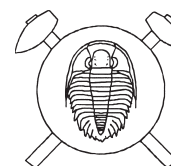


Middle Devonian Tentaculitoidea from the late generation of fillings of the neptunian dyke in the Koněprusy area (Prague Basin, Czech Republic)



Tentaculitoidea z mladší výplně neptunické žíly v devonu koněpruské oblasti (střední devon, pražská pánev, Česká republika)

(8 figs)

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A dacryoconarid fauna from one Middle Devonian neptunian dyke in the Voskop Quarry (Koneprusy area, Prague Basin, central Bohemia) with Acanthopyge Limestone infill was studied. Nine species belonging to seven tentaculitoid genera (*Nowakia*, *Viriatellina*, *Styliolina*, *Metastyliolina*, *Stylianowakia* and *Homocetus*) were identified. The stratigraphic position of the neptunian dyke infill is also discussed. Two new species, *Viriatellina babaluae* sp. nov. (Nowakiidae) and *Lukesia elixi* gen. et sp. nov. (Striatostyliolinidae), are described. *Viriatellina holochlidana* Schöne, 1996, was found in the Prague Basin for the first time.

Key words: Palaeozoic; Middle Devonian; Prague Basin; Tentaculitoidea; stratigraphy; new taxa

Introduction

In the progress of mining at the Velkolom Čertovy schody Quarry (VČS, Koneprusy Devonian, Barrandian area, central Bohemia), a neptunian dyke with polyphase filling has been exposed in the eastern wall of the Voskop Quarry (Figs 1, 2). The Suchomasty Limestone represents the dominant and the Acanthopyge Limestone a partial infill of this neptunian dyke (Chlupáč, 1996). The present study is aimed at dacryoconarid fauna from the Acanthopyge Limestone. Clasts of these darker grey and reddish bioclastic and biomicritic limestones show a special feature: they contain very abundant dacryoconarid tentaculites as dominant rock-forming components representing true “tentaculitic limestones” (Chlupáč, 1996).

The Middle Devonian stratigraphy of the Koneprusy area has been discussed for more than 100 years (Chlupáč, 1960, Chlupáč et al., 1992 and references herein); however, some problems are still not solved. Chlupáč (1960) presumed a stratigraphical hiatus or a later erosion of stratigraphical equivalents of the Kačák Shale (late Eifelian) in the Koneprusy area. In contrast, Hladil – Kalvoda (1993) and Hladil et al. (1993) regarded the so-called “upper dark interval” from the Jiráskův Quarry as the possible stratigraphic equivalent of the Kačák Shale. This quarry, situated on the NW slope of Zadní Kobyla Hill, displays the upper part of the Acanthopyge Limestone with the “dark interval” above. The “upper dark interval” is about 60 cm thick and corresponds to bed 45 *sensu* Hladil – Kalvoda (1993). Lithology and paleontology of the “upper dark interval” was discussed in detail by Hladil – Kalvoda (1993), Hladil et al. (1993) and Budil (1995). According to the latter authors, the “upper dark interval” reflects the effect of the Kačák

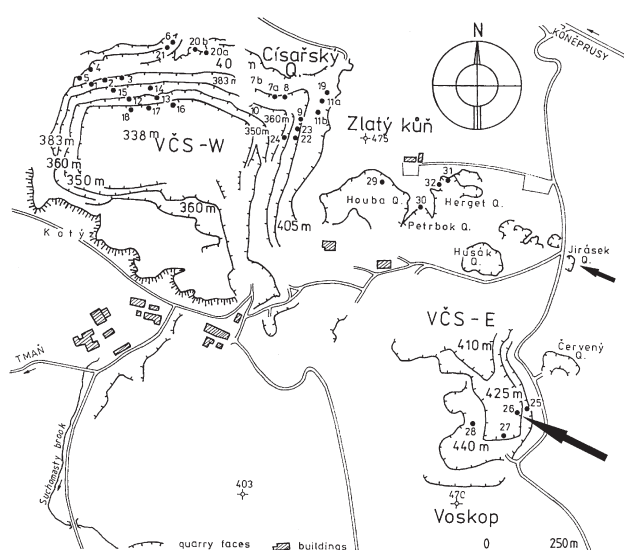


Fig. 1. Topographic scheme of the northern part of the Koneprusy Devonian showing the position of sample localities (after Chlupáč, 1996, slightly modified).



Fig. 2. The neptunian dykes transecting the Koneprusy Limestone on the eastern wall of the VČS-E Quarry. The studied neptunian dyke marked with arrow.

Event in Koněprusy area. This interpretation is based on the presence of *Nowakia otomari*, conodonts of the *ensen-sis* Zone and corals of Givetian type. Budil (1995), who has studied the mentioned dark interval, considered this assumption probable but still kept this question open because of insufficient knowledge of the conodont taxa present.

Three different goals are the subject of this paper: clarification of the stratigraphic assignment of the neptunian dyke infill, which is presumed by Chlupáč (1996) to be late Eifelian or early Givetian in age; a description of the tentaculitoid fauna from the Jiráskův and Voskop quarries; and a correlation of the studied material from the Voskop Quarry with the “upper dark interval” in the Jiráskův Quarry (Koneprusy Devonian, Barrandian area, central Bohemia).

Material and Methods

Material

The present study is based on a large amount of material, which comprises samples collected from the Čertovy schody – East, Voskop Quarry, by I. Chlupáč and P. Lukeš in the years 1993–1995 and by the author of this paper in 2003. The material from the “upper dark interval” in the Jiráskův Quarry has been collected by the author and P. Lukeš.

Methods

Only very little has been published on the methodology of tentaculitid studies. Some notes were given, e.g., by Lyaschenko (1955), Bouček (1964) and Lardeux (1969). For the present study the dacryoconarids were obtained by mechanical fragmentation of the rock with a hammer. Individual preparation employed a vibrational preparation needle (Vibrograv). The Carl Zeiss binocular microscope was used for the observation of tentaculitoid conchs (magnification 4× to 100×). For a detailed study, latex casts were used. Photomicrographs were taken using the CamScan MX 3200 scanning electron microscope.

Tentaculitoid fauna

Neptunian dyke at the Voskop Quarry

Besides the very abundant species of *Styliolina* Karpinskiy, 1884, the following genera and species were found in the infill of the neptunian dyke (Fig. 2): *Metastyliolina* Bouček – Prantl, 1961 (*Metastyliolina* sp.), *Styliolowakia* Lardeux, 1969 (*Styliolowakia* sp.), *Homoctenus* Lyashenko, 1955 (*Homoctenus* sp.), *Nowakia* Gürich, 1896 (*Nowakia* ex gr. *otomari* Bouček, 1964, *Nowakia* (*Cepanowakia*) *pumilio* Alberti, 1993), *Viriatellina* Bouček, 1964 (*Viriatellina babaluae* sp. nov.; *Viriatellina holochlidana* Schöne, 1996) and *Lukesia* gen. nov. (*Lukesia elixi* sp. nov.).

Jiráskův Quarry

The tentaculitoid fauna from the Jiráskův Quarry is lower in diversity compared to the material from the studied neptunian dyke at the Voskop Quarry. In low abundances only the following taxa were found: *Nowakia* ex gr. *otomari* Bouček, 1964; *Nowakia* (*Cepanowakia*) *pumilio* Alberti, 1993; *Lukesia* gen. nov., and *Styliolina* sp.

Strikingly, representatives of the genus *Styliolina* are scarce in the Jiráskův Quarry although they belong to the most common taxa in the Voskop Quarry. This fact may suggest slightly different environments at the two localities. Zagora (1984) supposed that the frequency of *Nowakia* decreases and the frequency of *Styliolina* increases with increasing water depth. However, there are still few data for such a conclusion; moreover, no other similar relation has been observed in the Barrandian area (P. Lukeš, pers. comm.).

Some authors (Budil, 1995, Hladil – Kalvoda, 1993) mentioned the species *Nowakia* (*Cepanowakia*) *chlupaciana* Alberti, 1979 (by error?), common in the Choteč limestone facies, from both the Jirásek and Voskop quarries but no specimen of this taxon was found within the present study. The possible absence of the *Nowakia* (*Cepanowakia*) *chlupaciana* Subzone in the Koneprusy area could be explained by either facies dependence of *N. chlupaciana* (very implausible) or by a hiatus in this interval.

The accompanying fauna from both localities is low diverse and not abundant (with the exception of conodonts). Only several fragments of proetid trilobites, brachiopods (*Orbiculoidea* sp., *Quasidawidsonia* sp.), and ostracodes were found.

Conodont fauna

Neptunian dyke at the Voskop Quarry

Slavík (pers. comm.) has determined the following taxa: *Polygnathus costatus costatus* Klapper, 1971; *Polygnathus eiflius* Bischoff – Ziegler, 1957; *Polygnathus costatus* ssp.; *Polygnathus* sp.; *Polygnathus linguiformis linguiformis* Hinde, 1879. The latter species may indicate a Givetian age of the material studied; however, this is not an index taxon of any certain biozone, similarly *P. eiflius*.

Jiráskův Quarry

Conodont fauna from the Jiráskův Quarry was described by Hladil – Kalvoda (1993). According to these authors, conodont assemblages of the “upper dark interval” correspond to the *Polygnathus eiflius* Zone. This zone embraces the boundary interval of the Eifelian and Givetian, implying either a latest Eifelian or earliest Givetian age for the conodont fauna obtained from this dark interval.

Systematic paleontology

Abbreviations used in the systematic part:

TR...transversal rings

TS...transversal structures

LR...longitudinal ribs

Ich...initial chamber

W_A ...width at the apertural part of the tube

W_M ...width at the middle part of the tube

W_{ICH} ...width at the initial chamber

Class *Tentaculitoidea* Lyashenko, 1957

Order *Dacryoconarida* Fisher, 1962

Family *Nowakiidae* Lyashenko, 1955

Genus *Nowakia* Gürich, 1896

Type species: *Tentaculites cancellatus* Richter, 1854

Nowakia (*Cepanowakia*) *pumilio* Alberti, 1987

Figs 3 A–C

1978 *Nowakia pumilio* n. sp.; Alberti, p. 264.

1979 *Nowakia* (*Nowakia*) *pumilio* Alberti, 1978; Alberti, p. 234–235.

1987 *Nowakia pumilio* Alberti, 1978; Alberti, p. 638, fig. 2.

? 1989 *Nowakia* (*N.*) *albertii* n. sp.; Ruan – Mu, p. 184–5, pl. 12, figs 1, 2.

1989 *Nowakia* cf. *pumilio* Alberti, 1978; Lukeš, p. 193–205, pl. 2, figs 6–8, pl. 4, fig. 9.

1993 *Nowakia* (*Cepanowakia*) *pumilio* G. Alberti, 1978; Alberti, p. 65, pl. 33, figs 1–11.

1997 *Nowakia* (*Cepanowakia*) *pumilio* Alberti, 1978; Alberti, p. 7–8.

Holotype: specimen SMF 34163 figured by Alberti (1987) in fig. 1/2a + b and Alberti (1993) on pl. 33, figs 1–2, stored in the Senckenberg Museum Frankfurt.

Type locality: Rheinisches Schiefergebirge, Dill-Mulde, Bomm quarry.

Type horizon: Rheinisches Schiefergebirge, Günteröder Kalk, Bed No. 10, Eifelian.

Material: 12 specimens from the VČS-East, Voskop Quarry, neptunian dyke with fillings of Acanthopyge Limestone, eastern wall of the quarry; 5 specimens from the „upper dark interval“ [Beds No. 45 A–L *sensu* Hladil – Kalvoda (1993)] from the Jiráskův Quarry.

Descriptions: Straight, conical shells of very small size (average length 1 mm). The width ranges from 0.12 to 0.18 mm (W_A 0.18 mm; W_M 0.15 mm; W_{ICH} 0.12 mm). Apical angle 10–12°. The shell is covered with transverse rings and prominent longitudinal ribs. The transverse rings are narrow but prominent and regularly distributed (8–10 per 1 mm of the length). The rings and interspaces between them are of the same width. The number of the longitudinal ribs is 3–4 (exceptionally 5–6) per shell semi-circumference. The longitudinal ribs are present also on the surface of the initial chamber. The initial chamber (Fig. 3 C) is drop-like constricted off from the proximal part of the tube and hypertrophic (about 130 µm in width and 140 µm in length on average).

Relations: Morphologically similar but stratigraphically older taxon *Viriattellina minor* Ruan – Mu, 1989

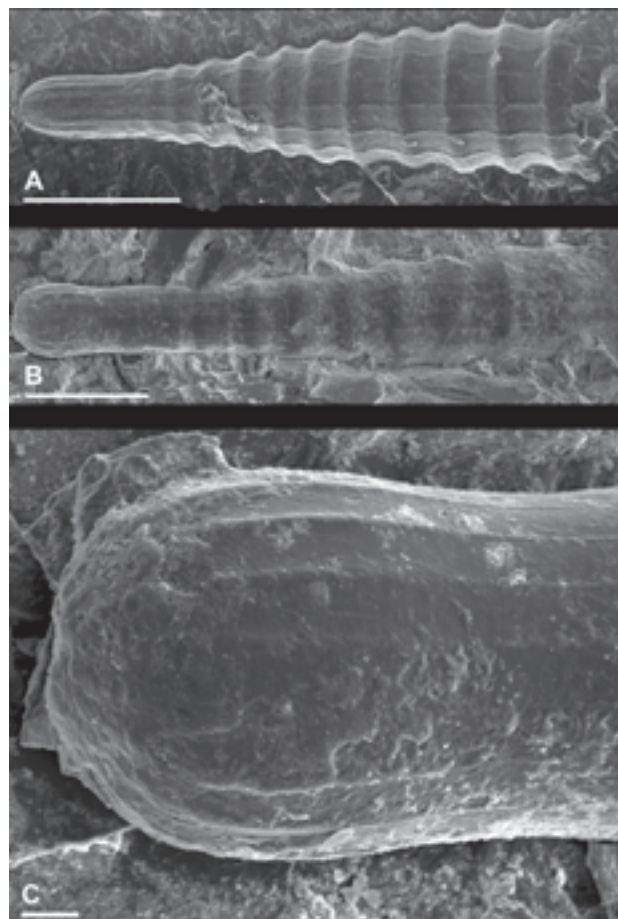


Fig. 3. A–C – *Nowakia* (*Cepanowakia*) *pumilio* Alberti, 1987. A–B – specimens with longitudinal ribbing observable also on the initial chamber from the Acanthopyge Limestone, Voskop Quarry, scale bar is 250 µm; C – Magnified initial chamber of previous specimen, scale bar is 20 µm.

(late Emsian) differs from *N. pumilio* in its smaller size (average length is 0.5 mm) and in the general shape of the transverse structures, which resemble rather transverse ripples.

Stratigraphical range: Middle Devonian, Eifelian–Givetian.

Geographical distribution: *N. (C.) pumilio* has been described from Asia – China, Guangxi province (Ruan – Mu, 1989); Europe – Germany (Alberti, 1978); Czech Republic (Lukeš, 1989, Alberti, 1993) and from the southwest of Morocco (Alberti, 1993).

Nowakia ex gr. *otomari* Bouček – Prantl, 1959

Figs 4 B–C; Fig. 6 A–C

1882 *Tentaculites acuarius* Richter; Novák, p. 54–55, pl. 12, figs 1–4, 18.

1959 *Nowakia otomari* Bouček – Prantl; Bouček – Prantl, p. 7; (brief description only).

1964 *Nowakia otomari* Bouček – Prantl, 1959; Bouček, p. 91–93, pl. 15, figs 1–4.

1969 *Nowakia* cf. *otomari* Bouček – Prantl, 1959; Lardeux, p. 106, pl. 36, fig. 4.

1978 *Nowakia otomari* Bouček – Prantl; Alberti, p. 263.

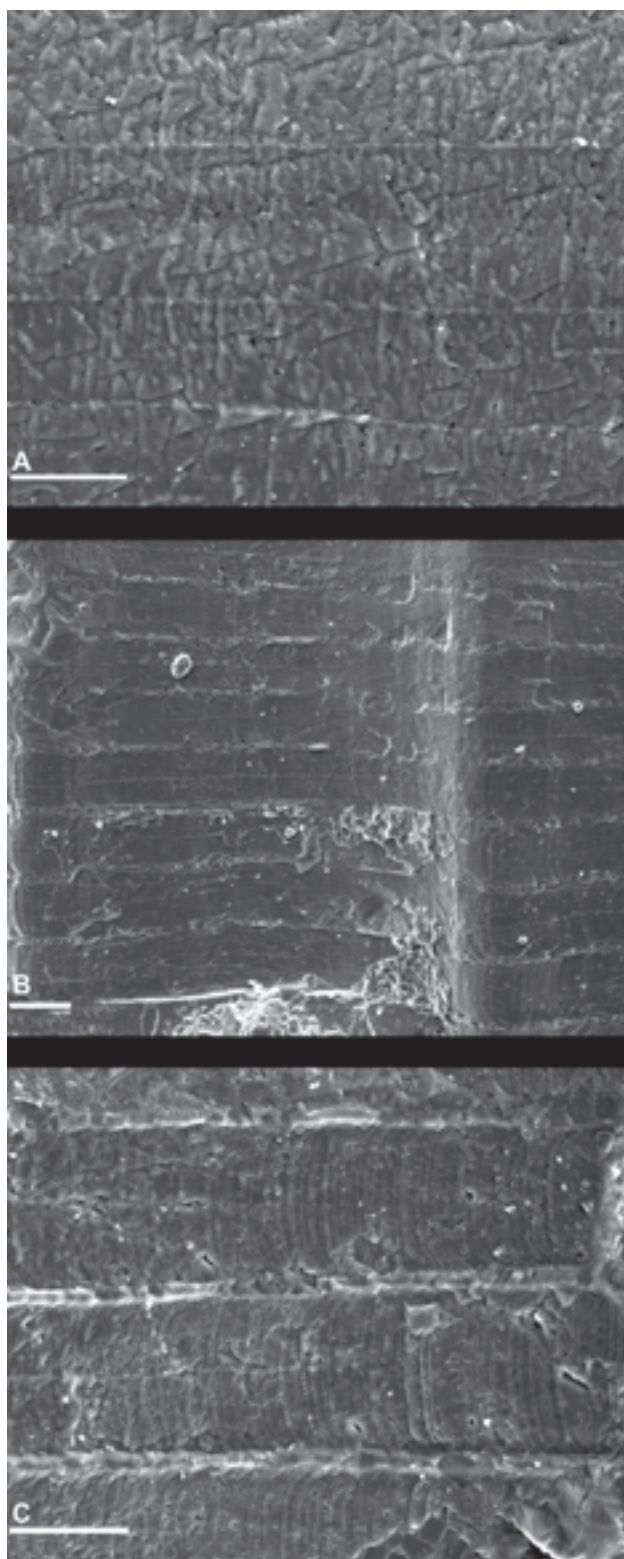


Fig. 4. A – *Styliolina* ?*fissurella* Hall, 1845. Longitudinal ribbing noticeable only with the SEM observation, Acantopyge limestone, Voskop Quarry, scale bar is 20 μ m; B – *Nowakia* ex gr. *otomari* Bouček – Prantl, 1959. Microribs between ribs noticeable only with the SEM observation, Acantopyge Limestone, Voskop Quarry, scale bar is 40 μ m; C – *Nowakia* ex gr. *otomari* Bouček – Prantl, 1959. Growth lines between longitudinal ribs (noticeable only with the SEM observation). Acantopyge Limestone, Voskop Quarry, scale bar is 40 μ m.

- 1983 *Nowakia otomeri* Bouček – Prantl; Mu – Ruan, p. 310, pl. 1, figs 1–2.(sic).
 1983 *Nowakia otomari* Bouček – Prantl, 1959; Mu – Ruan, p. 57, pl. 9, fig. 6, pl. 20, figs 1–2.
 1983 *Nowakia otomari* Bouček – Prantl, 1959; Sauerland, p. 37, 38.
 ? 1985 *Nowakia otomari* Bouček – Prantl; Lütke, p. 203, pl. 3, fig. 8–9.
 1993 *Nowakia* (*Nowakia*) *otomari* Bouček – Prantl; Alberti, p. 49, pl. 26, figs 1–6.
 1993 *Nowakia otomari* Bouček – Prantl, 1959; Lukeš, p. 10, pl. 2, figs 1–7
 1994 *Nowakia otomari* Bouček – Prantl, 1959; Dorodnova, p. 86, pl. 23, figs 5–7.

Holotype: Specimen figured by Bouček (1964), pl. 8, fig. 5; deposited in the collections of the Czech Geological Survey.

Type locality: Czech Republic, Prague Basin, Barrandian area, Hostim.

Type horizon: Middle Devonian (Givetian), Srbsko Formation, Kačák Member.

Material: Numerous incomplete and 4 complete specimens from the Voskop Quarry; several fragments and 2 complete specimens from the Jiráskův Quarry (beds 45 A–L, the maximum abundance was found in the bed 45 A).

Description: Conical shells of medium size, total length of the shell ranges from 5 to 7 mm, the apical angle is 6–8°. Width of the tube increases from 0.29 mm to 0.75 mm (W_A 0.75 mm; W_M 0.5 mm; W_{ICH} 0.29 mm). The surface of the shell is covered with marked and widely spaced regular transversal rings (TR) and fine, dense longitudinal ribbing (LR). The rings are prominent, with sharp ridges, interspaces between the rings are approximately three times wider than the rings. There are 5 rings per 1 mm. Number of LR is 22–26 on the semi-circumference. The initial chamber (ICH) is small, drop-like, with no LR observed on the ICH. Fine microribs and growth lines were observed under the SEM (Fig. 4 B, C).

Remarks: The shells of *N. otomari* from the Voskop Quarry (Fig. 6 A, C) differ from specimens from the Jiráskův Quarry (Fig. 6 B) in their smaller proportions and scarcer distribution of LR (this fact was already mentioned by Hladil – Kalvoda, 1993). Despite these morphological differences, specimens from both quarries are here ascribed to one species. It is necessary to evaluate morphological variation in *N. otomari* (some notes were given already by Schöne, 1996b). A further investigation and discussion of the morphological variability of *Nowakia* ex gr. *otomari* is necessary.

Stratigraphical range: Middle Devonian, Eifelian–Givetian.

Geographical distribution: *N. otomari* has been described from Europe (Germany: Alberti, 1978, 1979, 1993; Czech Republic: Novák, 1882, Bouček – Prantl, 1959, Bouček, 1964; Lukeš, 1989, France: Lardeux, 1969), Asia (China: Ruan – Mu, 1989, Russia: Dorodnova, 1994), from the North America (Lütke, 1985), North Africa (Alberti, 1993, Lardeux, 1969) and Australia (Lütke, 1985).

Genus *Viriatellina* Bouček, 1964

Type species: *Viriatellina hercynica* Bouček, 1964

Viriatellina babaluae sp. nov.

Fig. 5, 6 E.

Derivatio nominis: After my friend Babalu.

Holotype: Specimen figured in Fig. 6 E deposited in the collections of the Czech Geological Survey SB 1.

Type locality: Czech Republic, Barrandian area, Koněprusy area, VČS-East, Voskop Quarry, neptunian dyke with partial filling of Acanthopyge Limestone, eastern wall of the quarry.

Type horizon: Acanthopyge Limestone, Eifelian.

Material: 16 specimens from the Voskop Quarry.

Diagnosis: Shell regularly conical, average length is 2 mm; the width is 0.29 mm at the apertural part of the tube. The apical angle is 7–8°. The surface of the shell is covered with longitudinal ribbing LR (7–10 LR on the semi-circumference) and transversal undulations. The distal part of the ripple is more abrupt than the proximal part.

Description: Shells are straight and narrow; the maximal length is 2.4 mm (the average length is 2 mm). Shell gradually widens up to the maximum width of 0.29 mm (W_A 0.29 mm; W_M 0.24 mm; W_{ICH} 0.09 mm). The apical angle is 7–8°. The surface of the shell is covered with low and broad ripple-like rings or undulations.



Fig. 5. *Viriatellina babaluae* sp. nov., drawing of reconstructed shell showing characteristic features (drawn by P. Lukeš), scale bar is 1 mm.

There are 8 transversal undulations per 1 mm of length. The distal part of the ripple is more abrupt than the proximal part. The undulations are observable directly above the ICH. The entire surface (except ICH) is covered with fine longitudinal ribbing (7–10 LR on the semi-circumference). The ICH is small, drop-like (0.09 mm in length and 0.06 mm in width).

Relations: *Viriatellina babaluae* sp. nov. is most similar to stratigraphically older taxon *Viriatellina hercynica* Bouček, 1964 which differs from the described species in the greater width of its tube and in the shape of its undulations.

Stratigraphical range: Middle Devonian, Eifelian–Givetian?

Geographical distribution: Czech Republic, Barrandian area, Koněprusy Devonian.

Viriatellina holochlidana Schöne, 1996

Fig. 6 D

Holotype: Specimen No. 4820X1 figured by Schöne (1996a), pl. 3.

Type locality: Rhenisch Slate Mountains, Ense region, “Blauer Bruch” (an abandoned quarry).

Type horizon: Dark calcareous shale in the upper part of “Oderhausen-Formation”, *ensensis* Zone, Eifelian.

Material: 1 complete specimen from VČS-East, Voskop Quarry, neptunian dyke with partial filling of Acanthopyge Limestone, eastern wall of the quarry.

Description: A slender shell of medium size (total length 2.25 mm); the shell gradually widens up to the maximum width of 0.5 mm (W_A 0.55 mm; W_M 0.4 mm; W_{ICH} 0.29 mm). The apical angle is 13°. Transversal structures resemble narrow, regularly distributed ripples. The surface of the shell is covered with a fine longitudinal ribbing (LR), 12 LR on semi-circumference. The initial chamber is small, drop-like.

Stratigraphical range: Middle Devonian, Eifelian–?Givetian.

Geographical distribution: Germany (Rhenisch Slate Mountains), Czech Republic (Barrandian area, Koněprusy Devonian).

Genus *Stylianowakia* Lardeux, 1969

Type species: *Stylianowakia ligiriensis* Lardeux, 1969

Stylianowakia sp.

Material: 2 incomplete specimens from the Voskop Quarry.

Diagnosis: Transversal rings (TR) are narrow, low, and were observed only in the apertural part in the number of 3 TR. Fine longitudinal ribbing (LR) present, 5–6 LR on the semi-circumference. The length of the fragment is 1.8 mm, the width of the aperture is 6.24 mm.

Remarks: The available material from the Voskop Quarry does not allow a determination to the species level.

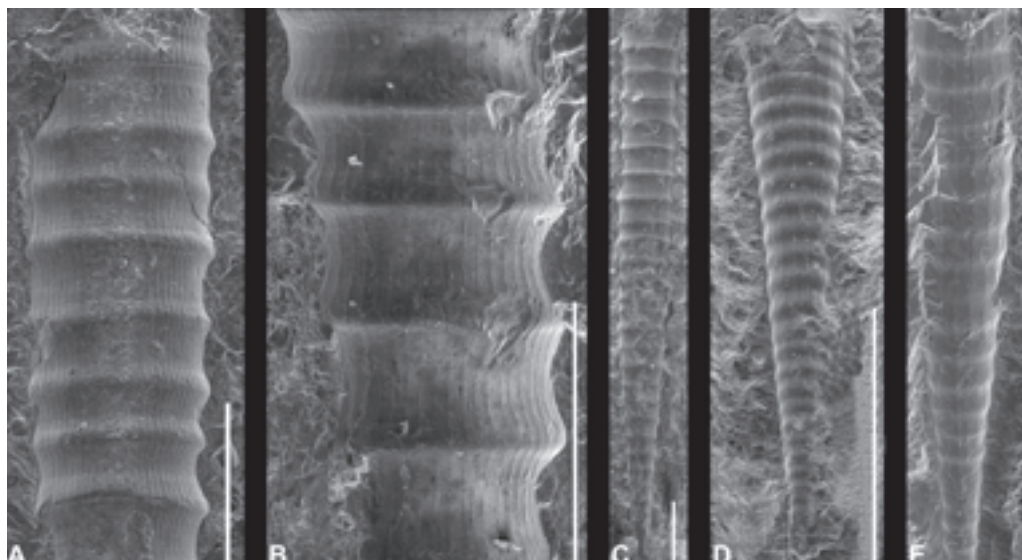


Fig. 6. A–C – *Nowakia* ex gr. *otomari* Bouček – Prantl, 1959, scale bar is 1 mm. A: Detail of the middle part of the tube with dense longitudinal ribbing, Acantopyge Limestone, Voskop Quarry. B – Detail of the middle part of the tube with scarce longitudinal ribbing, Acantopyge Limestone, Jiráskův Quarry. C – Shell of the incomplete specimen without initial chamber, Acantopyge Limestone, Voskop Quarry. D – *Viriatellina holochlidana* Schöne, 1996. Shell of the specimen with damaged apertural part, Acantopyge Limestone, Voskop Quarry, scale bar is 1 mm. E – *Viriatellina babaluae* sp. nov.; Holotype SB 1, incomplete specimen without apertural part, Acantopyge Limestone, Voskop Quarry, scale bar is 1 mm.

Family Styliolinidae Grabau – Shimer, 1910

Genus *Styliolina* Karpinskiy, 1884

Type species: *Styliolina nucleata* Karpinskiy, 1884

Styliolina ?*fissurella* Hall, 1845

Fig. 4 A

- n. v. 1843 *Tentaculites fissurella* n. sp.; Hall, p. 182, fig. 71/10.
 1882 *Styliola clavulus* Barr.; O. Novák, p. 59, pl. 13, figs 27–30.
 1942 *Styliolina clavulus* (Barrande); Prantl, p. 158–9, text. fig. 158.
 1952 *Styliolina clavulus* (Barrande); Prantl, p. 195.
 1962 *Styliolina clavulus* Barrande; Fisher, p. 166, fig. 55/2.
 1962 *Styliolina clavulus* (Barrande, 1852); Strnad – Barth, p. 116, fig. 55/2.
 1964 *Styliolina fissurella* (Hall 1843); Bouček, p. 127–128, pl. 31, figs 1–2, pl. 32, figs 3–9.
 1969 *Styliolina fissurella* (Hall, 1843); Lardeux, p. 159–160, pl. 48, figs 122, 133.
 1989 *Styliolina fissurella* (Hall, 1843); Ruan – Mu, pl. 23, figs 1, 2a, 3–6.

Lectotype: Chosen by Bouček (1964), p. 128, specimen figured by J. Hall on. pl. 31 A, fig. 13.

Type locality: North America, New York State, South of Alden.
 Type horizon: Genesee shales, Eifelian.

Material: 2 complete specimens from the Voskop Quarry, several fragments from the Voskop and Jiráskův quarries. In the Jiráskův Quarry species of this taxon are rare (beds 45 A–F), no species of this taxon were found in beds 45 G–L.

Description: Tube narrowly conical, straight or slightly curved at the proximal part of the tube. Shells are medium in size (the total length of a complete specimen is 4.2 mm). The width of the shell is 0.45 mm in the apertural part (W_A 0.45 mm; W_M 0.39 mm; W_{ICH} 0.21 mm). The apical angle is 6°. The surface of the shell is smooth. Fine longitudinal ribbing was observed under the

SEM (Fig. 4 A). The initial chamber is small, slender, not well differentiated from the rest of the tube.

Remarks: Due to the poor preservation of the shell, the assignment to species *S. fissurella* is uncertain. In general, the diagnostic features on shells of the genus *Styliolina* are very few, the initial chamber, the most important part, is rarely preserved.

Stratigraphical range: Middle Devonian, Eifelian–Givetian.

Geographical distribution: The species has been reported from the Czech Republic (Prague Basin, Barrandian area, Bouček, 1964); southwest Africa (Morocco – Algeria – Alberti, 1993), south China (Ruan – Mu, 1989), Australia and North America (Lütke, 1985).

Family Striatostyliolinidae Bouček, 1964

Diagnosis: Shells of medium size, straight or sometimes slightly curved. Initial chamber drop-like or conical. Shells longitudinally ribbed or grooved

Lukesia gen. nov.

Derivatio nominis: In honour of Pavel Lukeš, who has investigated especially the Early Devonian dacryoconarid tentaculites in the Barrandian area.

Type species: *Lukesia elixi* sp. nov., Middle Devonian, Eifelian.

Diagnosis: Conical shells of medium size (maximum observed length 4.2 mm). Transverse structures (TS) are very narrow and low, irregularly arranged. A characteristic feature of this genus is the presence of longitudinal grooves, which were observed only in the interspaces of TS (or the proximal parts of TS). The initial chamber is small, slender.

***Lukesia elixi* sp. nov.**

Figs 7, 8 A–D

Derivatio nominis: from Latin word “elix” – groove.**Holotype:** Specimen figured in Fig. 8 A. Deposited in the collections of the Czech Geological Survey SB 2.**Type locality:** Czech Republic, Barrandian area, Koněprusy area, VČS-East, the Voskop Quarry, neptunian dyke with partial filling of the Acanthopyge Limestone, eastern wall of the quarry.**Type horizon:** Acanthopyge Limestone, Eifelian.**Material:** 6 specimens from the Voskop Quarry, 1 specimen from the Jiráskův Quarry.

Diagnosis: Slender shells of medium size (average length 4 mm, width 0.4 mm). The apical angle is 6–8°. TS are narrow and low, irregularly arranged. Longitudinal grooves are present in the interspaces of TS. The initial chamber is small, slender.

Description: Medium-sized shells (maximum observed length 4.2 mm). Shell gradually widens to the maximum width of 0.4 mm (W_A 0.4 mm; W_M 0.35 mm; W_{ICH} 0.3 mm). Shell is slender, apical angle is 6–8°. Initial chamber (ICH) is small, slight, not well differentiated from the rest of the tube. The length of ICH is 0.15 mm, width 0.09 mm. TS are very low and narrow, resembling rather transversal projections. The setting of TS is irregular with a greater density of TS in the apertural part of



Fig. 7. *Lukesia elixi* gen. et sp. nov., drawing of reconstructed shell showing characteristic features (drawn by P. Lukeš), scale bar is 1 mm.

the tube (8 TS per 0.3 mm). Longitudinal structures developed as grooves observed in the interspaces of TS only (or distal parts of TS), 12 grooves on the semi-circumference. Longitudinal grooves were observed along the length of the tube (except ICH). Fine longitudinal ribs were also observed under the SEM, mainly in the distal part of the tube (Fig. 8 B, C).

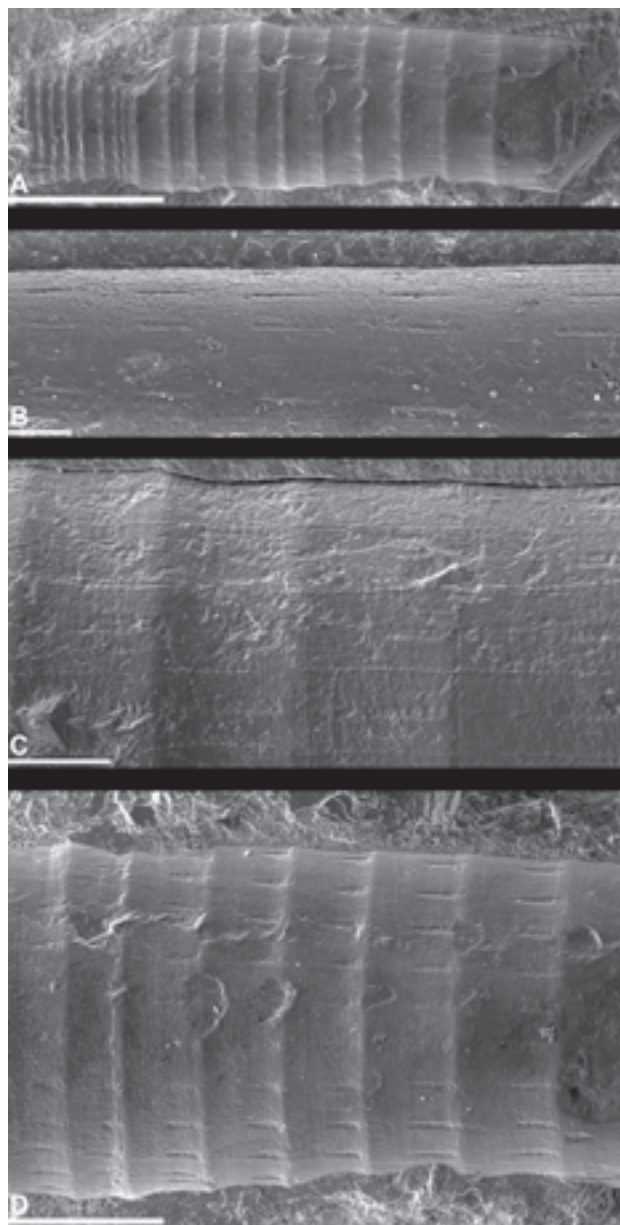


Fig. 8. A–D – *Lukesia elixi* gen. et sp. nov. A – Holotype SB 2, incomplete shell with well preserved apertural part and longitudinal grooves, Acanthopyge Limestone, Voskop Quarry, scale bar is 1 mm. B – detail of the proximal part of the tube with noticeable longitudinal ribs and grooves. Acanthopyge Limestone, Voskop Quarry, scale bar is 100 µm. C – Detail of the middle part of the shell with observable longitudinal ribbing (noticeable only with the SEM observation), Acanthopyge limestone, Voskop Quarry, scale bar is 100 µm. D – Detail of the distal part of the shell with observable longitudinal ribbing (noticeable only with the SEM observation), Acanthopyge limestone, Voskop Quarry, scale bar is 500 µm.

Relations: The main diagnostic feature of the described taxon – the longitudinal grooves – is also known at the genus *Distriatostylus* Lardeux, 1969; however, this genus differs from *Lukesia* in several respects. The main difference is that the grooves at *Distriatostylus* are not only longitudinal, but also transversal; moreover, the grooves run uninterruptedly along the whole tube length.

Stratigraphical range: Middle Devonian, Eifelian–?Givetian.

Geographical distribution: Czech Republic, Barrandian area, Koněprusy Devonian

Genus *Metastylolina* Bouček – Prantl, 1961

Type species: *Metastylolina striatissima* Bouček – Prantl, 1961

? *Metastylolina* sp.

Material: 1 incomplete specimen from the Voskop Quarry and one fragment from the Jiráskův Quarry (bed no. 45 A *sensu* Hladil – Kalvoda, 1993).

Description: The length of the fragment is 1.6 mm, aperture width is 0.45 mm. A very dense longitudinal ribbing (LR) was observed (16–18 LR on the semi-circumference).

Relations: The genus *Metastylolina* Bouček, 1964 differs from the genus *Striatostylolina* Bouček – Prantl, 1959 in its shape and size of the initial chamber, and especially in the higher density of LR distribution.

Order *Homoctenida* Bouček, 1964

Family *Homoctenidae* Lyashenko, 1955

Genus *Homoctenus* Lyashenko, 1955

Type species: *Homoctenus krestovnikovi* Lyashenko, 1955

Homoctenus sp.

Material: 1 incomplete specimen from the Voskop Quarry.

Description: The length of the fragment is 0.43 mm, width is 0.5 mm. The rings are narrow but prominent, regularly and closely distributed (19 TR in 0.43 mm). No longitudinal structures were observed.

Conclusions

Middle Devonian dacryoconarid fauna from the Koněprusy area was studied. So far, the tentaculitid studies have been concentrated mainly on the Early Devonian tentaculitids (Bouček, 1964, Lukeš, 1982a, b; 1991a, b). The present study reveals a presence of two new Middle Devonian species: *Viriatellina babaluae* sp. nov. and *Lukesia elixi* gen. et sp. nov. The species *Viriatellina holochlidana* Schöne, 1996 was found in the Prague Basin for the first time.

The following species were determined in the material studied:

1. The neptunian dyke infill, Voskop Quarry:

Nowakia ex gr. *otomari* Bouček, 1964 (very abundant)
Nowakia (*Cepanowakia*) *pumilio* Alberti, 1993 (abundant)

Viriatellina holochlidana Schöne, 1996 (rare)

Styliolina ? *fissurella* Hall, 1845 (very abundant)

Viriatellina babaluae sp. nov. (very abundant)

Lukesia elixi sp. nov. (abundant)

Metastylolina sp. (rare)

Stylionowakia sp. (rare)

Homoctenus sp. (rare)

2. “Upper dark interval”, Jiráskův Quarry:

Nowakia ex gr. *otomari* Bouček, 1964: beds 45 A–L (*sensu* Hladil – Kalvoda, 1993) (abundant)

Nowakia (*Cepanowakia*) *pumilio* Alberti, 1993: beds 45 A–L (rare)

Styliolina ? *fissurella* Hall, 1845: beds 45 A–F (rare)

Lukesia elixi sp. nov. (rare)

Metastylolina sp.: bed 45 A (rare)

This study clarifies the stratigraphic assignment of the neptunian dyke infill. Late Eifelian age of the studied material from the neptunian dyke is clearly evidenced by the presence of the tentaculite *Nowakia pumilio* Zone (this study) and the conodont faunas belonging to the *Polygnathus costatus costatus* Zone (Slavík pers. comm.). Similarly, Eifelian age was also documented in the Jiráskův Quarry by the presence of fauna belonging to the tentaculite *Nowakia pumilio* Zone (this study) and the conodont *Polygnathus costatus costatus* Zone (Hladil – Kalvoda, 1993).

The present study shows that the stratigraphical correlation of the Voskop Quarry material with the material from the “upper dark interval” in the Jiráskův Quarry is ambiguous, as has been already mentioned by Chlupáč (1996). According to Hladil – Kalvoda (1993) the “upper dark interval” represents a probable equivalent of the Kačák Shale. Their interpretation is mainly based on the presence of *Nowakia otomari*, conodonts of the *P. ensensis* Zone and corals of Givetian type. However, specimens of *N. otomari* from the Jiráskův Quarry differ in some morphological aspects from the specimens from the Voskop Quarry (see systematic part) as has been already mentioned by Hladil – Kalvoda (1993). On the other hand, Budil (1995) has found *N. otomari* in several other sections of the Prague Basin, always within the Kačák Shale. In contrast to that, Walliser (2000) and House (2002) stated the first occurrence of *N. otomari* below the mentioned interval. This makes the stratigraphical correlation of the “upper dark interval” in the Jiráskův Quarry with the neptunian dyke infill (Voskop Quarry) unclear.

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Tentaculitoidea z mladší výplně neptunické žíly v devonu koněpruské oblasti (střední devon, pražská pánev, Česká republika)

V práci je popsána tentakulitová fauna středního devonu z výplně nově odkryté neptunické žíly ve východní stěně lomu Voskop (Velkolom Čertovy schody). Jsou popsány 2 nové druhy *Viriattellina babaluae* sp. nov. (Nowakiidae) a *Lukesia elixi* gen. et sp. nov. (Striatostyliolinidae). Druh *Viriattellina holochlidana* Schöne, 1996 byl popsán z pražské pánve poprvé. Diskutována je též stratigrafická korelace se „svrchním tmavým intervalem“ v Jiráskově lomu, který je některými autory považován za možný ekvivalent kačáckých břidlic známých z jiných částí pražské pánve.

