The present paper deals with the genus Spinophyllum Wedekind, 1922, in the Bohemian Massif. While in Moravia there are two species resembling the genus Charisphyllum Oliver & Sorauf, 1988, synonymous with Spinophyllum. Spinophyllum sp. cf. conicum Kettnerová, 1932, known from the Koněprusy Acanthopyge Limestone of the Prague Basin, has its slender septal trabeculae arranged in a half-fan or asymmetrical fan and does not belong to Spinophyllum. The fine structures of rugose corals are repeating at the same taxa in various preservational environments. It seems to prove that these fine structures are at least based on the structures which originated through the life of corals. The mentioned fine structures were considered important diagnostic feature in the present paper. • Key words: Middle Devonian, Rugosa, systematics, septal structures, biostratigraphy.


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The present paper deals with the genus Spinophyllum Wedekind, 1922, in the Bohemian Massif. While in Moravia there are two species resembling the genus Charisphyllum Oliver & Sorauf, 1988, known with coarse septal trabeculae and a double charactophyllloid bend (Spinophyllum conicum Kettnerová, 1932, and S. ondra sp. nov.), slender septal trabeculae of the Bohemian species “Spinophyllum sp. cf. conicum Kettnerová, 1932” are arranged in a half-fan or asymmetrical fan and they probably do not belong to Spinophyllum.

Discussed Moravian species Spinophyllum conicum Kettnerová, 1932, and S. ondra sp. nov. can be, in my opinion, considered congeneric with Spinophyllum alveogoti (Oliver & Sorauf, 1988). On the other hand, the three above-mentioned species are not necessarily congeneric with the type species of Spinophyllum, S. spongiosum (Schlüter, 1889). One of the species discussed here, Spinophyllum conicum Kettnerová, 1932, occurs in Čelechovice na Hané (Fig. 1). The Čelechovice Devonian crops out at the Košíř Hill, approximately 7 km NW of Prostějov. In literature the locality has been mentioned under the names of Čelechovice, Kaple, and Rittberg. Hladil et al. (2002) summarized the research history of the Devonian at Čelechovice and also confirmed the age of the fossiliferous beds as close to the boundary between the Po. hemiansatus and early Po. varcus zones (= Lower Givetian). The Čelechovice Limestone consists of dark algal limestones, packstones, floatstones, coquines, and biostromes with typical “Čelechovice fauna”. It is underlain by dark marlstone of an extremely shallow environment and overlain by laminated, sometimes siliciferous limestone (Galle & Hladil 1991). Faunal lists and a detailed measured section are seen in Galle & Hladil (1991), too.

Another species discussed here, Spinophyllum ondra sp. nov., is known from the borehole Mě-1 Měnín (Fig. 1), core No. 12, depth 397.8–398.9 m, and from the localities of Lažánky – Zrcadla in the Moravian Karst, both of the early Givetian age.

The locality of Zrcadla S of Lažánky in the Moravian Karst (Fig. 1) was discovered in course of mapping the Devonian and Carboniferous of the Moravian Karst by late J. Dvořák (Czech Geological Survey, Brno). It was mentioned in Chlupáč (1964) and Galle (1985a, b). Rugose coral fauna of the Čelechovice Limestone in Lažánky, although never systematically described, is very rich and diverse. Besides Spinophyllum ondra sp. nov. it also contains Acanthophyllum sp., Dohmuophyllum sp., Grypophyllum primum (Wedekind, 1923), Moravophyllum ptenophyloides Kettnerová, 1932, Thamnophyllum caespitosum (Goldfuss, 1826), Pseudohexagonaria katerinae (Galle, 1985), Battersbyia cf. anisactis (Frech, 1886), Dendrostella trigemme (Quenstedt, 1879), Cyathophyllum (C.) dianthus Goldfuss, 1826, and others.

The Devonian of the borehole Mě-1 was described in detail in Zukalová et al. (1981), rugose corals in Galle (1981), tabulates in Hladil (1981), stromatoporoids and microfossils in Zukalová (1981), its clastic pre-Devonian part, e.g., in Vavrdová (2004). Rugose corals are represented there by rich *S. ondra* sp. nov. known also from *Spinophyllum* sp. and *Stringophyllum* spongiosum (Schlüter, 1889), the lectotype of *Spinophyllum* sp. (Frech, 1886), *Gryphophyllum* sp., and *Battersbyia* cf. *anisactis* (Freh, 1886), *Cystiphylloides* sp., and *S. conicum* sp. cf. *Battersbyia* (Simpson, 1900 (see Pedder 1972)). Photographs were made by D. Hejdová, B. Vávrová, and J. Brožek.

The localities of Čelechovice and Lažánky – Zrcadla belong to the rugose coral biozone *Cyathophyllum dianthus* – *Thamnophyllum caespitosum* as described in Galle (1985b) and Galle et al. (1988). The stratigraphical position of the core No. 12 from the borehole Mě-1 Měnin, depth 397.8–398.9 m, has not been clear till now. Rich occurrence of the core No. 12 from the borehole Měnin, stored in the Geological Museum Bonn, Germany; PřFUK – Faculty of the Natural History, Geological Institute, Charles University, Prague, Czech Republic; AS CR (AG and the two specimens of “Spinophyllum sp. cf. *S. conicum* Kettnerová, 1932”), Photographs were made by D. Hejdová, B. Vávrová, and J. Brožek.

**Systematic palaeontology**

Class Anthozoa Ehrenberg, 1834
Subclass Rugosa Milne-Edwards & Haime, 1850
Family Charactophyllidae Pedder, 1972

*Type genus.* – *Charactophyllum* Simpson, 1900 (see Pedder 1972).

**Diagnosis.** – “Solitary or rarely parricidally budded tetra-corals. Septa radial or weakly to moderately pinnate in arrangement; composed, at least in part, of coarse monacanthine trabeculae that are seen to be flexed first downwards, and then, provided the septa are sufficiently long, upwards, when traced adaxially. Septa are commonly dilated, but nature of dilation varies depending on the genus. Dissepiments tend to be globular and are not elongated even in large specimens; horseshoe-shaped dissepiments are not developed” (Pedder 1972).


Genus Spinophyllum Wedekind, 1922

For synonymy, see Birenheide & Lütte 1990; McLean 1993; Schröder 1997; Pedder 1999; Coen-Aubert 2002.

Type species. – By monotypy, Campophyllum spongiosum Schlüter, 1889, p. 46. Middle Devonian, Givetian, Büchel Formation, abandoned Büchel Quarry, Bergisches Land, Germany.

Diagnosis. – “Solitary rugose corals. Septa of two orders, highly and irregularly carinate in the disseipmentarium with yardarm and zigzag carinae. Septa more or less dilated
in the dissepimentarium and thin in the tabularium. Major septa reaching the axis of the corallum or leaving an open space in the centre of the tabularium. Minor septa traversing the entire dissepimentarium. Dissepimentarium composed of several rows of globose dissepiments arranged in horizontal layers in its outer part and inclined towards the axis of the corallum in its inner part. Tabulae incomplete or compound” (Coen-Aubert 2002).

Liao & Birenheide (1989) added that “traces of a cardinal fossula or a shortening of the cardinal septum are often recognizable”.

Pedder (1972, 1999) and McLean (1993) brought attention to the charactophylloid double bend of septal trabeculae in Spinophyllum. Wrzołek & Wach (1994) also considered it an important feature of the mentioned genus.

Discussion. – Birenheide and Lütte (1990) chose the lectotype and re-illustrated Spinophyllum spongiosum (Schlüter, 1889), in pl. 3, fig. 15 (lectotype GNBo 174a), and pl. 3, fig. 16 (lectotype GNBo 174b), from Rheinisches Schiefergebirge, Böhus Formation, Bergisches Land, abandoned quarry at Büchel, Bergisch-Gladbach; Coen-Aubert (2002) and Schröder (2005) considered their choice unfortunate. The lectotype is re-figured in Wrzołek & Wach (1994, pl. 2, fig. 11), Coen-Aubert (2002, pl. 2, figs 11, 12), and also here in Fig. 2A, B. The figs 15 and 19 in pl. 3 and possibly also figs 10, 12, 13, 14 and 16 of Birenheide & Lütte (1990) have coarse monacanthine trabeculae. However, they do not have the characteristic charactophylloid bend (see Oliver & Sorauf 1988; Pedder 1972, 1982; and Sorauf 1998). Although there is an upward bend seen in the lower left part of the fig. 15b, the downward then upward double bend of the typical charactophyllids is missing. The trabeculae in fig. 11b and possibly also in figs 11, 17, and 20 are arranged in high angle and seem to belong to the other species or genus. Hill (1981, p. F269–F270, fig. 172/3a, b) illustrated an excellent example of Spinophyllum spongiosum with a well-developed double bend of charactophyllids. Mentioned specimen is the toptype from Büchel Quarry, Bergisch Gladbach, and is probably the best illustration of S. spongiosum morphology. McLean (1993, p. 110) stated that “characteristic charactophylloid trabeculae” are seen in pl. 2, fig. 10b and pl. 3, fig. 19b of Birenheide & Lütte (1990); he did not mention decisive pl. 3, fig. 15b. Further notes to the lectotype of S. spongiosum see Coen-Aubert (2002).

Wrzołek & Wach (1994) have also questioned the Birenheide & Lütte (1984) interpretation of Spinophyllum spongiosum.

As mentioned above, Birenheide (1978) considered Spinophyllum Wedekind, 1922, a junior synonym of Charactophyllum Simpson, 1900. Nevertheless, Sorauf (1998) newly described the type species of Charactophyllum and thus discriminated both genera.


Schröder (2004) calls attention to wide variability of the septal morphology of Spinophyllum. It leads, in his opinion, to erection of numerous new taxa.

Oliver & Sorauf (1988) describe Charisphyllum altevogti from the Givetian of Cantabrian Mountains, Asturias, Spain. It differs from the lectotype of Spinophyllum spongiosum (Schlüter, 1889) in the presence of well-developed coarse trabeculae with typical charactophyllid double bend. Oliver & Sorauf (1988) also compare C. altevogti, besides Moravian Spinophyllum conicum Kettnerová, 1932, to an undescribed species from Middle Devonian of Western Sahara, and to Heliophyllum aiense Soshkina, 1949 (pl. 36, figs 2, 5).

Pedder (1999) emphasizes that “the most important feature of the Charisphyllum... is that the monacanths are
not only separated peripherally to form yardarm carinae, but axially they are flexed in the charactophylloid manner.

Moravian specimens of *Spinophyllum* resemble “Charisphyllum” in the mentioned character. It is hard to decide whether *Spinophyllum* and *Charisphyllum* are congeneric or not, as the type specimen of *Spinophyllum spongiosum* (Schlûter, 1889) has bent trabeculae, but the double bend characteristic of *Charisphyllum* is not fully developed.

### Spinophyllum conicum Kettnerová, 1932

Figures 3, 4

1932 *Spinophyllum conicum* n. sp.; Kettnerová, pp. 55, 56, pl. 2, figs 7, 8; pl. 3, figs 4, 5; text-fig. 41.

**Holotype.** – PřIFUK No. 27, two transverse sections, one of which is figured in Kettnerová, text-fig. 41, Čelechovice, Čelechovice Limestone, early Givetian. Here it is refigured (Fig. 3A). Kettnerová’s (1932) unfigured thin section, here in Fig. 3B, very probably belongs to the holotype.

**Material.** – AG 1380A–C (Fig. 4E, F), 2 transverse and 1 longitudinal sections; AG 1398A–D (Fig. 4A–D), 3 transverse and 1 longitudinal sections; AG 1515A, B (unfigured), 1 transverse and 1 longitudinal sections; AG 1517A, B (unfigured), 1 transverse and 1 tangential sections; and probably also AG 1514B (unfigured), 1 oblique transverse section all Čelechovice.

**Diagnosis.** – *Spinophyllum* with dilated septa which are sometimes in lateral contact, with globular dissepsiments dominating. Mean corallite diameter is 16.7 mm, mean tabularium diameter is 10.3 mm, mean number of major septa is 33.75.

**Description.** – Corallum solitary, conical, with calicinal increase (Fig. 4A, AG 1398A). Septa are radially arranged, a single section shows possible fossula or psudofossula, probably with shortened protoseptum (Fig. 4D, AG 1398C). Major septa reach a half to two-thirds of the corallite radius and sometimes to the corallite axis, minors attain approximately two-thirds of the length of majors. Both major and minor septa are slightly spindle-shaped, weakly to heavily carinated, particularly in their attenuate peripheral parts. Carinae are of zigzag type, in places the yardarm carinae are present (Fig. 4A, AG 1398A). Both major and minor septa are moderately thickened, in places they are in the lateral contact, particularly in the thickened part of dissepsimentarium at the tabularium border. Dissepsimentarium is built of two to five rows of steeply sloping globose to subpeneckiloid dissepsiments diminishing toward the corallite axis (Fig. 4B, AG 1398D). Rare stereoplasmatic thickening occurs. Tabularium consists of the axial series of flat tabellae, peripheral tabellae are relatively gentle-sloping toward axis.

**Dimensions in mm.**

<table>
<thead>
<tr>
<th>Čelechovice</th>
<th>d</th>
<th>dt</th>
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<tr>
<td>OR</td>
<td>7.94–22.94</td>
<td>6.47–12.76</td>
<td>28–38</td>
</tr>
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<td>N</td>
<td>10</td>
<td>8</td>
<td>8</td>
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<tr>
<td>Mean</td>
<td>15.62</td>
<td>9.66</td>
<td>32.5</td>
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**Fine structure.** – Septa are built of coarse uniserial charactophylloid monacanths. Monacanths are in some places tufted so that they resemble rhipidacanths. Trabeculae display the pronounced sigmoidal charactophylloid bend; they are flat-lying (75° to almost horizontal) at both their ends, peripheral and adaxial ones, while steeply sloping toward the periphery under the angle of 40° to 20° in the central part of the dissepsimentarium (Fig. 4B, F, AG 1398D, AG 1380C).

**Discussion.** – The type species *Spinophyllum spongiosum* (Schlûter, 1889) differs from *Spinophyllum conicum* Kettnerová, 1932, particularly in the shape of trabeculae which are only very slightly bent or almost straight in *S. spongiosum.*

*Spinophyllum conicum* Kettnerová, 1932, differs from the species *S. altevogti* (Oliver & Sorauf, 1988) in less conspicuously developed carinae, however, both yardarm and zigzag carinae being present. Majors of *S. altevogti* are longer than those in *S. conicum*; moreover, the corallite diameter and number of septa are larger in the type species.


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**Figure 5.** *Spinophyllum ondra* sp. nov., Lower Givetian, Čelechovice Limestone, borehole Měnin-1, core No. 12, Moravia. • A – specimen AG 653A, holotype, transverse section, major and minor septa with heavily developed yardarm carinae often in lateral contact, depth 397.9 m, × 4. • B – the same specimen AG 653B, holotype, oblique longitudinal section, depth 397.9 m, × 4. • C – the same specimen AG 653A, holotype, detail of Fig. 12, × 11. • D – specimen AG 656A, paratype, longitudinal section with conspicuous sigmoidally arranged charactophylloid trabeculae, depth 397.8 m, × 4. • E – the same specimen AG 656A, paratype, detail of Fig. 15, × 11. • F – specimen AG 655A, paratype, transverse section with septa reaching the axis, depth 397.8 m, × 4. • G – the same specimen AG 655B, paratype, oblique longitudinal calicinal section, × 4. • H – specimen AG 654A, paratype, transverse section, depth 397.9 m, × 5. • I – specimen AG 661A, paratype, transverse section, septa less carinated, depth 397.8 m, × 5.
Another Moravian species Spinophyllum ondra sp. nov. differs from S. conicum mainly in its dimensions (corallite diameter = 6.5–17.6 mm, tabularium diameter = 4.1–9.2 mm, number of majors = 20–31 at Spinophyllum ondra sp. nov.), and, further, in steeper elongate dissepiments and in much less dilated septa and less pronounced carinae at S. conicum.

S. conicum differs from the species described from Poland by Wrzolek & Wach (1994), S. longiseptatum (Lütte, 1984), S. aff. longiseptatum (Lütte, 1984), S. aiense aiense (Soshkina, 1949), and S. aiense liujingense (Yu & Kuang, 1984) in lacking the charactophylloid double bent trabeculae.

Spinophyllum sp. cf. S. conicum Kettnerová, 1932, described in Galle (1994) from the Barrandian Eifelian/Givetian Acanthopyge Limestone from the vicinity of Koněprusy has not the charactophylloid trabeculae developed; herein, the Barrandian specimen is not considered a member of Spinophyllum Wedekind, 1922.

Occurrence. – Middle Devonian, Lower Givetian; Moravia, Čelechovice.

Spinophyllum ondra sp. nov.

Figures 5, 6

1981 Charactophyllum sp. nov.; Galle, p. 59, pl. 34, figs 1–4; pl. 35, figs 1–4.

Holotype. – Specimen AG 653A–C, two transverse and one oblique longitudinal sections, borehole Měnín-1, core No. 12, depth 397.9 m, figured here in Fig. 5A–C.

Paratypes. – Specimens AG 550, single incomplete transverse section, depth 397.0–402.0 m (unfigured); AG 654A, B, 1 transverse and 1 longitudinal sections, depth 397.9 m (Fig. 5H); AG 655A, B, 1 incomplete transverse and 1 oblique longitudinal sections, depth 397.8 m (Fig. 5F, G); AG 656A, B, 1 axial longitudinal and 1 tangential sections, depth 397.8 m (Fig. 5D, E); AG 657, transverse section, depth 398.7 m; AG 658A–C, 3 oblique transverse sections, depth 398.7 m; AG 659A–C, 3 oblique transverse sections, depth 398.7 m; AG 660, oblique transverse section, depth 398.7 m; AG 661, transverse section through two corallites, depth 397.8 m (Fig. 5I); AG 662, incomplete transverse section, depth 397.8 m; AG 663A, B, 1 oblique transverse and 1 tangential sections, depth 397.9 m (unfigured); AG 664, tangential section, depth 398.7 m; AG 665, incomplete transverse section, depth 398.7 m; AG 666, incomplete transverse section, depth 398.7 m; AG 667A, B, 2 tangential sections, depth 397.9 m; AG 668, transverse section, depth 397.8 m; AG 669, transverse section, depth 397.9 m; AG 670A–C, 3 transverse sections, depth 397.8 m; AG 671A, B, 1 transverse and 1 oblique sections, depth 397.8 m, all unfigured, all specimens borehole Měnín-1, core No. 12.

Material. – Specimens AG 556A, B, 1 transverse and 1 longitudinal sections, depth 397.0–402.0 m; AG 668, transverse section, depth 397.9 m; AG 671A, B, 2 transverse sections, depth 397.9 m; and AG 674, oblique section, depth 398.5 m, all unfigured, all borehole Měnín-1, core No. 12, and AG 1057A–D, 2 transverse and 2 longitudinal sections, Čelechovice Lst., early Givetian, Zrcadla near Lažánky at Blansko, Moravian Karst (Fig. 6A–C).

Etymology. – Ondra – diminutive of Ondřej, Czech first name (Andrew).

Diagnosis. – Spinophyllum with relatively steeply arranged elongated dissepiments and with heavily dilated septa, septa in lateral contact, mean values of d = 11 mm, dt = 7 mm, and nl = 27.5.

Description. – Corallum solitary, conical. Major septa sometimes reach the axis where they are sometimes in contact or interfinger, more often they leave the inner tabularium free. Minor septa reach approximately one-half to two-thirds of the length of majors. Both major and minor septa are heavily carinated with yardarm carinae (Fig. 5A, C, AG 653A). Both major and minor septa are dilated, usually they are in the lateral contact in the inner dissepimentarium, less often they are in contact along entire width of dissepimentarium or are touching each other only by their carinae in some places.

Dissepimentarium is built of one to two series of flat elongated dissepiments, and an inner series of small globose dissepiments relatively steeply sloping toward the axis. Stereoplasmatic thickening occurs only rarely in the dissepimentarium. Tabularium is built of complete tabulae; they are almost flat-lying, with depressed axial part. Peripheral tabellae are sometimes developed (Fig. 5D, E, AG 656A).

Fine structure. – Septa are built of coarse charactophylloid monacanths. Within the thinner adaxial part of septum monacanths are fine and less pronounced. Carinae are arranged in conspicuously sigmoidal pattern; they are flat-lying under the angle 80° at the periphery and adaxially, more steeply-sloping under the angle 60° in their central parts (Fig. 5D, E, AG 656B, Fig. 6C, AG 1057C). It is characteristic of charactophylloid trabeculae of Pedder (1972).

Discussion. – The type species Spinophyllum spongiosum (Schlüter, 1889) differs from Spinophyllum ondra sp. nov. particularly in the shape of trabeculae which are only very slightly bent or almost straight.
Spinophyllum ondra sp. nov. differs from \textit{S. conicum} Kettnerová, 1932, in its dimensions (main value of corallite diameter = 15.5 mm at \textit{S. conicum}). Moreover, \textit{S. conicum} is not as heavily dilated as \textit{S. ondra}, and its dissepiments are elongate and relatively steeply arranged. \textit{Spinophyllum ondra} sp. nov. differs from \textit{Spinophyllum altevogti} (Oliver & Sorauf, 1988) from the Spanish Cantabrian Mountains in much more dilated septa which are only seldom in the lateral contact with the Spanish species. The Moravian species is also more heavily carinated. Furthermore, \textit{S. ondra} sp. nov. differs from \textit{S. altevogti} (Oliver & Sorauf, 1988) in more steeply inclined trabeculae/carinae, in less numerous rows of dissepiments, in the tabulae which are incomplete in \textit{S. altevogti}, and in much smaller dimensions. \textit{Spinophyllum ondra} sp. nov., similar to other Moravian species \textit{S. conicum}, differs from the species described in Poland by Wrzolek & Wach (1994), \textit{S. longiseptatum} (Lütte, 1984), \textit{S. aff. longiseptatum} (Lütte, 1984), \textit{S. aiense aiense} (Soshkina, 1949), and \textit{S. aiense liujingense} (Yu & Kuang, 1984), in lacking the charactophyllloid double bent trabeculae.

**Occurrence.** – \textit{Spinophyllum ondra} sp. nov. is known till now from the borehole Mě-1 Měnín, core No. 12, depth 397.8–398.9 m, and from Lažánky – Zrcadla in the Moravian Karst, both localities of the Lower Givetian age.

**“Spinophyllum sp. cf. conicum” Kettnerová, 1932**

Figures 7A, B

1994 \textit{Spinophyllum sp. cf. conicum} Kettnerová, 1932. –

Galle, p. 49, pl. 1, figs 6, 7; pl. 2, fig. 12.

**Material.** – Transverse thin-section No. 3730, derived from the 2nd coral horizon, beds 10, 11, Preislerův Quarry (Fig. 7A); and another specimen with longitudinal thin-section No. 3679, 4th coral horizon, breccia bed 46, Jiráskův Quarry (Fig. 7B). Both thin-sections need not be conspecific.

**Description.** – Corallum, calice shape and dimensions are unknown. The outline of the corallite is circular, outer wall is missing. Major septa reach half the corallite radius, minors are only slightly shorter. Septa are radially arranged, attenuate, smooth or with inconspicuous zigzag or sometimes yardarm carinae, arranged in half-fans. Dissepimentarium is built of one to three rows of relatively large, flat-lying, elongated, sometimes slightly peneckilloid dissepiments, and another one to three rows of small globose steeply inclined dissepiments. Tabularium is built of flat-lying axial tabellae and smaller periaxial tabellae; axial longitudinal section is missing.

**Discussion.** – “\textit{Spinophyllum sp. cf. S. conicum}” Kettne-
rová, 1932” as described in Galle (1994) resembles Moravian specimens of *S. conicum* Kettnerová, 1932, from the early Givetian Čelechovice Lst. from Čelechovice (Kettnerová, 1932, text-fig. 41; here in Figs 3, 4), and *S. ondra* sp. nov. (here in Figs 5, 6) from the borehole Měnín MČ-1 and from Lažánky – Žrcadla in the Moravian Karst. The septa of the Moravian species are composed of coarse charactophyllloid monacanths. They are highly variable in their length, reaching the corallite axis and only slightly over half the corallite radius in the same corallite. They also vary in their thickness, being attenuate and slightly dilated, sometimes also in the same specimen. Attenuate septa tend to be smooth or only slightly carinated. Bohemian specimens do not differ in their dimensions from the Moravian ones (d = 7.94–23.33 mm, dt = 6.47–12.76, and nI = 29–38).

The Bohemian specimen differs from the Moravian ones in slender and gracile trabeculae/carinæ arranged in half-fans, resembling those in some specimens *S. spongiosum* (Schlüter, 1889); figs 11, 11b, 17 and 20 of Bi- renheide & Lütte (1990).

The Koněprusy specimens differ from *Spinophyllum* in having slender septal trabeculae arranged in a half-fan or asymmetrical fan. In this, and in its flat dissepimentarium, it seems to be close to paradisphyllids. According to Schröder (pers. comm. 2003), it also has “more flat or even evert dissepimentarium in the early stage, almost reminding of the *Gurievskiella*-type”.

The type species *Spinophyllum spongiosum* (Schlüter, 1889) from the middle Givetian of the Rhenish Slate Mountains (Birenheide & Lütte, 1990, p. 4, pls 1–3) differs from the species discussed above in that the length of major septa reaches nearly the axis, while minors are just half the length of the radius. In other characters, both the species are similar.

**Occurrence.** – Middle Devonian, Eifelian and lowermost Givetian, Acanthopyge Limestone, Preislerův and Jiráskův quarries nearby Koněprusy, Bohemia.
Conclusions

The species close to those described as Charisphyllum Oliver & Sorauf, 1988, are well defined, particularly by their fine structure of coarse monacanthine trabeculae with double sigmoidal bend. On the other hand, it is impossible to exclude “Charisphyllum” from the genus Spinophyllum Wedekind, 1922, because it is not clear whether Spinophyllum differs from Charisphyllum: septal trabeculae of S. display slight bend but serious comparison of both respective genera is impossible because of inadequate lectotype (see Coen-Aubert 2002).

Acknowledgements

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