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THE JURASSIC BIVALVE FAUNA FROM THE WESTERN SIDE OF THE BUCEGI MOUNTAINS PART II. SUBCLASS PTERIOMORPHIA (ORDER PECTINOIDA)

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Abstract: Eleven taxa, from the bivalve subclass Pteriomorphia (Order Pectinoida) were recorded from the rich faunal assemblages of the Middle Jurassic (Bajocian - Bathonian) deposits that outcrop in the western side of Bucegi Mountains (South Carpathians). All of these species are described and figured for the first time for the studied area and many of them represent the first record of the respective taxa in the Bucegi Mountains. The bivalves occur in rocks ranging from calcareous sandstones and argillaceous silts to biocalcarenites. Stratigraphic occurrence and facies affinities are also recorded for the studied taxa.

Key words: Bivalves, Pteriomorphia, Middle Jurassic, Bucegi, South Carpathians, Romania.

INTRODUCTION

The present paper represents a continuation of the systematic description of the Middle Jurassic bivalve faunas collected from the western slope of the Bucegi Mountains, from deposits well known for their rich fossil assemblages. From north to south, the entire western slope of the Bucegi Mts. represents an almost continuous outcrop of Bajocian to Kimmeridgian deposits, included into the sedimentary cover of the Getic Nappe, belonging to the Median Dacides, South Carpathians (Săndulescu, 1984). Pre-Hercynian metamorphic rocks represent the basement of the Getic Nappe, while the sedimentary cover contains Paleozoic and Mesozoic deposits. The sedimentation processes were differentiated during the Jurassic in the area of the Getic Domain, with many major gaps present, e.g. the Jurassic and Cretaceous deposits overlying Precambrian rocks of the Leaota Formation in the studied area.

Patrulius *et al.* (1980) informally assigned the Middle Jurassic deposits that outcrop in the Bucegi Mts. to the Strungulița (Bajocian) and Strunga (Bathonian – Lower Callovian) formations; these units have been described in details by Lazăr (2000, unpublished PhD thesis).

The majority of the papers published up to 1999 gave only species lists or illustrated only a few species of bivalves, although fossils collected from this area have been studied since the 19th century. Lazăr (2000, 2002, and 2004) described and figured twenty-two species from the Subclass Anomalodesmata and eighteen species from the subclasses Palaeotaxodonta and Pteriomorphia (Orders Arcoida, Pterioida and Limoida). An outline of the history of palaeontological researches in this area, a general account of the geology and stratigraphy, a list with localities of the samples and the fossiliferous levels mentioned for each species (Fig. 1), have been presented in previous contributions (Patrulius, 1969; Lazăr, 2000, 2002, 2004).

Subclass Pteriomorphia is very well represented in the studied area, with thirty species identified until the present. For some of the species it was possible to collect a significant number of individuals. The representatives of the orders Arcoida, Pterioida and Limoida have been described in a previous paper (Lazăr, 2004). Therefore, the present paper describes and figures eleven taxa, belonging to nine genera and subgenera of the Order Pectinoida, subclass Pteriomorphia.

The species described in the present paper belong to the suspensivore, epifaunal (*free-living, swimmer* or *byssate recliner*) ecological group, according to Duff (1978), and Johnson (1984). The *free-living* and *swimmer* forms are *Entolium (Entolium) corneolum, Camptonectes (Camptonectes) laminatus, C. (C.) auritus, Camptonectes (Camptochlamys) obscurus* and *Camptonectes (C.) clathratus*, some of which might have had byssal attachment during the early ontogeny. The *byssate recliner epifaunal* forms like *Oxytoma (Oxytoma) inequivalve, Chlamys (Chlamys) textoria, Radulopecten vagans, and Eopecten aff. spondyloides* are supposed to have had permanent byssal attachment.

The members of Pteriomorphia represent almost 15% of the bivalve assemblage and occur with moderate frequency in calcareous sandstones, argillaceous silts and biocalcarenites. The largest part of the specimens belonging to the genera *Entolium, Camptonectes, Camptochlamys* and *Radulopecten* were found as disarticulated (but not isolated) valves, suggesting an environment with moderate hydrodynamic energy, also supported by the fact that the delicate ornamentation and the auricles are very well preserved in some specimens and broken or crushed valves are rarely observed.

All taxa are described and figured for the first time from the study area and, in case of the majority of them, represents also the first record of the species in the Bucegi Mountains.

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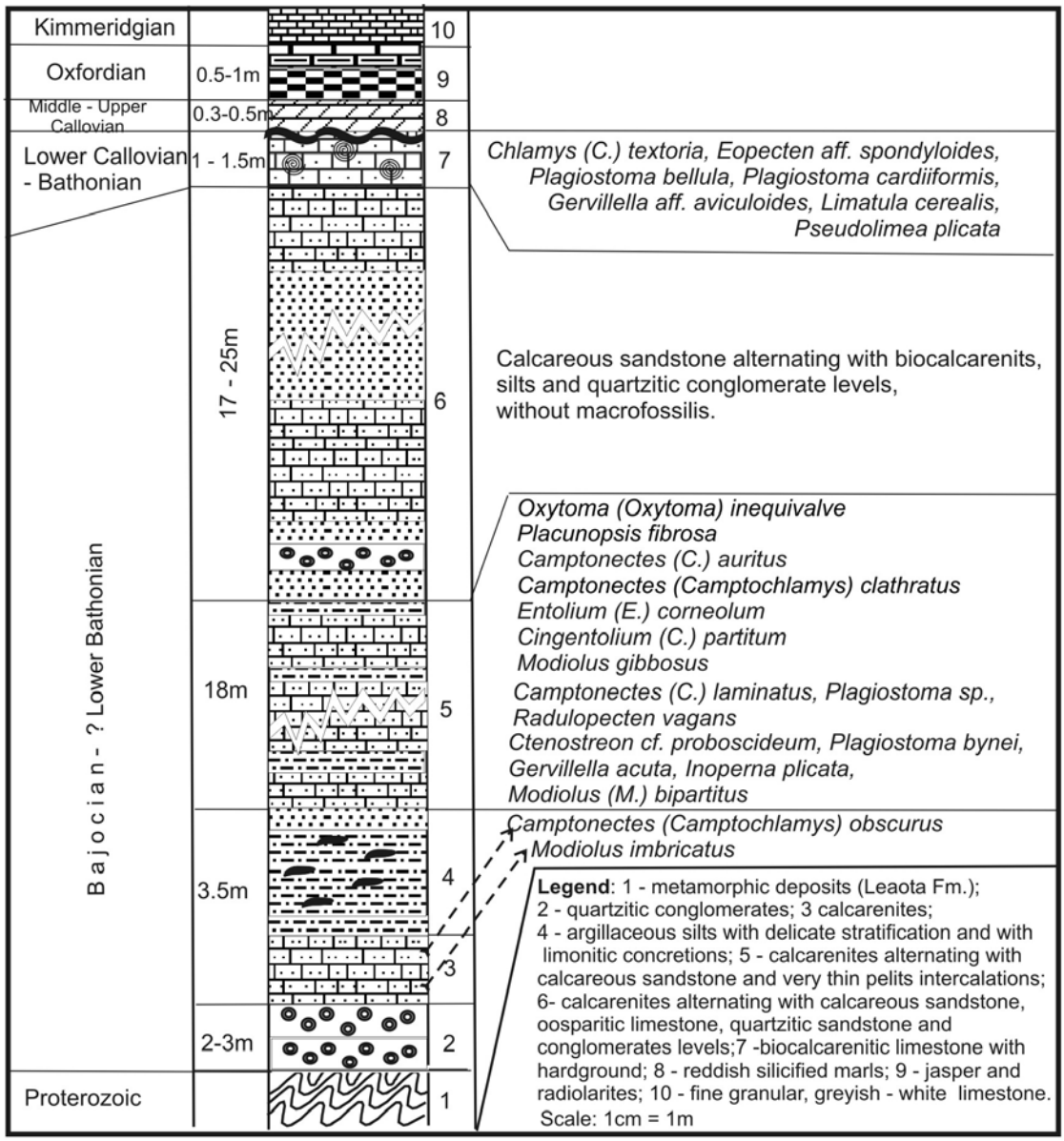

Fig. 1. Synthetic lithostratigraphic log from Strunga-Strungulița-Tătaru Peak area and the location of the bivalve assemblages containing representatives of the subclasses Pteriomorphia and Isofilibranchia

TAXONOMY

Class **Bivalvia** (BUONANNI, 1681) LINNÉ 1758
Order **Pectinoida** RAFINESQUE, 1815
Superfamily **Monotoidea** FISCHER 1887
Family **Oxytomidae** ICHIKAWA 1958
Genus *Oxytoma* MEEK 1864
Subgenus *Oxytoma s.s.*
Oxytoma (Oxytoma) inequivalve (J. SOWERBY 1819)
Pl. 1, figs. 1, 2

1819 *Avicula inaequivalvis* sp. nov., J. Sowerby, p. 78, pl. 224, figs. 2,3;

1854 *Avicula Münsteri* Bronn; Morris & Lycett, p. 129, Pl. XIV, fig. 6;

1863 *Avicula subcostata* Roemer; Lycett, p. 36, pl. 40, fig. 24;

1867 *Avicula Münsteri* Bronn; Laube, p. 31;

1868 *Avicula Münsteri* Bronn; Eichwald, p. 503, pl. XXII, fig. 13;

1899 *Avicula (Oxytoma) Münsteri* Bronn ; Greppin, p. 113, pl. IX, fig. 10; pl. XII, fig. 4;

1940 *Oxytoma inequivalve* (J. Sowerby); Cox, p. 98, pl. VI, figs. 9-12;

1948 *Oxytoma inequivalve* (J. Sowerby); Cox & Arkell, p. 7;

1957 *Oxytoma inequivalvis* (J. Sowerby); Himşiaşvili, p. 102, Pl. XV, fig. 5;

1969 *Oxytoma (Oxytoma) inequivalvis* (J. Sowerby); in Moore, p. N345, Fig. C69, 1a;

1973 *Oxytoma inequivalvis* (J. Sowerby); Romanov, p. 62, pl. IV, figs. 19-22;

1974 *Oxytoma inequivalvis* (J. Sowerby); Bărbulescu, p. 105, pl. XXII, fig. 3;

1978 *Oxytoma (Oxytoma) inequivalvis* (J. Sowerby); Duff, p. 54, pl. 4, figs. 11, 15-18, 21-22;

1986 *Oxytoma (Oxytoma) inequivalvis* (J. Sowerby); Pugaczewska, p. 55, pl. 18, fig. 1a;

1995 *Oxytoma (Oxytoma) inequivalvis* (J. Sowerby); Jaitly *et al.*, p. 191, pl. 12, figs. 12-14.

Material: one specimen (LPBIIIL1501), composite mould of a left valve with moderate preservation.

Approximate measurements: Length (L) = ? 22 mm; Height (H) = ? 19mm.

Remarks: Left valve with oblique – ovate general outline and moderate convexity. The umbo is situated in the anterior third of the hinge line; the hinge line is long, narrow and straight, with its longest segment situated in the posterior part; the posterior wing is well developed; the ornamentation is represented by 12 distinct radial ribs, with 3-4 radial delicate, secondary ribblets in between (pl. 1, fig. 1).

Occurence: "La Politzie" Saddle outcrop situated in the northern extremity of the western slope of Bucegi Mts., within grey calcareous sandstones, Strungulița Formation, Bajocian.

Stratigraphic and geographic distribution: ***Romania***: Central Dobrogea (Hârşova Hill), in limestones with *Macrocephalites macrocephalus*; Rarău (Câmpulung – Pojorâta): Bajocian; Anina: Middle Callovian. The taxon has a large distribution in ***Europe***, from the Liassic to the Kimmeridgian; also known from the Kuchh-Dhosa Oolite of ***India*** (?Oxfordian).

Family **Terquemiidae** COX 1964
Genus *Placunopsis* MORRIS & LYCETT 1853
Placunopsis fibrosa LAUBE 1867
Pl. 1, figs. 3, 4

1853 *Placunopsis jurensis* (Roemer); Morris & Lycett, p. 6, Pl. I, figs. 8, 8a;
1867 *Placunopsis fibrosa* nov. sp. Laube, p. 16, Pl. I, fig. 7;
1948 *Placunopsis fibrosa* Laube; Cox & Arkell, p. 16;
1951 *Placunopsis fibrosa* Laube; Krach, p. 376;
1969 *Placunopsis fibrosa* Laube; Fischer, p. 91;
1969 *Placunopsis fibrosa* Laube; in Moore, p. N380, figs. C100: 4a-c;
1974 *Placunopsis fibrosa* Laube; Bărbulescu, p. 115, Pl. XXVI, fig. 1;
1991 *Placunopsis fibrosa* Laube; Romanov *et al.*, p. 10, Pl. I, figs. 3-6
1995 *Placunopsis fibrosa* Laube; Jaitly *et al.* p. 192, pl. 18, fig. 1.

Material: one specimen (LPBIIIL 1714), a left valve of moderate degree of preservation.

Measurements: H = 28 mm, L = 27, 5 mm.

Description: orbicular, inequilateral, moderately convex left valve, with slightly elongated anterior part; the dorsal margin is short and almost straight; the anterior, posterior and ventral margins are largely convex and describe together an approximately semicircular trajectory; the umbo is very small, placed at about 2 mm under the hinge line. The ornamentation is represented by numerous, delicate, distinct wavy radial ribs; the radial ribs are intersected by concentric, comarginal growth lines that are distinct and more pronounced (like comarginal plicae) at irregular intervals.

Remarks: The specimen from Bucegi is very similar, in shape and ornamentation, to specimens described by Bărbulescu (1974) from Bathonian deposits from Central Dobrogea and to those described by Romanov (1991). *Placunopsis oblonga* LAUBE (1867, pl.I, fig. 7) is more elongated in the dorso-ventral direction; *P. fibrosa* is very similar to *P. radiata* (PHILLIPS 1829), but the later taxon appears to have straighter and more slightly wavy radial ribs and more weakly developed radial riblets (Jaitly *et al.*, 1995, p. 192).

Occurence: Tătarul Peak, within calcareous sandstones, Strungulița Formation, Bajocian.

Stratigraphic and geographic distribution: ***Romania***: Central Dobrogea (Tichileşti Valley): rarely in Upper Bathonian deposits; Roşia (Pădurea Craiului): Bajocian – Callovian; ***France***: SW Ardennes in Bathonian; ***Germany***: Dogger; ***Poland***: Bathonian; ***England***: abundant in the Bathonian (the Great Oolite); ***Russia, Turkmenistan, Azerbaijan***: Callovian.

Superfamily **Pectinoidea** RAFINESQUE 1815
Family **Entoliidae** KOROBKOV 1960
Genus *Entolium* MEEK 1865
Subgenus *Entolium* MEEK 1865
Entolium (Entolium) corneolum (YOUNG and BIRD 1828)
Pl. 1, figs. 5 - 10

1828 *Pecten corneolus* sp. nov., Young & Bird, p. 234, pl. 9, fig. 5;
1854 *Pecten demissus* Phillips; Morris & Lycett, p. 127, pl. XIV, fig. 7;
1863 *Pecten cingulatus* Goldfuss, p. 74, pl. XCIX, fig. 3;
1867 *Pecten spathulatus* Roemer; Laube, p. 9;
1867 *Pecten demissus* Phillips; Laube, p. 10;
1871-1873 *Pecten cingulatus* Goldfuss; Terquem et Jourdy, p. 127;
1888 *Pecten disciformis* Zieten; Herbich, p. 324, pl. XXVIII, fig. 7;
1899 *Pecten (Entolium) demissum* Phillips; Simionescu, p. 27, pl. II, fig.6;
1923 *Syncyclonema demissum* (Phillips); Lissajous, p. 167;
1923 *Syncyclonema spathulatum* (Roemer); Lissajous, p. 168;
1926 *Entolium cingulatum* (Goldfuss); Staesche, p. 93, pl. 4, figs. 3, 4;
1926 *Entolium demissum* (Phillips); Staesche, p. 99, pl. 4, fig. 5;
1936 *Entolium cingulatus* (Goldfuss); Dechaseaux, p. 60;
1936 *Entolium spathulatus* (Roemer); Dechaseaux, p. 63;
1936 *Entolium disciformis* (Schübler); Dechaseaux, p. 61, pl. VIII, figs. 12, 13;
1936 *Entolium demissus* (Phillips); Dechaseaux, p. 61, 62, text-fig. 14;
1948 *Entolium corneolum* (Young & Bird); Cox & Arkell, p. 15;
1957 *Entolium demissum* Phillps; Himşiaşvili, p. 126, pl. XXIII, fig. 3;
1957 *Entolium cingulatum* Goldfuss; Himşiaşvili, p. 128, pl. XXIII, figs. 5, 6;
1961 *Entolium demissum* (Phillips); Bărbulescu, p. 701, 702;

1961 *Entolium cf. cingulatum* (Goldfuss); Bărbulescu, p. 702;
1963 *Entolium demissus* Phillips; Bărbulescu, p. 49, pl. V, figs. 38-40;
1965 *Entolium corneolum* (Young & Bird); Cox, p. 51;
1965 *Entolium cingulatum* (Goldfuss); Cox, p. 52, pl. 6, fig. 5;
1969 *Entolium (Entolium) demissum* (Phillips); in Moore, p. 346, figs. C71, 4a, 4b;
1973 *Entolium demissum* (Phillips); Romanov, p. 43, pl. V, figs. 1-12;
1974 *Entolium demissus* Phillips; Bărbulescu, p. 111, pl. XXIII, figs. 7, 9;
1974 *Entolium cingulatum* Phillips; Bărbulescu, p. 111, pl. XXIII, fig. 8;
1976 *Entolium cingulatum* Goldfuss; Preda, p. 32, pl. II, fig. 18;
1976 *Entolium demissus* Phillips; Preda, p. 31, pl. II, fig. 19; pl. VI, fig. 1;
1978 *Entolium (Entolium) corneolum* (Young and Bird); Duff, p. 62, pl. 4, figs. 25, 29, 30; pl. 5, figs. 3-5, text-fig. 20;
1984 *Entolium (Entolium) corneolum* (Young and Bird); Johnson, p. 45, pl. 1, figs. 24-26;
1989-1990 *Entolium (Entolium) demissus* (Phillips); Dikani & Makarenko, p. 43, pl. 6, figs. 1-6;
1995 *Entolium (Entolium) corneolum* (Young and Bird); Szente, p. 99, pl. 2, fig. 2;
1995 *Entolium (Entolium) corneolum* (Young and Bird); Jaitly *et al.*, p. 193, pl. 18, figs. 8-9;
1997 *Entolium (Entolium) corneolum* (Young and Bird); Radulovič *et al.*, p. 147-148, pl. I, fig. 7;
1998 *Entolium demissus* (Phillips); Bărbulescu in Dragastan *et al.*, p. 138, pl. IV, fig. 1;
1998 *Entolium demissum demissum* (Phillips); Turculeț, p. 96, pl I, figs. 1-13; pl. II, figs. 1-14;
2004 *Entolium (Entolium) corneolum* (Young and Bird); Lazăr *et al.*, p. 236, pl. III, figs. 1-4.

Material: seven specimens (LPBIIIL1669 - 1675) represented by internal or external moulds with fragments of shell, from both left and right valves.

Meassurements:

No. LPBIIIL	H (mm)	L (mm)	H / L
1669	24	22	1,23
1670	16	13	1,23
1671	23	23	1,00
1672	43	38	1,13
1673	41	36	1,13
1674	30	28	1,07
1675	?34	28	1,07

Remarks: The papers mentioned at the synonymy include numerous descriptions of the same species, referred to different taxa by different authors. One of the most complete and clearest descriptions of this species was given by Duff (1978, p. 62, 63). Duff specified the distinctive features of *Entolium (Entolium) corneolum*, and thus he put order in the "troubled" synonymy of the species. Moreover, because the type specimen of *Pecten corneolus*, described originally by Young & Bird in 1828, was lost, Duff (1978) described in detail a neotype. Johnson (1984) in his wonderful work on the Pectinidae and Propeamusiidae of the European Jurassic presents an impressive synonymy for this species and discusses largely all the specific characteristics, the confusions and the inconsistencies that generated the description of this species under different names. Studying an impressive number of specimens, from almost all the European collections, Johnson (1984) made also biometric studies, demonstrating the variability of the species and supporting the placement of all specimens, described under different names by different authors, within *Entolium (Entolium) corneolum* (YOUNG and BIRD). Bărbulescu (1963, p. 49) pointed out that numerous authors studying this species in detail have divergent opinions concerning the umbonal angle, feature that was considered an important specific character. Johnson (1984, p. 49, text-fig. 32) clarified this problem as well, showing that the variability of the umbonal angle/height ratio is very large, therefore the species: *Entoilum disciformis, E. spathulatus, E. demissus*, can be included without doubt into *E. (E.) corneolum*.

Although the specimens from Bucegi Mts. have a moderate degree of preservation, they display the main characteristics of *E. (E.) corneolum.* The shells are equivalves and equilateral (without the auricles), being sub-orbicular or sub-ovate, with H/L ratio more than 1 (1, 07-1, 15). The auricles are small, unequal, and reach the anterodorsal and posterodorsal margins, very near to umbo, under an obtuse angle. The length of the shell is variable, but in the majority of the specimens is smaller than the height, leading to an oval shape. The umbo is small, acute, orthogyrous with median position on the dorsal margin. The anterior, posterior and ventral margins describe a largely curved, semicircular, continuous line. The surfaces of both valves show concentric growth lines that are regularly spaced, closely packed, and sometimes, at regular intervals, more pronounced. On the surface of a few specimens with well preserved shell, delicate, very fine, radial striae can be observed, representing possibly part from the external calcite layer. Our specimens differ from *Cingentolium (C.) partitum* (J. DE C. SOWERBY 1840) by the lack of the internal lateral ridges in the umbonal region.

Occurrence: Strungulița Pass, Strunga Pass, from calcareous sandstones in the upper part of the Strungulița Formation, Bajocian.

Stratigraphic and geographic distribution: ***Romania***: Central Dobrogea (Hârşova, Mireasa, Cheia, Casian, Piatra Taşaul), Bathonian–Callovian; Roşia (Pădurea Craiului): Liasic and Bajocian; Hăghimaş Mts. (Piatra Liciului): Bajocian-Bathonian; Anina: Bathonian – Callovian; Codlea: Bathonian; Rarău (Câmpulung – Pojorâta): Bajocian; ***England***: from Aalenian to Kimmeridgian (distributed throughout the Inferior Oolite to the Kimmeridge Clay); ***Luxemburg, France, Germany, Suisse, Poland, Russia, India:*** from Toarcian to Bajocian, Bathonian, Callovian, Oxfordian.

Genus *Cingentolium* YAMANI 1983
Subgenus *Cingentolium* YAMANI 1983
Cingentolium (Cingentolium) partitum (J. DE C. SOWERBY 1840)
Pl. 1, figs.11 -12

1840 *Pecten partitus* sp. nov. J. de C. Sowerby, p. 328, pl. 22, figs. 5, 5a;
1985 *Neoentolim cingulatum* (Goldfuss); Romanov, p. 38, pl. 4, figs. 12, 14, 15, 17, 18, 19 ;
1995 *Cingentolium (Cingentolium) partitum* (J. de C. Sowerby); Jaitly *et al.*, p.193, pl. 18, figs. 10-13;
2000 *Cingentolium (Cingentolium) partitum* (J. de C. Sowerby); Delvene, p. 117, pl. 5, figs. 3, 5-7a.

Material: six disarticulate specimens (LPBIIIL1666-1668; 1949-1951) internal and external moulds with fragments of shell.

Measurements:

No. LPB IIIL	H (mm)	L (mm)	H / L
1666	11	10	1,10
1667	14	13	1,07
1668	15	13	1,15
1949	14	12	1,16
1950	11,57	10	1,15
1951	13	12	1,08

Remarks: Considering the general outline of the valves, dimensions and the presence of two internal laminae diverging from the umbones, forming a very acute angle with the dorsal margin and connected with the palial line, our specimens closely agree with those described by Cox (1965, p. 52, pl. 6, fig. 5) and Yamani (1983, p. 7, pl. 1, figs. 1 - 5) as *Cingentolium (Cingentolium) cingulatum* (GOLDFUSS). On the internal moulds, these internal laminae appear as grooves. The valves have low convexity or they are planoconvex. However, in some specimens the ornamentation is very well preserved, consisting of numerous equidistant commarginal ridges, considered by Jaitly *et al.* (1995, p. 193) as a characteristic feature of *Cingentolium (Cingentolium) partitum* (J. de C. Sowerby). On the other hand Delvene (2000, p. 117) shows that *C. (C.) cingulatum* (Goldfuss) is close to *C. (C.) partitum* (J. de C. Sowerby) and differs from it "*in the presence of dense internal radial lines observed clearly in shells (as grooves) or in internal moulds (as ribs)*". Within our sample, only two specimens show on their internal moulds few radial lines reminiscent of delicate radial ribs. For all reasons it is considered that, the specimens from Bucegi are more closely related to *C. (C.) partitum* (J. de C. Sowerby).

Occurrence: the species is very abundant within the oncoidal calcarenites with algal nodules and microbial films from Strunga Pass, in the upper part of the Strunguliţa Formation (Bajocian).

Stratigraphic and geographic distribution: ***Romania***: Central Dobrogea: Callovian; Anina (Colonia Cehă Quarry): Lower Callovian. ***Germany***: Liasic – Kimmeridgian; ***Tanganyika*** and ***Kenya***: Upper Jurassic; ***France***: Lower – Upper Jurassic; ***Poland***: Liasic; ***India***: Callovian – Lower Oxfordian; ***Caucaz***: Upper Liasic - Malm; ***Pamir***: Toarcian-Oxfordian; ***Central Asia***: Bajocian-Callovian.

Family **Pectinidae** RAFINESQUE 1815
Genus *Camptonectes* AGASSIZ in MEEK 1864
Subgen *Camptonectes* AGASSIZ in MEEK 1864
Camptonectes (Camptonectes) auritus (SCHLOTHEIM 1813)
Pl. 2, figs.1 – 5

1813 *Chamites auritus* sp. nov. Schlotheim, p. 103;
1862-1863 *Pecten lens* Sowerby; Goldfuss, p. 48, pl. XCI, figs. 3a-c;
1867 *Pecten lens* Sowerby; Laube, p. 12;
1871-1873 *Pecten lens* Sowerby; Terquem et Jourdy, p. 127;
1888 *Pecten lens* Sowerby; Herbich, p. 324, pl. XXVIII, fig. 3;
1899 *Pecten (Camptonectes) lens* Sowerby; Greppin, p. 121, pl. XIII, fig. 9;
1903-1915 *Camptonectes Saturnus* (d'Orbigby); Cossman, p. 4, pl. VII, fig. 5;
1916 *Pecten (Camptonectes) lens* Sowerby; Jekelius, p. 229;
1923 *Camptonectes lens* (Sowerby); Lissajous, p. 165;
1926 *Camptonectes lens* (Sowerby); Staesche, p. 76, pl. II, fig. 8;
1936 *Camptonectes lens* (Sowerby); Deschaseaux, p. 30, pl. IV, figs. 11, 14;
1936 *Camptonectes Mairei nov. sp*. Deschaseaux, p. 37, pl. V, figs. 8-10;
1948 *Camptonectes auritus* (Schlotheim); Cox & Arkell, p. 14;
1957 *Camptonectes lens* Sowerby; p. Himşiaşvili, p. 117, pl. XXIII, fig. 1;
1965 *Camptonectes auritus* (Schlotheim); Cox, p. 54;
1969 *Camptonectes (Camptonectes) lens* (Sowerby); Hertlein in Moore, p. N351, figs.C74 - 1a, b;
1973 *Camptonectes mairei* Dechaseaux; Romanov, p. 78, pl. VI, fig. 11;
1974 *Camptonectes (Camptonectes) lens* (Sowerby); Bărbulescu, p. 107, pl. XXII, figs. 8-10;
1976 *Camptonectes lens* (Sowerby); Preda, p. 31, pl. II, fig. 6;
1978 *Camptonectes (Camptonectes) auritus* (Schlotheim); Duff, p. 66, text-fig. 22, pl. 5, figs. 22, 25;
1983 *Camptonectes (Camptonectes) auritus* (Schlotheim); Yamani, p. 17, pl. 2, figs. 1-4;
1985 *Camptonectes (Camptonectes) lens* (Sowerby); Romanov, p. 80, pl. XIII, figs. 4-8;
1986 *Camptonectes (Camptonectes) lens* (Sowerby); Pugaczewska, p. 57, pl. 24, figs. 2, 3a, b; pl. 25, fig. 3;
1989-1990 *Camptonectes (Camptonectes) lens* (Sowerby); Dikani & Makarenko, p. 50, pl. 7, fig.3;
1995 *Camptonectes auritus* (Schlotheim); Szente, p. 62, pl. 6, fig. 12;
1995 *Camptonectes (Camptonectes) auritus* (Schlotheim); Jaitly *et al.*, p. 195, pl. 21, figs.1-4;
1997 *Camptonectes (Camptonectes) auritus* (Schlotheim); Bărbulescu *et al.*, p. 52;
1998 *Camptonectes (Camptonectes) lens* Sowerby; Bărbulescu in Dragastan *et al.*, p. 138, pl. IV, fig. 5;

Material: ten specimens (LPBIIIL 1676, 1677; 1679-1686), either external or composite moulds with remains of shells from right and left disarticulated valves, with moderate degree of preservation.

Measurements:

No. LPB	H (mm)	L (mm)	H / L
1679	28	30	0,93
1681	36	40	0,90
1682	52	-	-
1683	52	54	0,96
1684	51,5	52	0,99
1685	-	51	-
1686	44	44	1

Description: Inequilateral, inequivalve shell with almost flat right valve and moderately convex left valve. Small, unequal auricles, anterior auricle larger than posterior one; below the anterior auricle a large byssal notch can be observed; sub-orbicular general shape; the umbonal angle varies from 89^0 to 98^0. The posterior auricle of the right valve has a straight dorsal margin, shorter than that of the anterior auricle, and its posterior margin is oblique, slightly concave, forming an obtuse angle with the posterodorsal margin of the shell. It is ornamented with commarginal, delicate, densely packed growth lines and a few radial, oblique, delicately punctuated striae. The general shape of the shell is sub-orbicular, with large convex, almost perfect circular ventral margin. The umbo is small, orthogyrous, rounded. The specimens LPB IIIL: 1682, 1683, 1684, show a straight or slightly convex posterodorsal margin, with an obtuse posterodorsal angle. The ornamentation is represented on both valves by numerous, delicate, divaricated, punctuated radial striae. The radial striae are largely divergent curved to the anterior and posterior extremities of the shell. The presence of numerous delicate concentric growth lines intersecting the radial threads, generate a reticulate aspect with fine punctuations of the ornamentation.

Remarks: Johnson (1984, p. 117) showed that this species has been often described under different names by different authors, considering the delicate ornamentation and the general orbicular shape of the shell as distinctive criteria and without regard to the large variability of these characters present in ontogenetic and ecophenotypic varieties. The ecophenotypic variations defined by Johnson (1984, p. 1984) are also observed in the Bucegi specimens, with either the presence of strong commarginal ornamentation or specimens having the central part of the right valve eroded with reduced ornamentation.

Occurrence: Strunga Pass, Strungulița Pass, Tătarul Peak, Obârşia Văii Tătarului – very abundant in calcareous sandstones and calcarenites from upper part of the Strungulița Formation, Bajocian.

Stratigraphic and geographic distribution: ***Romania***: Central Dobrogea (Tichileşti Valley – Upper Bathonian; Hârşova, Baroi – Lower Callovian); Hăghimaş Mts. (Piatra Liciului) – Bajocian; Southern Carpathians (Codlea) –Lower Bathonian; ***Hungary***: (Bakony Mts. - Som Hill) – Bajocian; ***Poland***: Bajocian – Callovian; Southern ***Germany***: Hettangian and Lower Toarcian, Posidonienschiefer; ***Spain***: Liassic; ***France***: Bajocian – Bathonian; ***England***: Lower Callovian (Upper Cornbrash), Callovian (Kellaways Rock), Oxfordian (Lower Oxford Clay) - Kimmeridgian (Kimmeridge Clay).

Camptonectes (Camptonectes) laminatus (J. SOWERBY 1818)
Pl. 2, figs. 6 - 10

1818 *Pecten laminata* sp. nov. J. Sowerby, p. 4, pl. 205, fig. 4;
1853 *Pecten Woodwardii* nov. sp. Morris & Lycett, p. 8, pl. I, fig. 20;
1863 *Pecten rigidus* J. Sowerby; Lycett, p. 31, pl. XL, fig. 16;
1871-1873 *Pecten anguliferus* sp. nov. Terquem et Jourdy, p. 128, pl. XIII, fig. 16;
1948 *Camptonectes laminatus* (J. Sowerby); Cox & Arkell, p. 13;
1948 *Camptonectes rigidus* (J. Sowerby); Cox & Arkell,p. 13;
1964 *Camptonectes laminatus* (J. Sowerby); Fischer, p. 36;
1969 *Camptonectes laminatus* (J. Sowerby); Fischer, p. 89; Lazăr *et al.*, p.
1969 *Camptonectes rigidus* (J. Sowerby); Fischer, p. 89, pl. IX, fig. 20;
1984 *Camptonectes (Camptonectes) laminatus* (J. Sowerby); Johnson, p. 124, pl. 4, figs. 10, 12-16, ? fig. 11;
1985 *Camptonectes (Camptonectes) laminatus* (J. Sowerby); Romanov, p. 83, pl. XIII, figs. 9-11;
1995 *Camptonectes (Camptonectes) laminatus* (J. Sowerby); Jaitly *et al.*, p. 195, pl. 19, fig. 6.
2004 *Camptonectes (Camptonectes) laminatus* (J. Sowerby); p. 237, pl. II, figs. 8,9.

Material: four specimens (LPBIIIL 1678; 1687-1689) composite moulds with remains of shell, from left and right valves.

Approximate measurements:

No. LPBIIIL	H (mm)	L (mm)	H / L	UA
1678	17,5	18	0,97	100^0
1687	25	21	1,19	$?82^0$
1688	26	24	1,08	98^0
1689	23	-	-	

Remaks: Essentially very similar to *C. (C.) auritus, C (C.) laminatus* is distinguished by a more elongated, suboval shell, with coarser ornamentation represented by radial, divaricated threads and punctuated striae. Numerous, delicate growth lines intersect the radial ornamentation, having sometimes the aspect of imbricated lamellae.

Occurrence: Strunga Pass – Obârşia Văii Tătarului, rare in grey calcareous sandstone from the upper part of Strungulița Formation (Bajocian).

Stratigraphic and geographic distribution ***England***: rare in Bajocian and Oxfordian; ***New Zeeland, Afghanistan***: Callovian; ***Japan***: Lower Liassic.

Subgenus *Camptochlamys* ARKELL 1930
Camptonectes (Camptochlamys) clathratus
(ROEMER 1836)
Pl. 3, figs. 1, 2

1836 *Pecten clathratus* sp. nov. Roemer, p. 212, pl. 13, fig. 9;
1853 *Pecten retiferus* sp. nov. Morris & Lycett, p. 9, pl. I, figs. 15, 15a;
1853 *Pecten personatus* Goldfuss; Morris & Lycett, p. 11, pl. I, fig. 17 (non fig. 17a);
1853 *Pecten clathratus* Roemer; Morris & Lycett, p.13, pl. I, fig. 19;
1936 *Camptochlamys retiferus* (Morris & Lycett); Dechaseaux, p. 39;
1936 *Camptochlamys intertextus* Roemer; Dechaseaux, p, 39;
1948 *Camptonectes (Camptochlamys) intertextus* (Roemer); Cox & Arkell, p. 14;
1948 *Camptonectes (Camptochlamys) retiferus* (Morris & Lycett); Cox & Arkell, p. 14;
1957 *Camptochlamys intertextus* Roemer; Himşiaşvili, p. 113, pl. XXVI, fig. 1;
1961 *Camptochlamys retiferus* (Morris & Lycett); Bărbulescu, p. 701;
1961 *Camptochlamys intertextus* Roemer; Bărbulescu, p. 83;
1964 *Camptonectes (Camptochlamys) retiferus* (Morris & Lycett); Fischer, p. 37;
1969 *Camptonectes (Camptochlamys) intertextus* (Roemer); in Moore, p. N352, figs. C74 – 2a, 2b;
1969 *Camptonectes (Camptochlamys) retiferus* (Morris & Lycett); Fischer, p. 90, pl. IX, fig. 19;
1969 *Camptonectes (Camptochlamys) lafayi* (Lissajous); Bărbulescu şi Grădinaru, p. 88, pl. I, fig. 5;
1974 *Chlamys (Camptochlamys) retiferus* (Morris & Lycett); Bărbulescu, p. 108, pl. XXII, fig. 13;
1974 *Chlamys (Camptochlamys) intertextus* (Roemer); Bărbulescu, p. 109, pl. XXII, figs. 11, 14;
1984 *Camptonectes (Camptochlamys) clathratus* (Roemer); Johnson, p. 143, pl. 4, figs. 23, 26, 27; pl. 5, figs. 1-3, 6;
1985 *Camptonectes (Camptochlamys) intertextus* (Roemer); Romanov, p. 97, pl. XVI, figs. 1, 2, 2a;
1989-1990 *Camptonectes (Camptochlamys) intertextus* (Roemer); Dikani & Makarenko, p. 54, pl. VII, figs. 6, 7;
1998 *Camptonectes (Camptochlamys) intertextus* (Roemer); Bărbulescu in Dragastan *et al.*, p. 139, pl. IV, fig. 7;

Material: one specimen (LPBIIIL 1698) a composite mould with fragments of shell.

Approximate measurements: H = ? 47mm; L = ? 49-50mm.

Remarks: Although our specimen is incomplete, it shows the specific ornamentation of the species *C. (C.) clathratusl,* represented by numerous strong radial ribs separated by spaces that are larger than the ribs. Concentric, equally spaced comarginal ribs intersect the radial ones generating a reticulate aspect of the ornamentation.

Occurrence: Strunga Pass – Obârşia Văii Tătarului, rare in the Bajocian, from the same level with *C. (C.) auritus*.

Stratigraphic and geographic distribution: ***Romania***: Central Dobrogea (Tichileşti) - rare in Bathonian; South of ***England*** – rare in Bajocian; ***England, France, Germany, Russia***: Bathonian – Callovian – Oxfordian.

Camptonectes (Camptochlamys) obscurus (J. SOWERBY 1818)
Pl. 3, figs. 3 – 11

1818 *Pecten obscura* sp. nov. J. Sowerby, p. 3, pl. 205, fig. 1;
1853 *Pecten annulatus* Sowerby; Morris & Lycett, p. 12, pl. I, fig. 13;
1869 *Pecten exaratus* nov. sp. Terquem et Jourdy, p. 128, pl. XIII, fig. 17;
1916 *Pecten (Camptonectes) annulatus* J. Sowerby; Jekelius, p. 229;
1926 *Camptonectes lens var. annulatus* (J. Sowerby); Staesche, p. 79, pl. III, fig. 12;
1936 *Camptonectes lens var. exaratus* (Terquem et Jourdy); Dechaseaux, p. 30;
1936 *Camptonectes annulatus* (Sowerby); Dechaseaux, p. 31, pl. IV, fig. 10;
1936 *Camptonectes Richei* nov. sp. Dechaseaux, p. 32, pl. IV, figs. 12-15; pl. V, figs. 1, 2;
1936 *Camptonectes lamellosus* (J. Sowerby); Dechaseaux, p. 36, pl. V, fig. 11;
1948 *Camptonectes annulatus* (J. Sowerby); Cox & Arkell, p. 13;
1948 *Camptonectes (Camptochlamys) obscurus* (J. Sowerby); Cox & Arkell, p. 14;
1969 *Camptonectes annulatus* (J. Sowerby); Fischer, p. 89;
1984 *Camptonectes (Camptochlamys) obscurus* (J. Sowerby); Johnson, p. 134, pl. 4, figs. 17-22, 24, 25;
1985 *Camptonectes (Annulinectes) annulatus* (J. Sowerby); Romanov, p. 90, pl. XIV, figs. 5, 6;
1985 *Camptonectes (Annulinectes) indicus* (Cox); Romanov, p. 92, pl. XIV, figs. 12, 13;
?1985 *Camptonectes (Camptochlamys) subgiganteus* (Repman); Romanov, p. 97, pl. XV, figs. 5, 6;
1986 *Camptonectes (Camptonectes) richei* Dechaseaux; Pugaczewska, p. 56, pl. 23, figs. 4a, b;
1995 *Camptonectes (Camptochlamys) obscurus* (J. Sowerby); Jaitly *et al.*, p. 196, pl. 19, figs. 7-8.

Material: thirteen specimens (LPBIIIL 1702-1712; 1947, 1948) right and left single valves or incomplete shells with moderate degree of preservation.

Meassuremets: UA = apical angle; Laa = length of the anterior auricle; haa = height of the anterior auricle; Lpa = length of the posterior auricle; hpa = height of the posterior auricle;

No. LPBIIIL	H (mm)	L (mm)	H / L	UA
1702-left valve	64	-	-	82^0
1703-right valve	55	-	-	81^0
1704left valve	65	56	1,16	88^0
1705-left valve	-	-	-	90^0
1707-left valve	67	56	1,19	87^0
1708-right valve	63	53	1,18	$?95^0$
1709-left valve	68	60	1,13	-
1947-left valve	56	52,3	1,07	88^0
1948-left valve	56	53	1,05	88^0
No. LPBIIIL	**Laa**	**haa**	**Lpa**	**hpa**
1702-left valve	-	-	14,5	14
1703-right valve	18	16	14	13
1704-left valve	18	13	14	13
1705-left valve	21	18	16	15,5
1707-left valve	18	16	-	13

Description: General outline sub-oval to sub-orbicular. The antero-dorsal margin is slightly concave or almost straight. Straight and oblique postero-dorsal margin; the ventral margin is largely convex, almost semicircular. The umbo is small and acute, arising slightly (1-1, 5 mm) above the hinge line. The auricles are large, well developed, unequal (the anterior auricle is larger than the posterior one). The anterior auricle has a triangular shape and form with the antero-dorsal margin, a rectangular angle. The anterior margin of the anterior auricle is slightly undulate, forming a shallow byssal notch in the lower part. The posterior auricle has a triangular shape, with the posterior margin almost straight, forming with the postero-dorsal margin of the shell an obtuse angle. Commarginal growth lines and delicate radial striae represent ornamentation on both auricles. In two specimens (LPBIIIL 1708, 1749) the surface of the valves is ornamented with very delicate, commarginal, obscure lamellae, regularly spaced (0,5-1 mm). Because our specimens are preserved mainly as internal or composite moulds, usually is very difficult to observe this ornamentation. Only a few specimens show very delicate radial striae. The maximum inflation is in the dorsal third of the shell bellow the umbo.

Remarks: In the following ratios: haa / L = 0,23-0,28, Laa / L = 0,32, Lpa / L = 0,25, the specimens from Bucegi reveal very similar values to those described and figured by Johnson (1984, p.138-139). The specimens from Bucegi are also very similar in outline and ornamentation with those described by Romanov (1985) under the name *C. (Annulinectes) annulatus*, even if Romanov's specimens have more pronounced radial striae and the commarginal lamellae are more widely spaced. *C. (A.) indicus* and *C (C.) subgiganteus* (described by Romanov, 1985) are very close to the Bucegi sample in their ornamentation, in the degree of development of the auricles and the values of the apical angle, but their general outline is slightly more oval.

Occurrence: Strungulița Pass, very abundant in only one bed of calcareous sandstone, rich in bioclasts, situated in the lower part of Strungulița Formation (Bajocian).

Stratigraphic and geographic distribution: Southern ***Germany***, eastern ***France***, ***England*** (Costwolds), ***Poland, Russia, Turkmenia***: Bajocian – Bathonian; the species is mentioned in Europe from the Aalenian to the Tithonian, but is more frequent in the Bathonian (Johnson, 1984).

Genus *Eopecten* DOUVILLÉ 1897
Eopecten aff. spondyloides (ROEMER 1836)
Pl. 4, fig. 5

Material: one specimen (LPBIIIL1713), an incomplete left valve.

Remarks: Moderately convex left valve, with irregular sub-ovate outline, higher than long. Reduced anterior auricle; ornamentation represented by strong radial primary costae and intercalated secondary radial costae; between the primary and secondary ribs there are 2 or 3 very delicate tertiary riblets. The primary ribs are covered with comarginal imbricate lamellae, some of them more pronounced, having the aspect of delicate tubercles. *Pecten velatus* (GOLDFUSS 1833, pl. 90, fig. 2) has also an irregular shape of the shell, but differs from our specimen especially in the ornamentation, represented by a smaller number of the radial ribs, without tubercules or comarginal lamellae. *Eopecten abjectus* (PHILLIPS 1829) figured by Jaitly *et al.*, 1995 (p. 197, pl. 20, fig. 2) shows two coarse radial costae with median position on the surface of the shell, relatively more pronounced compared to the remaining radial ribs. These two median radial costae are not present in our material. The specimen from Bucegi is very similar in general shape and characters of ornamentation to the following species: *Eopecten tuberculosus* (GOLDFUSS) described by LISSAJOUS (1923, p. 157), *Velopecten jason* (d'ORBIGNY) described and figured by STAESCHE (1926, p. 121, pl. VI, fig. 12) and *Velopecten spondyloides* (ROEMER) described and figured by STAESCHE (1926, p. 124, pl. VI, fig. 10). These three species were included in the synonymy of *Eopecten spondyloides* by Johnson (1984, p. 155), considering the similarities in ornamentation. Romanov (1985, p. 107, pl. XVIII,

fig. 5, 6) described and figured the species *Velata spondyloides* that is also very similar to the Bucegi specimen. In Romania, Bărbulescu and Grădinaru (1969, p. 88, pl. III, fig. 1) described *Eopecten tegulatus* (MORRIS & LYCETT) from Bathonian – Lower Callovian deposits outcropping in Tichileşti Valley (Central Dobrogea) and Bărbulescu (1974, p. 111, pl. XXIII, fig. 4) described *Velata tegulata* from Lower Bathonian deposits that outcrop in Stupinei Valley (west Central Dobrogea). *E. tegulatus* is also considered synonymous with *E. spondyloides* by Johnson (1984, p. 155). Although the specimen from Bucegi is poorly preserved, it shows clear affinities with *Eopecten spondyloides* (ROEMER 1836), especially in the features of ornamentation. Until more material will be available, the Bucegi material is identified tentatively as *Eopecten* cf. *spondyloides* (ROEMER 1836).

Occurrence: Grohotişul Mountain – bioclastic limestone with hardground in the upper part, in the top of Strunga Formation (Bathonian – Middle Callovian).

Stratigraphic and geographic distribution: *Romania*: Central Dobrogea: Bathonian – Lower Callovian. This species is mentioned in ***Europe*** and ***Russia*** from the Sinemurian to the Tithonian, being more frequent in the Bajocian and Bathonian of ***France***.

Genus *Chlamys* ROEDING 1798
Subgenus *Chlamys* ROEDING 1798
Chlamys (Chlamys) textoria (SCHLOTHEIM 1820)
Pl. 4, figs. 1 - 4

1820 *Pectinites textorius* sp. nov. Schlotheim, p. 229;
1899 *Pecten (Chlamys) Dewalquei* Oppel; Greppin, p. 116, pl. XII, figs. 8, 8a;
1899 *Pecten articulatus* (Schlotheim); Greppin, p. 128;
1871-1873 *Pecten semispinatus* nov. sp. Terquem et Jourdy, p. 130, pl. XIII, figs. 21, 22;
1916 *Pecten (Chlamys) textorius* (Schlotheim); Jekelius, p. 49;
1923 *Chlamys Dewalquei* (Oppel); Lissajous, p. 158, pl. XXX, fig. 3, 3a;
1926 *Chlamys textoria* (Schlotheim); Staesche, p. 30 ;
1926 *Chlamys Dewalquei* (Oppel); Staesche, p. 35 ;
1926 *Chlamys Meriani* (Greppin); Staesche, p. 39, pl. I, fig. 3;
1926 *Chlamys subtextoria* (Münster); Staesche, p. 40;
1936 *Chlamys textorius* (Schlotheim); Dechaseaux, p. 13, pl. I, figs. 1-4;
1936 *Chlamys ambiguus* (Münster); Dechaseaux, p. 14, pl. II, fig. 2 ; pl. III, fig. 1;
1936 *Chlamys Dewalquei* (Oppel); Dechaseaux, p. 15, pl. I, figs. 5, 7; pl. II, fig. 4;
1936 *Chlamys subtextorius* (Münster); Dechaseuax, p. 19, pl. III, figs. 2, 2a;
1948 *Chlamys ambigua* (Münster); Cox & Arkell, p. 12;
1948 *Chlamys jurensis* (Riche); Cox & Arkell, p.12;
1948 *Chlamys subtextoria* (Münster); Cox & Arkell, p. 12;
1961 *Chlamys dewalquei var. jurensis* (Riche); Bărbulescu, p. 702;
1961 *Chlamys ambiguus* (Münster); Bărbulescu, p. 83;
1961 *Chlamys cf. dewalquei* Oppel; Bărbulescu, p. 83;
1965 *Chlamys subtextoria* (Münster); Cox, p. 55, pl. 7, fig. 8;
1974 *Chlamys jurensis* Riche; Bărbulescu, p. 106, pl. XXIII, figs. 10-13;
1974 *Chlamys ambigua* (Münster); Bărbulescu, p. 106, pl. XXIII, figs. 1, 2;
1976 *Chlamys ambiguus* (Münster); Preda, p. 30, pl. V, fig. 1; pl. VI, fig. 7;
1976 *Chlamys dewalquei* (Oppel); Preda, p. 30, pl. V, fig. 10; pl. VI, fig. 2;
1984 *Chlamys (Chlamys) textoria* (Schlotheim); Johnson, p. 163, pl. 6, figs. 10-12 ; pl. 7, figs. 1-21 ; pl. 8, figs. 1-3, 5-20;
1985 *Chlamys (Chlamys) textoria* (Schlotheim); Romanov, p. 64, pl. VIII, fig. 9;
1985 *Chlamys (Chlamys) ambigua* (Münster); Romanov, p. 66, pl. IX, fig. 1;
1985 *Chlamys (Chlamys) dewalquei* (Oppel); Romanov, p. 67, pl. VIII, figs. 12, 13;
1995 *Chlamys (Chlamys) textoria* (Schlotheim); Jaitly *et al.*, p. 197; pl. 20, figs. 3-7;
1989-1990 *Chlamys (Chlamys) ambigua* (Münster); Dikani & Makatenko, p. 46, pl. 6, figs. 16-21;
1989-1990 *Chlamys (Chlamys) cf. nattheimensis* (De Loriol); Dikani & Makarenko, p. 49, Pl. 7, fig. 5;
1989-1990 *Chlamys (Chlamys) cf. pseudotextoria* (Redlich); Dikani & Makarenko, p. 50, Pl. 6, fig. 10;
1989-1990 *Chlamys (Chlamys) quenstedti* (Blake); Dikani & Makarenko, p. 44, pl. 6, figs. 22-24;
1997 *Chlamys (Chlamys) textoria* (Schlotheim); Bărbulescu *et al.*, p. 53;
1998 *Chlamys (Chlamys) aff. ambigua* (Münster); Bărbulescu in Dragastan *et al.*, p. 138, pl. IV, fig. 6;
1998 *Chlamys (Chlamys) cf. dewalquei* (Oppel); Bărbulescu in Dragastan *et al.*, p. 138, pl. IV, figs. 2-4;
2000 *Chlamys (Chlamys) textoria* (Schlotheim); Bărbulescu, p. 45, pl. II, figs. 8-12; pl. III, figs. 1-6.

Material: three specimens (LPBIIIL 1699-1701), all of them composite moulds with moderate degree of preservation of the shell.

Measurements:

No. LPBIIIL	H (mm)	L (mm)	H / L
1699	35	30	1,16
1700	45	41	1,09
1701	32	28	1,14

Description: Sub-orbicular shell, higher than long; the apical angle is variable; the shell is nearly equilateral, inequivalve, with moderately convex left valve, and almost flat right valve; the anterodorsal and the posterodorsal margins are obliquely straight or easily concave lines, that make an almost semicircular profile with the ventral margin; unequal lateral auricles; anterior auricle is larger and more elongated; both auricles are covered with coarse commarginal imbricate lamellae; The surface of the disc ornamented with a variable number (25-33) of radial plicae bearing pronounced commarginal imbricate lamellae.

Remarks: the specimen LPBIIIL 1699 (Pl. 4, fig. 1) has 25 pronounced radial plicae bearing strong comarginal lamellae and corresponds to the coarse phenotype described by Johnson (1984). Specimens LPBIIIL 1700 and 1701 (Pl. 4, figs. 3, 4) show 33-34 radial plicae also ornated with commarginal lamellae, which are shorter and less well pronounced and thus corresponding to the intermediate phenotype of Johnson (1984).

Occurrence: Strunga Pass, from the upper part of the bioclastic calcareous sandstone with a limonitic hard ground at the top of the bed; Strunga Formation (Bathonian – Lower Callovian). Other occurrence in Bucegi Mts.: Poiana Țapului (Bajocian – Bathonian);

Stratigraphic and geographic distribution: ***Romania***: Central Dobrogea (Tichileşti - Bathonian; Mireasa, Cheia, Baroi, Hârşova, Topalu: Callovian – Lower Kimmeridgian); Southern Carpathians: Codlea – Bathonian; Hăghimaş (Piatra Liciului): Bajocian – Bathonian; Roşia (Pădurea Craiului): Liassic and Bajocian – Callovian. ***France, Southern Germany, England*** and ***Russia***: from the Aalenian to the Callovian.

Genus *Radulopecten* ROLLIER 1891
Radulopecten vagans (J. DE C. SOWERBY, 1826a)
Pl. 4, figs. 7 – 12

1826a *Pecten vagans* sp. nov., J. de C. Sowerby, p. 82, pl. 543, figs. 3,4,5;
1853 *Pecten vagans* (J. de C. Sowerby); Morris & Lycett, p. 8, pl. I, figs. 12, 12a;
1853 *Pecten peregrinus* sp. nov. Morris & Lycett, p. 9, pl. I, fig. 14;
1853 *Pecten hemicostatus* sp. nov. Morris & Lycett, p. 10, pl. I, fig. 16;
1863 *Pecten Griesbachi* sp. nov. Lycett, p. 31, pl. XXXIII, figs. 6, 6a;
1863 *Pecten inaequicostatus* Phillips; Lycett, p. 32, pl. XXXIII, fig. 1a (non fig. 1);
1863 *Pecten Rushdenensis* sp. nov. Lycett, p. 33, pl. XXXIII, figs. 4, 4a-c;
1863 *Pecten Wollastonensis* sp. nov. Lycett, p. 33, pl. XXXIII, figs. 2, 2a-c;
1863 *Pecten anisopleurus* Buvignier; Lycett, p. 34, pl. XXXIII, figs. 5, 5a;
1867 *Pecten vagans* J. de C. Sowerby; Laube, p. 10, pl. I, fig. 10;
1867 *Pecten hemicostatus* Morris & Lycett; Laube, p. 11, pl. I, fig. 15;
1871-1873 *Pecten hemicostatus* Morris & Lycett; Terquem et Jourdy, p. 127;
1871-1873 *Pecten anomalus* sp. nov. Terquem et Jourdy, p. 128, pl. XIII, figs. 18-20, 20a;
1871-1873 *Pecten rushdenesis* Lycett; Terquem et Jourdy, p. 129;
1899 *Pecten hemicostatus* Morris & Lycett; Greppin, p. 128;
1923 *Radulopecten vagans* (J. de C. Sowerby); Lissajous, p. 160;
1923 *Radulopecten Romani* sp. nov. Lissajous, p. 162, pl. 30, figs. 4, 4a-b, 5, 5a-b;
1926 *Aequipecten vagans* (J. de C. Sowerby); Staesche, p. 67;
1936 *Aequipecten vagans* (J. de C. Sowerby); Dechaseaux, p. 43, pl. VI, figs. 1, 2, 3, 9;
1936 *Aequipecten vagans var. anomalus* (Terquem et Jourdy); Dechaseaux, p. 44, pl. VI, figs. 5, 7, 8, 14;
1936 *Aequipecten vagans var. hemicostatus* (Morris & Lycett); Dechaseaux, p. 45;
1936 *Aequipecten Rushdenesis* (Lycett); Dechaseaux, p. 46, pl. VI, figs. 10, 11;
1936 *Aequipecten cf. Romani* (Lissajous); Dechaseaux, p. 47, pl. VI, figs. 12, 12a;
1936 *Aequipecten anisopleurus* (Buvignier); Dechaseaux, p. 49;
1948 *Chlamys (Radulopecten) hemicostata* (Morris & Lycett); Cox & Arkell, p. 12;
1948 *Chlamys (Radulopecten) vagans* (Sowerby); Cox & Arkell, p. 12;
1948 *Chlamys (Radulopecten) anisopleurus* (Buvignier); Cox & Arkell, p. 12;
1948 *Chlamys (Radulopecten) wollastonensis* (Lycett); Cox & Arkell, p. 13;
1948 *Chlamys (Radulopecten) griesbachi* (Lycett); Cox & Arkell, p. 13;
1948 *Chlamys (Radulopecten) rushdenensis* (Lycett); Cox & Arkell, p. 13;
1961 *Chlamys vagans* (J. de C. Sowerby); Bărbulescu, p. 701;
1964 *Chlamys (Radulopecten) hemicostata* (Morris & Lycett); Fischer, p. 35;
1969 *Chlamys (Radulopecten) vagans* (Sowerby); Fischer, p. 88;
1969 *Chlamys (Radulopecten) hemicostata* (Morris & Lycett); in Moore, p. N362, figs. C83-1a, b;
1969 *Chlamys (Aequipecten) vagans* (J. de C. Sowerby); Bărbulescu & Grădinaru, p. 80-81;
1969 *Chlamys (Radulopecten) hemicostata* (Morris & Lycett); Bărbulescu & Grădinaru, p. 80-81, 87, pl. II, fig. 2;
1969 *Chlamys (Radulopecten) anisopleurus* (Buvignier); Bărbulescu & Grădinaru, p. 80-81, 88, pl. II, figs. 3a, 3b;
1973 *Aequipecten vagans* (J. de C. Sowerby); Romanov, p. 74, pl. VI, fig. 3;
1973 *Camptonectes rushdenensis* (Lycett); Romanov, p. 77, Pl. VI, figs. 7-10;
1974 *Chlamys (Radulopecten) vagans* (J. de C. Sowerby); Bărbulescu, p. 109, pl. XXIII, figs. 3, 5, 6;
1984 *Radulopecten vagans* (J. de C. Sowerby); Johnson, p. 188, pl. 9, figs. 9-33;
1985 *Radulopecten (Radulopecten) anisopleurus* (Buvignier); Romanov, p. 122, pl. XXIV, fig. 2;
1986 *Camptonectes (Camptonectes) rushdenensis* (Lycett); Pugaczewska, p. 56, pl. 23, figs. 1a-c, 2a-c; pl. 24, figs. 1a-b; pl. 25, figs. 1a-b;
1989-1990 *Radulopecten (Radulopecten) hemicostatus* (Morris& Lycett); Dikani & Makarenko, p. 58, pl. 10, figs. 1-3.

Material: eight specimens (LPBIIIL 1690-1697) complete shells or isolated left or right valves with moderate degree of preservation.

Measurements:

No. LPBIIIL	H (mm)	L (mm)	H / L	UA
1690	28	25	1,12	85^0
1691	21	19	1,10	85^0
1692	24,5	21	1,16	90^0
1693	25	-	-	-
1694	18	16	1,12	-
1695	-	17	-	-
1697	7	6	1,16	-

Description: Equilateral, inequivalve shell, usually with the left valve more convex than the right one. The auricles have variable dimensions, the anterior auricle being larger than the posterior one. The auricles make an angle of 90^0 or less with the antero-dorsal, respectively postero-dorsal margins. The auricles are covered with commarginal lamellae. The straight antero-dorsal and postero-dorsal margins are oblique and make with the ventral margin largely rounded, obtuse angles. The ventral margin is largely convex, rounded, almost semicircular. The ornamentation shows a great variability and is different between the surfaces of the two valves. On the three right valves four or five low-relief radial plicae can be observed, the plicae being wider than the spaces (sulci) developed in between. These radial plicae are developed on the right valve only late during ontogeny. The entire surface of both valves (including the radial plicae) is covered with equally spaced commarginal lamellae during all stages of ontogeny.

Remarks: Considering the main characteristics of the shell, the biometric parameters and the features of the ornamentation, all these specimens from Bucegi Mountains are very similar to the specimens described and figured by the authors listed in the synonymy. Our sample shows the distinctive features defined by Johnson (1984, p.188) for the species *Radulopecten vagans*. The development of the ornamentation during the ontogeny is especially particular. Some of our specimens show only comarginal lamellae and/or fine radial striae in the early stages of growth. Other, adult specimens present "decussate" ornamentation (coarse commarginal lamellae, interrupted at the antero-dorsal, postero-dorsal and ventral margins) that is clearly developed even in the early stages. Specimen LPBIIIL 1697 (Pl. 4, fig. 6) is a juvenile that shows 20 or 22 pronounced commarginal lamellae. This specimen is very similar to that described and figured by Laube (1867, pl. I, fig.15).

Occurrence: Grohotişul Mountain, Strunga Pass, Strungulița Pass, Obârşia Văii Tătarului – very abundant in calcareous sandstones and calcarenites, Strungulița Formation (Bajocian).

Stratigraphic and geographic distribution: ***Romania***: Central Dobrogea (Tichilesti)-Bathonian; ***England, Germany, France, Poland, Russia***: Bajocian, Bathonian, Callovian, Oxfordian.

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PLATE CAPTIONS

LATE 1

Figs. 1, 2 *Oxytoma (Oxytoma) inequivalve* (J. SOWERBY 1819): 1 – fragment of shell with details of ornamentation, enlarged from fig. 2; 2 – composite mould of the left valve, Strungulița Formation, Bajocian, LPBIIIL 1501 x 3;
Figs. 3, 4 *Placunopsis fibrosa* LAUBE 1867: 3 - fragment of shell with details of ornamentation, enlarged from fig. 4; 4 – left valve, Strungulița Formation, Bajocian, LPBIIIL 1714 x 2;
Figs. 5 – 10 *Entolium (Entolium) corneolum* (YOUNG & BIRD 1828): 5 – ?left valve, broken in the umbo region, Strungulița Formation, Bajocian, LPBIIIL1675. x 1; 6 – internal mould of left valve with fragments of shell, Strungulița Formation, Bajocian, LPBIIIL 1674 x 1,5; 7 – internal mould of left valve, Strungulița Formation, Bajocian, LPBIIIL 1672 x 1,5; 8 - internal mould of left valve, Strungulița Formation, Bajocian, LPBIIIL 1669 x 1,5; 9 – internal mould of single valve with fragments of shell, Strungulița Formation, Bajocian, LPBIIIL1671x 1,5; 10 - internal mould of left valve, Strungulița Formation, Bajocian, LPBIIIL 1673 x 1,5;
Fig. 11 – 13 *Cingentolium (Cingentolium) partitum* (J. de C. SOWERBY 1840): 11 – internal mould of left valve, internal mould of left valve, Strungulița Formation, Bajocian, LPBIIIL 1668 x 2; 12 – single valve, well preserved, Strungulița Formation, Bajocian, LPBIIIL1666 x 2; 13 – external mould of sigle valve, Strungulița Formation, Bajocian, LPBIIIL1951 x 2;

PLATE 2

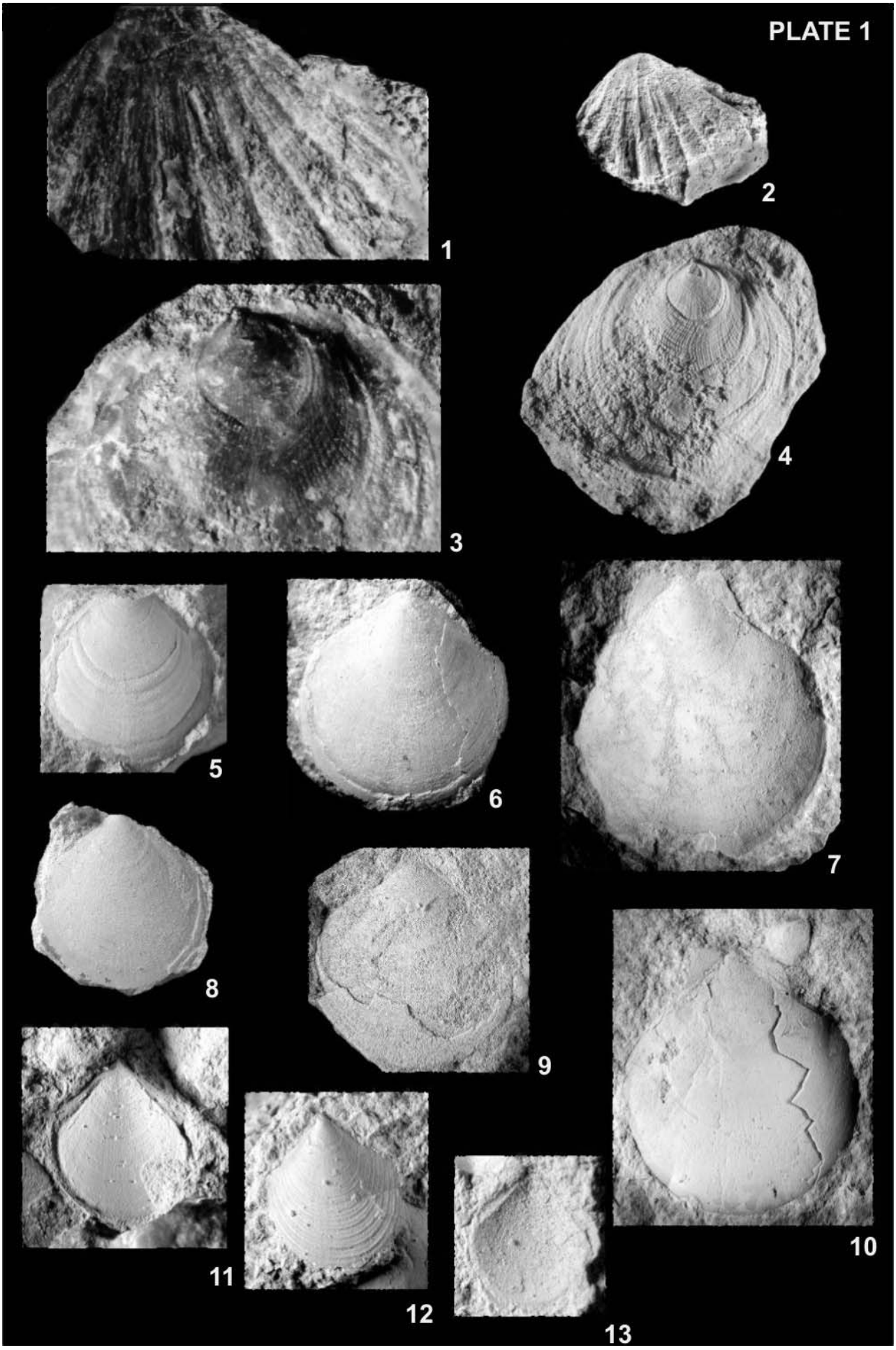
Figs. 1 – 5 *Camptonectes (Camptonectes) auritus* (SCHLOTHEIM 1813): 1 – internal moulds of two ?right valves with fragments of shell, Strungulița Formation, Bajocian, LPBIIIL 1685 x 1; 2 – internal mould of ?left valve with fragments of shell, Strungulița Formation, Bajocian, LPBIIIL 1682 x 1; 3 – ?right valve from a juvenile specimen, Strungulița Formation, Bajocian, LPBIIIL 1677 x 2,5; 4 – internal mould of ?left valve with fragments of shell, Strungulița Formation, Bajocian, LPBIIIL 1684 x 1; 5 – right fissured valve, Strungulița Formation, Bajocian, LPBIIIL 1683 x 1;
Figs. 6 – 10 *Camptonectes (Camptonectes) laminatus* (J. SOWERBY 1818): 6 – left valve of an articulated specimen, Strungulița Formation, Bajocian, LPBIIIL 1688 x 2; 7 – right valve of an articulated specimen, Strungulița Formation, Bajocian, LPBIIIL 1687 x 2; 8 – ?left fragmented valve of an articulated specimen, Strungulița Formation, Bajocian, LPBIIIL 1689 x 2; 9 - enlarged fragment of shell with details of ornamentation, LPBIIIL 1687; 10 – enlarged fragment of shell with details of ornamentation, LPBIIIL 1688.

PLATE 3

Figs. 1 – 2 *Camptonectes (Camptochlamys) clathratus* (ROEMER 1836): 1 – internal mould of ?left valve with fragments of shell, Strungulița Formation, Bajocian, LPBIIIL 1698 x 1; 2 – enlarged fragment of shell with details of ornamentation, LPBIIIL 1698;
Figs. 3 – 10 *Camptonectes (Camptochlamys) obscurus* (J. SOWERBY 1818): 3 – internal mould of left valve, Strungulița Formation, Bajocian, LPBIIIL 1702 x 1; 4 – composite mould of ? right valve of an articulate specimen, Strungulița Formation, Bajocian, LPBIIIL 1708 x 1; 5 – internal mould of left valve, Strungulița Formation, Bajocian, LPBIIIL 1704 x 1; 6 – internal mould of left valve, Strungulița Formation, Bajocian, LPBIIIL 1707 x 1; 7 – interior view of a fragment of right valve, Strungulița Formation, Bajocian, LPBIIIL 1705 x 1; 8 – interior view of a fragment of right valve, Strungulița Formation, Bajocian, LPBIIIL 1706 x 1; 9 – internal mould of right valve, Strungulița Formation, Bajocian, LPBIIIL1948 x 1; 10 – external mould of right valve, Strungulița Formation, Bajocian, LPBIIIL1712 x 1; 11 – internal mould of ?right valve, Strungulița Formation, Bajocian, LPBIIIL 1947 x 1,5;

PLATE 4

Figs. 1 – 4 *Chlamys (Chlamys) textoria* (SCHLOTHEIM 1820): 1 – right valve, Strunga Formation, Bathonian – Lower Callovian, LPBIIIL 1699 x 1,5; 2 – ?valve, Strunga Formation, Bathonian – Lower Callovian, LPBIIIL 1700 x 1; 3 – right valve, Strunga Formation, Bathonian – Lower Callovian, LPBIIIL 1701 x 1; 4 – enlarged fragment of shell with details of ornamentation, LPBIIIL 1699;
Fig. 5 – *Eopecten aff. spondyloides* (ROEMER 1836) fragmentary left valve, Strunga Formation, Bathonian – Lower Callovian, LPBIIIL 1713 x 2,5;
Figs. 6 – 11 *Radulopecten vagans* (J. DE C. SOWERBY, 1826a): 6 – left valve of a juvenile specimen, Strungulița Formation, Bajocian, LPBIIIL 1697 x 2; 7 – right valve, Strungulița Formation, Bajocian, LPBIIIL 1691 x 2; 8 – right valve, Strungulița Formation, Bajocian, LPBIIIL 1690 x 1,5; 9 – right valve, Strungulița Formation, Bajocian, LPBIIIL 1693 x 1,5; 10 – enlarged fragment of shell with details of ornamentation (in the anterodorsal region of the shell), LPBIIIL 1690; 11 – enlarged fragment of shell with details of ornamentation (in the ventral part of the shell), LPBIIIL 1690.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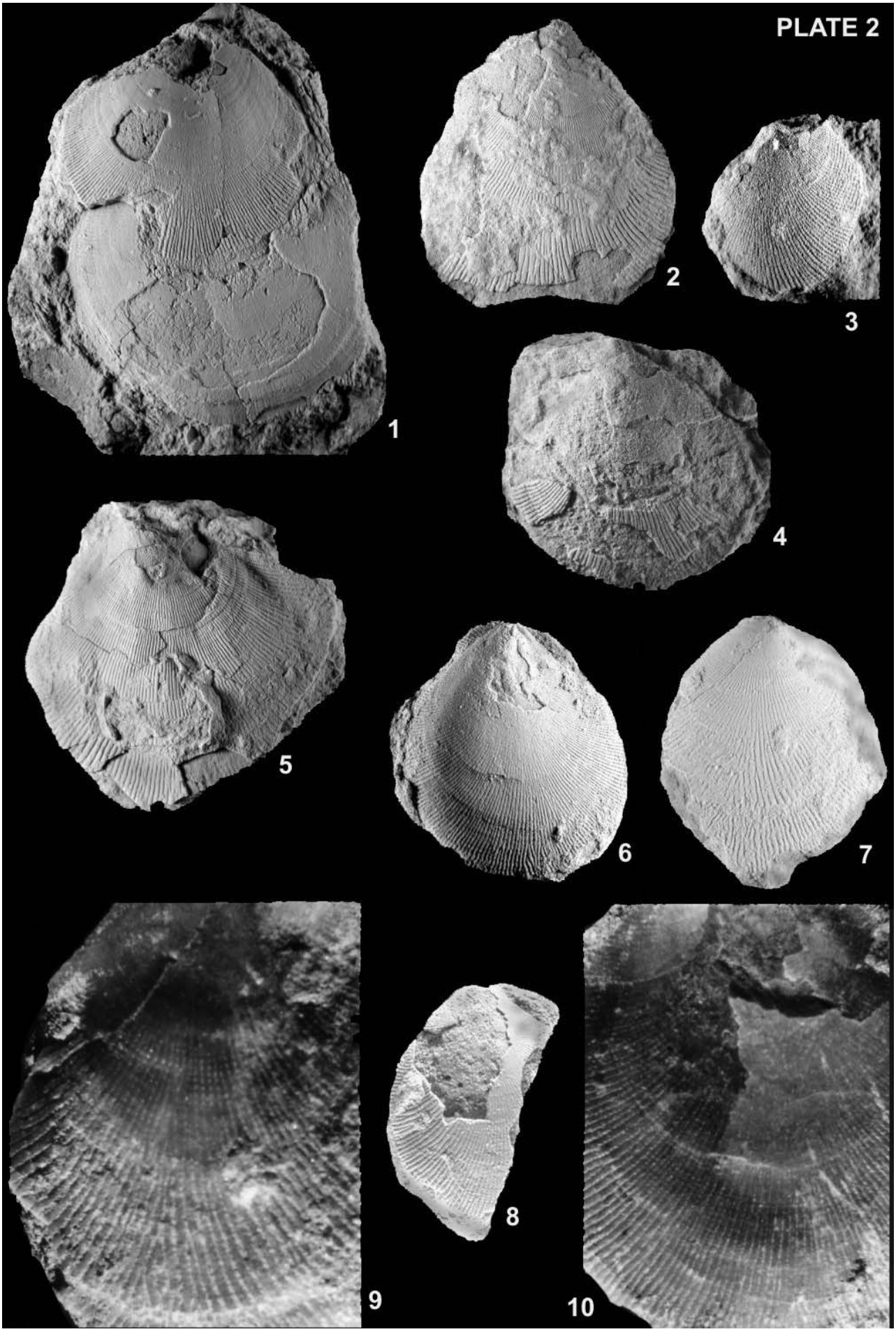
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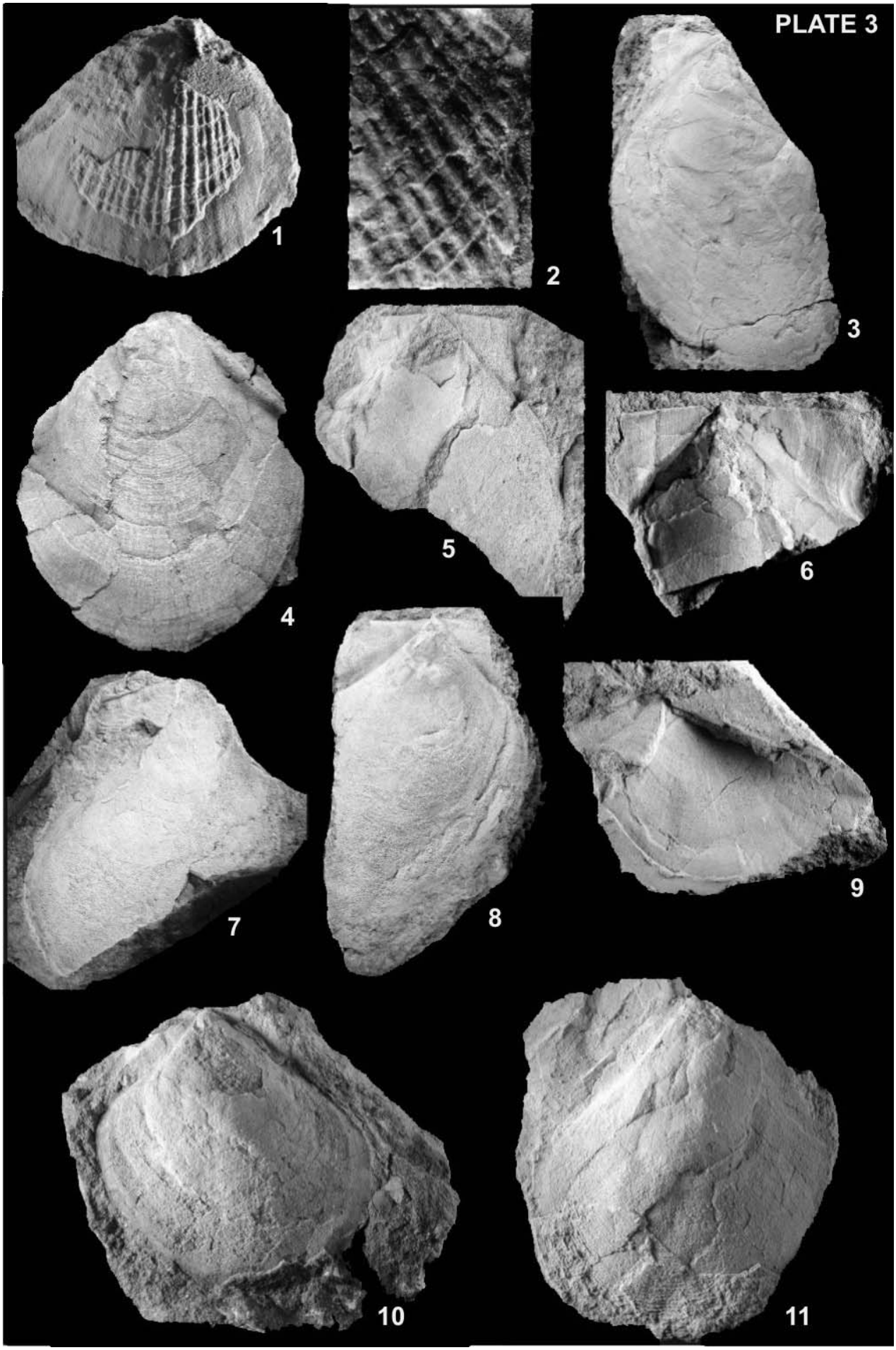
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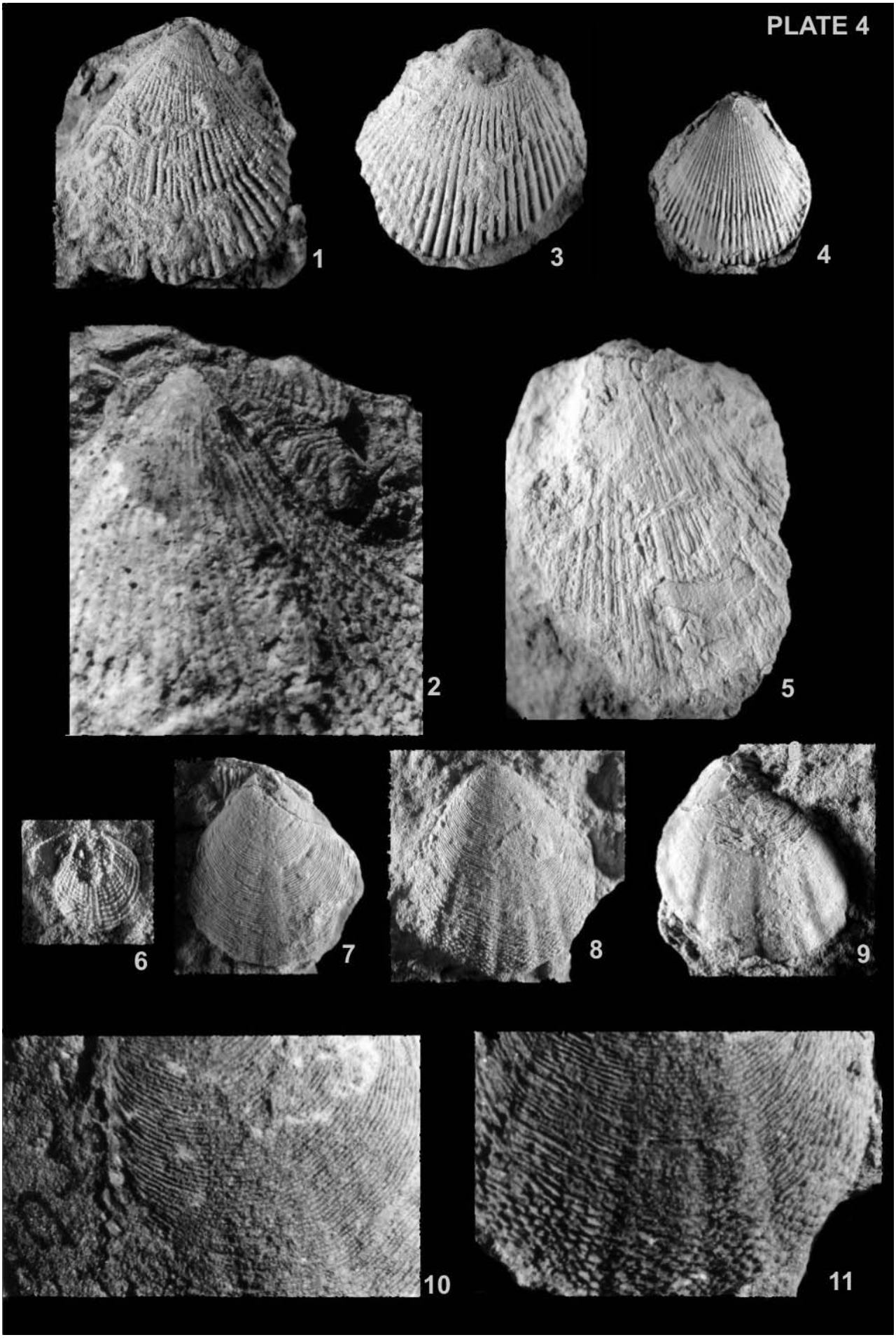
PLATE 4
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