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## Some Terebratulida (Brachiopoda) from the Muschelkalk sediments in the Holy Cross Mts.

Results of the studies on morphology of some Terebratulida from the Muschelkalk sediments from the border of the Holy Cross Mts. have been presented. It has been stated basing on the analysis of the inner parts of the shells performed using the method of serial transverse sections that the hitherto conducted determinations of the majority specimens of the Terebratulida in the area under discussion as *Coenothyris vulgaris* (Schlotheim) cannot be concerned as sufficient.

Two new species have been described at present: *Aulacothyroides alius* sp.n. and *Sulcatinella subsulcata* sp.n. The geographical extent of *Aulacothyroides* Dągis, 1965, the genus known up to now only in the Upper Silesia, has been moved recently north-eastwards into the area of the Holy Cross Mts. The fact of appearance of *Sulcatinella* Dągis, 1974 found in the Holy Cross Mts., on Podlasie and possibly in the Upper Silesia causes a distinct change in geographical extent of this genus in Europe. Its geographical extent has been moved from Hungary towards the north onto the area of Central Poland.

### INTRODUCTION

The Terebratulida represent a significant element of the macrofaunal assemblage abundant in the Muschelkalk sediments of the Holy Cross Mts. In general they correspond to representatives of the families of Dielasmatidae Schuchert 1913 and Aulacothyroideidae Dągis, 1972. The brachiopod collection under studies comes from the Lower and Upper Muschelkalk sediments. The Middle Muschelkalk in the area discussed contains no macrofaunal remnants.

Most of the Terebratulida specimens have been determined as *Coenothyris vulgaris* (Schlotheim) in the earlier papers on the Middle Triassic fauna from the Holy Cross Mts. (A. Łuniewski, 1923; B. Kowalczewski, 1926; J. Czarnocki, 1927; H. Senkowiczowa, 1956, 1957, 1985) because their outer form is similar to that species. Only in the uppermost Muschelkalk also *C. cycloides* (Zenker) has been distinguished (E. Popiel-Barczyk, H.

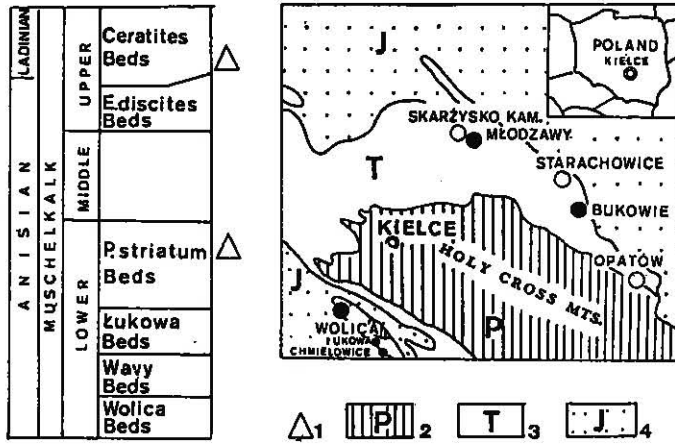


Fig. 1. Localization of the Muschelkalk outcrops where the fauna studied was found as well as its position in the stratigraphical profile

1 — fauna position in the profile, 2 — Palaeozoic, 3 — Triassic, 4 — Jurassic

Lokalizacja odsłoneń wapienia muszlowego, z których pochodzi opracowana fauna i jej pozycja w profilu stratygraficznym

1 — pozycja opracowanej fauny w profilu, 2 — paleozoik, 3 — trias, 4 — jura

Senkowiczowa, 1989). Recent studies on the interior of the shells together with the features of the exterior have resulted in a determination of two other genera in the Lower Muschelkalk sediments, namely: *Aulacothyroides* Dagis, 1965 and *Sulcatinella* Dagis, 1974. It seems to be possible that due to poor recognition of the Terebratulida in the Triassic sediments of the Holy Cross Mts. still other genera and species will be distinguished together with progress in the studies.

In the Lower Muschelkalk, the Terebratulida occur extremely frequently in the *Plagiostoma striatum* Beds (Fig. 1). Together with *Punctospirella fragilis* (Schlotheim), *Hirsutella hirsuta* (Alberti), molluscs — *Plagiostoma striatum* (Schlotheim), cephalopods — *Beneckeia buchi* (Alberti) and numerous crinoids, they represent a high percentage of the fauna there.

The *Plagiostoma striatum* Beds are represented by grey limestones, often nodular, with intercalations of grey and olive clayey or marly shales. The presence of the brachiopods is in majority connected with the nodular limestones. The fauna is strongly destroyed, the shells are crushed, even in form of chips. The best preserved remnants of the brachiopods have been observed in Młodzawy at the northern margin of the Holy Cross Mts. and in Wolica, Chmielowice and Łukowa at the southern one (Fig. 1). Two new species have been distinguished there: *Aulacothyroides alius* sp.n. and *Sulcatinella subsulcata* sp.n. The thickness of the beds with *Plagiostoma striatum* ranges from 10.0 m in Młodzawy to 22.0 m in the Wolica region.

In the uppermost Upper Muschelkalk the Terebratulida occur in mass. They form a Terebratula Bed built of the shells of *Coenothyris vulgaris* (Schlotheim) and *C. cycloides* (Zenker) identified with *Cycloidesbank* γ known from Germany (E. Popiel-Barczyk, H.

Senkowiczowa, 1989). This bed is situated in the lowermost part of the Ceratites Zone — *Gymnoceratites enodis*.

The specimens of *C. vulgaris* (Schlotheim) described below from Bukowie (Fig. 1) come from the lower part of the Upper Muschelkalk — from the Ceratites Beds. The Terebratula Bed is not present there. It was either destroyed due to the Upper Triassic erosion or was not formed at all.

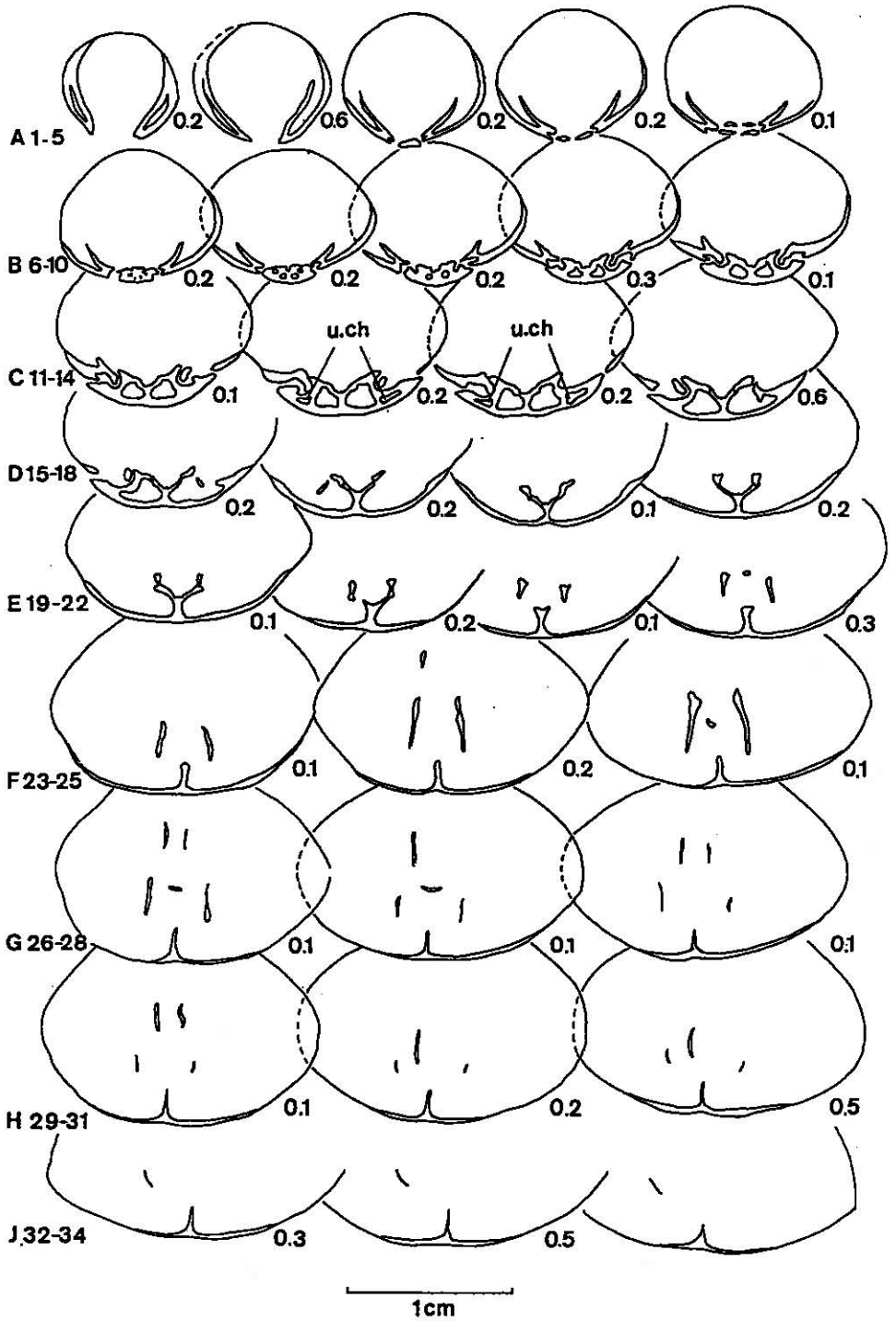
The Upper Muschelkalk in the Bukowie region is developed as grey, occasionally nodular limestones, which contain some quartz sand and locally glauconite admixtures. Intercalations of grey shaly marls are subordinate there. The faunal assemblage is characteristic mainly for the limestones. Apart from the brachiopods, there occur also numerous remnants of molluscs, gastropods, crinoids and fish. The age of the sediments is determined as the Ceratites spinosus Zone due to the presence of these cephalopods. One limestone bed contained the interlayer of the thickness of some centimetres with well-preserved big shells of the brachiopods. As it results from the studies conducted, the brachiopods belong to *C. vulgaris* (Schlotheim). The thickness of the Upper Muschelkalk in the Bukowie region equals to almost 3.0 m.

The brachiopods analysed belong to the collection of the Museum of the Polish Geological Institute, Warsaw. They were collected by H. Senkowiczowa in the period of 1956–1970 and indexed as MUZ PIG 1182 (II) 178, MUZ PIG 1362 (II) 33, 42, 127–130.

Some specimens from the collection of the Museum of the Earth, Polish Academy of Science, Warsaw were sampled by K. Nawara in 1968 and by E. Popiel-Barczyk in 1981. They are evidenced under the numbers of MZ VIII Bra-1648, 1672–1676.

## PALAEONTOLOGICAL PART

The interior of the shells concerned till recent as *Coenothyris vulgaris* (Schlotheim) was studied using the method of the serial transverse sections. It appeared, however, after the analysis of the drawings and the reconstruction of the shell interior that the remnants represent not only this species. Different elements of the interior point to three genera: *Aulacothyroides* Dagus, 1965, *Sulcatinella* Dagus, 1974 and *Coenothyris* Douvillé, 1879. Differences in morphology of the interior of the shells were readable only thanks to the drawings of the serial transverse sections. The presence and development of the dental plates are the most important differentiation features. In the absence of the dental plates in a pedicle valve, the *Coenothyris* genus (Fig. 7A1–8, B9–14) differs from the *Sulcatinella* (Figs. 4A5, 6; 5A2–7) and *Aulacothyroides* (Fig. 2A1–5) ones. The character and the pattern of these plates (more or less divergent), in their turn, are differentiation factors to distinguish specimens from the *Sulcatinella* (Fig. 4A5, 6) and *Aulacothyroides* genera (Fig. 2A1–5). The pattern of the hinge plates in respect to crural bases and a septum is characteristic for the genera from the Dielasmatidae family (N. Brügge, 1973, p. 196, fig. 1; A. Dagus, 1974, p. 40, fig. 18, p. 178, fig. 122). It is possible to distinguish the genera of *Sulcatinella* Dagus, 1974 (Fig. 4F20–22) and *Coenothyris* Douvillé, 1879 (Fig. 7D20–24) from *Aulacothyroides* Dagus, 1965 (Fig. 2E19) which is the representative of the Aulacothyroideidae family. The development of the septalium and its details allows to recognize individual representatives of the *Sulcatinella* Dagus, 1974 genus (Fig. 6D16–19) from those of *Aulacothyroides* Dagus,



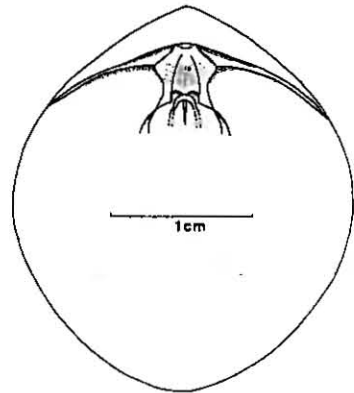


Fig. 2a. Interior of brachial valve of *Aulacothyroides alius* sp.n. reconstructed from serial transverse sections presented in Fig. 2  
 Rekonstrukcja wnętrza skorupki grzbietowej *Aulacothyroides alius* sp.n. ze szlifów seryjnych z fig. 2

1965 (Fig. 2D15–17). It is more difficult to get loops, so the reconstruction of their shapes and details is hard, too. Still comparisons of the forms studied with those known from the bibliography are possible (A. Dagis, 1972, 1974; K. Usnarska-Talerzak, 1988, 1990; E. Popiel-Barczyk, H. Senkowiczowa, 1989; H. Senkowiczowa, E. Popiel-Barczyk, 1993).

The specimens from Młodzawy are mostly variable in their external morphology. Two groups of the morphological forms have been distinguished there. One group is represented by oval-pentagonal forms with a wide hinge angle and an almost flat brachial valve (Pl. II, Figs. 1–8). That second one corresponds to the elongated-oval forms with the maximum width of the shell either in the middle of its length or at the anterior margin (Pl. I, Figs. 1–6). Both groups have dental plates, as it is seen on the drawings from the transverse sections. The character and the arrangement of these plates are distinctly different in the representatives of both the groups. Basing on the facts presented above and due to the other features, the specimens analysed have been, therefore, assigned to two genera — *Aulacothyroides* Dagis, 1965 and *Sulcatinella* Dagis, 1974.

The occurrence of the specimens of the *Aulacothyroides* Dagis, 1965 was earlier noticed in the Muschelkalk sediments in the Dziewkowice region in the Upper Silesia (K. Usnarska-Talerzak, 1988, 1990). The *Sulcatinella* Dagis, 1974 has not been till recent observed in the Triassic sediments in Poland. Only *S. incrassata* (Bittner) from Anisian in the Aszófő vicinity, Balaton Highland in Hungary was cited in Europe (J. Pálffy, A. Török, 1992). Both genera mentioned have been stated in the Wolica region.

A new species *A. alius* sp.n. (Pl. I, Figs. 1–6) has been created for the representatives of the *Aulacothyroides* Dagis, 1965. Most probably, the *Aulacothyroides* sp. from the Terebratula Beds from the Dziewkowice vicinity (K. Usnarska-Talerzak, *l.c.*) may be assigned to this species, too.

The geographical extent of the *Aulacothyroides* Dagis, 1965 expanded onto the area of the Holy Cross Mts.

Fig. 2. *Aulacothyroides alius* sp. n. from Młodzawy; serial transverse sections of specimen MZ VIII Bra-1674; L = 26.9 mm, W = 24.9 mm, T = 13.8 mm  
 Szlify seryjne z *Aulacothyroides alius* sp. n. z Młodzaw

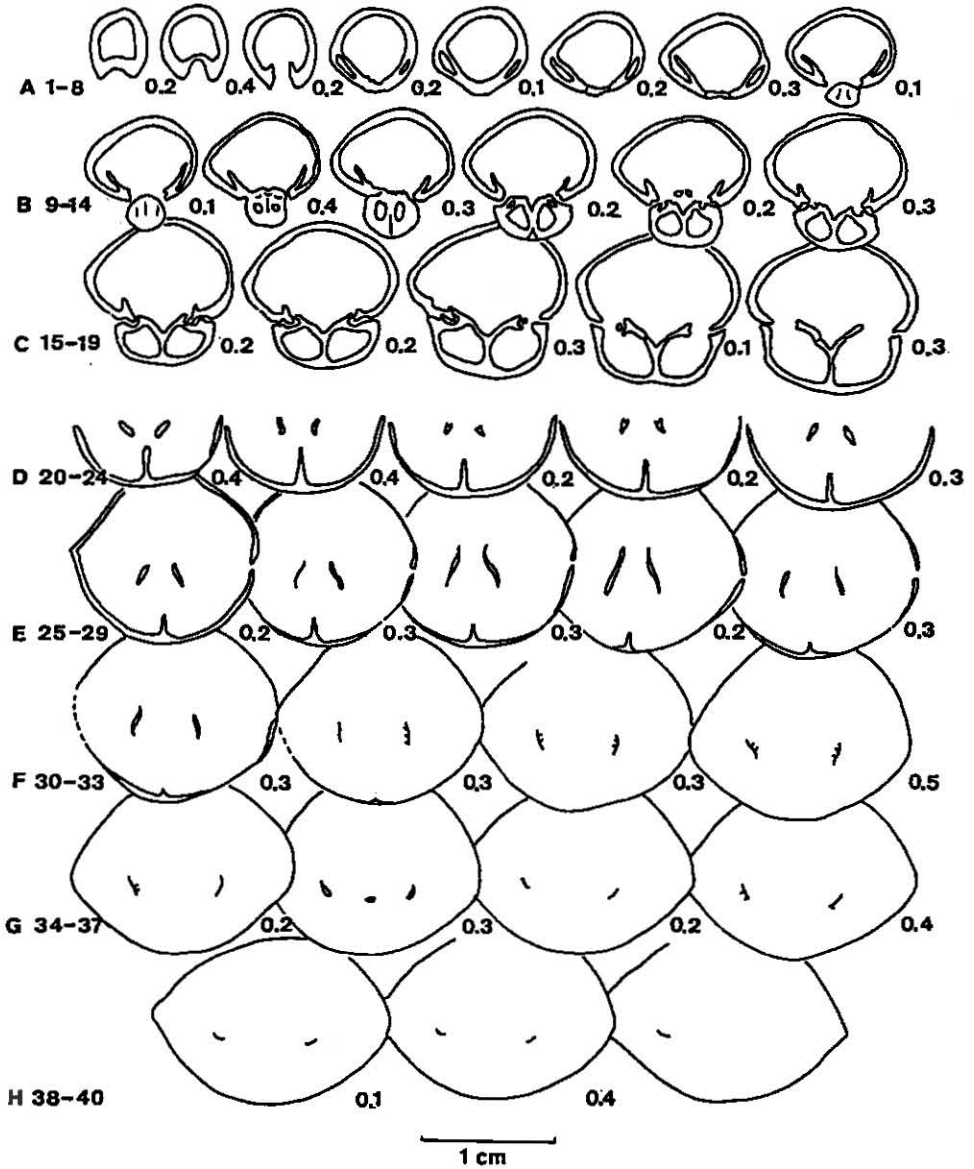


Fig. 3. *Aulacothyroides alius* sp.n. from Wolica; serial transverse sections of specimen MZ VIII Bra-1675; L = 23.2 mm, W = 19.0 mm, T = 14.2 mm

Szlify seryjne z *Aulacothyroides alius* sp.n. z Wolicy

Another new species within the *Sulcatinella* Dagus, 1974 has been formed, too. It is *S. subsulcata* sp.n. (Pl. II, Figs. 1–8), which differs with its characteristic external features from the typical *S. sulcata* Dagus from the Anisian sediments of NW Caucasus (A. Dagus, 1974, pl. LXVII, fig. 5). The occurrence of *S. subsulcata* sp.n. was observed also in the *Plagiostoma striatum* Beds in the Żebrak IG 1 borehole in the Podlasie area (see p. 455). It seems that the adult specimens from Żebrak determined as the probable representatives of *Zeilleria edlingeri* (Assmann) in the brachiopod analysis of the material from the borehole under discussion (E. Popiel-Barczyk, H. Senkowiczowa, 1983, fig. 7, pl. I, fig. 6a) as well as some specimens with the dental plates from Dziewkowice (Upper Silesia) should be assigned to *S. subsulcata* sp.n.

As it results from the remarks from above, the geographical extent of the *Sulcatinella* Dagus, 1974 (A. Dagus, 1974, p. 178) has changed moving northwards from Hungary (J. Pálffy, A. Török, 1992) to the area of central Poland.

The specimens from Bukowie belong to one species of *Coenothyris vulgaris* (Schlotheim) (Pl. I, Fig. 7). They are relatively well preserved and have big shells. It was, therefore, possible to observe morphological details of the internal shell of this species not known till recent (Fig. 7a–c).

#### Family Aulacothyroideidae Dagus, 1972

##### Genus *Aulacothyroides* Dagus, 1965

Type species: *Aulacothyroides bulkutensis* Dagus, 1965

##### *Aulacothyroides alius* sp.n.

(Figs. 2, 2a, 3, 3a; Pl. I, Figs. 1–6)

**Holotype:** MUZ PIG 1362 (II) 42.

**Type locality:** Wolica, southern margin of the Holy Cross Mts.

**Type horizon:** Lower Muschelkalk, *Plagiostoma striatum* Beds.

**Derivation of the name:** *alius* [Lat.] — another (other than the typical species).

**Diagnosis:** Shells with an oval or triangle-like outline, elongated in their hinge part, with a low hinge angle, biconvex or with a more convex pedicle valve. Smooth surface of the shell. A massive beak, elongated, mesothyrid. Lateral margins straight, the anterior margin — gently sulcate. Strongly divergent dental plates. The loop longer than the septum, which reaches about 1/3 of the length of the brachial valve. Deep septalium with a distinct knob swelling on the bottom. Wide cardinal process.

**Material:** 14 specimens from Młodzawy, 12 specimens from Wolica, 1 specimen from Chmielowice and 1

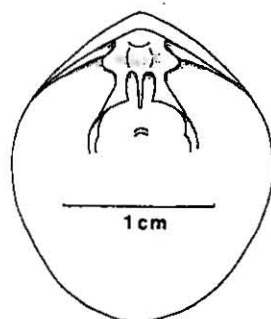
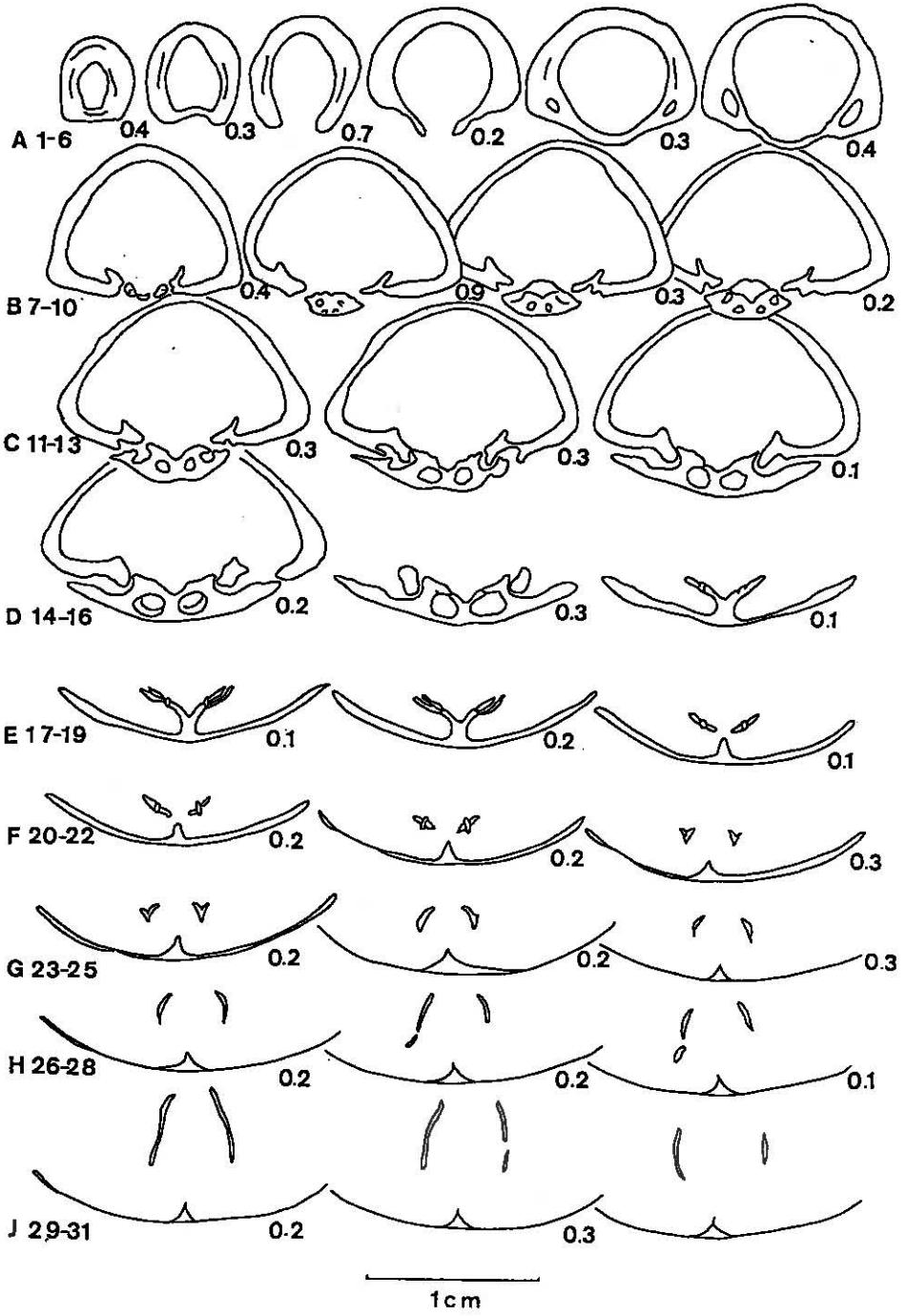


Fig. 3a. Interior of brachial valve of *Aulacothyroides alius* sp.n. reconstructed from serial transverse sections presented in Fig. 3

Rekonstrukcja wnętrza skorupki grzbietowej *Aulacothyroides alius* sp.n. ze szlifów seryjnych z fig. 3





specimen from Łukowa. 4 specimens from Młodzawy and 1 from Wolica — sectioned.  
 Dimensions in mm:

Cat. no.	L	W	T	W/L	T/L	Locality	Documentation
MUZ PIG 1362 (II) 42	25.6	22.8	9.8	0.89	0.38	Wolica	Holotype, Pl. I, Fig. 1
MZ VIII Bra-1674	28.3	23.6	13.8	0.89	0.38	Młodzawy	Paratype
MZ VIII Bra-1676	26.9	24.8	13.8	0.92	0.51	Młodzawy	Paratype, Pl. I, Fig. 2; Fig. 2, 2a
MZ VIII Bra-1675	23.2	19.0	14.2	0.81	0.50	Wolica	Paratype, Fig. 3, 3a
MZ VIII Bra- 1675	22.8	18.8	11.5	0.82	0.50	Młodzawy	Paratype

**Description.** — The hinge angle equals to about 85–90°. Beak ridges distinctly developed. The maximum width of the shell is below the center of its length or closer to the anterior margin. The maximum convexity of the pedicle valve close to the hinge margin. The brachial valve with a distinct flattening in the place of the septum localization. Internal morphology: the pedicle collar is well developed, dental plates thin and strongly divergent one in respect to another, almost parallel to the margins of the pedicle valve. The flat and wide cardinal process. Hinge plates at an angle towards the interior. The deep septalium, on the bottom of which there exists a knobby swelling well seen on the drawings of the transverse sections, in the reconstruction of the interior of the typical species *Aulacothyroides bulkutensis* Dągis (A. Dągis, 1974, figs. 125, 126) and on the corresponding schemes of our specimens (Figs. 2B9, 10, 2a). The septum shorter than the loop, not exceeding 1/3 of the length of the brachial valve. Crural processes short, more distinctly developed in the reconstruction of the interior of the brachial valve of the specimen from Wolica (Fig. 3a). Descending branches of the loop get wider distinctly towards the anterior. In their anterior part traces of spines are seen (Fig. 3F31–33, G34). The specimen from Młodzawy displays distinct lateral umbonal chambers (u. ch.) in the brachial valve under dental sockets (Fig. 2C12, 13).

**Remarks.** — *Aulacothyroides alius* sp.n. differs from *A. bulkutensis* Dągis with a lesser convexity of both valves and a weaker sulcation of the anterior margin. Our specimens are bigger than those described by A. Dągis (A. Dągis, 1965, p. 156; 1974, pl. LXVII, figs. 6–8). They are also bigger than the specimens of *Aulacothyroides* sp. from the Lower Muschelkalk in the Dziewkowice region (K. Usnarska-Talerzak, 1990, tab. I, fig. 2a–c), being similar to them with the shell outline and inner features seen on the drawings (*l.c.* fig. 2; and K. Usnarska-Talerzak, 1988, fig. 29). The outline of the specimens from the Silesia is more distinctly triangle.

**Occurrence.** — Lower Muschelkalk (the *Plagiostoma striatum* Beds) of the northern and southern margins of the Holy Cross Mts. and, probably, the Terebratula Beds in the Upper Silesia in Dziewkowice (K. Usnarska-Talerzak, 1990).

Fig. 4. *Sulcatinella subsulcata* sp. n. from Młodzawy; serial transverse sections of specimen MZ VIII Bra-1672; L = 26.7 mm, W = 25.3 mm, T = 15.2 mm

Szlify seryjne z *Sulcatinella subsulcata* sp. n. z Młodzaw

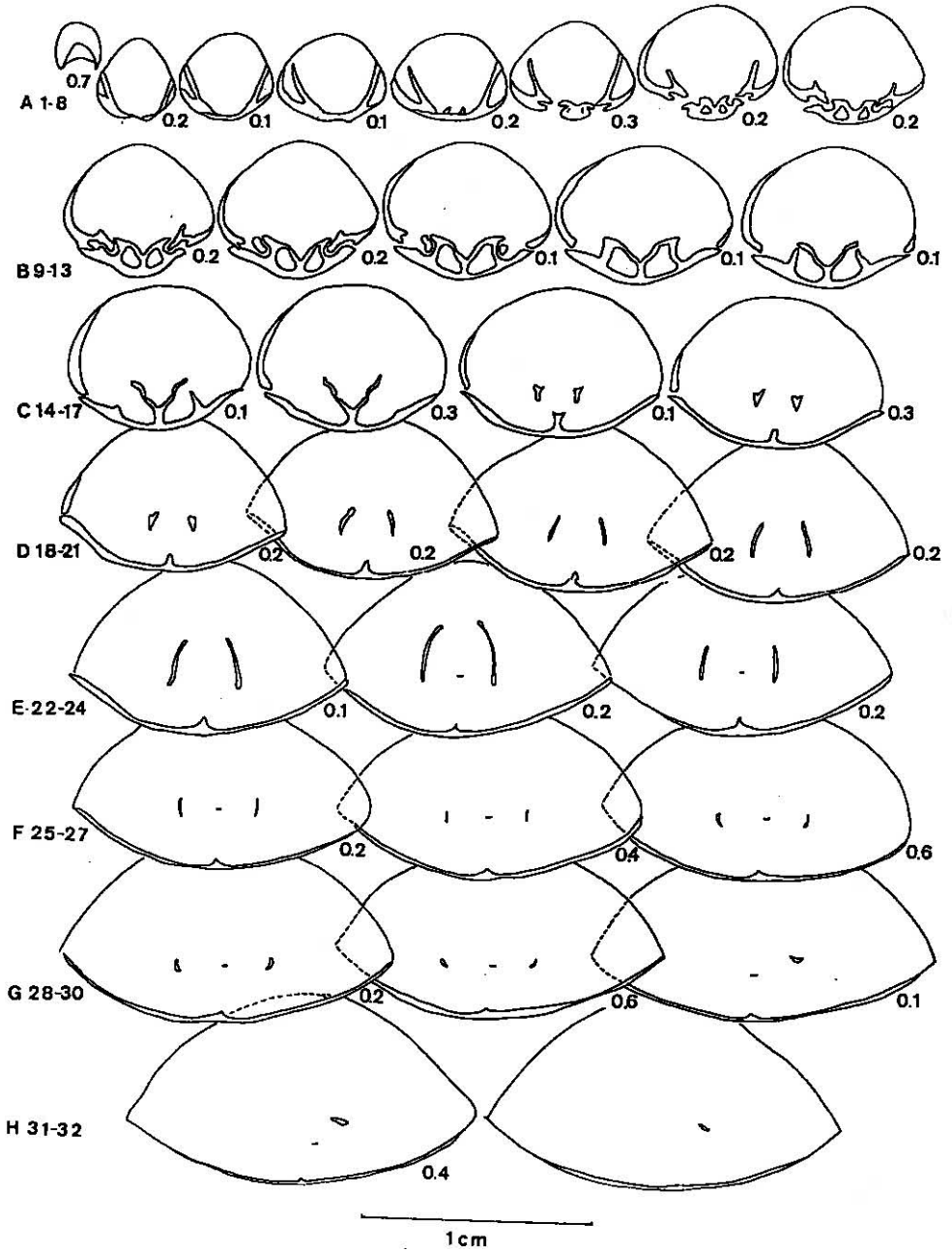


Fig. 5. *Sulcatinella subsulcata* sp. n. from Młodzawy; serial transverse sections of young specimen MZ VIII Bra-1672a; L = 15.0 mm, W = 14.6 mm, T = 7.6 mm

Szlify seryjne z młodego okazu *Sulcatinella subsulcata* sp.n. z Młodzaw

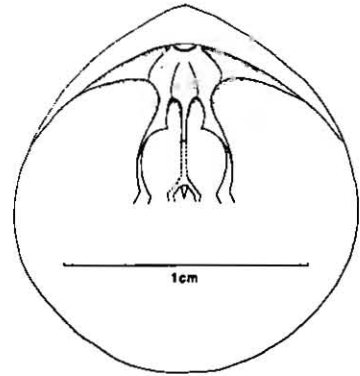


Fig. 5a. Interior of brachial valve of *Sulcatinella subsulcata* sp.n. reconstructed from serial transverse sections presented in Fig. 5  
 Rekonstrukcja wnętrza skorupki grzbietowej *Sulcatinella subsulcata* sp.n. ze szlifów seryjnych z fig. 5

Family **Dielasmatidae** Schuchert, 1913

Genus *Sulcatinella* Dągisi, 1974

Type species: *Sulcatinella sulcata* Dągisi, 1974

*Sulcatinella subsulcata* sp.n.

(Figs. 4, 5, 5a, 6, 6a; Pl. II, Figs. 1–8)

**Holotype:** MUZ PIG 1362 (II).33.

**Type locality:** Młodzawy, southern margin of the Holy Cross Mts.

**Type horizon:** Lower Muschelkalk, *Plagiostoma striatum* Beds.

**Derivation of the name:** *subsulcata* — close to *sulcata* (the typical species of the *S. sulcata* Dągisi).

**Diagnosis:** Shells displaying a round-pentagonal or oval outline with a wide hinge angle, univalvally-biconvex, with a smooth surface. Short beak, mesothyrid. Lateral margins almost straight — weakly sulcate. Divergent dental plates. Hinge appendix poorly developed, the loop longer than the septum, which reaches almost the half of the brachiopod valve length. Deep septalium.

**Material:** 8 specimens from Młodzawy, 10 specimens from Wolica. 3 specimens from Młodzawy and 1 from Wolica — sectioned.

**Dimensions** in mm:

Cat. no.	L	W	T	W/L	T/L	Locality	Documentation
MUZ PIG 1362 (II) 33	27.0	25.5	13.9	0.94	0.45	Młodzawy	Holotype Pl. II, Fig. 1
MZ VIII Bra-1672	25.7	25.3	15.2	0.94	0.56	Młodzawy	Paratype, Fig 4
MUZ PIG 1182 (II) 178	23.3	19.8	13.9	0.84	0.59	Wolica	Paratype, Figs. 6, 6a
MZ VIII Bra-1672a	16.8	15.8	6.8	0.94	0.40	Młodzawy	Paratype, Pl. II, Fig. 8
MZ VIII Bra-1672	15.0	14.6	7.6	0.97	0.50	Młodzawy	Paratype, Pl. II, Fig. 7; Figs. 5, 5a

**Description.** — Hinge angle wide, reaches about 108–110°. Beak ridges are gently developed, being sharp in the bigger forms. The maximum width of the shell closer to the hinge margin (in the bigger specimens) or in the half of the shell length (in the smaller forms). The pedicle valve more convex at the hinge margin less at anterior one, the brachial valve slightly convex with a depression in its central part. Internal morphology: pedical collar well developed (Fig. 4A1, 2). Dental plates arranged divergently one in respect to

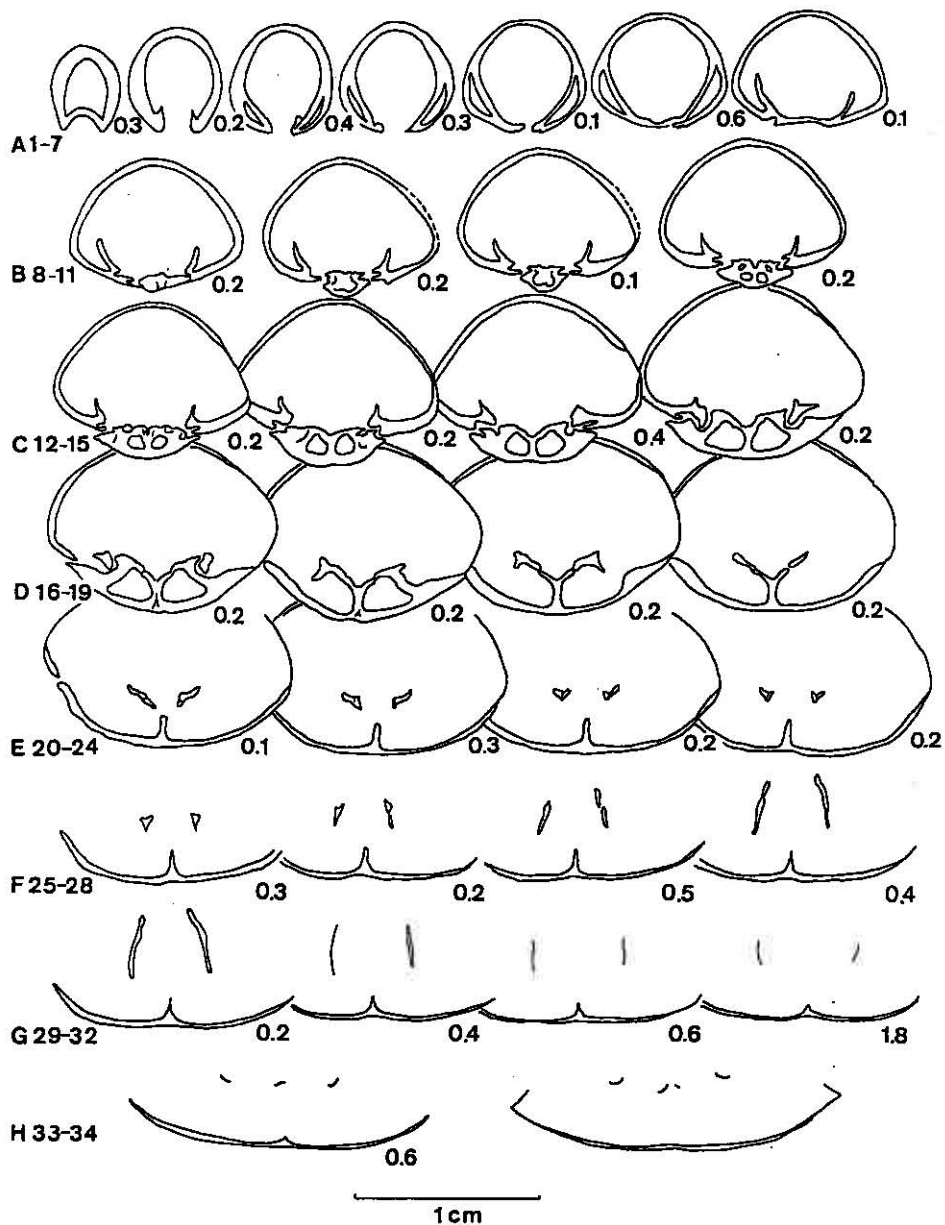


Fig. 6. *Sulcatinella subsulcata* sp.n. from Wolica; serial transverse sections of specimen MUZ PIG 1182 (II) 178; L = 23.3 mm, W = 19.8 mm, T = 13.9 mm

Szlify seryjne z *Sulcatinella subsulcata* sp.n. z Wolicy

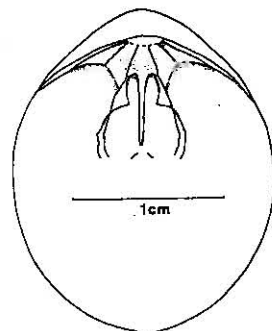


Fig. 6a. Interior of brachial valve of *Sulcatinella subsulcata* sp.n. reconstructed from serial transverse sections presented in Fig. 6

Rekonstrukcja wnętrza skorupki grzbietowej *Sulcatinella subsulcata* sp.n. ze szlifów seryjnych z fig. 6

another. Cardinal process low and flat. Hinge plates and crural bases, which rest on the septum, form a characteristic pattern of these elements, characteristic for the genus under discussion (Figs. 4F20, 21; 6D 18, 19). Deep septalium (Fig. 5C14, 15). Crural processes wide and short. The loop is longer than the septum, ascending branches preserved only fragmentarily (Fig. 6a). One of the sectioned specimens of the shell length of 15.0 mm displays a vertical element (Fig. 5a) in the place occupied by the septum. It may represent remnants of the vertical plate, which according to K. Usnarska-Talerzak vanishes in the ontogenesis of the Dielasmatidae in the specimens not exceeding 10 mm in length (K. Usnarska-Talerzak, 1988, p. 183, tab. 4).

**R e m a r k s .** — *Sulcatinella subsulcata* sp.n. differs from *S. sulcata* Dagis from the Anisian of NW Caucasus (A. Dagis, 1974, pl. XLVI, fig. 5) with a lesser sulcation of the anterior margin and with a wider hinge margin. Inner features of both species are convergent, which is evident on the A. Dagis' and our drawings (1974, figs. 122, 123; Figs. 4–6, respectively). The length of the septum reaches almost the half of the brachial valve as reconstructed from the sectioned specimens from Młodzawy (Fig. 5a) and Wolica (Fig. 6a). This fact corresponds to the informations given in the description of the genus (A. Dagis, 1974, p. 178). Whereas the reconstructed interior of *S. sulcata* Dagis (*l.c.* p. 179, fig. 123) displays the distinctly shorter septum.

In 1992 J. Pálffy and A. Török enclosed the variety *Waldheimia (Aulacothyris) angusta* Schlotheim sp. var. *incrassata* Bittner (A. Bittner, 1890, p. 8, pl. XVI, figs. 23–26) to the *Sulcatinella* Dagis, 1974, increasing its rank to the species (J. Pálffy, A. Török, 1992, p. 310). *Sulcatinella subsulcata* sp.n. differs from *S. incrassata* (Bittner) with its less thick shell and weaker sulcation of the anterior margin.

*S. subsulcata* sp.n. displays a significant similarity of the exterior features as well as a total identity of the interior characters to the adequate properties of the adult specimens of the Terebratulida from the *Plagiostoma striatum* Beds from Żebrak in Podlasie (E. Popiel-Barczyk, H. Senkowiczowa, 1983, fig. 7, pl. I, fig. 6a). These specimens were that time concerned as the forms presumably belonging to *Zeilleria edlingeri* (Assmann). The authoress are at present of the opinion that these specimens should be assigned to *S. subsulcata* sp.n. Some adult specimens from the Terebratula Beds in Dziewkowice should be assigned to this species, too. They have divergent dental plates and a reconstructed loop very similar to that of *S. subsulcata* sp. n.

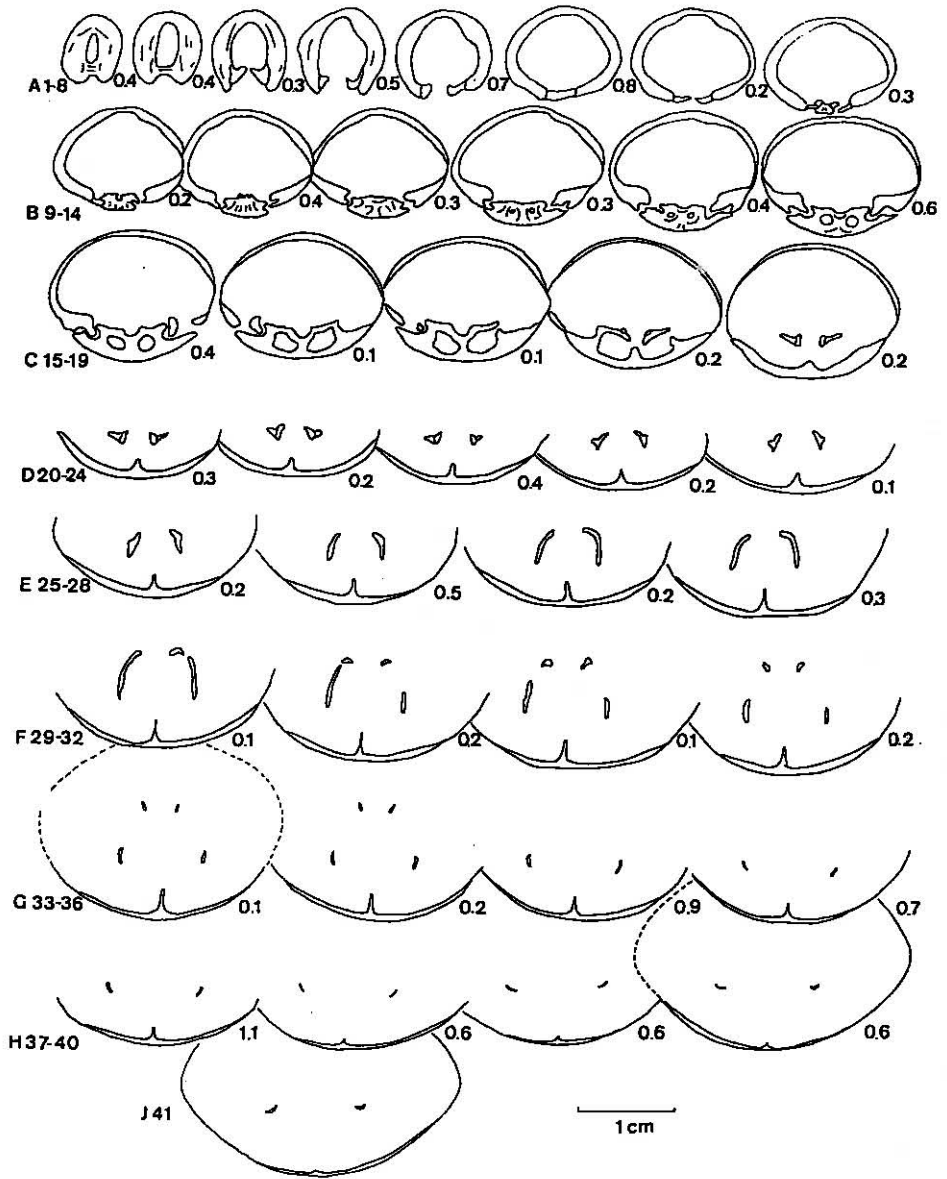


Fig. 7. *Coenothyris vulgaris* (Schlotheim) from Bukowie; serial transverse sections of specimen MUZ PIG 1362 (II) 129, L = 34.3 mm, W = 28.7 mm, T = 17.7 mm

Szlify seryjne z *Coenothyris vulgaris* (Schlotheim) z Bukowia

**Occurrence.** — Lower Muschelkalk, the *Plagiostoma striatum* Beds from the northern and southern margins of the Holy Cross Mts., Podlasie as well as the Upper Silesia.

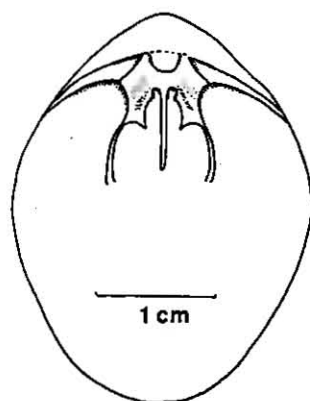


Fig. 7a. Interior of brachial valve of *Coenothyris vulgaris* (Schlotheim) reconstructed from serial transverse sections presented in Fig. 7

Rekonstrukcja wnętrza skorupki grzbietowej *Coenothyris vulgaris* (Schlotheim) ze szlifów seryjnych z fig. 7

The *Sulcatinella* Dągis, 1974 has not been known till recent from the Triassic sediments in Poland. The only species from this genus — *S. incrassata* (Bittner) is cited in the brachiopod list from the Anisian in the Aszófő region, Balaton Highland in Hungary (J. Pálffy, A. Török, 1992).

Genus *Coenothyris* Douvillé, 1879

*Coenothyris vulgaris* (Schlotheim, 1820)

(Figs. 7, 7a-c; Pl. I, Fig. 7)

1989 *Coenothyris vulgaris* (Schlotheim); E. Popiel-Barczyk, H. Senkowiczowa: p. 89, figs. 3-7, pl. 1, figs. 1-8, pl. 3, figs. 1-3, pl. 4, figs. 2-4 (cum synonym.).

1992 *Coenothyris vulgaris* (Schlotheim, 1820); D. Urošević *et al.*: p. 475, fig. 4, pl. I, figs. 9-11.

1993 *Coenothyris vulgaris* (Schlotheim); H. Senkowiczowa, E. Popiel-Barczyk: p. 582, figs. 2, 2a, pl. I, fig. 3a-d.

**Material:** 23 specimens from Bukowie, 6 sectioned.

**Dimensions** in mm:

L	W	T	W/L	T/L
28.6-34.3	24.5-28.7	13.5-17.7	0.83-0.92	0.47-0.53

**Emended description and remarks.** — All specimens studied display large shell dimensions and are relatively well preserved. This last fact is proved by a delicate wavy striation radially arranged on the sides of the surfaces of both valves. These are traces of a colour ornamentation known from the descriptions of this species from the Strzelce Opolskie region (E. Nowakowski, 1972; H. Senkowiczowa, Z. Kotański, 1979). In their exterior morphology, the specimens from Bukowie are similar to the large specimens of *Coenothyris vulgaris* (Schlotheim) from the Terebratula Beds in Skrzelczyce and

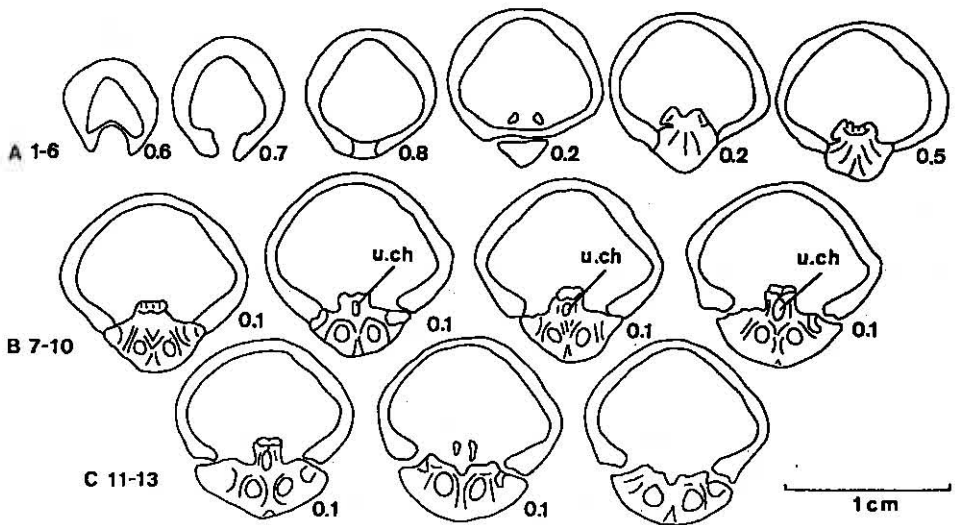


Fig. 7b. *Coenothyris vulgaris* (Schlotheim) from Bukowie; serial transverse sections of specimen MUZ FIG 1362 (II) 127, L = 32.3 mm, W = 25.4 mm, T = 17.1 mm, through hinge part of shell with "peculiar" cardinal process; central umbonal chamber (u. ch.) is seen at B8-10 under the myophore

Szlify seryjne z *Coenothyris vulgaris* (Schlotheim) przez zawiasową część muszli z widocznym nietypowym wyrostkiem zawiasowym i umbonalną komorą centralną (u. ch.) pod nim — na pozycji B8-10

Bliżyn (E. Popiel-Barczyk, H. Senkowiczowa, 1989, pl. I, figs. 2a, b, 8a-c), to the Anisian specimens from Mecsek Mts. in southern Hungary (A. Török, 1993a, pl. 2, figs. 3, 5; A. Török, 1993b, pl. I, fig. 1) and to the Anisian forms of the Yugoslavian Carpatho-Balkanides (D. Urošević *et al.*, 1992, pl. I, figs. 9-11). Some specimens of *C. vulgaris* (Schlotheim) from Bukowie (Pl. I, Fig. 7) show a resemblance in their exterior features (the shape of the shell, the development of the anterior margin) to big specimens of *C. acuta* Radulović, 1992 from the Upper Carnian in the Stara Planina Mts. region (V. Radulović *et al.*, 1992, pl. 2, fig. 8, text-figs. 8-13).

The morphology of the interior of the shell is similar to the adequate features of the specimens from the Terebratula beds in the Holy Cross Mts. (E. Popiel-Barczyk, H. Senkowiczowa, 1989, figs. 3-6) and in Grotów in SW Poland (H. Senkowiczowa, E. Popiel-Barczyk, 1993, figs. 2, 4, 5). No dental plates have been stated in any sectioned specimens (Fig. 7). In one specimen a presence of the central umbonal chamber (u. ch.) under the myophore is seen in the drawing of the massive and bipartial cardinal process (Fig. 7b). The patterns of the hinge plates, crural bases and the septum are similar to those described in specimens from Grotów as *Coenothyris* sp. (H. Senkowiczowa, E. Popiel-Barczyk, 1993, fig. 4). The septalium is wide and deeper than that in the Grotów specimens (Fig. 7C15-17). The crural processes in the reconstructed loop (Fig. 7a) are longer (*l.c.*, fig. 5a). The septum is long and reaches about 1/2 of the brachial valve length. It is terminated in the place where the descending branches of loop turn towards the back.



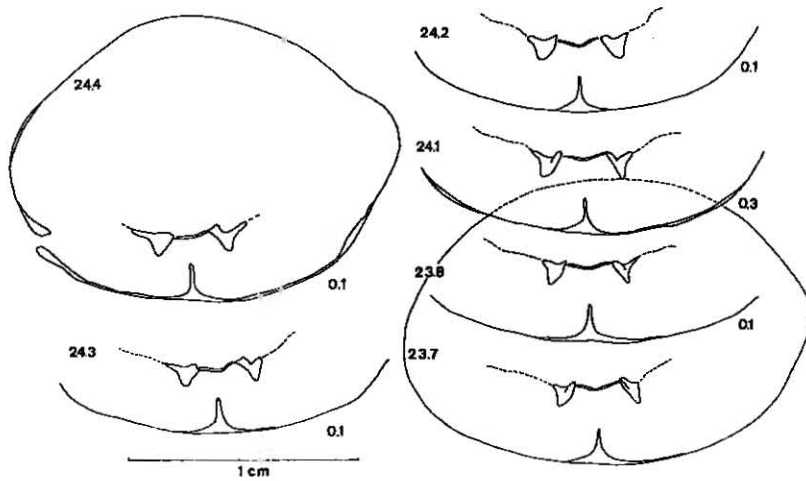


Fig. 7c. *Coenothyris vulgaris* (Schlotheim) from Bukowie; serial transverse sections of specimen MUZ PIG 1362 (II) 130; L = 30.5 mm, W = 28.1 mm, T = 15.2 mm, through hinge part of shell with "platform" of probably spiculate structures

Szlify seryjne przez zawiasową część muszli *Coenothyris vulgaris* (Schlotheim) z widoczną „platformą” prawdopodobnie struktur spikulowych

Three sectioned specimens showed limestone structures known from the bibliography as spiculate structures (see G. Steinich, 1963, 1965; E. Popiel-Barczyk, 1968; T. N. Smirnova, 1972; T. Binkevich, E. Popiel-Barczyk, 1979; A. Somody, 1989) or as sub-loop skirts (M. M. Cox, F. A. Middlemiss, 1978; F. A. Middlemiss, 1991). In the Bukowie specimens, these structures are seen on the drawings in the hinge part of the brachial valve between the crural bases and the hinge plates, over the septum. They form a sort of a "platform" which does not rest on the valve bottom (Fig. 7c). The "platform" is almost parallel to the valve bottom. It may be followed on the successive drawings of the sectioned surface.

The spiculate structures under discussion mostly occur in the Cretaceous and present species in the vicinity of the loop, being interpreted as its reinforcement. They are connected with the spicules inside the shell (in the mantle or anterior wall of the body) and are built of the spiculate aggregates (E. Popiel-Barczyk, 1968, pl. I, figs. 2, 2a, pl. VII, fig. 5a; T. N. Smirnova, 1972, p. 59, fig. 25; T. Bilinkevich, E. Popiel-Barczyk, 1979, fig. 7; A. Somody, 1989, fig. 11). The forms known as the sub-loop skirts do not have any distinct reference to the spicules. They are believed, however, to reinforce and protect in their function (M. M. Cox, F. A. Middlemiss, 1978, p. 419, text-fig. 3; F. A. Middlemiss, 1991, p. 238, figs. 5, 6).

Both the limestone structures inside the shells which resemble the spiculate structures or the sub-loop skirts have not been described till recent in Poland in the papers on the Triassic brachiopods.

**O c c u r r e n c e .** — *Coenothyris vulgaris* (Schlotheim) is a species generally known from the Middle Triassic sediments (Anisian, Ladinian) in the Central-European basin and in the Tethys area.

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## NIKTÓRE TEREBRATULIDA (BRACHIOPODA) Z OSADÓW WAPIENIA MUSZLOWEGO GÓR ŚWIĘTOKRZYSKICH

### Streszczenie

W artykule przedstawiono wyniki badań morfologii wnętrza muszli niektórych przedstawicieli rzędu Terebratulida Waagen, 1883 z wapienia muszlowego północnego i południowego obrzeżenia Gór Świętokrzyskich (fig. 1). Metodą szlifów seryjnych, stosowaną powszechnie w odniesieniu do ramiononogów mezozoicznych, zbadano kolekcję okazów z wapieni gruzłowatych z warstw z *Plagiostoma striatum* z dolnego wapienia muszlowego z okolicy Młodzaw (fig. 2, 4 i 5) i Wolicy (fig. 3 i 6) oraz z górnego wapienia muszlowego z poziomu *Ceratites spinosus* z okolic Bukowia (fig. 7).

Stwierdzono, że wewnętrzna budowa muszli badanych okazów wskazuje na ich przynależność do trzech różnych rodzajów: *Aulacothyroides* Dagis, 1965, *Sulcatinella* Dagis, 1974 i *Coenothyris* Douvillé, 1879 i, że dotychczasowe oznaczenia większości Terebratulida z tego terenu — jako *Coenothyris vulgaris* (Schlotheim) — nie mogą być uznane za poprawne. Opisano dwa nowe gatunki: *Aulacothyroides alius* sp.n. (tabl. I, fig. 1–6) i *Sulcatinella subsulcata* sp.n. (tabl. II, fig. 1–8), co zmieniło dotychczasowe zasięgi geograficzne obu rodzajów. Zasięg geograficzny rodzaju *Aulacothyroides* Dagis, 1965, znanego w Polsce jedynie z okolic Dżiewkowic na Górnym Śląsku (K. Usnarska-Talerzak, 1988, 1990), uległ przesunięciu ku północy na obszar Gór Świętokrzyskich. Rodzaj *Sulcatinella* Dagis, 1974 nie był dotychczas notowany w Polsce. Znany był w Europie jedynie z anizyku Węgier (J. Pálfy, A. Török 1992). Stwierdzenie jego w dolnym wapieniu muszlowym w Górach Świętokrzyskich i na Podlasiu oraz prawdopodobnie na Górnym Śląsku przesunęło jego zasięg geograficzny w Europie z Węgier ku północy na obszar centralnej Polski. Zbadano również nieznanne dotychczas szczegóły budowy wewnętrznej muszli *Coenothyris vulgaris* (Schlotheim) (fig. 7b, c).

PLATE I

Fig. 1–6. *Aulacothyroides alius* sp.n.

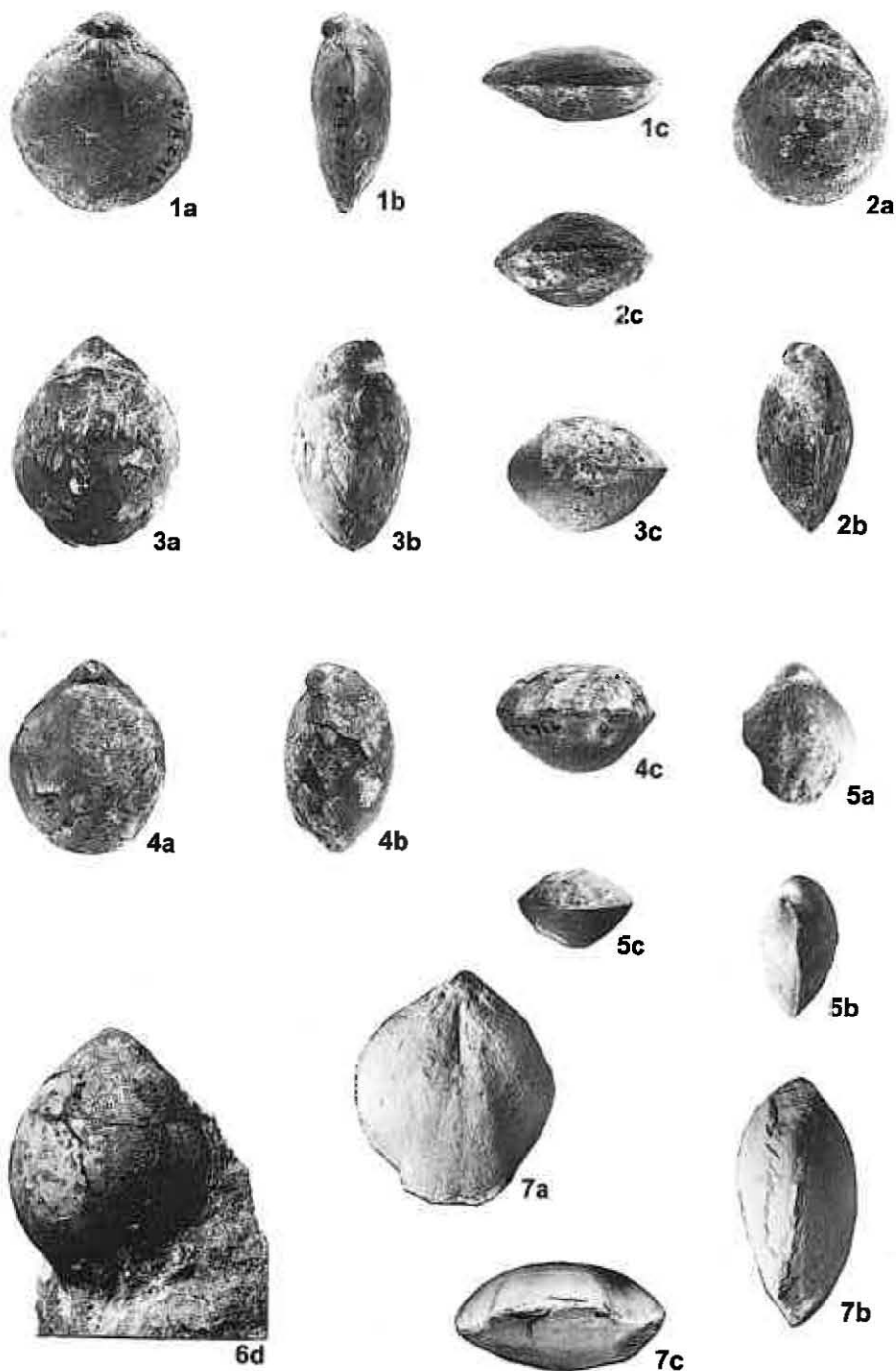
Fig. 1 — Młodzawy, MUZ PIG 1362 (II) 42, holotyp; Fig. 2 — Młodzawy, MZ VIII Bra-1676; Fig. 3 — Łukowa, MUZ PIG 1362 (II) 30; Fig. 4 — Młodzawy, MUZ PIG 1362 (II) 27; Fig. 5 — Chmielowice, MUZ PIG 1362 (II) 74; Fig. 6 — Wolica, MUZ PIG 1362 (II) 32; *Plagiostoma striatum* Beds; x 1

Fig. 7. *Coenothyris vulgaris* (Schlotheim)

Upper Muschelkalk, Bukowie, MUZ PIG 1362 (II) 131; x 1

In all figures: a — brachial valve view, b — lateral view, c — anterior view, d — pedicle valve view; phot. J. Modrzejewska

Na wszystkich figurach: a — widok od strony skorupki grzbietowej, b — widok z profilu, c — widok od brzegu czołowego, d — widok od strony skorupki brzusznej; fot. J. Modrzejewska



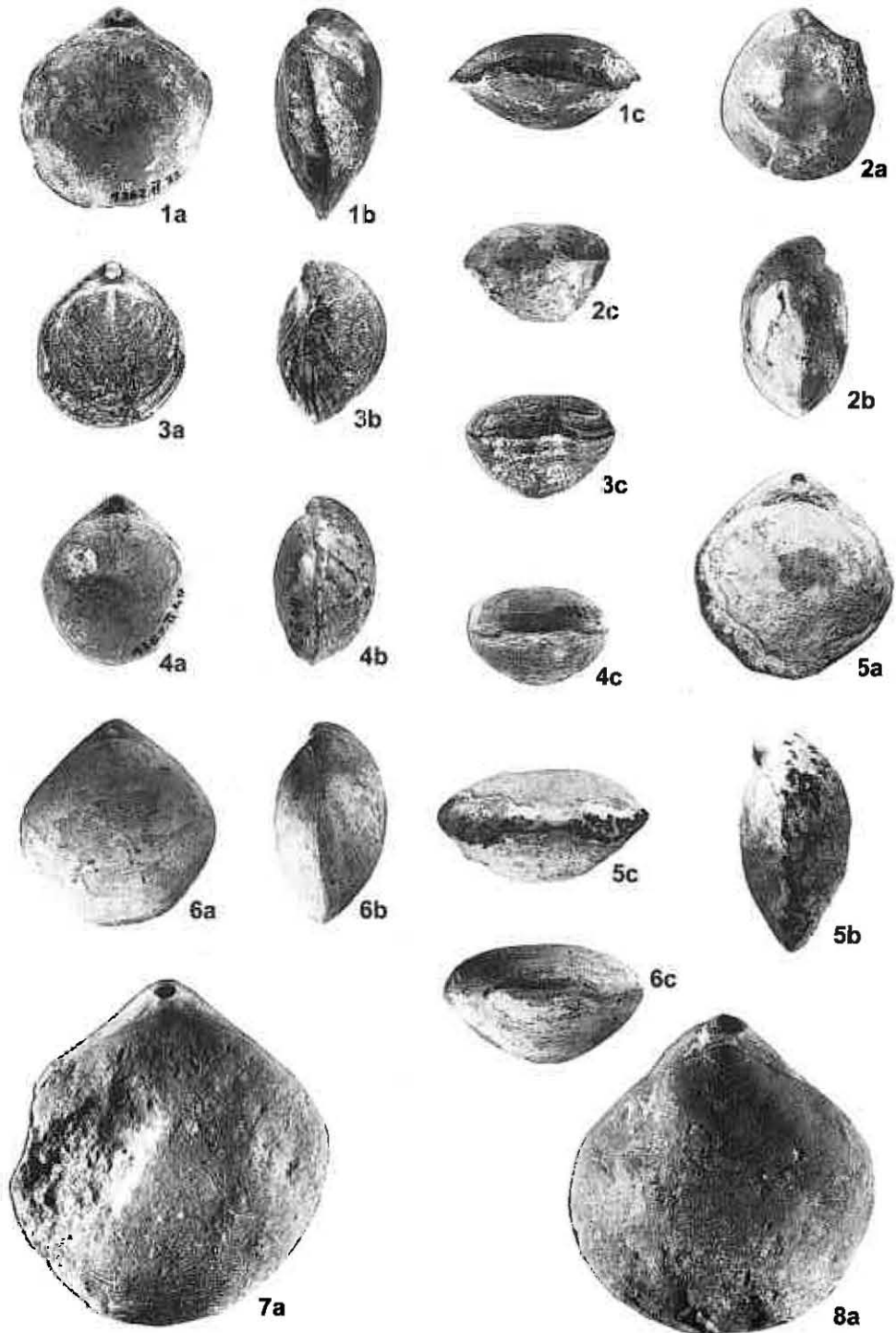
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## PLATE II

Figs. 1–8. *Sulcatinella subsulcata* sp.n.

Fig. 1 — Wolica, MUZ PIG 1362 (II) 33, holotyp; Fig. 2 — Wolica, MUZ PIG 1362 (II) 37; Fig. 3 — Wolica, MUZ PIG 1182 (II) 178, plaster of the sectioned specimen illustrated in the text — Figs. 6 and 6a (odlew gipsowy z okazu szlifowanego ilustrowanego w tekście — fig. 6 i 6a); Fig. 4 — Wolica, MUZ PIG 1362 (II) 49; Fig. 5 — Wolica, MUZ PIG 1362 (II) 45; Fig. 6 — Wolica, MUZ PIG 1362 (II) 21; Fig. 7 — Młodzawy, MZ VIII Bra-1672, juvenile specimen (okaz juwenilny); Fig. 8 — Młodzawy, MZ VIII Bra-1672a, juvenile specimen illustrated in the text — Fig. 5 and 5a (okaz juwenilny ilustrowany w tekście — Fig. 5 i 5a)

*Plagiostroma striatum* Beds; Figs. 1–6 — x 1, phot. J. Modrzejewska; Figs. 7, 8 — x 3, phot. L. Dwornik



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