*Bulletin of Geosciences, Vol. 78, No. 4, 447–457, 2003*
*© Czech Geological Survey, ISSN 1214-1119*

# Cherts of the Přídolí Formation and accompanying trace fossils (Pridoli, Silurian), Barrandian area, Czech Republic

*Radek Mikuláš [1] – Pavel Čáp [2] – Radvan J. Horný [3]*

[1] Academy of Sciences of the Czech Republic, Institute of Geology, Rozvojová 135, 165 00 Praha 6, Czech Republic. E-mail: mikulas@gli.cas.cz
[2] Charles University, Faculty of Science, Institute of Geology and Palaeontology, Albertov 6, 128 43 Praha 2, Czech Republic. E-mail: pcapm@natur.cuni.cz
[3] National Museum, Department of Palaeontology, Václavské náměstí 68, 115 79 Praha 1, Czech Republic. E-mail: radvan.horny@nm.cz

Abstract. In the area of the "Amerika" Anticline (central part of the Prague Basin, Barrandian area), bedded cherts are present in the upper part of the Přídolí Formation (uppermost Silurian). According to the study of thin sections, an ideal succession of lithification and diagenesis of these rock was as follows: 1. crystallization of cryptocrystalline quartz from gels, which were derived mostly from sponge spicules; 2. nearly contemporaneous appearance of quartz veinlets, 3. fine cracking of the lithified rocks, 4. healing of the cracks by calcite, 5. pressure-induced solution combined with the appearance of stylolite sutures, which consume calcite-filled cracks, 6. crystallization of dolomite along the sutures, 7. partial silicification of the dolomite rhombi, 8. crystallization of pyrite.
Relative hardness of the bottom and its composition (newly formed silica in the cement) might represent main ecologic stress for in-faunal benthic organisms that caused a development of a dense but monospecific (more correctly, "monoichnospecific") assemblage. The shaft-like structure, falling to the group of "plug-shaped" ichnofossils, is designated herein as *Pridolichnus pollex* igen. et isp. nov.

Key words: cherts, silicification, spiculites, trace fossils, Přídolí Formation, Silurian, Prague Basin

## Introduction

The Čížovec Quarry at Trněný Újezd, ca 18 km SW of the centre of Prague, represents a large but tectonically disrupted exposure of the uppermost Silurian and earliest Devonian strata. It is situated in the central part of the Prague Basin, which belongs to the Barrandian area (e.g., Chlupáč et al. 1998). In the middle of 1980s, R. J. Horný and V. Turek (National Museum, Prague) collected vertical tubular bodies resembling ichnofossils in cherts and carbonates in the southern wall of the quarry. Then, it was uncertain whether these rocks belong to the uppermost Silurian (Pridoli, Přídolí Formation *sensu* Prantl and Přibyl 1948) or to the lowermost Devonian (Lochkovian, Lochkov Formation). In 1999, the site was revisited by R. Horný, who initiated a more detailed field and laboratory research aimed at a description, quantity, occurrence and interpretation of the above-mentioned phenomenon. At the same time, the second author of the present paper started a detailed study of cherts of the Přídolí Formation, which also touched the problem of the presumed ichnofossils accompanying them (Čáp 2002). The aim of the present paper is to summarize the results of these studies.

## Geological settings of the area

The Přídolí Formation (Pridoli) is characterized by dark, platy biomicritic limestones with calcareous shale intercalations, with common laminated micritic limestones (e.g., Kříž 1998). Nodular cherts are very frequent in the overlying Devonian Lochkov Formation (e.g., Chlupáč 1998). The Přídolí Formation was known to yield lenses and beds of chert only in the abandoned gallery at Liščí Quarry (unpublished report by Horný and Chlupáč 1970) whereas the stratigraphic position of the occurrences of chert at Čížovec, known from the beginning of 1990s from personal communications by J. Kříž, R. Horný, V. Turek and others, was not precisely known due to the lack of index fossils until the present stage of research; recently, these beds were also convincingly placed to the Přídolí Formation due to the occurrence of the index brachiopod *Dayia bohemica* and cephalopod *Corbuloceras corbulatum*.

Both the above mentioned localities, i.e., the Liščí Quarry and Čížovec Quarry, belong to the central segment of the Silurian sedimentary area of the Barrandian (according to Kříž 1998); the distance between the localities is 4000 m (Fig. 1). In the area between the localities, the Přídolí Formation is not well exposed and was therefore not studied in detail. Horný and Chlupáč (1970) found intervals with cherts in the gallery at the Liščí Quarry, approximately 20 m below the base of the Devonian, i.e., in the middle part of the Přídolí Formation. Chert nodules and lenses in limestones occur in the first three metres of the cherts-bearing section; they are followed by a 2.6 m thick interval of mostly compact, bedded chert with carbonate nodules and intercalations. Another massive silicite bed (20 cm thick) occurs 2 m above the main chert interval; chert nodules and thin beds are present in the ambient limestone. The last occurrence of chert at the locality lies 10 m below the Silurian/Devonian boundary.

The geological setting in the Čížovec Quarry is complicated by complex tectonic deformation of strata. The interval dominated by chert is 2.6 m thick (i.e., same as at the previous locality; Fig. 2). Cherts of the Čížovec Quarry

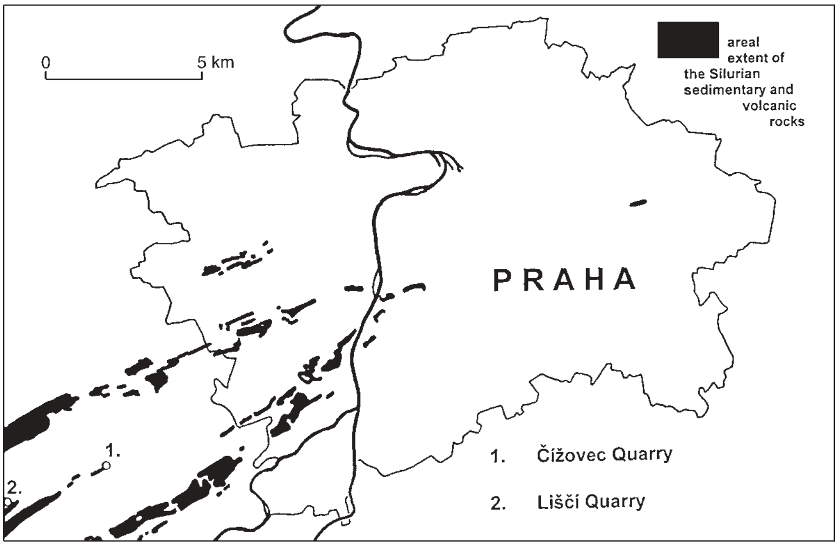


Fig. 1. Location map.

The Přídolí Formation is herein composed of micritic to fine-grained bioclastic limestones and dolomites, or by transitional members of the limestone – dolomite system. They locally contain also cherts, both nodular and bedded ones. Bedded (stratified and laminated) cherts are bound to transitional limestone-dolomite rocks. They yielded shaft-like structures interpreted as ichnofossils in the text below.

contain very frequently a biogenic structure that is described below in the "Systematic Ichnology". The locality of Liščí Quarry (Gaisler's Road) provided also this ichnofossil but only sparsely, in one thin chert bed. Recently, the third locality, which provided both bedded cherts and presumable ichnofossils adjacent to them, has been discovered in the so-called Diabase road close to the Pustý Quarry, 320 m S of the Liščí Quarry. It has not been studied in more detail yet but it helps to assess the distribution of the described ichnofabric feature.

## The localities

### Liščí Quarry – Gaisler's road

The locality lies 2 km NW of the Karlštejn Castle and 0.5 km SE of Mokrý Hill (elev. 421 m). The quarry has been opened in a limestone body of the Kopanina Formation, which were subject to quarrying from 1920s to 1960s. Limestones of the Kopanina Formation comprise several lithotypes varying in the amount of tuffite material, colour, proportion of bioclasts and their systematic classification (Kukal 1955b, Čáp 2002). The boundary between Kopanina and Přídolí formation is exposed in the so-called Gaisler's Road (subsurface gallery), which connects the Liščí Quarry with the Modlitebna Quarry, situated south of the Liščí Quarry, and with the "Woodcraft" Quarry lying ca 250 m N of the Liščí Quarry. A substantial part of the section in the Gaisler's road was described and figured by Horný and Chlupáč (1970). These authors found sediments of the Kopanina, Přídolí (Silurian) and Lochkov (Devonian) formations in the road cut. While the Kopanina / Přídolí formation boundary cannot be precisely determined in the section, the Přídolí / Lochkov formation boundary (i.e., the Silurian / Devonian boundary) is clearly marked by the occurrence of trilobites *Tetinia minuta* (Přibyl and Vaněk) and *Warburgella rugulosa* (Alth).

### Čížovec Quarry

The quarry is located on the SE margin of the village of Trněný Újezd (Fig. 1). Exploitation of limestones started in 1887 and continues only occasionally at present. A new quarry was founded ca 300 m S of the old quarry in the 20$^{th}$ century and now represents the main source of spoil in the Čížovec mining area.

The old quarry shows the axial part of the anticline (the so-called "Amerika" Anticline) formed by sedimentary rocks (chiefly limestones), Pridoli and Lochkovian in age. It means that the Silurian/Devonian boundary is included, but is only approximately positioned to an interval of ca 5 m of the succession of strata (cf. Plate I, fig. 1). The Přídolí Formation is represented by micritic to fine-grained bioclastic limestones and dolomites (or by transitional members of the limestone–dolomite system). Dark laminated cherts occur in the southern wall of the quarry, approximately in one-third of the wall width measured from the SW. The occurrence is a part of a tectonically isolated block of platy limestones and shales, limited by faults dipping NE at ca 45°, which provided rare but convincing finds of index fossils of the Přídolí Formation (*Corbuloceras corbulatum*, *Dayia bohemica*). A certain portion of the Přídolí Formation is characterized herein by the presence of cherts, both nodular and bedded. Also transitional members of the chert-dolomite succession occur.

Another occurrence of cherts is a slope north of a small lake in the deepest (SE) part of the quarry. Here, 10–20 cm thick beds of chert are present; they yielded few specimens of *Dayia bohemica*.

## The cherts

Silicification of limestones in the Barrandian area was studied, e.g., by Petránek (1951), Náprstek (1957), Kukal (1955a, 1955b, 1964), and Svoboda et al. (1957). According to Svoboda et al. (1957), two main types of silicification can be distinguished in the study area: 1 – silicification of bioclasts and coarse-grained calcite crystals. This process is characterized by the growth of authigenic quartz crystals. In some cases even idiomorphic quartz crystals can be formed this way. 2 – chert-forming silicification connected with spiculite formation.

In the Barrandian area, cherts occur typically in two forms: bedded and nodular. Differences between the two forms were given by Kukal (1964). According to this author, the bedded cherts form platy bodies, i.e., true beds showing a more-or-less stable thickness. The analyses showed that the bedded cherts, compared to the nodular ones, contain less $SiO_2$ and more $C_{org}$. $SiO_2$ contents usually decrease with increasing thickness of silicite strata. Stratified cherts show large amount of sponge spicules, therefore they may locally form spiculites. Besides quartz bioclasts, microcrystalline quartz forms a substantial part of the rocks, which points to the assumption that they were formed from silica gels. Kukal (1964) also ascertained primary lamination partly covered with secondary quartz-poor and quartz-rich laminae. The colour of the chert ranges from fuscous to black, which depends on the proportion of $Fe^{2+}$, $Fe^{3+}$, and bituminous substances. According to Petránek (1951), Náprstek (1957), Kukal (1955b, 1964) and Svoboda et al. (1957), the process of silicification of carbonates of the Barrandian area is early diagenetic, but some processes were in operation during the late diagenesis, too. Temporal relationships between dolomitization and silicification were not constant – any of the processes might have preceded the other one.

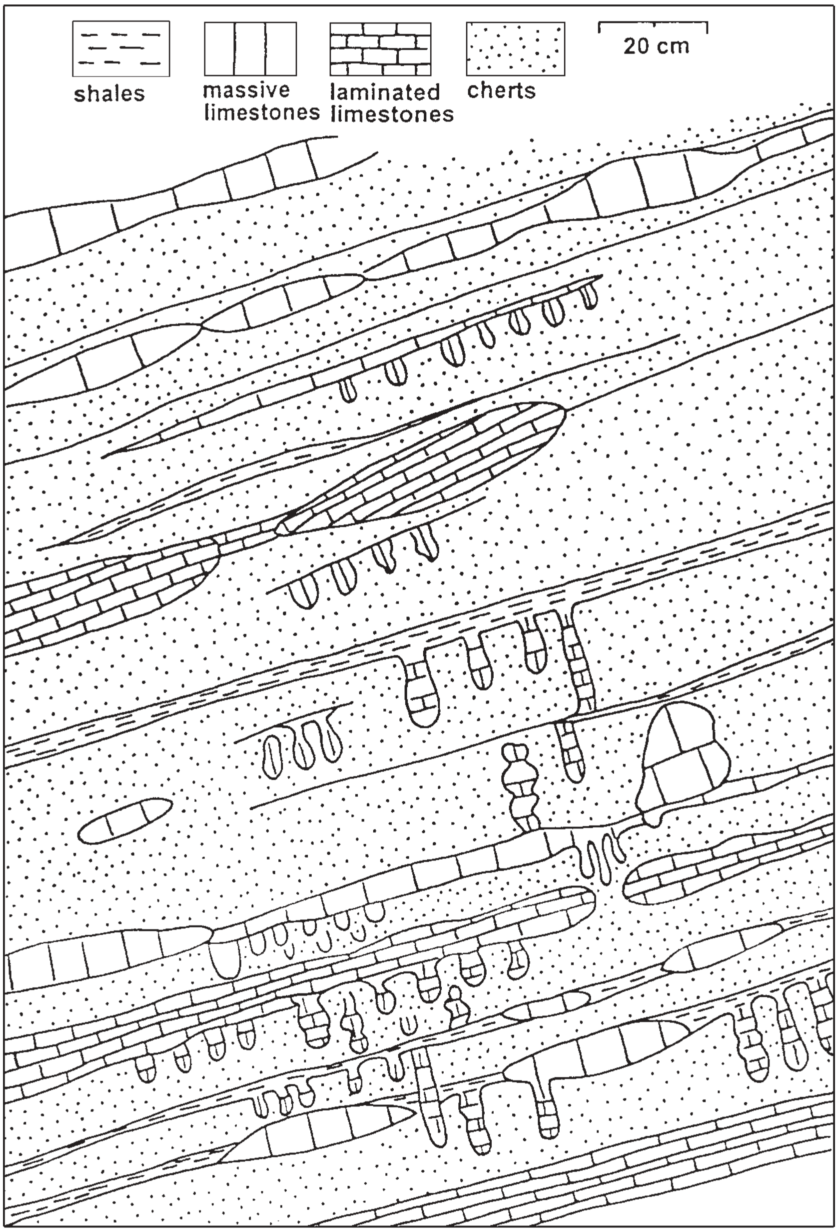


Fig. 2. A schematic drawing of the distribution of *Pridolichnus* in the SE part of the Čížovec Quarry and its relation to various lithotypes (cf. also Plate I, figs 2–3).

Description of the studied chert samples

Approximately one-half of the studied chert samples can be classified as spiculites because of the high content of sponge spicules. Also the remaining part of the samples has been presumably derived from spiculites; however, most of the spicules were destroyed by intensive dissolution of $SiO_2$. With the exception of one sample, the bedded cherts are thin-laminated, which is mostly caused by different contents of bituminous substance in different bed levels. The laminae mostly show diffuse boundaries. Neighbouring laminae may also differ in their contrast and preservation of discernible bioclasts, mainly spicules. Fragments of ostracodes have never been preserved in dark laminae.

The sample shown in Plate VI, fig. 2, shows dolomite rhombi instead of spicules; dolomite does not occur in pale laminae. This can be explained by primary enrichment of dark laminae in Mg ions. Some cherts are brecciated but even they preserve the original lamination in certain parts. Alternation of pale and dark laminae is mostly regular, rhythmic. Ostracode remains are occasionally present only in pale laminae, which may represent a record, though changed and incomplete, of seasonal variations of deposition of bioclasts.

We presume that the prevailing, i.e. microcrystalline form of quartz resulted from a crystallization of silica gels. These were derived from the deposition of large amount of quartz bioclasts (mainly spicules). Chalcedonic form of quartz can reasonably be explained by precipitation from the solutions passing through the rock, either before its lithification or after (as shown by stylolites and quartz-filled rhombi – originally dolomite crystals).

The identified bioclasts are represented only by sponge spicules and by ostracodes. The spicules are best recognizable in cross-sections; they show average diameter of 0.03 mm. Axial canals, which may be filled with pyrite crystals, are usually preserved. Longitudinal sections of spicules can be recognized much worse, and they often reach length of more than 1 mm. Ostracode shells, also more than 1 mm long, may be present in pale laminae; these are formed by carbonate or are silicified.

The presence of radiolarians is questionable. They may be spread among spicules and may not be recognized. Rocks designated as spiculites in the present paper seem to contain numerous siliceous spherules and therefore tend to resemble radiolarites. However, detailed observations (mainly in dark laminae which provide great contrast between bioclasts and matrix) allowed us to determine most of the "spheres" with certainty as transverse or oblique sections of sponge spicules.

Some of the samples enable us to reconstruct a reliable succession of the origin of individual structures. For example, sample A1 (Plate VI, fig. 2) shows dolomitic rhombi up to 0.2 mm long on a stylolite suture. These are much larger than those in the remaining part of the thin section; the smaller ones are partly silicified with chalcedonic quartz, keeping its idiomorphic shape. The sample shows also quartz veinlets and calcite-lined fissures. The calcite-filled fissures cut across the quartz veinlets; therefore, they are younger. To summarize, the succession of lithification and diagenesis was as follows: 1. crystallization of cryptocrystalline quartz from gels, 2. nearly contemporaneous appearance of quartz veinlets, 3. fine cracking of lithified rocks, 4. healing of the cracks by calcite, 5. pressure-induced solution joined with the appearance of stylolite sutures, which consume calcite-filled cracks, 6. crystallization of dolomite along the sutures, 7. partial silicification of the dolomite rhombi, 8. crystallization of pyrite (which is often regularly spread in the rock and shows no vitiation of idiomorphy). Besides sample A1, no thin section showed such a completely decipherable succession, but partial stages are commonly preserved and observable. It should be noted that the calcite-filled cracks have been explained already by Petránek (1951) by dehydratation of silica gel.

A set of thin sections was made to characterize the rocks occurring in a close neighbourhood of bedded cherts. The neighbouring rocks can be characterized as fine- to coarse-grained bioclastic limestones and microcrystalline dolomites. The limestones contain fine organic detritus, mostly fragments of crinoids and ostracodes; they show features of dolomitization and silicification. Crinoid biodetritus is clearly abraded. Micrite is usually replaced by sparite to form distinctive clusters. Such clusters occur also in pale laminae of the bedded cherts; in these cases, the original rock was probably a bioclastic limestone that was changed into chert. Dolomites can pass gradually into limestones but sometimes they are sharply separated by sutures; therefore, the two rocks might be brought together by pressure. Certain dolomites are rich in clays and/or organic matter. Idiomorphic dolomite rhombi are up to 0.2 mm long. Numerous transitions between dolomites and limestones, as well as between limestones and silicites, have been ascertained.

The presence of structures interpreted as ichnofossils in this paper is one of the notable features of the bedded cherts and accompanying rocks. The boundary of the presumable biogenic structure and surrounding spiculite is shown in Plate VI, fig. 4. Laminated spiculite is penetrated by a shaft (probably a burrow) perpendicular to laminae. The fill of the burrow is dolomitic. Dolomite rhombi show a zoned structure in this case, which may result from late diagenetic growth. The boundary between dolomite and spiculite, i.e. the shaft wall, is sharp except for the uppermost part. Close to the boundary, the chert laminae are moderately bent downwards. In places, the boundary is augmented by a silica lamina without (otherwise frequent) sponge spicules. This lamina might have resulted from a mucus layer of the former burrow.

## Systematic ichnology

*Pridolichnus* n. igen.

Derivation of name: After Pridoli, the name of the uppermost Silurian series derived from a local name of Přídolí in Prague.

Type ichnospecies: *Pridolichnus pollex* n. isp.

Diagnosis: Simple, large, vertical finger-like shafts, showing no wall lining; walls smooth or with irregular constrictions; average diameter/depth ratio is 1/5.

Relations and remarks: The trace shows close relationship to the group of "plug-shaped ichnofossils" as defined and revised by Pemberton et al. (1988). However, they differ from *Bergaueria* Prantl, 1945 by much deeper shafts. They also differ from *Conichnus* Myanill 1843, as none of the observed specimens is conical. The traces are too large and too shallow to be considered "simple vertical shafts" and thereby treated as *Skolithos* Haldeman, 1840.

*Pridolichnus pollex* n. isp.
Plates I–IV; fig. 2

Holotype: Specimen figured in Plate IV, fig. 2 (arrowed), housed in the National Museum in Prague, Inv. No. L 37501.

Derivation of name: From Latin: *pollex* = thumb.

Type horizon: Silurian, Pridoli, the Přídolí Formation.

Type locality: Čížovec Quarry at Trněný Újezd, a slope north of a small lake in the deepest (SE) part of the quarry, Barrandian area, Czech Republic.

Material: Approximately 200 specimens collected on 30 rock samples from the locality of Čížovec Quarry, hundreds of additional specimens observed *in situ* at Čížovec Quarry, five specimens observed and two collected in the gallery at the Liščí Quarry.

Description: Simple, large, vertical finger-like shafts, 10–30 mm in diameter and 10–100 mm in depth, showing no wall lining, walls smooth or with irregular constrictions, average diameter/depth ratio is 1/5. They occur exclusively in chert intervals. They are usually filled with carbonate mass corresponding to that of the overlying bed. They may occur solitarily but much more often, they are densely crowded, occupying 1/4 to 3/4 of the rock volume. Specimens of one bed are usually (but not always) equally deep but they usually show some variations in diameter.

Remarks: We interpret the shafts as biogenic structures; however, their present morphology is more or less strongly affected by early diagenetic processes. Carbonates intercalating the cherts tend to form nodules of variable size (centimetres to tens of centimetres). Both the openings of shafts and their inner parts clearly functioned as chemical inhomogeneities that initiated nodule formation during the early diagenetic stage. At some places, the chemical process must have been very strong, with the nodules also affecting the former structure of cherts (usually well recognizable by lamination); cf. Plate IV, fig. 1.

If all the presumed diagenetic features are taken into consideration, we may expect the original morphology of the traces to be as stated above, i.e. simple finger-like shafts with no wall lining and no active fill. Such traces (i.e. the above mentioned plug-shaped traces, *Bergaueria* and *Conichnus*) are interpreted as domichnia, i.e. permanent dwelling burrows of invertebrates.

## Discussion and conclusions

The cherts of the Přídolí Formation are developed probably in the whole area of the "Amerika" Anticline, as they are exposed in all three outcrops in the uppermost part of the formation in the area. They bear traces of unusual behaviour of benthic in-fauna. We may expect a relatively rapid hardening of the bottom by silica and/or carbonate solutions and gels as the substrate is in some places bioturbated so strongly that unconsolidated mud would not keep the given shape. The relative hardness of the bottom and its composition (newly formed silica oxide in the cement) might represent main ecological stress that caused the development of monospecific (more correctly, "monoichnospecific") assemblage. The whole benthic environment occupied the area of about several dozens square kilometres during the Late Silurian. The burrows can be used to show the degree of silicification during the earliest phases of the diagenesis when the substrate was not fully lithified. In subsequent phases, the burrows functioned as chemical inhomogeneities which participated in the complex interplay between silicification, dolomitization, and carbonate precipitation.

Acknowledgements. We thank the late Ivo Chlupáč (Charles University, Prague, Faculty of Science, Institute of Geology and Palaeontology) for his help during the fieldwork, providing biostratigraphic data, leadership of the master thesis of Pavel Čáp, and reading the early draft. We thank Zdeněk Kukal (Czech Geological Survey, Prague) for valuable comments to the topic and for his comments to the early draft of the paper. We are also obliged to Josef Brožek (Praha) for guidance in underground objects of the studied area, and for photographic documentation of subsurface outcrops. The study is a part of the research plan of the Institute of Geology, AS CR, Praha (No. CEZ: CZK-Z3 013 912). Problems related to the silicification processes are relevant to the grant project No. A3013302 of the Grant Agency of the Academy of Sciences CR.

*References*

Chlupáč I. (1998): Devonian. In: Chlupáč I. et al. (ed.) Palaeozoic of the Barrandian (Cambrian to Devonian). Czech Geological Survey, Prague, pp. 101–133.

Chlupáč I., Havlíček V., Kříž J., Kukal Z., Štorch P. (1998): Palaeozoic of the Barrandian (Cambrian to Devonian). Czech Geological Survey, Prague.

Čáp P. (2002): Přídolské vrstevnaté rohovce. In: Čáp P.: Mikrofacie hraničního intervalu silurských oddělení ludlow–přídolí na vybraných profilech v Barrandienu. MSc. Thesis. Report, Faculty of Science, Charles University, Prague, pp. 48–53.

Horný R., Chlupáč I. (1970): Geologický profil při hranici silur-devon v Geislerově štole u Karlštejna. Report, Faculty of Science, Charles University, Prague.

Kříž J. (1998): Silurian. In: Chlupáč I. et al. (ed.) Palaeozoic of the Barrandian (Cambrian to Devonian). Czech Geological Survey, Prague, pp. 79–101.

Kukal Z. (1955a): A petrographical investigation of the Kopanina Beds eB1 in the western part of the Barrandian (English summary). Univ. Carol., Geol. 1, 1, 71–110.

Kukal Z. (1955b): Investigation of the Silurian dolomite limestones at Velká Mořina (English summary). Sbor. Ústř. Úst. geol., Odd. geol. 21, 2, 225–251.

Kukal Z. (1964): Lithology of carbonate formations of the Barrandian. Sbor. geol. Věd, Geol. 6, 123–165 (In Czech with English summary).

Náprstek V. (1957): Několik poznámek k lithofaciálnímu vývoji spodního devonu v Barrandienu. Univ. Carol., Geol. 3, 1, 61–94.

Pemberton S. G., Frey R. W., Bromley R. G. (1988): The ichnotaxonomy of *Conostichus* and other plug-shaped ichnofossils. Canad. J. Earth Sci. 25, 866–892.

Petránek J. (1951): Nové poznatky o některých otázkách sedimentace a diageneze devonských vrstev u Prahy. Věst. Král. čes. Společ. Nauk, Tř. mat.-přírodověd. 11, 1–13.

Prantl F., Přibyl A. (1948): Revision of the Bohemian Silurian Eurypterida. Rozpr. St. geol. Úst. Čs. Republ. 10, 1–116.

Svoboda J., Prantl F., Kukal Z. (1957): Hochwertige Kalksteine des Barrandiens. Geotechnica 23, Praha, 1–132 (In Czech with German summary).

*Handling editor: Zdeněk Kukal*

Explanation of plates

The collected material is housed in the National Museum in Prague, Inv. Nos L 37501–L 37504. *Photos by Radek Mikuláš (Plate I–IV) and Pavel Čáp (Plate V–VI).*

Plate I →

1 – a view of the western wall of the Čížovec Quarry, showing the axis of the "Amerika" Anticline and tectonic deformation of strata. Approximate course of the Silurian/Devonian boundary is marked by the interrupted line; 2 – southern wall of the Čížovec quarry showing the bedded cherts of the Přídolí Formation and accompanying rocks (limestones, dolomites and transitional members). Burrows of *Pridolichnus pollex* igen. et isp. nov. are well visible in the cherts. Scale = 2 m; 3 – *Pridolichnus pollex* igen. et isp. nov.; field photograph, Přídolí Formation, southern wall of the Čížovec Quarry.

Plate II → →

1–4 – *Pridolichnus pollex* igen. et isp. nov.; Přídolí Formation, Čížovec Quarry. 1, 3 – a slab of carbonate-rich chert from the slope north of a small lake in the deepest (SE) part of the quarry, bearing several dozens of specimens of *P. pollex*. Holotype is arrowed. Inv. No. L 37501. 2 – Field photograph, southern wall of the Čížovec Quarry. Rare oblique burrows of *P. pollex*. 4 – Field photograph, southern wall of the Čížovec Quarry. Diagenetic changes of the rock led to changes in the size and shape of the burrows.

1

2

3

Plate I

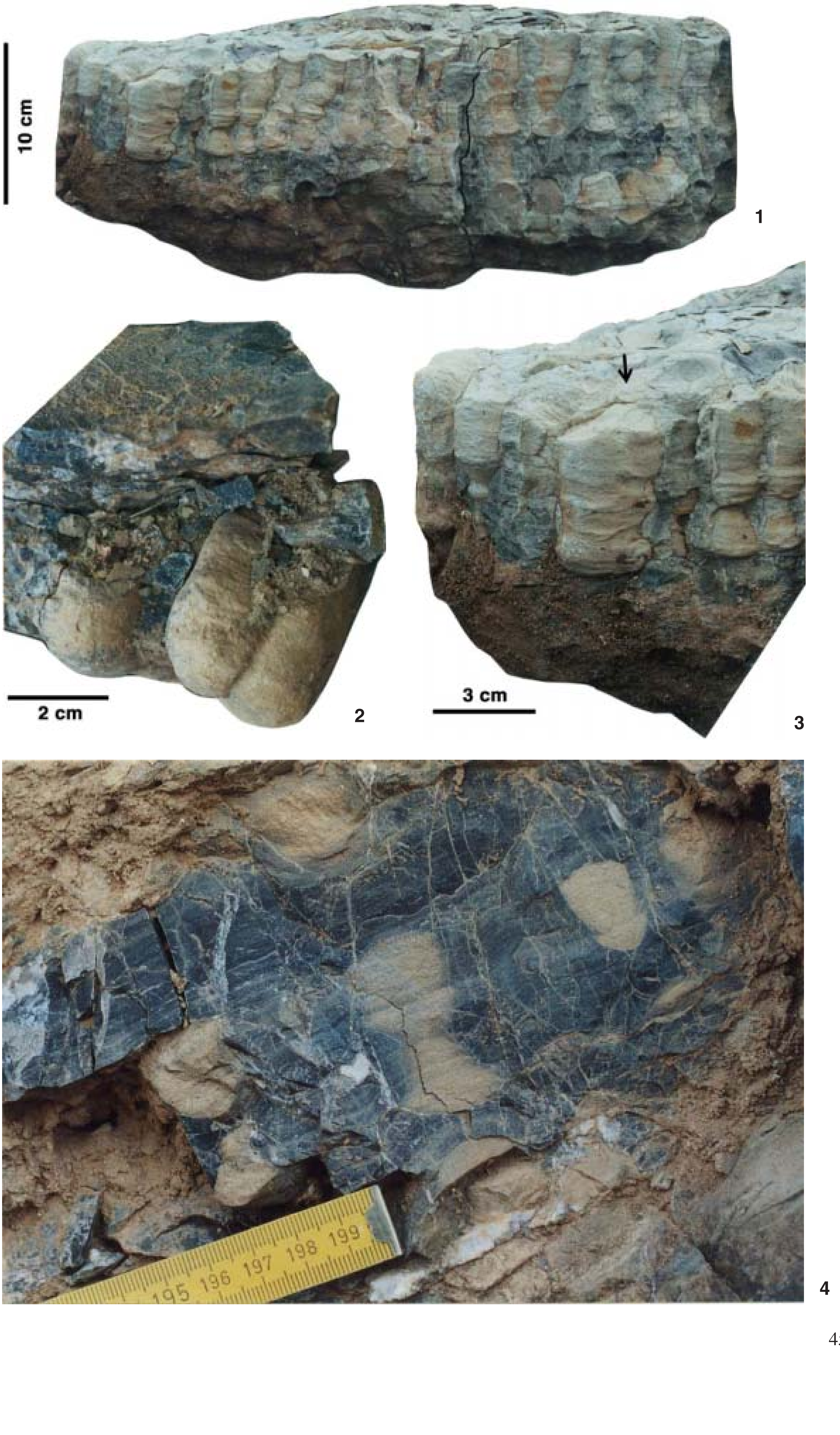


Plate II

Plate III
1–3 – *Pridolichnus pollex* igen. et isp. nov. Přídolí Formation, field photographs, southern wall of the Čížovec Quarry. 1 – openings of the burrows on upper bedding plane of a carbonate-rich chert bed. 2, 3 – constrictions of shafts of the burrows. The constrictions (annulation) are probably primary from certain part but they might be formed or augmented by diagenetic processes in many cases.

1

2

Plate IV
1–2 – *Pridolichnus pollex* igen. et isp. nov. Přídolí Formation, field photographs, slope north of a small lake in the deepest (SE) part of the Čížovec Quarry. 1 – cabonate-rich chert showing strongly modified burrows and diagenetic limestone-dolomite nodules. Degree of modification usually increases with the amount of carbonate in the host rock. 2 – field photograph of the slab with the holotype (found in debris).

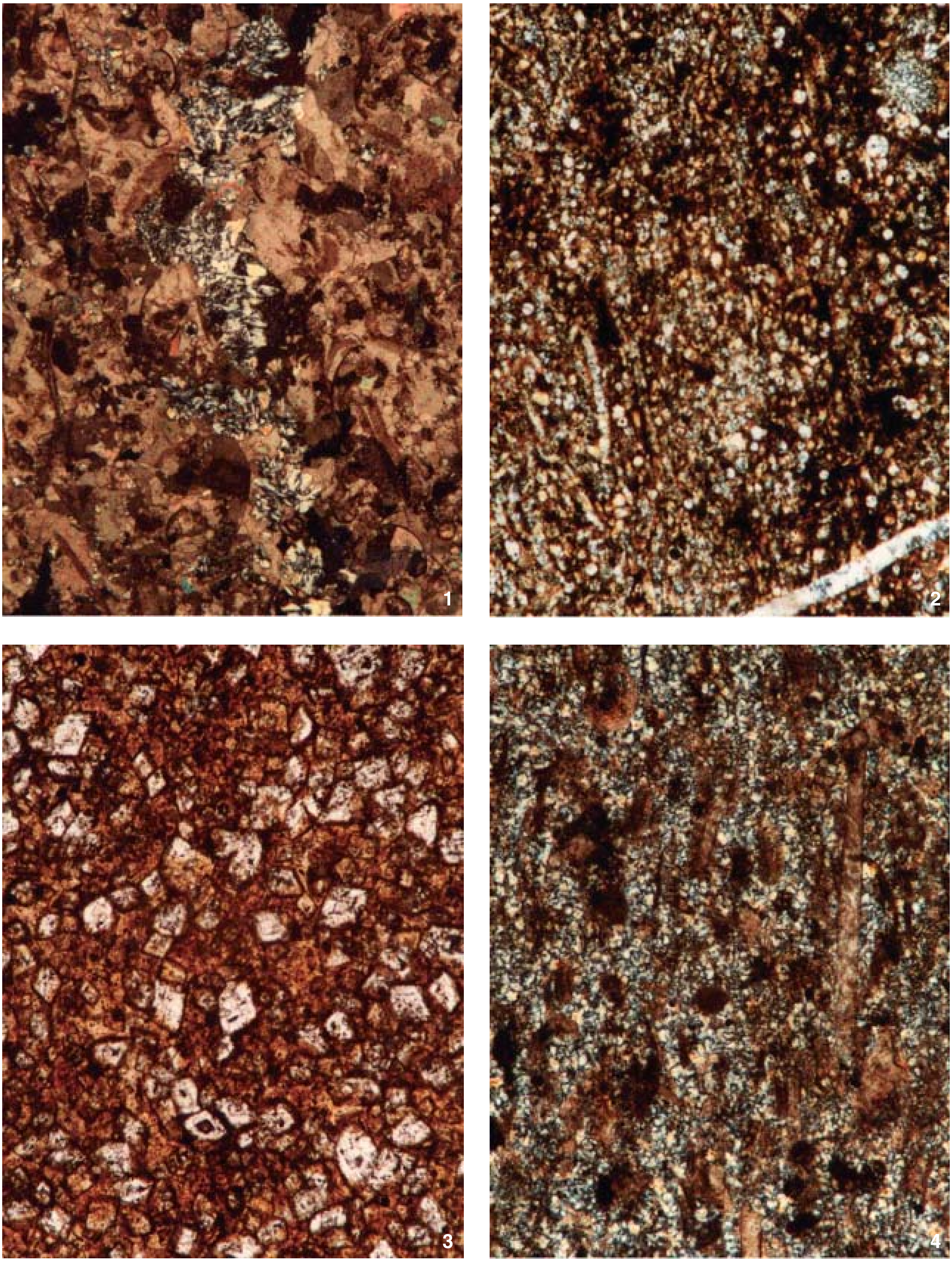

Plate V
Thin sections of rocks from the upper part of the Přídolí Formation. 1, 4 – Gaisler's Road near the Liščí Quarry: 1 – sample 39, silicified limestone, × 31; 4 – sample 41b, bedded chert, × 79. 2–3 – Čížovec Quarry; 2 – sample A2, spiculite, × 79; 3 – sample A2, dolomite, × 79.

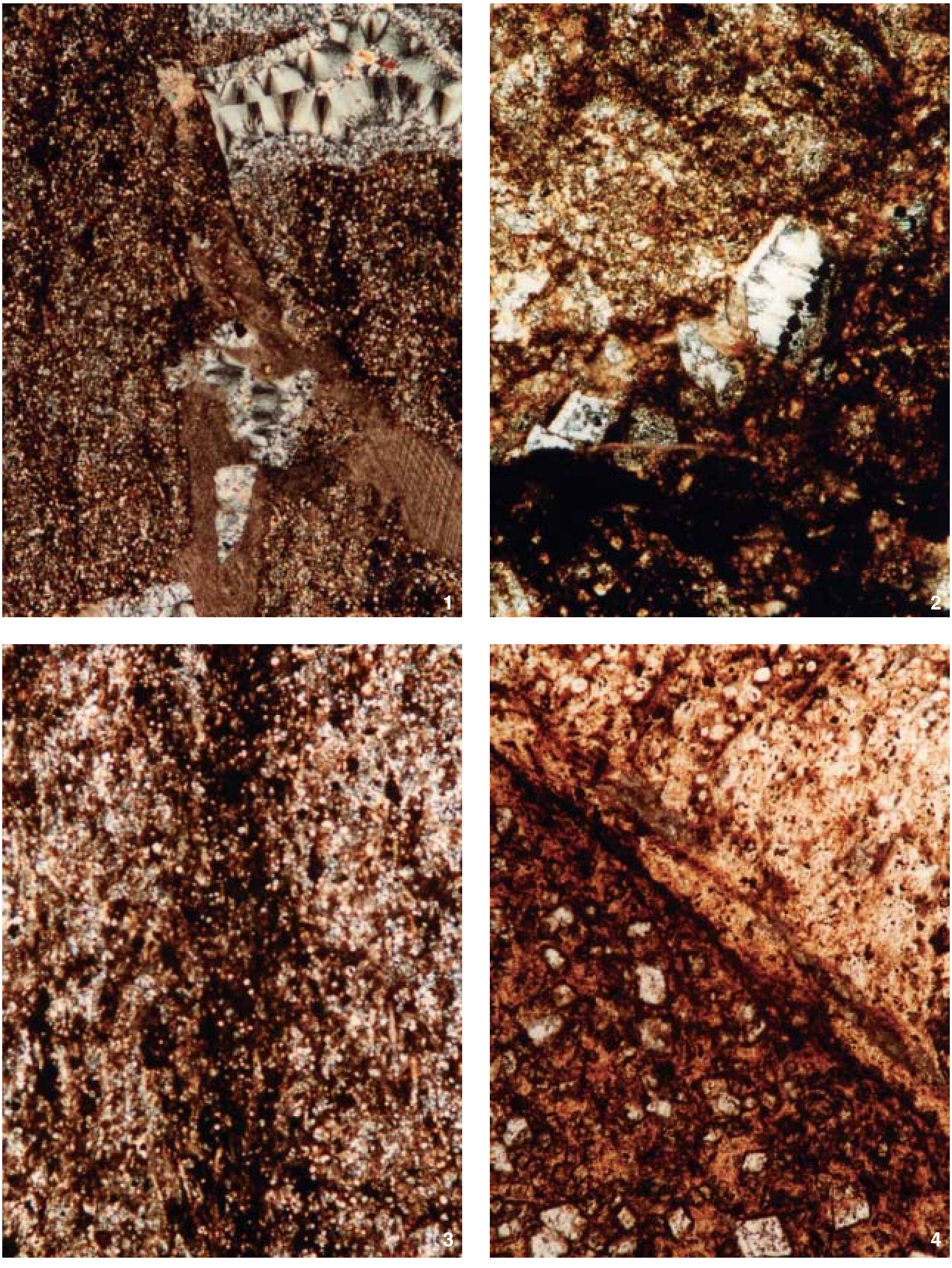


Plate VI
Thin sections of rocks from the upper part of the Přídolí Formation, Čížovec Quarry. 1 – sample A2, quartz veinlet, calcite crystals and bioclasts (ostracodes), × 31; 2 – sample A1, stylolite with silicified dolomite rhombi, × 79; 3 – sample B2, laminated spiculite, × 31; 4 – sample A2, laminated spiculite (top right) forming the host rock of a burrow and dolomite that represents fill of the burrow (bottom left). A non-laminated $SiO_2$ lamella represents the burrow wall; × 79.