

Organic-walled microfossils (Chitinozoa and Acritarcha) from Praha – Červený vrch Hill (Šárka Formation, Middle Ordovician, Prague Basin)

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Abstract. Moderately preserved early Middle Ordovician (Šárka Formation) organic-walled microfossils from the locality of Praha – Červený vrch Hill were studied and documented. The less diversified assemblage contains twelve morphotypes of acritarchs and five chitinozoan species, no cryptospores were detected. All the ascertained acritarchs and chitinozoans belong to taxa characteristic for the cold-water peri-Gondwanan localities.

Key words: Acritarcha, Chitinozoa, Middle Ordovician, Šárka Formation, Prague Basin, Barrandian

Introduction

Ordovician organic-walled microfossils of the Barrandian area have been recorded in a number of papers, however, only several localities and stratigraphic levels have been studied. Major part of these papers deal with Lower Ordovician acritarchs of the Klabava Formation (Vavrdová 1965–1999), but Upper Ordovician acritarchs have been also well documented by Vavrdová (1988, 1989). Compared to the older and younger Ordovician levels, Middle Ordovician organic-walled microfossils are poorly studied.

Previous studies

In the following chapter, publications dealing with organic-walled microfossils of the early Middle Ordovician Šárka Formation are discussed. The first report on the presence of moderately to poorly preserved acritarchs and chitinozoans from shales and pebbles of the Šárka Formation was published nearly six decades ago by Eisenack (1948) who studied five samples from the locality of Šárka in Praha-Vokovice; the provenance of two other Middle Ordovician samples is not exactly known. Other preliminary results were provided in a paper by Čorná (1970). She figured chitinozoans and acritarchs and documented also the occurrence of “tracheids, plant tissues, fragments of cuticles with stomata, and two triradiate spores”, all ascribed to remains of vascular plants. All these findings come from a stratigraphically unknown level of the Šárka Formation at the locality of Mýto. Later on, Vavrdová (1976, 1977, 1979, 1982, 1986, 1990a, b, 1995, 1999 and Sarjeant and Vavrdová 1997) published a series of papers on moderately to well preserved acritarchs from the Šárka Formation. Specific aspects on systematics of selected taxa were discussed by Brocke and Fatka (1993); Servais (1993); Brocke et al. (1995, 1998); Playford et al. (1995); Fatka et al. (1996, 1997a, b); Martin (1996); Servais et al. (1996); Ser-

vais and Fatka (1996a, b, 1997); Fatka and Brocke (1999) and Vecoli et al. (1999) – all being based on specimens coming from different localities of the Šárka Formation. Chitinozoans were shortly discussed by Paris and Mergl (1984) and mentioned by Fatka et al. (1996). The recent state of knowledge of Lower Palaeozoic organic-walled microfossils, including early Middle Ordovician chitinozoans, acritarchs and spores, has been briefly summarized by Fatka (1999).

Material and methods

All information on the Middle Ordovician organic-walled microfossils presented herein was obtained from samples of six localities distributed along the northwestern flank of the Prague Basin (Fig. 1). Published data on palynological assemblages of the Šárka Formation include the following items:

Acritarchs – 67 species (assigned to about 30 genera),

Cryptospores – no cryptospore specimens have been documented from the Šárka Formation, although at least four species of the supposed cryptospore genera *Virgataspores* Combaz 1967 and *Attritasporites* Combaz 1967 have been established in the underlying Klabava Formation (Vavrdová 1990a, b). The remains documented by Čorná (1970) are problematic due to possible contamination.

Chitinozoans – five taxa were reported by Paris and Mergl (1984) and Fatka et al. (1996).

Six samples of the Šárka Formation were taken from the documented excavation at the Červený vrch locality in Praha-Vokovice (Budil et al. 2003, this volume). They were processed using standard methods and subjected to palynological analyses for organic-walled microfossils in the micropalaeontological laboratory of the Czech Geological Survey, Prague. However, only one of the analysed samples contained determinable organic-walled microfossils (CV-Š2 in Fig. 1).

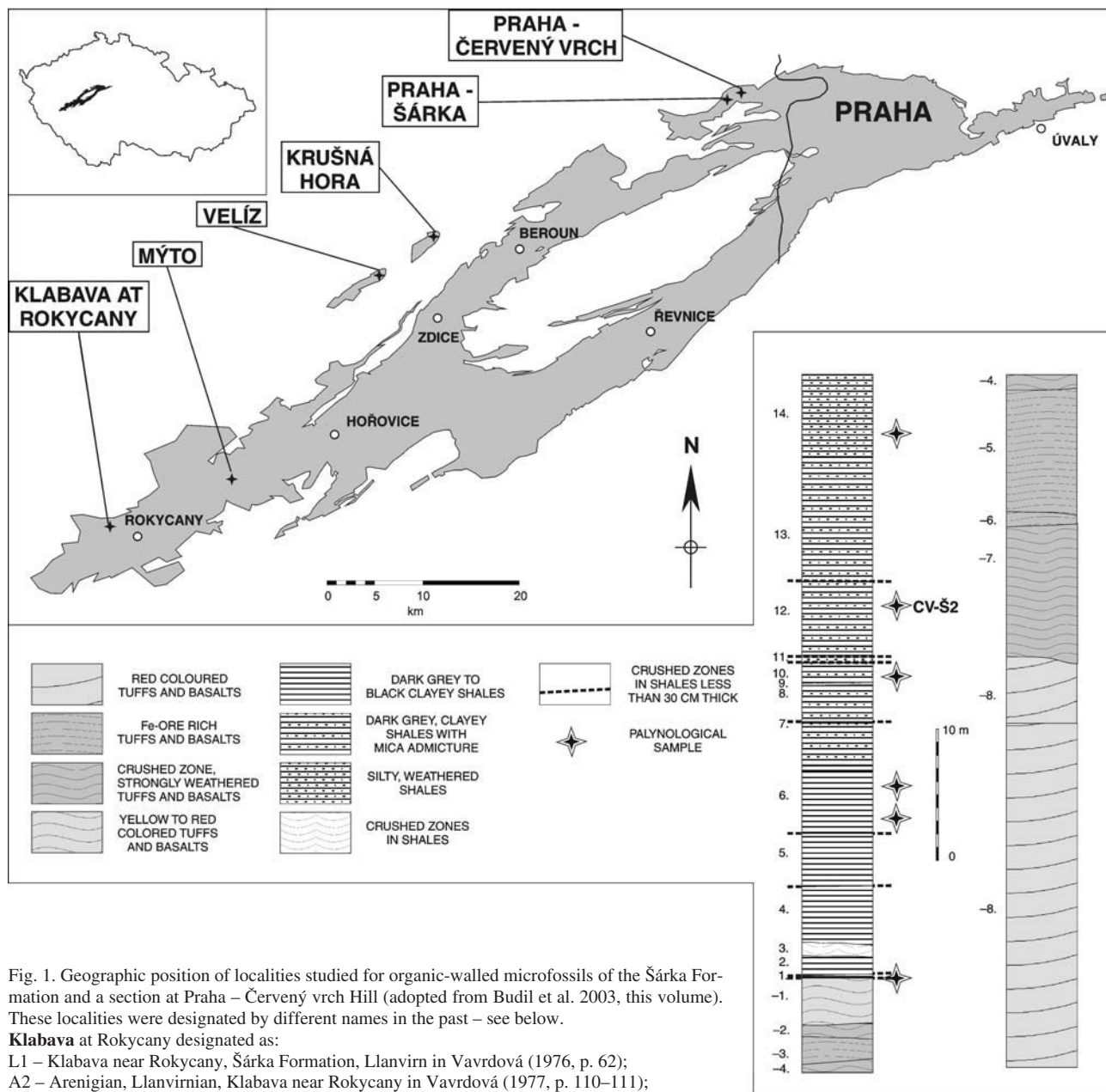


Fig. 1. Geographic position of localities studied for organic-walled microfossils of the Šárka Formation and a section at Praha – Červený vrch Hill (adopted from Budil et al. 2003, this volume). These localities were designated by different names in the past – see below.

Klabava at Rokycany designated as:

- L1 – Klabava near Rokycany, Šárka Formation, Llanvirn in Vavrdová (1976, p. 62);
- A2 – Arenigian, Llanvirnian, Klabava near Rokycany in Vavrdová (1977, p. 110–111);
- L1 – lower part of Llanvirnian, Klabava near Rokycany in Vavrdová (1977, p. 110–111);

L1 – lower part of Llanvirnian, Ejpvovice near Rokycany in Vavrdová (1982, p. 146); Ejpvovice near Plzeň, (10 km east of Plzeň) in Vavrdová (1999, p. 263);

Mýto designated as:

samples 529a, b Llanvirnian (Šárka Formation) locality of Mýto in Čorná (1970, p. 183);

Velíz designated as:

D. Krušná hora and Velíz near Beroun, refuse dump, Šárka Formation, Early Llanvirn, *Expansograptus ferrugineus* horizon in Vavrdová (1990, p. 238); Velíz – 8 km NW of Zdice in Vavrdová (1999, p. 263);

Krušná hora designated as:

- L3 – lower part of Llanvirnian, Krušná hora near Beroun in Vavrdová (1977, p. 110–111);
- Krušná hora u Berouna, Šárka Formation, lower part of Llanvirnian, *Expansograptus ferrugineus* horizon in Vavrdová (1979, p. 62–73);
- L2 – lower Llanvirnian, Krušná hora in Vavrdová (1982, p. 146);
- L3 – lower part of Llanvirnian, Krušná hora in Vavrdová (1982, p. 146); Krušná hora u Berouna, Šárka Formation, lower Llanvirn (*Expansograptus ferrugineus* hor.) in Vavrdová (1986, p. 351);
- Krušná hora u Berouna, Šárka Formation, *Expansograptus ferrugineus* hor., early Llanvirn in Vavrdová (1986, p. 353);
- D. Krušná hora and Velíz near Beroun, dump, Šárka Formation, Early Llanvirn, *Expansograptus ferrugineus* horizon in Vavrdová (1990a, p. 238);
- Krušná hora near Beroun, early Llanvirn, (Šárka Formation) in Vavrdová (1995, p. 367);
- Krušná hora – 8 km W of Beroun in Vavrdová (1999, p. 263);

Praha-Šárka designated as:

- Šárka (Scharka) Dyl in Eisenack (1948, p. 105);
- L2 – Šárka Prague-west, Šárka, Šárka Formation, Llanvirn in Vavrdová (1976, p. 62);
- L2 – Llanvirnian, Šárcké údolí, Prague in Vavrdová (1977, p. 110–111);

Praha – Červený vrch Hill, this paper.

Results

Systematic description of acritarchs

Genus *Aureotesta* Vavrdová 1972 emend. Brocke et al. 1998
Type species: *Aureotesta clathrata* Vavrdová 1972

Aureotesta clathrata var. *clathrata* Vavrdová 1972
Plate I, fig. 1

1998 *Aureotesta clathrata* var. *clathrata* Vavrdová 1972
Autonym; Brocke et al., p. 8–11, pl. 1, figs. J–M,
text-figs. 8, 9, 10 (with complete earlier synonymy).

Material: Two specimens.

Remarks: Central bodies of both studied specimens only with reticulum of fine filamentous outgrowths. This observation is in accordance to the morphology of the autonym variety as described by Brocke et al. (1998).

Genus *Baltisphaeridium* Eisenack 1958, emend. Eiserhardt 1989

Type species: *Baltisphaeridium longispinosum* (Eisenack 1931) Eisenack 1959.

Remarks on earlier records in Bohemia: Vavrdová (1965–1999) reported the presence of eight species of this genus in the underlying Lower Ordovician Klabava Formation; at least two species range to the Šárka Formation. Moreover, also one species of the genus *Baltisphaera* Burmann 1970 has been cited from the Šárka Formation (cf. Vavrdová 1976, 1977).

Baltisphaeridium spp.
Plate I, figs. 2, 3

Material: Five specimens.

Remarks: The five specimens observed could not be assigned to separate species. The specimen figured on Plate I, fig. 3 recalls the species *Baltisphaeridium klabavense* (Vavrdová 1965) Kjellström 1971, but the only two preserved processes combined with the large dimensions do not exclude its allocation to the genus *Baltisphaera* Burmann 1970.

Genus *Comasphaeridium* Staplin, Jansonius et Pocock 1965

Type species: *Micrhystridium cometes* Valensi 1949

Comasphaeridium sp. aff. *Comasphaeridium tonsum* Cramer et Diez 1977
Plate I, figs. 4, 5, 7

aff. 1977 *Comasphaeridium tonsum* n. sp.; Cramer and Diez, p. 345, pl. 2, fig. 1, text-fig. 3: 8.

Material: Five specimens.

Description: Thin-walled spherical vesicle with common fine, curved and tapered processes.

Dimensions: Diameter of central body ranges from 20 to 24 µm. Length of processes between 3 and 6 µm.

Remarks: Cramer and Diez (1977) erected three species of *Comasphaeridium* – *C. tonsum*, *C. pratulum* and *C. denseprocessum*, which come all from the supposed Arenigian sediments of Morocco. Two of them – *C. pratulum* and *C. denseprocessum* – were also recorded by Vavrdová (1990b) in a list of species established in the Klabava Formation (Arenigian) at the Mýto locality; however, the material has not been figured. A third species was mentioned and figured as *C. ?tonsum* by Fatka (1992, 1993) from lower levels of the Klabava Formation (Early Arenigian) at Svojkovice.

The figured specimens (Plate I, figs. 4, 5, 7) recall *C. tonsum*, but show smaller vesicle diameter and bear shorter processes.

Genus *Dicrodiacrodium* Burmann 1968 emend. Servais, Brocke et Fatka 1996

Type species: *Dicrodiacrodium ancoriforme* Burmann 1968, emend. Servais, Brocke et Fatka 1996

Dicrodiacrodium sp. cf. *D. ancoriforme* Burmann 1968, emend. Servais, Brocke et Fatka 1996
Plate I, fig. 8

cf. 1996 *Dicrodiacrodium ancoriforme* Burmann 1968; Servais et al., p. 392–402, pl. 1, text-figs. 1–5 (with complete earlier synonymy of *D. ancoriforme* Burmann 1968)

Material: One destroyed specimen.

Dimensions: Central body width 24 µm, preserved length about 33 µm. Apical process length 10 µm, terminally branched into 5 pinules up to 8 µm.

Description: The preserved specimen falls within the morphologic variability of *D. ancoriforme* as observed by Servais et al. (1996).

Remarks: The presence of the genus *Dicrodiacrodium* has been reported several times from Ordovician strata of the Prague Basin. Vavrdová (1990b, p. 241) reported *Dicrodiacrodium* aff. *fulcratum* Burmann 1968 from the upper part of the Klabava Formation (late Arenigian) at the Mýto locality, but no specimen of this species has been figured.

The occurrence of *Dicrodiacrodium normale* Burmann 1968 (synonymized with *Dicrodiacrodium ancoriforme* Burmann 1968 in 1996 by Servais et al.) has been documented six times from the Prague Basin:

- Klabava Formation (= Early to Late Arenigian – Vavrdová 1977, 1993, 1995),
- Šárka Formation (= Llanvirnian – Vavrdová 1976, 1977),
- Kosov Formation (= Late Ordovician – Vavrdová 1988, 1989, redeposited).

Genus *Ferromia* Vavrdová 1979, emend. Martin 1996

Type species: *Micrhystridium pellitum* Martin 1977

Ferromia sp. aff. *F. pellita* (Martin 1977) Martin 1996
Plate I, fig. 9

aff. 1996 *Ferromia pellita* (Martin 1977) comb. nov.;
Martin, p. 27–32, pl. 1, figs. 1–3, 5, 6, 9–12,
14–21, pl. 2, figs. 1–12.

Material: Two specimens.

Description: Central body spherical, circular to subcircular in outline, bearing 20 to 25 conical and hollow, irregularly distributed processes, and a densely spaced hair-like ornamentation.

Dimensions: Vesicle diameter 20–23 µm, length of processes 10–17 µm, length of the hair-like ornamentation less than 1 µm.

Remarks: In 1979, Vavrdová established the new genus *Ferromia* with its type species *Ferromia filosa* from the Šárka Formation (Llanvirnian) at Krušná hora Hill near Beroun. Martin (1996) synonymized four predescribed species (including *Ferromia filosa* Vavrdová 1979) with *Ferromia pellita* Martin 1977 as the type and the only remaining species of the genus. Martin (1996) documented the stratigraphic distribution of *F. pellita* from Tremadocian to Early Llanvirnian sediments in England, Belgium, France, and Bohemia; later on, this species was ascertained also from the Arenigian to Llanvirnian in China (Brocke et al. 2000).

The observed material shows a higher number of the main processes.

Genus *Leiosphaeridia* Eisenack 1958, emend. Downie et Sarjeant 1963, emend. Turner 1984

Type species: *Leiosphaeridia baltica* Eisenack 1958

Leiosphaeridia spp.

Plate I, figs. 10, 11

Material: Several tens of specimens.

Remarks: The observed specimens include thin-walled and thick-walled morphotypes ranging from 15 µm to more than 60 µm in diameter and are not attributed to separate species.

Genus *Micrhystridium* Deflandre 1937

Type species: *Micrhystridium inconspicuum* Deflandre 1937

Micrhystridium spp.

Plate I, figs. 6, 11, 13

Material: Four specimens.

Remarks: Altogether 13 species of the genus *Micrhystridium* have been documented from the Ordovician of the Prague Basin. Four species (*M. imitatum* Deflandre 1945, *M. nannacanthum* Deflandre, *Micrhystridium parinconspicuum* Deflandre 1945, *M. stellatum* Deflandre 1945) were mentioned by Vavrdová (1965) from the Upper Ordovician Bohdalec and Králův Dvůr formations (upper part of Caradocian – Ashgillian).

One year later, Vavrdová (1966) showed the presence of *M. malpeinadum* Cramer 1964 in the Upper Ordovician Bohdalec Formation. Seven taxa (*M. aff. acuum* Martin 1969, *M. fragile* Deflandre 1947, *M. inconspicuum* (Deflandre 1935) Deflandre et Sarjeant 1970, *M. nannacanthum* Deflandre, *M. parvispinum* Deflandre 1946, *M. stellatum* Deflandre 1945, and *Micrhystridium* sp.) have been discussed by Konzalová-Mazancová (1969) and Fatka (1990) from the Upper Ordovician (Ashgillian) sediments of the Králův dvůr Formation. The presence of *M. inconspicuum* (Defl.) and *M. stellatum* Defl. was cited by Vavrdová (1972) from the Klabava Formation, and later on Vavrdová (1977) mentioned the occurrence of *M. imitatum* Deflandre 1945 [as *Multiplicisphaeridium imitatum* (Defl.) Lister 1970] from the Klabava and Šárka formations (Arenigian and Llanvirnian) at several localities. Finally, the presence of three other taxa (*M. acuminosum* Cramer et Diez 1977, *M. coniferum* Downie 1982 and *M. shinetonense* Downie 1958) was reported by Vavrdová (1990b) in a list of species from the Klabava Formation at Mýto, however, with no figures.

The limited number combined with the moderate state of preservation of the observed specimens exclude their determination on species level.

Genus *Polygonium* Vavrdová 1966

Type species: *Polygonium gracile* Vavrdová 1966

Polygonium sp. aff. *P. gracile* Vavrdová 1966

aff. 1966 *Polygonium gracilis* n. sp.; Vavrdová, p. 413–414, pl. 1, fig. 3, pl. 3, fig. 1, text-figs. 3a, 4b.

Material: Nine specimens.

Remarks: The observed specimens well agree with the morphology described by Vavrdová (1965–1993)

Genus *Solisphaeridium* Staplin, Jansonius et Pocock 1965, emend. Sarjeant 1968

Type species: *Hystriosphæridium stimulierum* Deflandre 1938

Solisphaeridium sp.

Plate I, fig. 12

Material: Two specimens.

Dimensions: Vesicle diameter 35–42 µm, length of processes about 10 µm.

Remarks: Five taxa of the genus *Solisphaeridium* have been established in the underlying Klabava Formation of the Prague Basin. Vavrdová (1972) and Fatka (1992, 1993) documented the occurrence of *S. lucidum* (Deunff 1959) Turner 1985 (as *Baltisphaeridium* in Vavrdová). Two other species [*S. nanum* (Deflandre 1945) Turner 1984 and *S. solare* Cramer et Diez 1977] were determined by Fatka (1992, 1993), and *Solisphaeridium* sp. and *S. sp. A* were established by Vavrdová (1993) and

Fatka (1992), respectively. Due to the limited number of specimens the present specimens are left in open nomenclature.

Genus *Stelliferidium* Deunff, Gorka et Rauscher 1974

Type species: *Baltisphaeridium striatulum* Vavrdová 1966

Stelliferidium spp.

Plate I, figs. 14–16

Material: Nine specimens.

Remarks: Altogether nine taxa of genus *Stelliferidium* have been reported from the Ordovician of the Prague Basin: *Stelliferidium striatulum* (Vavrdová 1966) Deunff et al. 1974, *S. cortinulum* (Deunff 1961) Deunff et al. 1974, *S. furcatum* (Deunff 1961) Deunff et al. 1974, *S. philippotii* (Henry 1966) Deunff et al. 1974, *S. simplex* (Deunff 1961) Deunff et al. 1974, *S. stelligerum* (Gorka 1967) Deunff et al. 1974, *S. trifidum* (Rasul 1974) Fensome et al. 1990, *S. velatum* Vavrdová 1988.

However, the observed specimens show quite wide morphologic variability (length, thickness, number of processes, type of distal ramification) and are therefore not ascribed to any specific taxon.

Genus *Stephanodiacrodium* Vavrdová 1986

Type species: *Stephanodiacrodium stephanum* (Vavrdová 1976) Vavrdová 1986.

Stephanodiacrodium stephanum (Vavrdová 1976) Vavrdová 1986

Plate I, fig. 17

1986 *Stephanodiacrodium stephanum* (Vavrdová) comb. n.; Vavrdová, p. 349, tab. 1-I, text-fig. 1, pl. 1, fig. 1.

Material: One specimen.

Remarks: Vavrdová (1976, 1977, 1982, 1986, 1990a, b, 1993) reported the occurrence of this species both from the Klabava and Šárka formations. Morphology of the observed specimen agrees with the description of Vavrdová.

Genus *Veryhachium* Deunff 1954, emend. Downie et Sarjeant 1963, emend. Turner 1984

Type species: *Hystrichosphaeridium trisulcum* Deunff 1951

“*Veryhachium trispinosum*” group

Plate I, fig. 18

Material: Ten incomplete specimens.

Remarks: The size of central bodies ranges from 25 to 37 µm, the length of processes is 8–14 µm. Because of the unfavourable preservation, the attribution of two of the specimens to the genera *Arkonia* Burmann 1970 or *Frankea* Burmann 1970, emend. Servais 1993 cannot be excluded.

Remarks on chitinozoans

The following five chitinozoan species were ascertained in sample CV-Š2:

Sagenachitina oblonga (Benoit et Taugourdeau, 1961): (pl. 2, fig. 1). Material: Two specimens.

Cyathochitina campanulaeformis Eisenack, 1931. (pl. 2, fig. 2). Material: Two specimens.

Lagenochitina sp.: (pl. 2, fig. 3). Material: One specimen.

Belonechitina sp. cf. *B. micracantha* (Eisenack, 1931): (pl. 2, figs. 4–6, 8–10). Material: Over 100 specimens.

? *Velatachitina* sp.: (pl. 2, figs. 7, 11). Material: Two specimens.

Stratigraphic and palaeogeographic aspects

Acritarchs

Late Lower and early Middle Ordovician acritarchs have been documented from the tropical (warm-water) Australia, temperate Baltica and South China and also from the cold-water peri-Gondwana (Newfoundland, British Isles, Belgium, Germany, Bohemia, Spain, France, Italy, Jordan, and Iran) and Gondwana (Morocco, Algeria, Libya). Acritarch biostratigraphy has been established in several areas, e.g., in North Africa (Jardiné et al. 1974, Vecoli et al. 1999), Bohemia (Vavrdová 1993), South China (Brocke et al. 2000), Iran (Ghavidel 1997), Jordan (Keegan et al. 1990), and Britain (Molyneux 1990). In a comprehensive examination, Molyneux et al. (1996) documented a major change in the composition of cold-water acritarch assemblages near the Arenigian–Llanvirnian boundary, with an appearance of the genera *Arkonia*, *Dicrodiacrodium* and some distinct species of *Frankea*, *Striatotheca* and *Stellechinatum*. The studied acritarch assemblage shows an apparent absence of typical peri-Gondwanan genera of the upper part of Arenigian up to lower part of Llanvirnian (e.g., *Coryphidium* and *Striatotheca*), though it should be noted that the occurrence of several other typical taxa (e.g., *Arkonia* and *Frankea*) remains questionable. The studied acritarch assemblage is derived from weathered black shales and gives the impression of an impoverished assemblage by its composition. Such an assemblage can be explained by a taphonomic bias and/or by facies control resulting in a primarily depleted assemblage.

Vavrdová (1997) incorporated peri-Gondwanan localities within the *Coryphidium bohemicum* province and listed sixteen typical species. However, only two of them (*Aureotesta clathrata* and *Stephanodiacrodium stephanum*) were found in sample CV-Š2.

Chitinozoans

Paris (1981, 1990, 1996) defined two chitinozoan biozones for the upper part of Arenigian (*Belonechitina henryi*, *Desmochitina bulla*) and three for the lower part of Llanvirnian

of Northern Gondwana (*Cyathochitina* protocalix, *C. calix*, *Siphonochitina formosa*). None of the index species were found in the studied sample, but the presence of some taxa may serve as a stratigraphic indicator for some stratigraphic evaluation.

The genera *Sagenachitina* and *Velatachitina* are known to range from the middle part of Arenigian to the lower part of Llanvirnian (fig. 4 in Paris 1990). *Belonechitina micracantha* occurs for the first time in the B. henryi Biozone. Similarly, *Cyathochitina campanulaeformis* first appears also in the upper part of Arenigian (Soufiane and Achab 1993).

Both the respective acritarch and chitinozoan assemblages contain typical peri-Gondwanan taxa only.

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Plate I

Acritarchs from the locality of Červený vrch Hill.

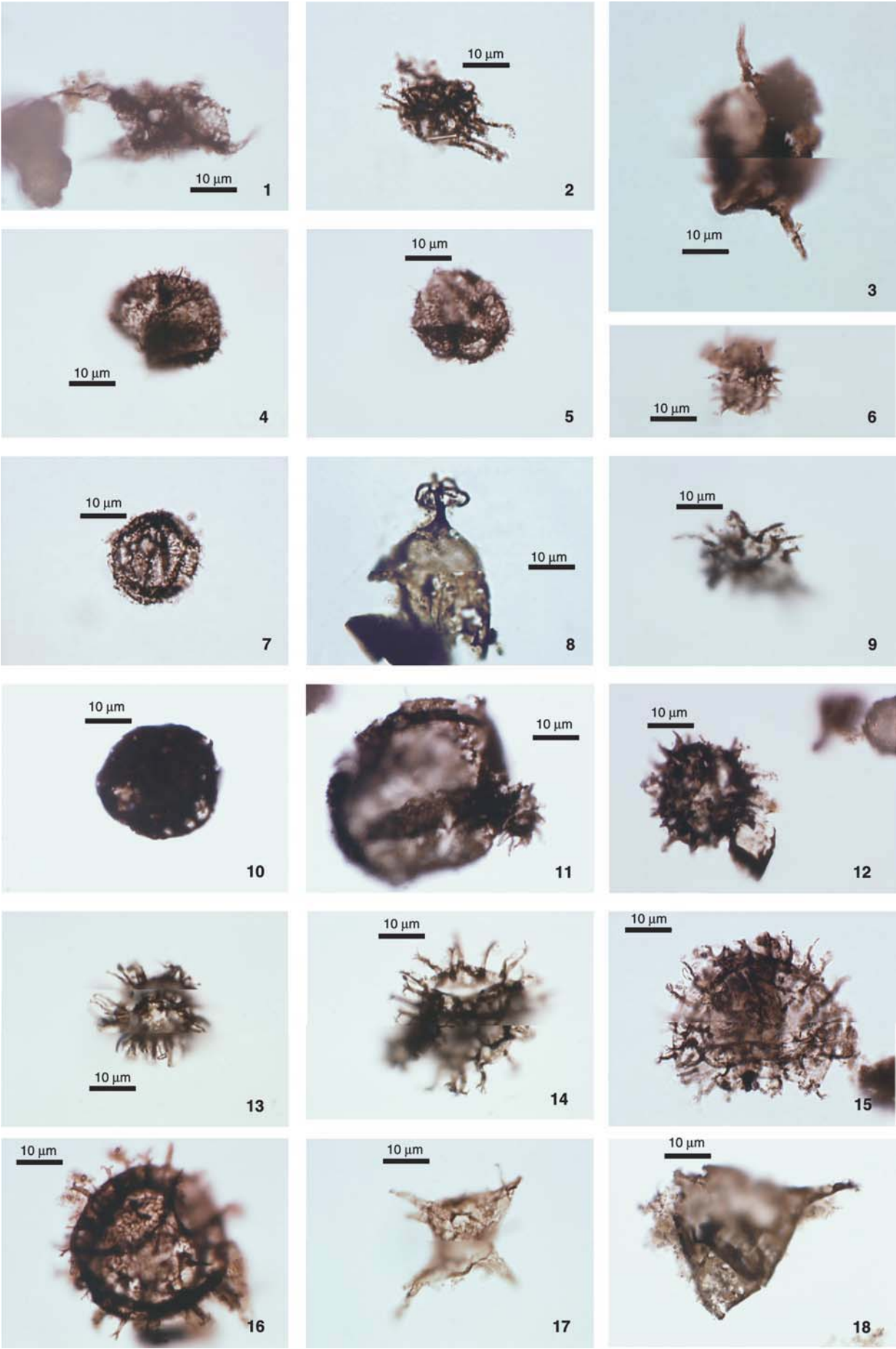
1 – *Aureotesta clathrata*, CV-Š2B, O47/1, 2 – *Baltisphaeridium* sp., CV-Š2B, 3 – *Baltisphaeridium* sp. cf. *B. klabavense* (Vavrdová 1965) Kjellström 1971, CV-Š2, 4 – *Comasphaeridium* sp. aff. *C. tonsum* Cramer et Diez 1977, CV-Š2B, O33/4, 5 – *Comasphaeridium* sp. aff. *C. tonsum* Cramer et Diez 1977, CV-Š2B, J43/1, 6 – *Michrhystridium* sp., CV-Š2B, S45/2, 7 – *Comasphaeridium* sp. aff. *C. tonsum* Cramer et Diez 1977, CV-Š2, 8 – *Dicrodiacrodium* sp. cf. *D. ancoriforme* Burmann 1968, emend. Servais, Brocke et Fatka 1996, CV-Š2, 9 – *Ferromia* sp. aff. *F. pellita* (Martin 1977) Martin 1996, CV-Š2B, L44, 10 – *Leiosphaeridia* sp., CV-Š2B, H45/4, 11 – *Michrhystridium* sp. + *Leiosphaeridia* sp., CV-Š2B, L35, 12 – *Solisphaeridium* sp., CV-Š2B, 13 – *Michrhystridium* sp., CV-Š2B, H41, 14 – *Stelliferidium* sp., CV-Š2B, 15 – *Stelliferidium* sp., CV-Š2, 16 – *Stelliferidium* sp., CV-Š2B, T43, 17 – *Stephanodiacrodium stephanum* (Vavrdová 1976) Vavrdová 1986, CV-Š2B, U53/2, 18 – “*Veryhachium trispinosum*” group, CV-Š2B.

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Plate II

Chitinozoans from the locality of Červený vrch Hill.

1 – *Sagenachitina oblonga* (Benoit et Taugourdeau, 1961), CV-Š2-Ch-X61, 2 – *Cyathochitina campanulaeformis* Eisenack, 1931, CV-Š2-Ch-S49, 3 – ?*Lagenochitina* sp., CV-Š2-Ch-X60, 4 – *Belonechitina* sp. cf. *B. micracantha* (Eisenack, 1931), CV-Š2-Ch-U66, 5 – *Belonechitina* sp. cf. *B. micracantha* (Eisenack, 1931), CV-Š2-Ch-S61, 6 – *Belonechitina* sp. cf. *B. micracantha* (Eisenack, 1931), CV-Š2-Ch-W55, 7 – ?*Velatachitina* sp., CV-Š2-Ch-S65, 8 – *Belonechitina* sp. cf. *B. micracantha* (Eisenack, 1931), CV-Š2-Ch-R56, 9 – *Belonechitina* sp. cf. *B. micracantha* (Eisenack, 1931), CV-Š2-Ch-Q53, 10 – *Belonechitina* sp. cf. *B. micracantha* (Eisenack, 1931), CV-Š2-Ch-R52, 11 – ?*Velatachitina* sp., CV-Š2-Ch-L65, 12 – *Conochitina* sp., CV-Š2-Ch-U61.



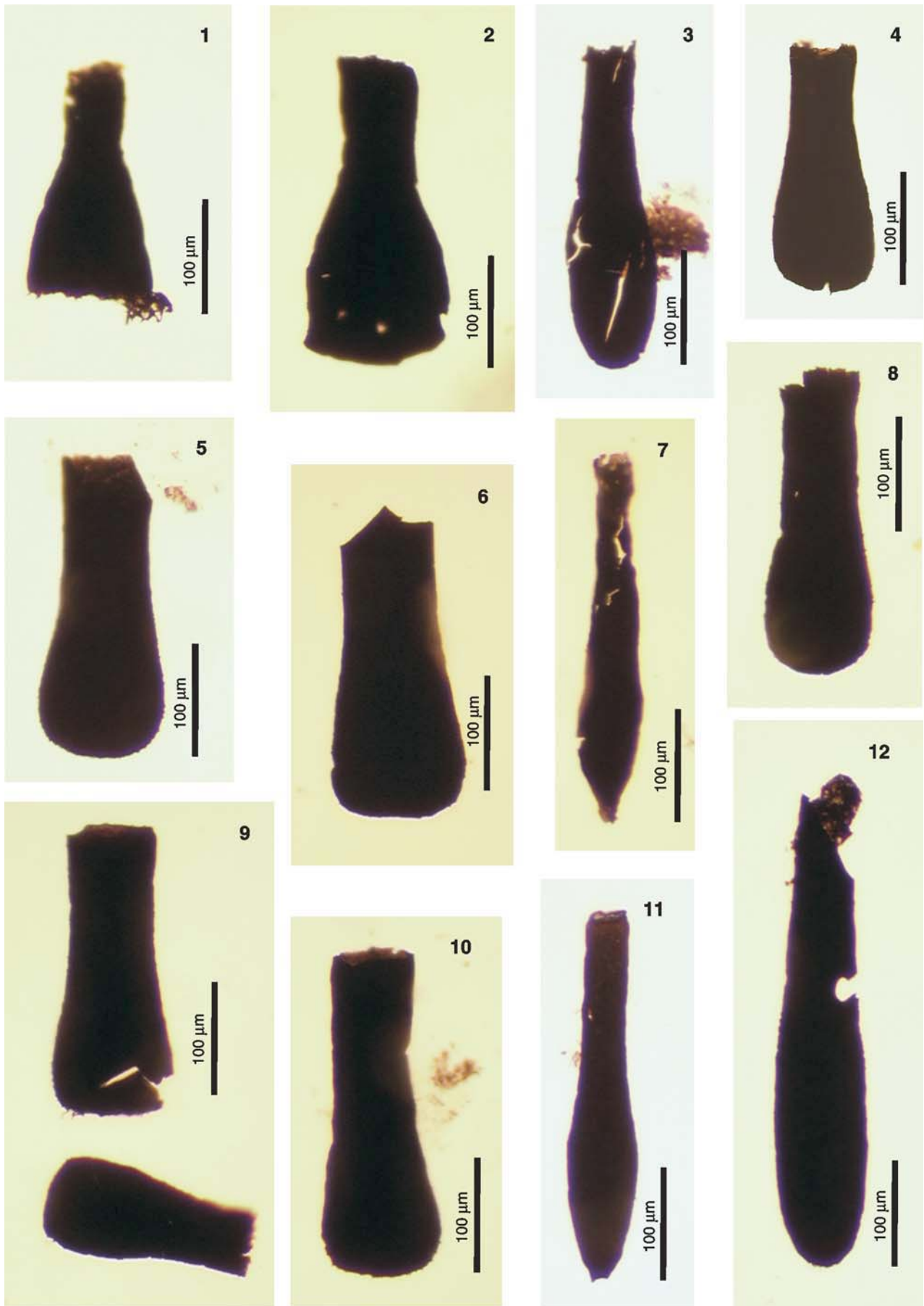


Plate II