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Lower and Middle Jurassic Gastropods from the Bakony Mountains (Hungary)
Part IV: Neritacea, Craspedostomatacea, Amberleyacea (Archaeogastropoda)

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Abstract — Four of the here described eighteen species and one of the genera are new: *Neritopsis (Neritopsis) papodensis* sp. n., *Neritopsis (Neritopsis) spinigera* sp. n., *Chartronella noszkyi* sp. n. and *Boeckhia boeckhi* gen. & sp. n. (Paraturbinidae). With 1 figure and 3 photoplates.

Systematic descriptions

Family **Neritopsidae** GRAY, 1847

Genus *NERITOPSIS* GRATELOUP, 1832

Neritopsis (Neritopsis) elegantissima HÖRNES, 1853

Plate I: figs. 1–3.

1853: *Neritopsis elegantissima* HÖRNES, p. 763.
1861: *Neritopsis elegantissima* HÖRN.– STOLICZKA, p. 179, pl. III. fig. 7.

Measurements:	H	HL	HA	W	D	A
Plate I: figs. 1–3	10	9	7.5	6.5	10	112°

Material: Four, definitely juvenile specimens in good state of preservation.

Shape: Shell dextral, low-spired, subglobose with a broad elliptical aperture. Peristome extends like a trumpet, bearing an angulation at the suture, only. Parallel with the narrowly callous inner lip, a shallow furrow runs, resulting a pseudoumbilicus.

Ornament: Excepting the embryonal part, shell is covered by spiral cords of two kinds alternating each other. Strong varices and growth-lines are crossing the spiral elements collabrally. In the beginning, varices are rounded, but becoming sharper and higher on the subsequent shell regions. Generally, they run from suture to suture, or to the basal furrow.

Embryonal shape and ornament: One of the specimens shows a fragment of its larval shell. Nucleus is lacking, but obviously the protoconch consisting of about one and a half whorls. Its shape is similar to the adult's but without any ornament. The end of the embryonal shell is marked by the onset of the adult sculpture.

Distribution: Northern Alps: Hierlatz Limestone; Bakony Mts., Sümeg: ? Upper Sinemurian.

Remarks: STOLICZKA's figure shows two kinds of varices alternating each other. This cannot be observed on the specimens from the Bakony Mts. but the strength is variable comparing the specimens.

Owing to the fewer number of varices and the orbicular peristome *Neritopsis taramellii* GEMM. G. G., 1879 and *Neritopsis praeclara* SEG., 1895 (GEMM. M., 1911) are distinguishable. However, the figures show different views, and due to this fact, the separation the mentioned species needs further study.

Neritopsis (Neritopsis) fabianii TONI, 1912

(Plate I: figs. 4–5)

1912: *Neritopsis fabianii* TONI, p. 40, pl. II, figs. 3a-d.

Measurements:	H	HL	HA	W	D	A
Plate I: figs. 4–5	–	–	–	8.5	13.5	130°

Material: More than forty specimens, most of them are preserved as inner mould with shelly portions and a few of well conserved shelly specimens.

Shape: Dextral, low-spired, subglobose shell. The upper border of the whorls is bent upwards along the upper suture. The last whorl is covering the former parts of the shell almost completely. The peristome is rather circular and angulate at the suture. A narrow callus is also present at the inner lip.

Ornament: The whole surface of the teleoconch is ornamented by spiral lines of two kinds alternating each other on the adult shell. On the juvenile parts, the secondary lines are absent. The prosocline growth-lines are arranged in bundles appearing subregularly on some specimens. On some other specimens, these bundles are protruded as low ridges near the suture. From a small number of the tests, the bundles and the ridges are lacking.

Embryonal shape and ornament: A single, recrystallized embryonal shell observable, showing a shape similar to the adult and no ornament.

Distribution: Southern Alps, Belluno: Middle Liassic; Bakony Mts., Kericser: beds with mixed Obtusum to Ibex Zone faunas; Kisnyerges-árok: Jamesoni and Ibex Zone; Lókúti-domb; Davoei Zone; Káváshegy: ? Davoei Zone; Bocskorhegy: Davoei Zone: Közöskúti-árok: Ibex Zone; Gombáspuszta: Carixian, mainly Ibex Zone.

Remarks: In spite of the relatively high number of the specimens, the identification of this species was difficult, owing to the lower number of such specimens having no marked transversal ornamental elements, than it is in Toni's depiction. The measurements do not vary as do the sculpture.

Neritopsis fabianii specimens with transversal ornament are similar to *N. elegantissima* and related species, but the latter have rarer, longer and stronger varices than the former.

Neritopsis (Neritopsis) papodensis sp. n.

(Plate I: figs. 6–9)

Holotypus: Plate I: figs. 6–9; Locus typicus: Lókút, Fenyveskút; Stratum typicum: vertical fissure-filling limestone; Derivatio nominis: the locality is on the slope of Mount Papod.

Diagnosis: rather protruded spire; longitudinally striated; suture to suture (or to inner lip) costae on the juvenile part only.

Measurements:	H	HL	HA	W	D	A
Plate I: figs. 6–9	11.5	10.5	9	8.5	11	118°

Material: Four, more or less fragmentary specimens.

Shape: Dextral, naticiform shell with moderately protruded spire and a strongly convex surface of the whorls. A narrow ramp is also present. The peristome is somewhat ovate bearing an angulation at the suture and no outer thickening. Inner lip with narrow, thin callus, partly unpreparable.

Ornament: On the teleoconch, spiral cords are the first sculptural elements, then secondary lines appear in almost all of interspaces, too. These are crossed by prosocline growth-lines and a few suture to suture (to inner lip, on the base) collabral costae. The costate shell portion begins a quarter whorl after the protoconch and it endures on the following whorl.

Embryonal shape and ornament: The protoconch consists of about two whols, second of which is observable in the available material. It is convex, smooth and angulate near the upper suture on the last quarter whorl. A sharp prosocline-prosoycrt growth-line indicates the end of the protoconch, where the spiral cords of the teleoconch suddenly begin.

Distribution: Bakony Mts., Fenyveskút: (near to Kericser at Lókút) Domerian.

Remarks: These forms are similar to those of *Neritopsis fabianii*, which have transverse ridges or riblets, but differ in having stronger and longer costae restricted to a longer and definite shell portion. Moreover, *N.papodensis* sp. n. has a higher spire and a deeper suture than *N. fabianii* TONI has. *N. elegantissima* HÖRN. and the related species with costae or varices differ in having over the full length of the teleoconch.

Neritopsis (Neritopsis) spinigera sp. n.

(Plate I: figs. 10–18)

Holotype: Plate I: figs. 10–11; Locus typicus: Bakonybél, Somhegy; Stratum typicum horizontal fissure-filling limestone; Derivatio nominis: spinigera (Lat.) = thorny.

Diagnosis: smooth, low turbiniform protoconch; a broad ramp on the whorls, delmited by carinate angulation; ornament of longitudinal cords crossed by strong, regularly repeated varices; long, hollow spines at the intersections of the angulation and the varices, each with a parabolic growth-line.

Measurements:	H	HL	HA	W	D	A
Plate I: figs. 10–11	–	13	11	11	18	–

Material: Each of the 31 specimens is more or less damaged.

Shape: Shell dextral, subglobose, with bicarinate whorls. Below the suture, a broad, flattened ramp extends, delimited by a rounded angulation marked by the upper, stronger keel. Peristome is

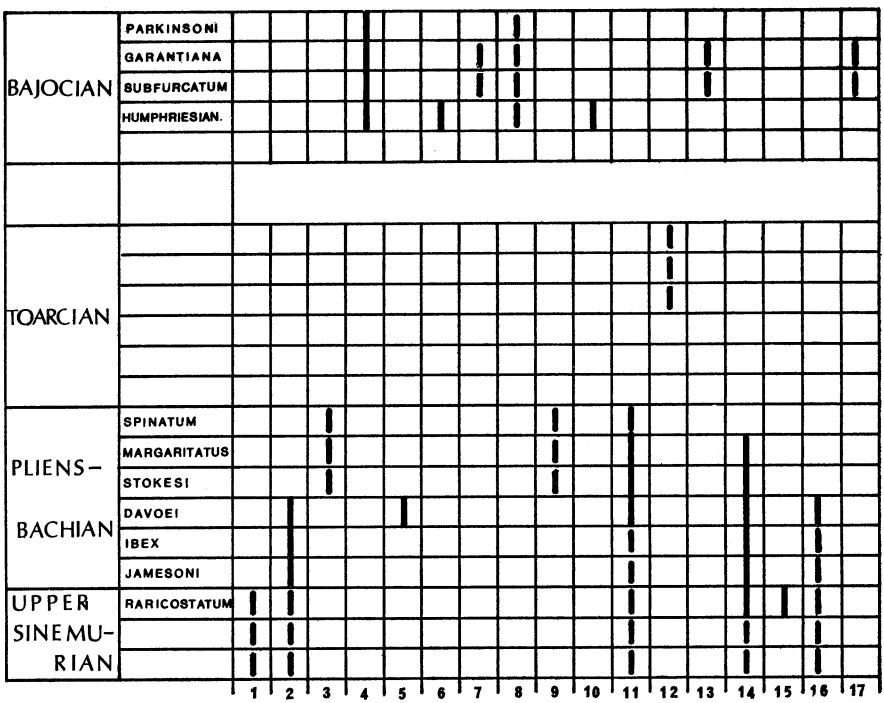

Fig. 1. Stratigraphic distribution of the species in the Bakony Mts. 1 = *Neritopsis* (*N,*) *elegantissima*, 2 = *Neritopsis* (*N.*) *fabianii*, 3 = *Neritopsis* (*N,*) *papodensis*, 4 = *Neritopsis* (*N.*) *spinigera*, 5 = *Neritoma* (*Neridomus*) aff. *tethys*, 6 = *Neritoma* (*Neridomus*) sp., 7 = *Crossostoma* sp., 8 = *Crossostoma* ? cf. *perampla*, 9 = *Chartronella noszkyi*, 10 = *Boeckhia boeckhi*, 11 *Amberleya* (*E.*) *alpina*, 12 = = *Amperleya* (*E.*) *capitanea*, 13 = *Amberleya* (*E.*) aff. *carpathica* 14 = *Risselloidea multistriata*, 15 = *Eucyclomphalus cupido*, 16 = *Eucyclomphalus* aff. *campiliensis*, 17 = *Trochacanthus* ? *disputabilis*

somewhat thickened by a callus along the inner lip and an external varix at the outer lip. The aperture is rounded less so at the inner lip and more so at the outer one.

Ornament: The varices are periodically repeated and crossed by the two carina and numerous spiral cords and lines. Usually, the varices appearing near the suture and becoming strong at the ramp angle, then they run down to the lower suture, or the inner lip on the last whorl. At the intersections with the upper carina, long, hollow spines are sitting, which may be longer than the height of the peristome on the adults, observable only on fortunate breaking surface of the matrix, because the specimens are hardly deliverable owing to the strong ornament. The spines are curved and bear a narrow slit from the aperture to the tip. At the crossing points of the lower carina and the varices, only small nodes are found.

Embryonal shape and ornament: The protoconch consists of the nucleus and about 2.5 whorls, with subglobose – low turbiniform outline, without any ornament. Its boundary with the teleoconch is marked by the sudden appearance of the adult form and ornament.

Distribution: Bakony Mts., Somhegy: Humphriesianum to Parkinsoni Zone.

Remarks: The lower, weaker carina being slightly stronger than a spiral cord on the last whorl, not appearing on the stratigraphically younger specimens.

An operculum of the neritopsid type definitely belongs to *Neritopsis spinigera* sp. n., being the only known neritopsid species on the locality (Plate I: figs. 15–16)

Neritopsis veronensis DAL PIAZ, 1912 also bears long spines, but in two rows, and this species has an extremely deep suture, and a dissimilar peristome. *Neritopsis spinosa* HEBERT & DESLONGCHAMPS, 1860 is ornamented by three rows of spines on three carinae.

Family **Neritidae** RAFINESQUE, 1815

Genus *NERITOMA* MORRIS, 1849

Neritoma (Neridomus) aff. **tethys** (GEMMELLARO, G. G., 1878)

(Plate II: fig. 1.)

aff. 1878: *Neritina tethys* GEMMELARO, G. G., p. 326, pl. 27, figs. 40, 42.

Measurements:	H	HL	HA	W	D	A
Plate II: fig. 1. ~	6	–5.5	–5	~4.5	~7	—

Material: A single, damaged and possibly juvenile specimen.

Shape: Small, globose shell, with a last whorl nearly completely enveloping the earlier parts. Peristome is rounded, angulate at the suture, its inner lip thick and largely callous.

Ornament: Shell smooth with some obscure longitudinal lines on the last whorl, and very fine growth-lines without sinus.

Distribution: Bakony Mts., Kericser: Davoei Zone.

Remarks: The shape of the specimen is highly similar to that of *Neritina tethys* GEMM., G.G., but owing to bad preservation and to its certainly juvenile state, the determination is doubtful.

Neritoma (Neridomus) sp.

(Plate II: figs. 2–3)

Measurements:	H	HL	HA	W	D	A
Plate II. figs. 2–3	12.5	12	11.5	9.5	14	–

Material: Two specimens in bad state of preservation.

Shape: Dextral, globose, thick-walled shell with a just visible spire. The slightly ovate peristome is angulate at the suture. Callosity missing along the inner lip.

Ornament: It consists of prosocline growth-lines being prosocyrt in a narrow band along the suture.

Distribution: Bakony Mts., Somhegy: Humphriesianum

Remarks: These specimens are comparable with such forms, that have been uncertainly determined by earlier authors: *Nerita (Neridomus)* "near to" *ovata* ROEMER (by HUDLESTON, 1894) and *Nerita* cf. *ovula* BUVIGNIER (by UHLIG,1881). The exact determination needs more and well preserved material.

Family **Crossostomatidae** COX, 1960

Genus *CROSSOSTOMA* MORRIS & LYCETT, 1851

Crossostoma sp. (Plate II: figs. 4—5)

Measurements:	H	HL	HA	D	W	A
Plate II: figs. 4–5	11	9.5	8.5	17.5	–	122°

Material: A single, damaged shelly specimen.

Shape: Dextral, low turbiniform species. The whorls are convex and axially somewhat depressed, and along the suture, the shell bends slightly upward the former whorl. On the last half whorl, there is a narrow, somewhat concave band below the suture. Near the peristome, a short section of the last whorl deviating from the former mode of coiling observable; it bends somewhat downwards. The rather prosocline peristome is rounded, somewhat thickened and extended like a trumpet. The columellar lip is not observable as well as the medial region of the depressed-convex base having certainly a deep excavation or a broad umbilicus.

Ornament: The only ornamental elements are the very fine, prosocline growth-lines.

Distribution: Bakony Mts., Somhegy: condensed Subfurcatum to Garantiana Zone.

Remarks: It is similar to d' ORBIGNY' s *Crossostoma reflexilabrum*, but much more depressed and the building of the peristomeis significantly different. It seems to be a new species, however, without the knowledge of the umbilical (?) region, the definition of such a featureless species would become doubtful.

Crossostoma ? cf. **perampla** (UHLIG, 1881) (Plate II: fig. 6)

(Plate II: fig. 6)

cf. 1881: *Vitrinella perampla* n. f. UHLIG, p. 402, pl. IX, f. 19.

Measurements:	H	HL	HA	W	D	A
Plate II: fig. 6	–	–	–	–	13	125°

Material: Three, poorly preserved specimens.

Shape: Dextral, low-spired, almost discoidal species with thick-walled shell. The diameter of the few, axially depressed whorls is growing quickly. The periphery is much more convex than other parts of the surface of the whorls. Owing to the downward deviation of the last whorl, the rounded peristome is rather prosocline. The sutural part of the outer lip and the columellar lip are thickened and certainly, there is a waek, circular inner varix on the remaining parts of the peristome. It is observable only in an impression of an inner mould of a badly preserved specimen.

Ornament: The species is ornamented by fine growth-lines, which are orthocline on the whorls and prosocline at the peripherial basal parts.

Distribution – Bakony Mts., Somhegy: ? Upper Bajocian.

Remarks: The shape of this species is comparable with some ataphrid forms, but the deviating last whorl and the thickening of the circular peristome are indicative of *Crossostoma.*

The specimens are similar to UHLIG's species, but owing to the damages, important

features are lacking from them, thus some uncertainty has remained. The *Crossostoma pratti* (MORRIS & LYCETT, 1851) has a higher and more convex last whorl, and its spire is more depressed.

Genus *CHARTRONELLA* COSSMANN, 1902

Chartonella noszkyi sp. n.

(Plate II: figs. 7–8)

Holotypus: Plate II. figs. 7–8, Locus typicus: Eplény, Manganese Ore Mine; Stratum typicum: Domerian vertical fissure-filling limestone; Derivatio nominis: after the collector, JENŐ NOSZKY (jun.) who was an excellent Hungarian geologist.

Diagnosis: dextral, turbiniform, with a whorl-surface consisting of three bands; one of these amounts to a ramp, and they are separated by carinae; convex base without an umbilicus; a thick parietal callosity and a strong columella; outer lip prosocline; the shell is covered by fine longitudinal lineation.

Measurements:	H	HL	HA	D	W	A
Plate II: figs. 7–8	24	16	12	19.5	11.5	69°

Material: One of the available three shelly specimens is rather well preserved.

Shape: Dextral, moderately high turbiniform, thick-walled shell. The convex surface of the whorls is divided into three longitudinal parts being roughly equal in width. The uppermost one of these forms a narrow ramp. The bands are flattened and bordered by the suture and carinate angulations, the number of which is two on the previous whorls and three on the last whorl. The lowermost keel is just overlapped by the suture. There is no umbilicus on the convex base. The rounded peristome is prosocline, particularly at its outer lip (being damaged, its orientation is given by the growth-lines). A narrow and shallow furrow separates the thickened inner lip from the low ridge founded on the base from the parietal lip to the foot of columella.

Ornament: Below the carina running on the abapical rim of the ramp, a spiral cord appears on the juvenile part and it endures to the peristome. Other cords are also present on the juvenile shell, but they disappear on the penultimate whorl. Besides the mentioned spiral elements, fine lines both on the base and the spire observable. The growth-lines are prosocline, somewhat sigmoidal on the whorls and parasigmoidal on the base.

Distribution: Bakony Mts., Eplény: Domerian.

Remarks: On the basis of the rather gradate outline and the tricarinate last whorl (and bicarinate preceding ones) *Chartronella noszkyi* sp. n. is distinguishable from the majority of its congeners. The form comparable to the new species is HUDLESTON's "*Trochus spiratus* d'Achiac", especially the specimen on pl. XXXI. fig. 7 having a tricarinate last whorl, but differs by its somewhat cyrtoconical shape with a less deep suture than *Ch. noszkyi* sp. n. Moreover, the secondary spiral sculptural elements are rarer and stronger, than on *Chartronella noszkyi* sp. n.

Genus *BOECKHIA* gen. n.

Type species: *Boeckhia boeckhi* gen. & sp. n. (see below); Derivatio nominis: after the excellent Hungarian geologist JÁNOS BÖCKH, who described the only gastropod species from the Jurassic of Bakony Mts. before the present series. – Diagnosis: Dextral, small to medium sized, turbiniform-sublenticular, thick-walled; the conical spire is separated by a carinate-angular periphery from the subglobose base; whorls are flattened or somewhat convex, usually with a slightly concave band above the carina; groove-like suture runs at or just below the carina of the former whorl; aperture nearly circular; peristome subquadral, prosocline especially at the outer lip, which is more or less thickened; always strong inner lip widening below and limited by two angulations; a significant parietal callosity is present; anomphalous, usually with pseudoumbilicus or possibly narrowly phaneromphalous; ornament of spiral threads crossed by fine prosocline growth-lines.

Distribution: Lower and Middle Jurassic in the Mediterranean Region and ? NW-Europe.

Remarks: Similar forms are known in wide distribution, but only a few species can be placed with certainty in this genus: DUBAR's species *Purpurinidae*? and "*Crossostoma*" *atlantis* DUB., 1948, *Crossostoma cristallinum* CARAPEZZA & TAGLIARI, 1894 (FUCINI, 1913), besides the type species. Owing to insufficient knowledge the others are ranged questionably into this genus needing further investigations: *Trochus (Ziziphinus) achiardii* GEMM.,G.G., 1878, BOURROUILH's *Crossostoma angulatum* GEMM. (1966) and HUDLESTON's "*Trochus spathica*" and "*Trochus*" *attrochus*.

The species "*Crossostoma*" *atlantis* DUB. has a peristome like that of a true *Crossostoma*. This similarity may originate from the adaptation into similar, certainly shallow water habit. Owing to this, comparable thickened peristomes develope in a high number of different groups, in which this character has a systematic value on species level only (for example: *Discohelix*, *Eucyclus*). This morphological agreement is regarded as homoeomorphism betwen *Boeckhia* gen.n. and *Crossostoma* MORRIS & LYCETT, 1851.

The similarly shaped *Pterocheilos* MOORE, 1867 is differing by its basal projection and the absence of an ornament.

DUBAR (1948) has considered, that his species "*Purpurinidae*?" was comparable with *Chartronella* species, in accordance with the present writer's judgement. *Boeckhia* gen.n. belonging to the family Paraturbinidae, shows a peristomial building similar to that of *Chartronella* COSSMANN, 1902, and the shape of the two genera are also somewhat similar. However, on the basis of the number of carinae, they are easily distinguishable. Other genera of this family significantly differ both in shape and ornament from *Boeckhia* gen. n.

Boeckhia boeckhi sp. n. (Plate II: figs. 9—10)

Holotype: Plate II: figs. 9–10; Locus typicus: Bakonybél, Somhegy; Stratum typicum: Bajocian submarine horizontal fissure-filling limestone. Derivatio nominis: see above in the name of the genus.

Diagnosis: rather sublenticular; peristome higher than half of total height; low axial ridge in the middle of columellar lip; a pseudoumbilicus is present

Measurements:	H	HL	HA	D	W	A
Plate II: figs. 9–10	–	9	6.5	11.5	6.5	89°

Material: A single, damaged specimen.

Shape: Dextral, low conical spire with a whorl-surface being slightly concave above and below the suture and convex medialy. Below the carinate periphery, there is the strongly convex base with a pseudoumbilicus. Outer lip more prosocline than thickened inner one. On the widened part of the latter, a low ridge is present between two shallow furrows.

Ornament: Distinct longitudinal lineation and prosocline growth-lines forming a small sinus at the peripherial carina.

Distribution: Bakony Mts., Somhegy: Humphriesianum Zone.

Remarks: *Boeckhia boeckhi* gen. & sp. n. has a lower spire than any of the above mentioned species of the genus, and the form of the inner lip is also unique.

Family **Amberleyidae** WENZ, 1938

Genus *AMBERLEYA* MORRIS & LYCETT, 1851

Amberleya (Eucyclus) alpina (STOLICZKA, 1861)

(Plate II: figs. 11–13)

1861: *Eucyclus alpinus* STOL. – STOLICZKA, p. 176, pl. II, fig. 12.
1874: *Eucyclus alpinus* STOL. – GEMMELLARO, G. G., p. 98, pl. XII, fig. 13.
1911: *Eucyclus alpinus* STOL. – GEMMELLARO, M., p. 223, pl. X, figs. 26–28., 31.

1912: *Eucyclus alpinus* STOL. – DARESTE DE LA CHAVANNE, p. 53, pl. IV, fig. 4.
1937: *Amberleya alpina* STOL. – PCHELINCEV, p. 29, pl. II, fig. 14.
1966: *Eucyclus alpinus* STOL. – BOURROUILH, p. 36, pl. I, fig. 1.
1967: *Pleurotomaria* (?) *obesa* (TQ. et PT.) – SACCHI-VIALLI & CANTALUPPIP 118. pl. XVIII. fig. 2.

Measurements:	H	HL	HA	D	W	A
Plate II: fig. 13	–	32	21.5	32	19	44°

Material: Twenty-two specimens, preserved as fragmentary inner moulds, some of them with shell portions.

Shape: The high littoriniform shell is dextral, with a rounded-angulate periphery, a deep suture and a convex base without umbilicus. The peristome is subquadral, its columellar lip vertical and strong, but the outer lip rather weak and thin as the remaining parts of the shell.

Ornament: Longitudinally, the whorls are ornamented by tubercled carinae, the strongest of which runs along the periphery. Two carinae are situated between the suture and the periphery on the earliest whorls, but its number increases to four on the adult. Below the periphery, there are also one or two carinae, and numerous cords on the base. These latter are arranged with narrower interspaces, than the carinae are and have no tubercles. The collabral ornament consists of somewhat prosocline and fine growth-lines.

Distribution: Northern Alps: Hierlatz Limestone; Sicily: "Pygope aspasia" Zone; Atlas Mountains, Guelma (Algeria) Middle Liassic; El Hameiret (Marocco): Sinemurian; n-Talsast (Marocco): Lower Carixian; Caucasus: Pliensabachian; Bakony Mts., Kericser: beds with mixed Obtusum to Ibex Zone fauna – Davoei Zone; Káváshegy. Davoei Zone; Lókút? Davoei Zone; Büdöskút: Stokesi – Margaritatus Zone; Fenyveskút: Domerian. S. Alps: Domerian.

Remarks: The available specimens agree with STOLICZKA's figure and description well. Other authors have documented somewhat different forms, with slightly coeloconoid outline, smaller spiral angle or slight changes in the sculptural characters. These differences simply mark a moderate variability of the species.

Amberleya (Eucyclus) capitanea (MÜNSTER, 1844)

(Plate III: figs. 1–2)

1844: *Turbo capitaneus* MÜNST. – in GOLDFUSS, p. 97, pl. CXCIV, fig. 1.
1852: *Turbo capitaneus* MÜNST. – D'ORBIGNY, p. 341, pl. 329, fig. 7–8.
1892: *Amberleya capitanea* MÜNST. – HUDLESTON, p. 277, pl. XXI, fig. 12.
1909: *Eucyclus capitaneus* MÜNST. – BRÖSAMLEN, p. 257, pl. XX, fig. 8–9
1937: *Amberleya capitanea* MÜNST. – PCHELINCEV, p. 30, pl. II, fig. 20.

Measurements:	H	HL	HA	D	W	A
Plate III: fig. 1	–	25	16.5	25.5	15	43°

Material: Three, more or less fragmentary inner mould specimens with some pieces of shell.

Shape: Dextral, high littoriniform, thick shell with a convex surface of the whorls. The periphery is subangulate and carinate. The somewhat flattened base is without umbilicus; the columella and the columellar lip is strong, likewise the other parts of the peristome are thickened inside on the adult. An inner mould shows antoher, deserted thickened peristome besides the last one.

Ornament: On the last whorl three strong, nodose carinae are present, the lowermost of which is covered by the suture on the former whorls. The base is ornamented by spiral cords with tiny tubercles on the outer one or two. Fine threads yield a transversal ornament parallel to the prosocline growth-lines.

Distribution: Germany: Upper Toarcian – Lower Aalenian; France: Toarcian; England: Upper Liassic; Bakony Mts., Gombáspuszta: Upper Toarcian. Caucasus: ?Toarcian.

Remarks: In having a smaller spiral angle, a thickened peristome and much higher number of the basal cords, specimens from the Bakony Mts. are different from all *A. (E) capitaneus* figured by the above mentioned authors. From these, BRÖSAMLEN's and D'ORBIGNY's figures display the most comparable shapes. However, these differences seem to fall into the variability of the species.

Amberleya (Eucyclus) aff. carpathica UHLIG, 1878

(Plate II: fig. 14)

aff. 1878: *Amberleya carpathica* UHLIG, p. 652, pl. XVII, fig. 1.

Material: A fragmentary inner mould specimen with preserved shell portions and a shelly whorl-fragment.

Shape: Dextral, high littoriniform with very thin, fragile shell. Whorl-surface without angulation, periphery carinate.

Ornament: Longitudinal and transversal threads forming a retiform sculpture with small tubercles at the crossing points. At the periphery, one of the spiral threads is strengthened as carina and it bears periodically repeated small spines.

Distribution: Bakony Mts., Somhegy: condensed Subfurcatum to Garantiana Zone.

Remarks: *Amberleya carpathica* UHL. is the most similar species to the form from the Bakony Mts. by its shape and fine ornament, but the latter possess a thorny carina, only. Certainly it is representing a new species but the bad state of preservation does not allow a good diagnosis.

Genus *RISELLOIDEA* COSSMANN, 1909

Riselloidea multistriata (BÖCKH 1874)

(Plate III: figs. 3–6)

1874: *Turbo multistriatus* BÖCKH p. 110, pl. VI, fig. 5.

Measurements:	H	HL	HA	D	W	A
Plate III: figs. 3–6	–	13.5	8.5	16	9	–

Material: Sixteen inner moulds, mainly in bad state of preservation, but some of them with shell fragments.

Shape: Dextral, turbiniform species of average size. The surface of the whorls is convex, the periphery is carinate. The peristome is prosocline with a somewhat thickened columellar lip separated from the convex base by a pseudoumbilicus. The aperture is rounded, but there are angulations at the foot of columella and at the suture.

Ornament: Spiral carinae are present on the whorls and are on the base. The strongest three of these are situated at the periphery and immediately beside it. The lowermost one of these is just overlapped by the suture of the following whorl. All of the other carinae are similar in strength. They are separated by narrower, equal interspaces on the base. The transversal ornament consists of fine collabral cords, which are denser than the longitudinal elements. Usually they run from suture to suture (or to inner lip), but sometimes a few of the cords do not reach the upper suture, but disappear near to it. In such cases, short riblets appear at the suture beside the earlier ones. The ends of the riblets and the related cords do not meet. Nodulae or tubercles are sitting at the crossing points. The growth-lines are strongly prosocline, and somewhat opisthocyrt on the base.

Distribution: Bakony Mts., Sümeg: ? Upper Sinemurian; Szentgál: Raricostatum and Ibex Zone; Kisnyerges-árok: Upper Sinemurian- Lower Pliensbachian; Közöskúti-árok: Ibex Zone; Kericser: beds with mixed Obtusum to Ibex Zone faunas and Davoei Zone; ? Kávashegy; ? Davoei Zone; Büdöskút-Középhát: Stokesi and Margaritatus Zone; Bocskorhegy: Davoei Zone.

Remarks: *Riselloidea multistriata* (BÖCKH) was the only species described before the present series from the Bakony Mts. Jurassic. The holotype deposited in the Museum of Hungarian Geological Institute is just like the available specimens in shape and ornament, but the depiction given by BÖCKH is somewhat incorrect, since the peripherial carinae follow each other with greater interspaces in reality than on the figure.

Genus *EUCYCLOMPHALUS* VON AMMON, 1892

Eucylomphalus cupido (D'ORBIGNY, 1825)
(Plate III: fig. 7)

1852: *Trochus cupido* D'ORBIGNY, p. 261, pl. 309, fig. 5–8.
1861: *Trochus cupido* D'ORB. – STOLICZKA, p. 174, pl. II, fig. 10–11.
?1874: *Trochus cupido* D'ORB. — GEMMELLARO, G. G., p. 100, pl. XII, Fig. 11–12.
1911: *Trochus cupido* D'ORB. — GEMMELLARO, M. p. 226, pl. X, fig. 29–30.
1915: *Eucyclomphalu cupido* D'ORB. – COSSMANN, p. 202, t. fig. 47, pl. XIII, fig. 20–22.
1966: *Eucyclomphalus cupido* D'ORB. – BOURROUILH, p. 41, fig. 15.

Material: Four, fragmentary, shelly specimens are available.

Shape: Dextral, conical shell with deep suture. The whorlsurface consists of two somewhat convex bands meeting at an angulation, which correspons to the periphery on the last whorl. The broadly phaneromphalous base is similarly convex, with a rounded angulation at the umbilical margin.

Ornament: Between the angulation and the upper suture, near to the latter, a tubercled cord is the only spiral ornament and prosocline growth-lines give the collabral ornament. Below the angulation enhanced by a nodose carina and the whole of the base, a retiform sculpture of transversal and longitudinal cords is visible. Tubercles are sitting at the crossing points.

Distribution: France, Fontaine-Etoupefour; Northern Alps: Hierlatz Limestone; Eastern Sicily: "Terebratula aspasia zona"; Marocco, jbel Bou-Mokhta and Daiet-el-Hamire: Sinemurian; Bakony Mts., Tűzköveshegy: Raricostatum Zone.

Remarks: The available specimens agree well with STOLICZKA's figure 10.a. G.G. GEMMELLARO' s *Trochus cupido* differs from D' ORBIGNY' s and STOLICZKA's descriptions in its shape and ornament in such degree, that it seems to be another species, not only a „varietas" (whorls without an angulation, bicarinate periphery, numerous spiral cords between the periphery and the upper suture etc.). BOURROUILH's *E. cupido* (D'ORB.) has a narrower umbilicus and a somewhat different sculpture, but such a variability is easily conceivable.

Eucyclomphalus aff. **campiliensis** (DE STEFANI, 1887)
(Plate III: figs. 8–9)

aff. 1887: *Pleurotomaria campiliensis* DE STEFANI, p. 45, pl. I, fig. 12–13.

Measurements:	H	HL	HA	D	W	A
Plate III: figs. 8–9	–	14.5	–	18	–	~45°

Material: Two damaged shelly and six internal mould specimens are available.

Shape: High conical test with a rather deep suture. The juvenile whorls possess a somewhat less convex surface than the latter. Below the rounded periphery, there is a convex and broadly phaneromphalous base with a subangulate umbilical margin. The prosocline peristome seems to be unthickened, though one or two weak collabral constrictions are observable on the last whorl of the figured shelly and some inner mould specimens.

Ornament: The whorls and the base as well as the inner parts of the umbilicus are covered by tubercled spiral cords. The strongest of them is running at the periphery. Some cords placed at the abaxial part of the base are following each other with narrower intrspaces, than the rest. Very fine, prosoclin growth-lines yield the transversal ornament.

Distribution: Bakony Mts., Kericser: Ibex and Davoei Zone

Remarks: The shape and the ornament correspond to the mentioned species excepting two characters and the generic arrangement. The doubtfulness of its relegation to *Pleurotomaria*, remarked by DE STEFANI, was established: it is an amberleyid species (*Amberleya* or *Eucyclomphalus*). It is not known, whether DE STEFANI's specimens have an umbilicus and tubercles or not, thus the use of open nomenclature is necessary.

Eucyclomphalus sp. (Plate III: fig. 10)

Measurements:	H	HL	HA	D	W	A
Plate III: fig. 10	21	13	9	14	9	55°

Material: Two bad preserved, shelly specimens.

Shape: Dextral, littoriniform, with convex surface of the whorls and the narrowly phaneromphalous base. The suture is situated in a moderately deep furrow. The umbilical lip is straight and vertical, the cross-section of the whorls is subcircular on the part corresponding to the outer lip.

Ornament: The whorls and the base are sculptured by spiral cords, on the latter in double density. Very fine, prosocline growth-lines and fine threads give the transversal ornament. It cannot be seen, whether or not tubercles are sitting on the crossing points of the cords and the threads.

Distribution: Bakony Mts., Kericser: beds with mixed Obtusum to Ibex Zone fauna and Davoei Zone.

Remarks: On the basis of the greater spiral angle and the narrower umbilicus, this species is distinctly separable from the *Eucyclomphalus* aff. *campiliensis* DE STEF., but owing to the bad state of preservation, it is undeterminable. Definitely, this species belongs to the relatives of "*Turbo*" *elegans* MÜNSTER, 1844 and "*Turbo*" *ferryi* DUMORTIER, 1864 but there are disagreements in the number and nature of the cords, and the measurements.

Family? **Nododelphinulidae** COX, 1960

Genus? *TROCHACANTHUS* DACQUÉ, 1936

Trochacanthus ? disputabilis (UHLIG, 1881)
(Plate III: figs. 11–12)

1881: *Trochus disputabilis* UHLIG, p. 406, pl. VIII, fig. 7–8.

Measurements:	H	HL	HA	W	D	A
Plate III: figs. 11–12	15	–	–	–	9	32°

Material: Two, fragmentary, shelly specimens.

Shape: Dextral, moderately high conical-trochiform, with a rather deep suture and convex whorls. On the last whorl, two rounded angulations are present, each of them marked by a nodosed carina. The upper one corresponds to the periphery, and its nodulae are sparser and greater than of the lower carina. This latter is the outer border of the flattened convex, anomphalous base and it is just exposed above the suture on the whorls. The peristome seems to be rather prosocline, with a parietal callosity.

Ornament: The whorls are covered by longitudinal and transversal cords yielding a retiform sculpture, the latter are less prosocline above the periphery and rather below it. On the base only the spiral cords are present.

Distribution: Western Carpathians, Babierzóvka: Upper Callovian; Bakony Mts., Somhegy: condensed Subfurcatum to Garantiana Zone.

Remarks: The determination was easy on species level, but remained "disputabilis" on generic leves. *Trochacanthus* was the only genus, on which I can see a similar type of nodosity besides the comparable shape. The nodulae of the peripherial carina remind me the parabolic type, but they may be a row of tremata. The clearing up of this question needs specimens in better state of preservation than the available ones.

References

BOURROUILH, L. (1966): Gasteropodes du Lias inferieur et moyen du atlasique marocain. – *Notes Mém. Serv. Mines Carte géol. Maroc*, **196:** 25–72. pls 1–3.

BÖCKH J. (1874): Die geologischen Verhältnisse des südlichen Theiles des Bakonys, II. Theil. – *Mitt. Jb. K. ung. geol. Abst.*, **3:** 1–180. pls. 1–7.

BRÖSAMLEN, R. (1909): Beitrag zur Kentniss der Gastropoden des schawäbischen Jura. – *Palaeontographica*, **56:** 177–321, pls 17–22.

COSSMANN, M. (1916): Essais de Paléoconchologie comparée. – Paris. 10, 292 pp., 12 pls.

DARESTE DE LA CHAVENNE, J. (1920): Fossiles liassiques de la region de Guelma. – *Bull. Serv. Cart. geol. Algér.*, (1), **5:** 1–73, pls 1–4.
DUBAR, G. (1948): Faune domérienne du Djebel Bou-Dahar (prés de Beni-Tajjite). – *Notes Mem. Serv. Mines Carte géol. Maroc*, **68:** 1–250, 1–30. pls
DUMORTIER, E. (1864): Études paléontologiques sur les dépôts jurassiques du Bassin du Rhone. I. Infralias. – Paris, 190 pp., 30 pls.
FUCINI, A. (1913): Nuove contributo alla conescensa dei Gasteropodi liassici della Montagna del Casale (Sicilia). – *Palaeontogr. Ital.*, **19:** 1–30. pls 1–2.
GEMMELLARO, G. G. (1874): Sopra i fossili della zona con Terebratula aspasia Menegh. della provincia di Palermo e di Trapani. – In: Sopra alcune faune giuresi e liasice di Sicilia. Studi paleontologici, Palermo, 1872–82: 53–112, pl. 12.
GEMMELLARO, G. G. (1878): Sui fossili del calcare cristallino delle Montagna del Casale e di Bellampo nella provincia di Palermo. – In: Sopra alcune faune giuresi e liasiche di Sicilia. Studi paleontologici, Palermo, 1872–82: 233–434, pls 21–31.
GEMMELLARO, M. (1911): Sui fossili degli strati a Terebratula Aspasia della Contrada Rocche Rosse presso Galati (prov. di Messina). Cephalopodi (fine) – Gasteropodi. – *G. Sci. nat. econ. Palermo*, **28:** 203–242, pls. 8–10.
HÉBERT, É. & DESLONGCHAMPS, E. (1860): Mémoire sur les fossiles de Montreuil-Bellay. – *Bull. soc. linn. Normandie*, **5:** 153–240, pls. 1–9.
HÖRNES IN HAUER, F. (1853): Ueber die Gliederung der Trias- Lias- und Juragebilde in den nordöstlichen Alpen. – *Jb. geol. Bundesanst.*, **4:** 715–784.
HUDLESTON, W. H. (1887–96): A monograph of the Onferior Oolite Gasteropoda – *Palaeontogr. Soc.* [Monogr.], London, 514 pp., 44 pls.
MORRIS, J. & LYCETT, J. (1851): A monograph of the Mollusca from the Great Oolite. Part I, Univalves. – *Palaeontogr. Soc.* [Monogr.], London, 130 pp., 15 pls.
GOLDFUSS, A. (1841–44): Petrefacta germaniae. 3. Teil. – Düsseldorf, – 128 pp.
D'ORBIGNY, A. (1850–60): Paléontologie francaise. Terrain jurassique, II. Gastropodes. – Paris, 456 pp., pls. 235–428.
PCHELINCEV, V. F. (1937): The Jurassic Gastropoda and Pelecypoda of the USSR. 1. The Gastropoda and Pelecypoda from the Liassic and Lower Dogger of the Tethys in the limit of the USSR. – *Monogr. Pal USSR.*, **48:** 1–83, pls 1–5 (russian with english abstract).
DAL PIAZ, G. (1912): Sulla fauna batoniana del Monte Pastello nei Veronese. – *Memorie Ist. geol. miner. Univ. Padova*, **1:** 215–266, pls 1–2.
SACCHI-VIALLI, G. & CANTALUPPI, G. (1967): I nuovi fossili di Gozzano (Prealpi Piemontesi). – – *Memorie Soc. ital. Sci. nat.*, **16:** 61–128, pls. 11–18.
DE STEFANI, C. (1887): Lias inferiore ad arieti dell' Appenino settentrionale. – *Memorie Soc. tosc. Sci. nat.*, **8:** 9–76, pl. 1.
STOLICZKA, F. (1861): Über die Gastropoden und Acephalen der Hierlatz-Schichten. – *Sber. Acad. Wiss. Wien, math.-naturw. Cl.*, **43:** 157–204, pls. 1–7.
TONI, A. (1912): La fauna liassica di Vedana Belluno. Parte secondo: Molluschi. – *Abh. schweiz. paläont. Ges.*, **38:** 33–52, pl. 2.
UHLIG, V. (1878): Beiträge zur Kentniss der Juraformation in den Karpatischen Klippen. – *Jb. geol. Bundesanstalt, Wien*, **28:** 641–658, pls 16–17.
UHLIG, V. (1881): Ueber die Fauna des rothen Kellowaykalkes der penninischen Klippe Babierzówka bei Neumarkt in West-Galizien. – *Jb. geol. Bundesanstalt, Wien*, **31:** 381–422, pls. 7–9.

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Plate I.

Figs 1–3. *Neritopsis (N.) elegantissima* HÖRNES, Sümeg; igs 1–2 = x2; fig. 3 = an embryonal shell is visible in the apertural part of the larger specimen, x6.
Figs 4–5. *Neritopsis (N). fabianii* TONI, Közöskúti-árok, x1.7.
Figs 6–9. *Neritopsis (N.) papodensis* sp. n., holotype, Fenyveskút, J 10130; fig. 6–8 = x2; fig. 9 showing the ornament and the protoconch, x5.
Figs 10–18. *Neritopsis (N.) spinigera* sp. n., Somhegy; fig. 10–11 = holotype J 10131, x1.7; fig. 12 = = inner lip of another specimen, x1.5; fig. 13–14 = a third specimen, which shows a fragment of a spine, marked by an arrow, x 2; fig. 15–16 = an operculum, which definitely belongs to this species, x4.6.

Plate I.

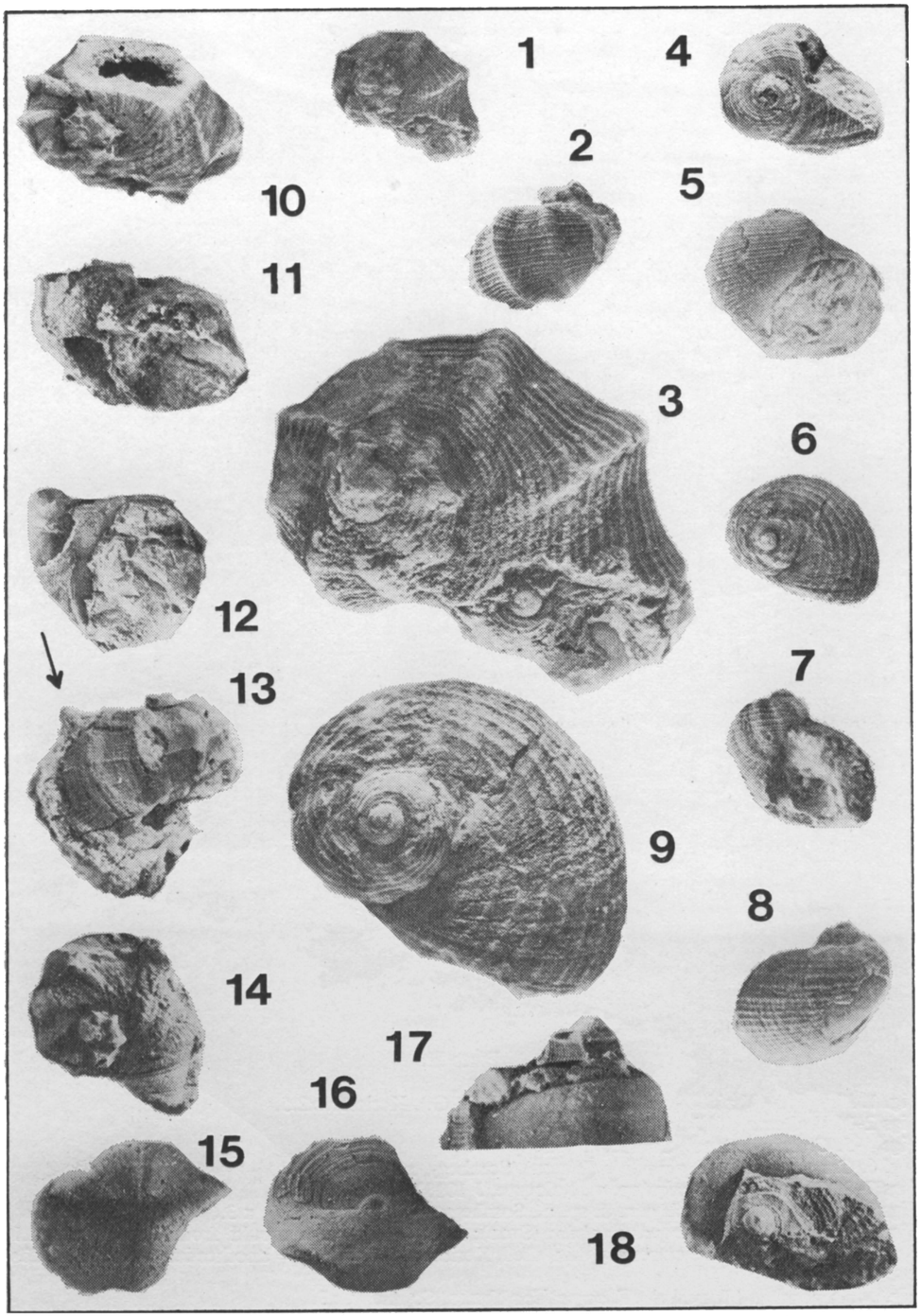

Plate II.

Fig. 1. *Neritoma* (*Neridomus*) aff. *tethys* (GEMM. G. G.), Kericser, x2.5.
Figs 2–3. *Neritoma* (*Neridomus*) sp., Somhegy, x1.6.
Figs 4–5. *Crossostoma* sp., Somhegy, x1.5.
Fig. 6. *Crossostoma* ? cf. *perampla* (UHLIG), Somhegy, x2.
Figs 7–8. *Chartronella noszkyi* sp. n., holotype, J 10132, x1.8 and 1.1
Figs 9–10. *Boeckhia boeckhi* gen. & sp. n., Somhegy, holotype, J 10133, x 3.6
Figs 11–13. *Amberleya* (*Eucyclus*) *alpina* (STOL); fig. 11 = an inner mould from Káváshegy, x1.1; fig. 12 = a portion of the extremely thin shell, Kericser, x1.2; fig. 13 = another inner mould, Büdöskút x4.
Fig. 14. *Amberleya* (*Eucyclus*) aff. *carpathica* UHLIG, Somhegy, x3.

Plate II.

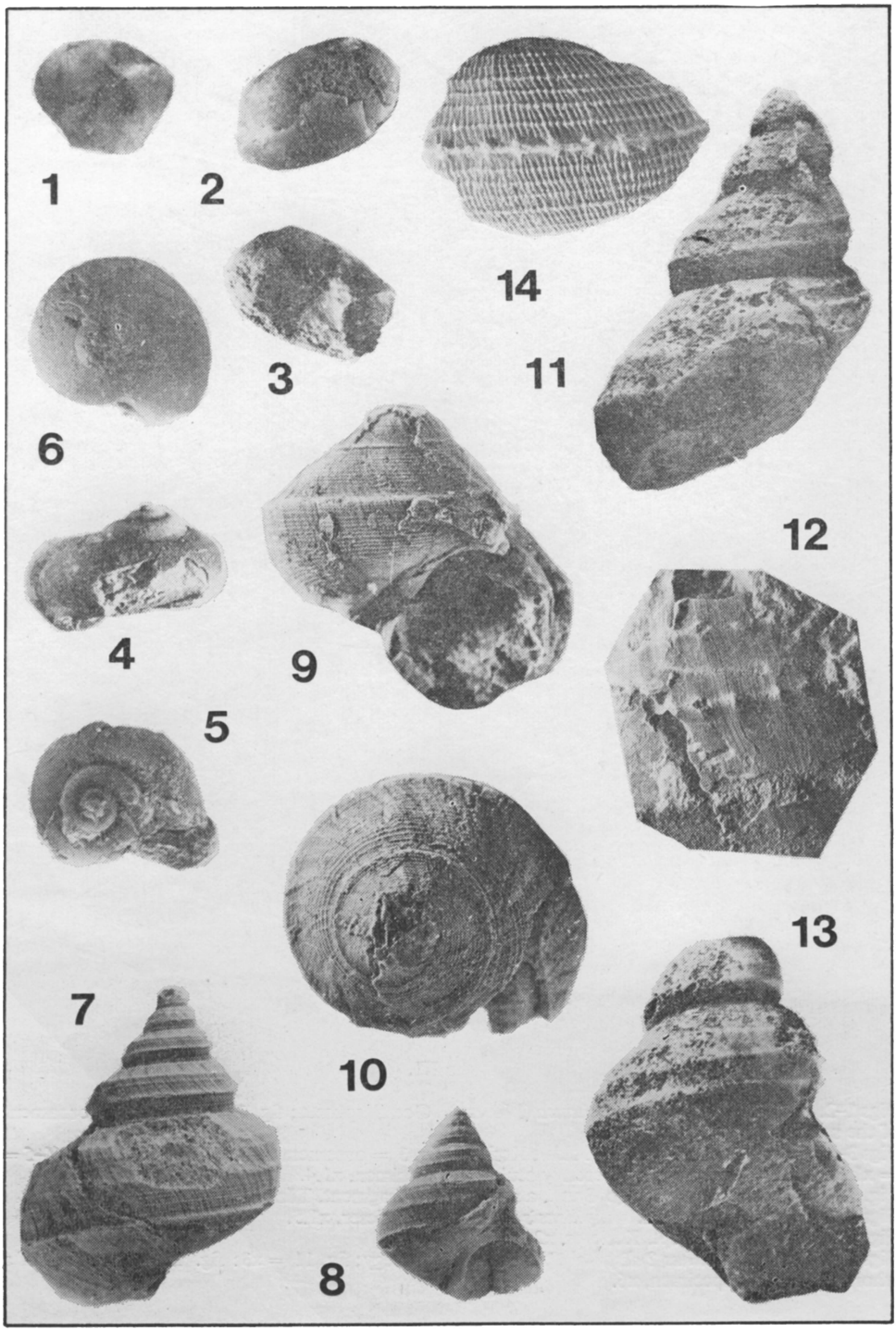

Plate III.

Figs 1–2. *Amberleya* (*Eucyclus*) *capitanea* (MÜNST.), Gombáspuszta; fig. 1 = x1.3; fig. 2 = ornament of the species, x 5.
Figs 3–6 *Riselloidea multistriata* (BÖCKH), Kericser; fig. 3 = ornament of the whorls, x4.5; figs. 4–5 = = x1.5; fig. 6 = a somewhat differently sculptured specimen, x1.4.
Fig. 7. *Eucyclomphalus cupido* (D'ORB)., a shelly whorl-fragment, Tűzköveshegy, x2.
Figs 8–9. *Eucyclomphalus* aff. *campiliensis* (DE STEF.), Kericser, x1.5.
Fig. 10. *Eucyclomphalus* sp., Kericser, x2.5.
Figs 11–12. *Trochacanthus* ? *disputabilis* (UHLIG), Somhegy; fig. 11 = x3: fig. 12 = ornament of a whorl of the same specimen, x6.

Plate III.