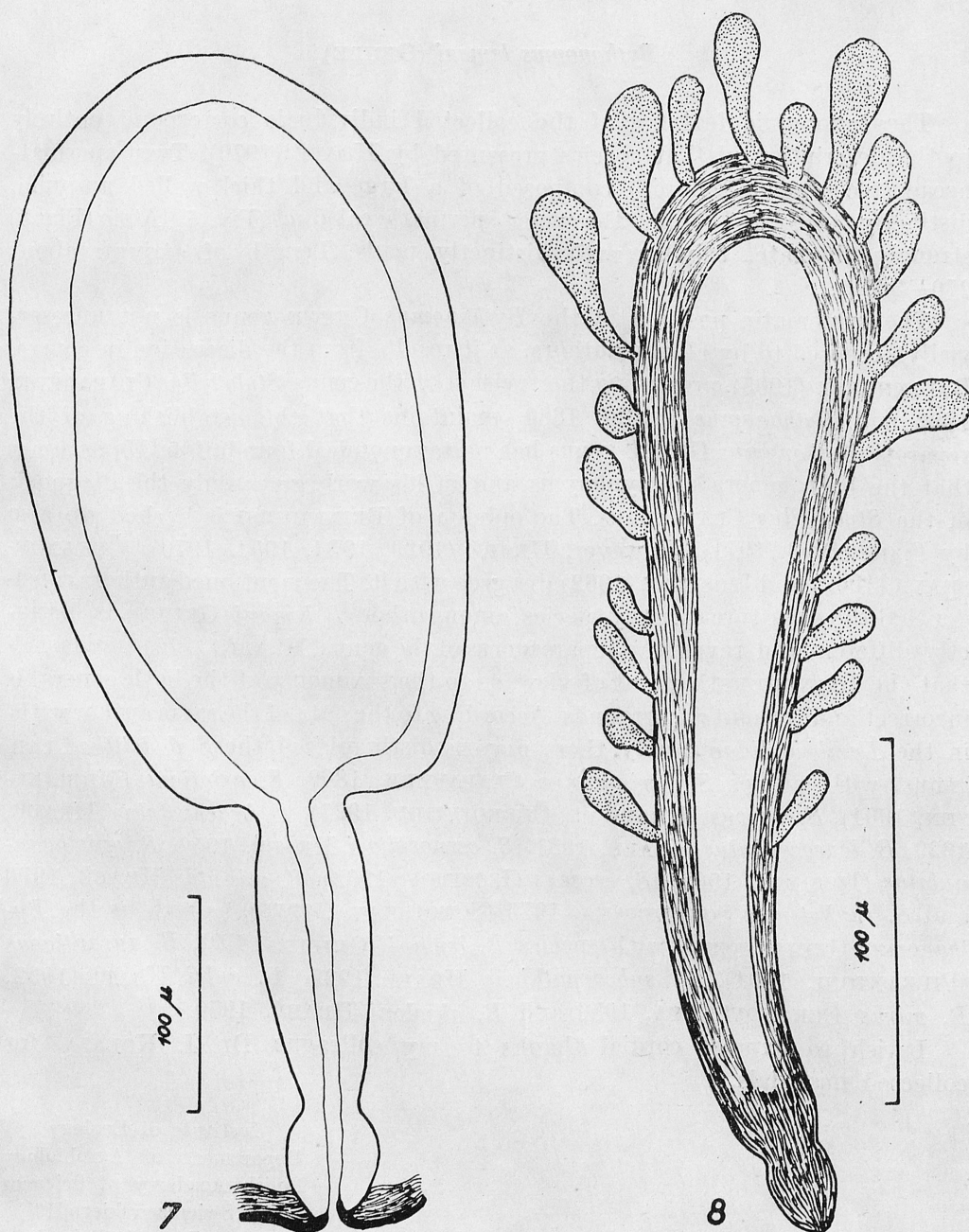


Fig. 7—8. *Bythonomus lemani* (GRUBE): 7 — spermatheca (receptaculum seminis), 8 — atrium

The body is covered by thick layer of secretion of the cutaneous glands mixed with particles of substratum (Pl. XVII, 1). Cutaneous papillae characteristic for all species of the genus *Peloscolex* LEIDY, 1852 are placed on every segment in 2—3 regular transverse rows (Pl. XVII, 2).

Bythonomus lemani (GRUBE)

The taxonomic features of the collected individuals correspond entirely to the description of that species presented by HRABĚ (1970). Twin spermathecae (receptacula semina) composed of a large and thick-walled ampulla, distinctly separated from the wide spermathecal duct (Fig. 7). Atria (Fig. 8) strongly elongate, tubular with distinctly penis. Length of atrium: about 270—300 μ .

The systematic position of the *Bythonomus* GRUBE genus is not unreservedly accepted by all the authors, as it results from the discussion in course. BRINKHURST (1965), presenting the revision of the genus *Stylodrilus* CLAPARÈDE, 1862 and *Bythonomus* GRUBE 1880, maintains that the establishing of the separate *Bythonomus* GRUBE genus has no taxonomical foundation. He assumes that the both genera are synonyms and in his work gives only the diagnosis of the *Stylodrilus* CLAP. genus. The opinion of BRINKHURST is backed up also by COOK (1968, 1971). However, HRABĚ (1929, 1934, 1954, 1970), ČEKANOVSKAYA (1962) and IZOSIMOV (1962) disagree with it. The mentioned authors consider that the structure of many species, among others *B. lemani* (GRUBE), is distinctly different and reveal the separateness of the genus. HRABĚ (1970) emphasises that the BRINKHURST's point of view, as to the taxonomy of the both genera, is incorrect and without any grounds. According to the data of the same author within the *Lumbriculidae* family, there may be distinguished the *Stylodrilus* CLAP. genus, with species *S. heringianus* CLAPARÈDE, 1862, *S. asiaticus* (MICHAELSEN, 1901), *S. parvus* (HRABĚ et ČERNOSVITOV, 1927), *S. brachystylus* HRABĚ, 1929, *S. leucocephalus* HRABĚ, 1931, *S. cernosviti* HRABĚ, 1950, *S. opisthoanulatus* (IZOSIMOV, 1962), *S. crassus* (IZOSIMOV, 1962), *S. minutus* HRABĚ, 1970 and *S. chukotensis* SOKOLSKAYA, 1975 (SOKOLSKAYA, 1975), as well as the *Bythonomus* GRUBE genus, with species *B. lemani* (GRUBE, 1879), *B. aurantiacus* (PIERANTONI, 1904), *B. subcarpathicus* HRABĚ, 1929, *B. sulci* HRABĚ 1932, *B. mirus* ČEKANOVSKAYA, 1956 and *B. absoloni* HRABĚ, 1970.

I wish to express cordial thanks to my colleague Dr J. KOLASA, for collected materials.

Institute of Ecology
Department of Agrobiology
Polish Academy of Sciences
ul. Świerczewskiego 19
60-809 Poznań (Poland)

REFERENCES

- BRINKHURST R. O. 1963a. The Aquatic *Oligochaeta* Recorded from Lake Maggiore with Notes on the Species Known from Italy. Mem. Ist. Ital. Idrobiol., Pallanza, **16**: 137—150.
- BRINKHURST R. O. 1963b. Taxonomical Studies on the *Tubificidae* (*Annelida*, *Oligochaeta*). Int. Rev. Hydrobiol., Leipzig, **48**: 1—89.
- BRINKHURST R. O. 1965. A revision of the genus *Stylodrilus* and *Bythonomus* (*Oligochaeta*, *Lumbriculidae*). Proc. zool. Soc., London, **144**: 431—444.
- BRINKHURST R. O. 1966. Taxonomical Studies on the *Tubificidae* (*Annelida*, *Oligochaeta*). Supplement. Int. Rev. Hydrobiol., Leipzig, **51**: 727—742.
- BRINKHURST R. O. 1971. Family *Naididae*. In: R. O. BRINKHURST, B. G. M. JAMIESON, Aquatic *Oligochaeta* of the World, Edinburgh, **7**, pp. 304—443.
- ČEKANOVSKAYA O. V. 1962. Vodnye maloščetinkovyje červi fauny SSSR. Opred. po faune SSSR, Moskva-Leningrad, **78**, 411 pp.
- COOK D. G. 1968. The genera of the family *Lumbriculidae* and the genus *Dorydrilus* (*Annelida*, *Oligochaeta*). J. Zool., London, **156**: 273—289.
- COOK D. G. 1971. Family *Lumbriculidae*. In: R. O. BRINKHURST, B. G. M. JAMIESON, Aquatic *Oligochaeta* of the World, Edinburgh, **5**, pp. 200—285.
- HRABĚ S. 1929. Zwei neue Lumbriculiden-Arten, sowie einige Bemerkungen zur Systematik einiger bereits bekannter. Zool. Anz., Leipzig, **84**: 9—21.
- HRABĚ S. 1934. *Bythonomus sulci*, eine neue Lumbriculiden-Art aus einer Höhle der Herzogwina. ibidem **106**: 314—317.
- HRABĚ S. 1954. Maloštětinateci — *Oligochaeta*. In: Klič zvěřeny ČSR, Praha, **1**, pp. 287—323.
- HRABĚ S. 1964. On *Peloscolex svirenkoi* (JAROŠENKO) and some other species of the genus *Peloscolex*. Publ. Fac. Sci. Univ. Purk., Brno, **2**: 101—112.
- HRABĚ S. 1970. Notes on the genera *Stylodrilus* and *Bythonomus* (*Lumbriculidae*, *Oligochaeta*). Publ. Fac. Sci. Univ. Purk., Brno, **7**: 283—309.
- IZOSIMOV V. V. 1962. Maloščetinkovyje červi semejstva *Lumbriculidae*. In: Maloščetinkovyje červi i planarii ozera Bajkal. Trudy limn. Inst., Moskva-Leningrad, **1** (21): 3—126.
- POP V. 1973. Deux espèces nouvelles de *Pristina* (*Naididae*, *Oligochaeta*) et leurs affinités. Stud. Univer. Babeş — Bolyai, Biologia, Cluj, **1**: 79—89.
- SOKOLSKAYA N. L. 1975. Novyj vid *Stylodrilus* (*Oligochaeta*, *Lumbriculidae*) s Čukotskogo Poluos-trova. Zool. Ž., Moskva, **54**: 116—119.
- SPERBER Ch. 1948. A Taxonomical Study of the *Naididae*. Zool. Bidr., Uppsala, **28**: 1—296.
- SPERBER Ch. 1950. A Guide for the Determination of European *Naididae*. ibidem, **29**: 45—78.

STRESZCZENIE

Autor podaje dane o występowaniu 20 gatunków skaposzczetów (*Oligochaeta*) we Włoszech. Dla kilku gatunków autor przedstawił nowe szczegóły dotyczące cech taksonomicznych.

РЕЗЮМЕ

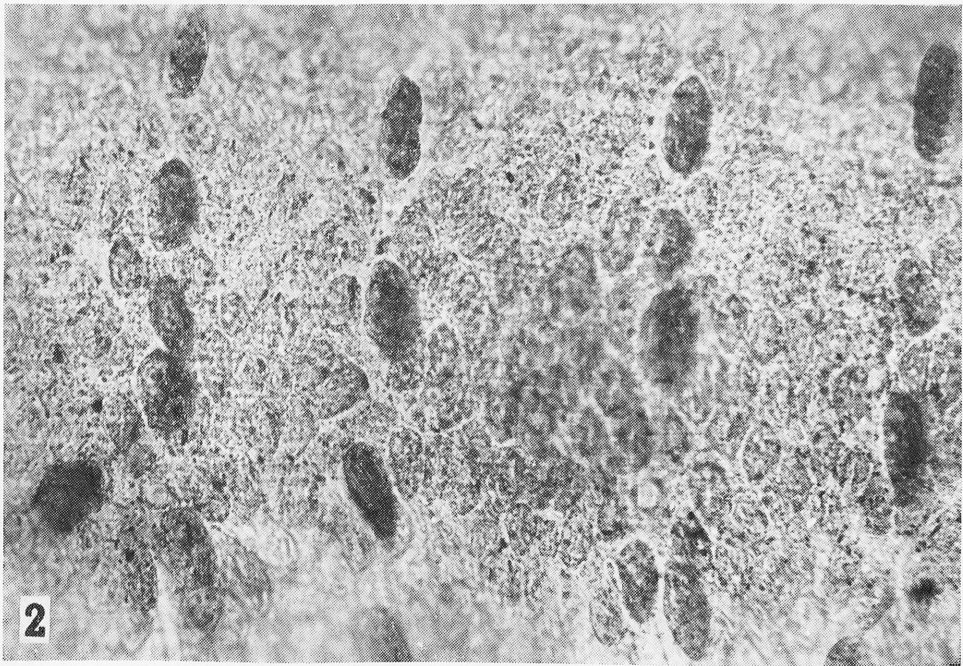
Автор приводит данные касающиеся новых местонахождений 20 видов малошчетиновых червей *Oligochaeta* найденных в Италии. Для нескольких видов автор приводит данные относительно таксономических признаков.

Plate XVII

Peloscolex velutinus (GRUBE)

1. Surface of body segments XX—XXV
2. Cutaneous glands and papillae of segment XXII

(Photo made by Z. Pniewski, Poznań)



Redaktor zeszytu: dr A. Szeptycki

PAŃSTWOWE WYDAWNICTWO NAUKOWE — ODDZIAŁ W KRAKOWIE — 1976

Nakład 800+80. Ark. wyd. 0,75. Ark. druk. $\frac{10}{16}$ +1wkładka. Papier ilustr. kl. III 70×100 80 g
Zam. 554/76 Cena zł 8.—

DRUKARNIA UNIwersytetu Jagiellońskiego w Krakowie