

ANNALES  
UNIVERSITATIS SCIENTIARUM  
BUDAPESTINENSIS  
DE ROLANDO EÖTVÖS  
NOMINATAE

SECTIO GEOLOGICA

Tomus XXXIV



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**Tomus XXXIV**

**BUDAPEST  
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## Nautiloid cephalopods from the Middle Eocene of Iszkaszentgyörgy, Transdanubian Hungary

András GALÁCZ<sup>1</sup>

(with 4 figures)

### Abstract

Two nautiloid specimens are described from the Transdanubian (West Hungarian) Middle Eocene. The specimens belong to the species *Euciphoceras regale* (J. Sow.) and *Cimomia elliptica* (SCHAFHÄUTL). While these Nautiloids represent a subordinate part of the otherwise very rich molluscan fauna of the localities, their appearance may suggest connections with areas in the wider paleogeographic surroundings.

### Introduction

The Eocene formations, especially the Middle Eocene nummulitic limestones of the Transdanubian Central Range not uncommonly yield nautiloids. These have been usually recorded in faunal lists (see e.g. SZÓTS 1956), but systematic evaluations, or proper descriptions, with the one exception of the works of VOGL (1908, 1910, 1911), are missing. Realizing that Nautiloids are good indications of marine connections, paleocurrents and other paleoceanic parameters, it seemed worth treating the old and new finds with special attention. This paper is a sequel of a former short note (GALÁCZ 1987) aimed to start introducing the Hungarian Tertiary representatives of this somewhat neglected fossil group.

### Material

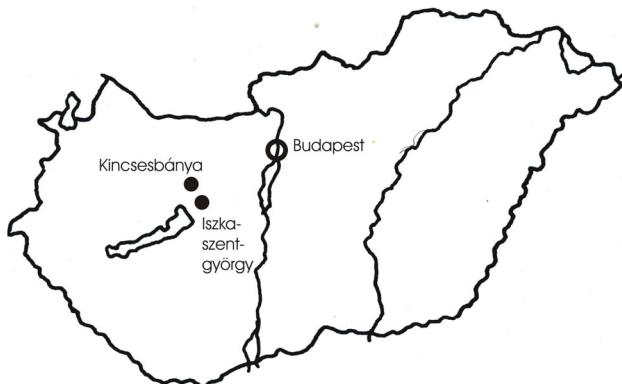
In Iszkaszentgyörgy the Eocene sequence is well-known as a good source of fossils. Most common group is that of the molluscs, including occasional Nautiloids (KECSKEMÉTI-KÖRMENDY & MÉSZÁROS 1980, p. 9; KOPEK 1980, p. 59). There are several Middle and Upper Eocene horizons with rich fossil assemblages exposed in numerous natural and artificial outcrops. These latter are the abandoned bauxite pits, which expose mainly the nummulitic limestones and marls forming the higher cover of the bauxite exploited here. The richest mollusc material came from the cut of the road

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leading to the former coal mine shaft (Kincses II).

One of the here described specimens is from the former collection of the Department of Geology of Eötvös University. It has a label with inventory no. M80, locality as Iszkaszentgyörgy, and a year: 1966. The collector is not recorded. The other specimen is from the collection of Z. EVANICS, a private collector, who kindly provided his material for study. The specimen is labelled as No. 76/596, and was collected in 1990 in Kincsesbánya, near Iszkaszentgyörgy (Text-fig. 1).



Text-fig. 1. Localities of the described Nautiloids

### Systematic descriptions

Classis Cephalopoda CUVIER, 1795  
 Subclassis Nautiloidea AGASSIZ, 1847  
 Ordo Nautilida AGASSIZ, 1847  
 Superfamilia Nautilaceae BLAINVILLE, 1825  
 Familia Nautilidae BLAINVILLE, 1825  
 Genus *Euciphoceras* SCHULTZ, 1976

*Euciphoceras regale* (J. de C. SOWERBY, 1823)  
 Text-figs 2, 3.

- 1822. *Nautilus regalis* – SOWERBY, J. de C., p. 77, pl. 355.
- 1849. *Nautilus regalis*, SOWERBY – EDWARDS, p. 46, pl. IV, pl. VIII, fig. 5.
- 1849. *Nautilus urbanus* SOWERBY – EDWARDS, p. 46, pl. III, fig. 2, pl. VIII, fig. 4.
- non 1880. *Nautilus regalis* SOW. – DE GREGORIO, p. 2, pl. B, figs 6, 7.
- 1891. *Nautilus urbanus*, J. de C. SOWERBY – FOORD, p. 320.
- 1908. *Nautilus regalis* SOW. – VOGL, p. 639, text-fig. 1.
- 1976. *Eutrephoceras (Euciphoceras) regale* (SOWERBY, 1822) – SCHULTZ, 1976a, p. 5, text-fig. 1D.
- 1976. *Eutrephoceras (Euciphoceras) regale* (J. SOWERBY, 1922) – SCHULTZ, 1976b, p. 9, text-fig. 1D.

### *Measurements*

Specimen	Diameter (D)	Whorl height (Wh)	Wh/D	Whorl breadth (Wb)	Wb/D	Umbilical breadth (U)	U/D
M.60	127	70	0.55	66	0.52	10.5	0.08
	85	50	0.59	54	0.63	6	0.07

### *Description*

A medium-size, slightly squeezed, but otherwise well-preserved internal mould. This is an adult example, showing the crowding of the last three septa at 115 mm diameter, and preserving a short part of the infilled body-chamber. The whorl-section (Text-fig. 3A) is high trapezoidal, with rounded umbilical shoulder, flattish, convergent flanks, rounded ventrolateral margin, and wide, depressed venter. Position of the siphuncle is not visible.

The suture line (Text-fig. 3C) is undulating for the genus, having a narrow umbilical saddle, a very wide, shallow lateral lobe, and a slight ventral lobe.

### *Comparison and remarks*

*Eucipheroceras regale* is a well-distinguished species by its whorl-section with flattened flanks and venter. The original of *Nautilus regalis* figured by VOGL (1908, text-fig.1) is now in the collection of the Department of Paleontology, Eötvös L. University. This is a big (nearly 200 mm diameter) specimen, septate up to about 160 mm, and shows the characteristic, trapezoidal whorl-section.

### *Distribution*

*E. regale* seems to be a common nautilid in the Eocene of Europe. In Austria, it occurs mainly in the Middle Eocene (see SCHULTZ, 1976b). The here described specimen came most probably from the „*Nummulites perforatus* marl” of the Upper Lutetian.

### Genus *Cimomia* CONRAD, 1866

#### *Cimomia elliptica* (SCHAFHÄUTL, 1852) Text-figs 3, 4

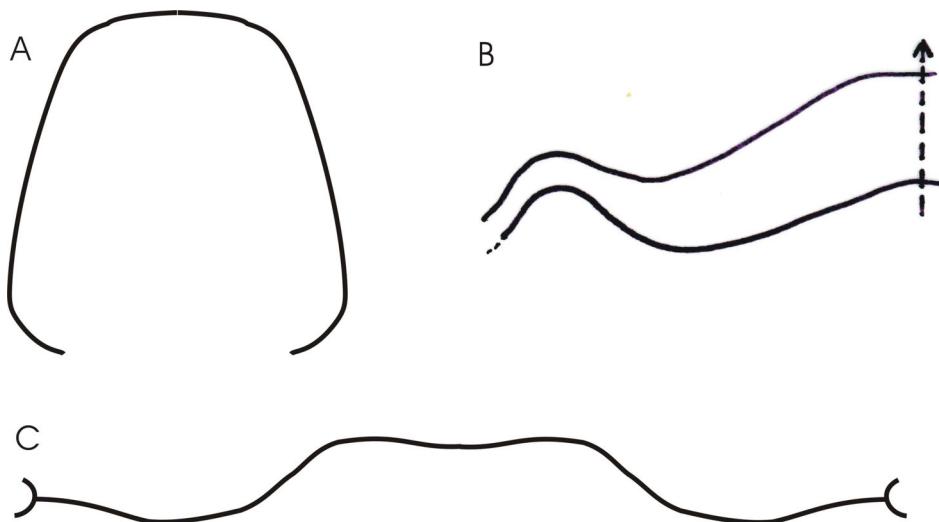
1863. *Nautilus ellipticus* mihi – SCHAFHÄUTL, p. 214, pls 57, 58.  
1891. *Nautilus ellipticus*, SCHAFHÄUTL – FOORD, p. 324.

### *Material*

A single, small specimen – internal cast – from the so-called „*Nummulites perforatus* horizon” of Kincsesbánya, near Iszkaszentgyörgy, from the collection of Z. Evanics.



Text-fig. 2. *Euterephoceras regale* (Sow.). Iszkaszentgyörgy, Middle Eocene. Collection of the Department of Paleontology. A: ventral view; B: lateral view (x0.9)



Text-fig. 3. Suture-lines and cross-section of the described forms. A and C: Cross-section and suture-line of *Euciphoceras regale* (SOW.) at 90 mm diameter (x1); B: Suture-lines of *Cimomia elliptica* (SCHAFHÄUTL) at 52 mm diameter (x2)

#### Measurements:

Specimen	Diameter (D)	Whorl height (Wh)	Wh/D	Whorl breadth (Wb)	Wb/D	Umbilical breadth (U)	U/D
76/596	90	57	0.63	? 42	? 0.47	? 4	? 0.05
	61	36	0.59	? 24	? 0.39	-	-

#### Description

A small, somewhat compressed specimen consisted entirely of the phragmocone. Seemingly a subadult specimen, because there are no traces of sutural crowding around the last visible sutures. Near the end of the septate part the distortion is smaller, here the whorl with narrow umbilicus shows high-oval cross-section with low, rounded umbilical wall, slightly convex, convergent flanks and narrow, arched venter. Maximum width of the whorl appears below the middle of the flanks, near to the umbilical margin. Siphuncle cannot be seen.

The suture-line (Text-fig. 3B) shows a narrow umbilical saddle and a wide, shallow lateral lobe, then runs straight across the venter.

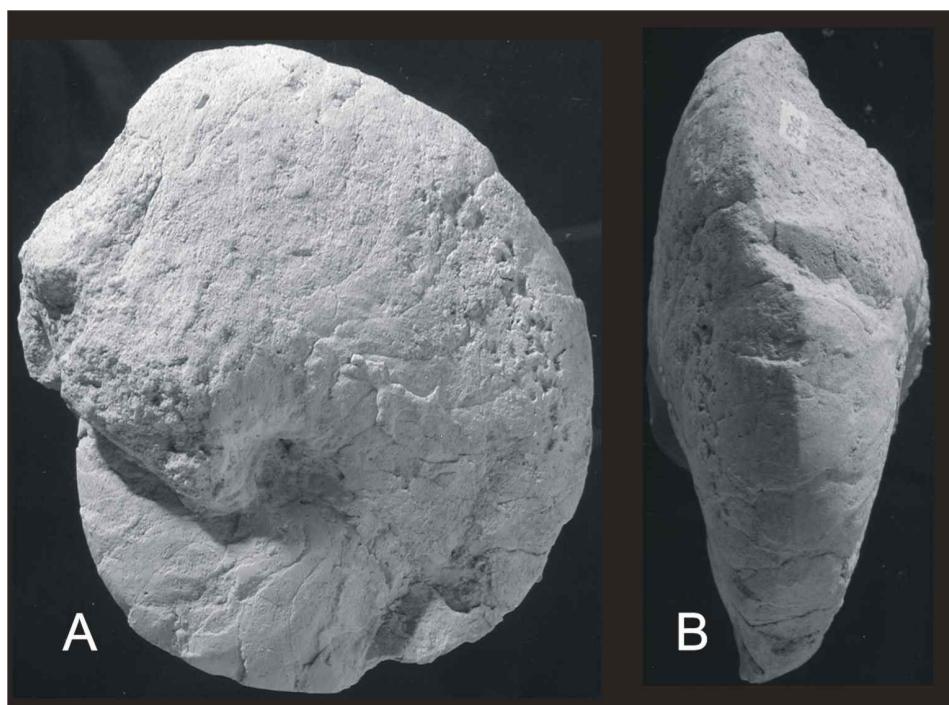
#### Comparison and remarks

This is a young specimen, with its dimensions half as those of the type. With its narrow, high-oval whorl-section it matches „*N.*” *ellipticus* SCHAFHÄUTL, the only narrow-whorled form within the genus. „*Nautilus*” *ellipticus*, designated by SCHAFHÄUTL belongs into genus *Cimomia* on the basis of its suture-line with shallow

lateral lobe and narrow, but highly-rounded umbilical saddle (see also KUMMEL 1956). It differs from the other Eocene *Cimomia* species by its narrow, high-oval whorl-section.

#### *Distribution*

*C. elliptica* seems to be a rare species, even the description given by FOORD (1891) refers to specimens in the Natural History Museum from the type locality Kressenberg (Bavaria). The Bavarian specimens, just as the here described example, came from the Middle Eocene Lutetian.



Text-fig. 4. *Cimomia elliptica* (SCHAFHÄUTL). Kincsesbánya, Middle Eocene. EVANICS collection (No. LC 76/596). A: lateral view; B: ventral view. Natural size.

#### Conclusions

As in other rich Middle Eocene localities of the Transdanubian Central Range, in the Iszkaszentgyörgy-Kincsesbánya fossil sites nautiloids also occur. Nevertheless, this occurrence yielded these forms in low proportion knowing the huge mollusc material collected previously from these fossil-rich beds. This can probably due to the fact that the so-called *perforatus* beds are the first fully marine formations here and in the wider, Bakony Mountain area following a coal-bearing terrestrial sequence. The appearing nautiloids may indicate that after a long terrestrial period not only the fully marine

environment, but the wider, high-sea connections became established only for later Middle Eocene times.

#### Acknowledgements

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## **Taxonomical revision of the Late Würm *Sorex* (Mammalia, Insectivora) remains of Hungary, for proving the presence of an alpine ecotype in the Pilisszántó Horizon**

L. Gy. MÉSZÁROS<sup>1</sup>

(with 2 figures, 1 table and 1 plate)

### **Abstract**

Fossil bone assemblages of 14 localities, ranged in the Pilisszántó Horizon (Late Würm), are stored in the collection of the Geological Museum of Hungary and Hungarian Natural History Museum. *Sorex araneus* findings were reported from five of them (Balla Cave, Bivak Cave, Peskő Cave, Petényi Cave, Pilisszántó Shelter). Taxonomic revision of *S. araneus* showed that several specimens belong to *S. alpinus* in Balla Cave and Petényi Cave. The presence of this form, supported by other Boreo-Alpine fauna elements, indicates not only a significantly cold climate in the Pilisszántó Horizon, but the development of a special ecotype in the named localities. However, as the sites are only 400–800 m above sea level, mountainous relief and periglacial climate yielded open mountain vegetation above the zone of pine forests.

### **Introduction**

The present author formerly studied Soricidae material of the Late Würm Vaskapu Cave in Bükk Mountains, Hungary (MÉSZÁROS, 1999). Beside many *Sorex araneus* and *S. minutus* findings he determined Alpine shrew, *Sorex alpinus* from the fauna. This was the first detailed description of this form from the fossil fauna of Hungary. He declared, that “being two hardly distinguished species, some *S. alpinus* occurrence might have been mentioned in the literature as the very common Quaternary shrew, *S. araneus*” and “this problem needs a comprehensive review in the future”.

The fossil fauna of 14 localities were ranged in the Pilisszántó horizon of the Late Würm glacial period by the book of JÁNOSSY (1979) about the biostratigraphy of the Hungarian Pleistocene.

Five of them (Balla Cave, Ballavölgy Cave, Görömböly-Tapolca Cave, Remetehegy Shelter, Peskő Cave) are stored in the Geological Museum of Hungary (GMH). A few

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specimens from Pilisszántó Shelter are also registered here. Among these we could have found *Sorex* remains only in Balla Cave, Peskő Cave and Pilisszántó Shelter samples.

The material of 5 sites (Diósgyör-Tapolca Cave, Kiskevély Cave, Remete Cave, Szelim Cave, Tarkő Shelter) are registered in the collection of the Geological and Palaeontological Department of the Hungarian Natural History Museum (HNHM), but without *Sorex* occurrence. A few specimens of the fossil fauna of Jankovich Cave are present in the HNHM, but the others are in the GMH. *Sorex* forms could have been determined from Bivak Cave, Petényi Cave and Pilisszántó Shelter in the HNHM collection.

Therefore the present paper discusses the taxonomical revision of the *Sorex* species of Balla Cave, Peskő Cave, Pilisszántó Shelter (GMH), Bivak Cave, Petényi Cave and Pilisszántó Shelter (HNHM) (Tab. 1, Fig 1).

Table 1- *Sorex araneus* and *Sorex alpinus* occurrences in the Hungarian localities from Pilisszánó Horizon. \* *S. alpinus* is reported by VÉRTES (1965) from Peskő Cave, but it was not find by this study on the present GMH material from this site.  
\*\* after MÉSZÁROS (1999 and 2003).

Locality	Stored in	<i>Sorex araneus</i> or <i>alpinus</i> occurrence
Balla Cave	GMH	<i>araneus, alpinus</i>
Ballavölgy Cave	GMH	-
Bivak Cave	HNHM	<i>araneus</i>
Diósgyör-Tapolca Cave	HNHM	-
Gömböly-Tapolca Cave	GMH	-
Jankovich Cave	GMH, HNHM	-
Kiskevély Cave	HNHM	-
Peskő Cave	GMH	<i>araneus (alpinus*)</i>
Petényi Cave	HNHM	<i>araneus, alpinus</i>
Pilisszántó Shelter	GMH, HNHM	<i>araneus</i>
Remete Cave	GMH	-
Remetehegy Shelter	HNHM	-
Szelim Cave	HNHM	-
Tarkő Shelter	HNHM	-
Vaskapu Cave	PM	<i>araneus, alpinus**</i>

Morphological terms and the measurements (in millimetres) are used after REUMER (1984). Abbreviation used in the text and the tables: GMH = Geological Museum of Hungary, HNHM = Hungarian Natural History Museum, PM = Pásztó Museum, Hungary, Nógrád Village, Inv. Nr. = inventory number, I = incisor, A = antemolar, M = molar, L = length, W = width, H = height.

## Localities

### *Balla Cave*

The locality is situated in the Bükk Mountains, at about 500 m north-northeast of Balla Hill, near Répáshuta village, at an altitude of 600 m above sea level. JÁNOSSY (1979) reported Pilisszántóian fauna in one of the layers of the sediment. Rich and well-preserved *Sorex* assemblage is stored in the collection of the GMH from the site.

Alpine fauna element (VÉRTES 1965):

*Microtus nivalis*

*Sorex* species (present study):

*Sorex araneus*

*Sorex alpinus*

### *Bivak Cave*

The locality is situated in the Western side of the Pilis Hill, which is the highest top of the Pilis Mountains, about 18 km north-northeast of Budapest, at an altitude of 560 m above sea level. The „Cave” is a small, fissure-like shelter, containing layered sediments, which yielded rich Pleistocene and Holocene faunas.

Alpine fauna elements (VÉRTES 1965):

*Microtus nivalis*

*Lepus timidus*

*Capra ibex*

*Sorex* species (according to the present studies):

*Sorex araneus*

Remarks: *Crocidura leucodon* occurrences dominate the Soricidae fauna of Bivak Cave. Seven *Crocidura* remains, but only one *Sorex* mandible was found in the fossil sample. The dominance of *Crocidura* indicates warmer and drier climate in Bivak Cave than at other sites. However, all *Crocidura* specimens came from the Holocene layers of the site, while Alpine elements and *S. araneus* were found in the Pleistocene ones.

### *Peskő Cave*

The cave is situated in the Bükk Mountains, as horizontally and vertically very near to the Petényi (Peskő 2) Cave. The remains from the “brick red” and “yellowish” strata of its sediments are determined as Pilisszántóian fauna by JÁNOSSY (1979). Beside many arctic and alpine forms, VÉRTES (1965) reports *S. alpinus* in the fauna. Unfortunately, we have found only one *Sorex* skull fragment in the collection of GMH. The alpine shrew could not present in the sample.

Alpine fauna elements (VÉRTES 1965):

*Pyrrhocorax pyrrhocorax*

*Sorex alpinus*

*Lepus timidus*

*Microtus nivalis*

*Rupicapra rupicapra*

*Capra ibex*

*Sorex* species (present study):

*Sorex araneus*

#### *Petényi Cave*

The locality is situated in the southern side of Peskő Hill in the Bükk Mountains, about 13 km north-northeast of Eger, at an altitude of 735 m above sea level. It is a rock shelter of 13 m length and 8 m width. Five Holocene and one Pleistocene layers were present in the sediments of the site.

Alpine fauna element (VÉRTES 1965):

*Microtus nivalis*

Soricidae species (this study):

*Coccidura suaveolens* (H5 layer)

*Crocidura leucodon* (H5 layer)

*Crocidura* sp. (H3 layer)

*Neomys fodiens* (P1 layer)

*Sorex minutus* (H3 and H5 layers)

*Sorex araneus* (P1, H3 and H5 layers)

*Sorex alpinus* (P1 layer)

*Sorex* sp. indet. (P1, H1, H2 and H5 layers)

Remarks: The fossiliferous layers of the site yielded Pleistocene and Holocene faunae as well. *Crocidura* and *Sorex minutus* are present in the Holocene samples, *S. araneus*, *Sorex* sp. indet. occur in both periods, while the Alpine fauna elements, *S. alpinus* and *Neomys fodiens* were found only in Pleistocene layers.

#### *Pilisszántó Shelter*

The rock shelter is situated in Upper Triassic (Dachstein) limestone of the Pilis Hill, in the vicinity of Pilisszántó village, about 10 km north-northeast of Budapest, at an altitude of 423 m above sea level. One of the richest cave fauna of the Hungarian Upper Pleistocene was found in this site. The cause of the richness of the faunal assemblage might be that this locality was at the time of deposition superbly suited for human settlement and also for birds of prey and carnivorous mammals (JÁNOSSY 1979).

Alpine fauna elements (JÁNOSSY 1979):

*Aquila chrysaetos*

*Lagopus mutus*

*Calidris alpinus*

*Pyrrhocorax graculus*

*Lepus timidus*

*Microtus nivalis*

*Capra ibex*

*Rupicapra rupicapra*

Soricidae species (this study):

*Sorex araneus*

*Sorex* sp. indet.

Remarks: all the studied forms came from the Pleistocene “brown clay” layer of the site. In the Holocene sample also *Crocidura* sp. indet. is present.

## Systematic description

Classis Mammalia LINNAEUS, 1735  
 Order Insectivora BOWDICH, 1821  
 Family Soricidae FISCHER VON WALDHEIM, 1817  
 Genus *Sorex* LINNAEUS, 1758

*Sorex araneus* LINNAEUS, 1758  
 Pl. 1, Figs 1-5

*Ecology*

*S. araneus* lives now in a great part of Europe and continental Asia, north of the steppe zone, mainly in the wet-soiled woods.

*Balla Cave*

## Material and measurements

Inv. Nr. V.10146:

skull fragment

left P<sup>4</sup> BL = 1.63, LL = 1.20, W = 1.50  
 M<sup>1</sup> BL = 1.50, LL = 1.43, AW = 1.60, PW = 1.70  
 right P<sup>4</sup> BL = 1.55, LL = 1.25, W = 1.78  
 M<sup>1</sup> BL = 1.53, LL = 1.48, AW = 1.63, PW = 1.70  
 M<sup>2</sup> BL = 1.25, LL = 1.20, AW = 1.61, PW = 1.45

skull fragment

left P<sup>4</sup> BL = 1.63, LL = 1.22, W = 1.75  
 M<sup>1</sup> BL = 1.48, LL = 1.43, AW = 1.60, PW = 1.75  
 right P<sup>4</sup> BL = 1.60, LL = 1.33, W = 1.71  
 M<sup>1</sup> BL = 1.48, LL = 1.40, AW = 1.58, PW = 1.75

skull fragment

right A<sup>2</sup>-A<sup>4</sup>, P<sup>4</sup> BL = 1.68, LL = 1.35, W = 1.70  
 M<sup>2</sup> BL = 1.23, LL = 1.22, AW = 1.65, PW = 1.58

right maxillary fragment

fragmentary I<sup>1</sup> and A<sup>3</sup>, P<sup>4</sup> BL = 1.68, LL = 1.35, W = 1.85  
 M<sup>1</sup> BL = 1.50, LL = 1.50, AW = 1.63, PW = 1.71  
 M<sup>2</sup> BL = 1.10, LL = 1.31, AW = 1.63, PW = 1.40

right maxillary fragment

P<sup>4</sup> BL = 1.55, LL = 1.25, W = 1.63  
 M<sup>1</sup> BL = 1.40, LL = 1.38, AW = 1.55, PW = 1.61  
 BL = 1.25, LL = 1.23, AW = 1.65, PW = 1.40

right maxillary fragment

P<sup>4</sup> BL = 1.61, LL = 1.20, W = 1.60  
 3 complete left mandibles

1:  $I_1 L = 4.19, H = 1.05$   
 $A_1 L = 1.10, H = 0.80$   
 $A_2 L = 1.28, H = 0.93$   
 $M_1 L = 1.75, W = 1.03$   
 $M_2 L = 1.48, W = 0.98$   
 $M_3 L = 1.18, W = 0.68$

2:  $I_1 L = 3.63, H = 1.05$   
 $A_1 L = 1.03, H = 0.60$   
 $A_2 L = 1.20, H = 0.65$   
 $M_1 L = 1.75, W = 0.98$   
 $M_2 L = 1.45, W = 0.98$   
 $M_3 L = 1.08, W = 0.63$

3:  $I_1 L = 4.06, H = 1.03$   
 $A_1 L = 1.10, H = 0.73$   
 $A_2 L = 1.25, H = 0.88$   
 $M_1 L = 1.75, W = 1.03$   
 $M_2 L = 1.50, W = 0.88$   
 $M_3 L = 1.10, W = 0.68$

2 complete right mandibles

$I_1 L = 3.97, H = 1.05,$   
 $A_1 L = 1.18, H = 0.75,$   
 $A_2 L = 1.05, H = 0.88,$   
 $M_1 L = 1.63, W = 0.95,$   
 $M_2 L = 1.38, W = 0.85,$   
 $M_3 L = 1.05, W = 0.63$

$I_1 L = 3.88, H = 1.00,$   
 $A_1 L = 1.10, H = 0.98,$   
 $A_2 L = 1.28, H = 0.98,$   
 $M_1 L = 1.73, W = 0.93,$   
 $M_2 L = 1.38, W = 0.88,$   
 $M_3 L = 1.05, W = 0.65$

left mandible

$I_1 L = 3.94, H = 1.03$   
 $A_1 L = 0.89, H = 0.70$   
 $A_2 L = 1.25, H = 0.98$   
 $M_1 L = 1.78, W = 0.98$   
 $M_2 L = 1.40, W = 0.90$

left mandible

$I_1 L = 3.75, H = 0.98$   
 $A_2 L = 1.28, H = 0.68$   
 $M_1 L = 1.63, W = 0.88$   
 $M_2 L = 1.38, W = 0.80$   
 $M_3 L = 1.00, W = 0.60$

left mandible fragment

$I_1 L = 3.94, H = 1.00$   
 $A_1 L = 1.03, H = 0.78$   
 $A_2 L = 1.25, H = 0.80$   
 $M_1 L = 1.63, W = 0.65$   
 $M_2 L = 1.38, W = 0.85$

right mandible fragment

$I_1 L = 3.84, H = 1.06$

$A_1 L = 1.03, H = 0.65$   
 $A_2 L = 1.38, H = 0.88$   
 $M_1 L = 1.75, W = 0.95$   
 $M_2 L = 1.35, W = 0.88$

Inv. Nr. V.10147  
complete left mandible

$I_1 L = 4.00, H = 1.04$   
 $A_1 L = 1.32, H = 0.78$   
 $A_2 L = 1.30, H = 0.80$   
 $M_1 L = 1.78, W = 1.00$   
 $M_2 L = 1.50, W = 0.90$   
 $M_3 L = 1.23, W = 0.73$

#### *Bivak Cave*

Material and measurements – from the yellow-grey layer:  
left mandible fragment

$A_2 L = 1.36, H = 0.88$   
 $M_2 L = 1.45, W = 0.85$

#### *Pilisszántó Shelter*

(GM) material and measurements – “Magdalenen I layer”, Inv. Nr. V.13885: complete left mandible

$A_1 L = 1.25, H = 1.00$   
 $A_2 L = 1.38, H = 1.08$   
 $M_1 L = 1.88, W = 1.00$   
 $M_2 L = 1.60, W = 0.88$   
 $M_3 L = 0.75, W = 0.68$

(HNHM) material and measurements – from the brown clay layer: right mandible fragment without ramus mandibulae

$I_1 L = 3.65, H = 0.95$   
 $A_1 L = 1.03, H = 0.53$   
 $A_2 L = 1.10, H = 0.83$   
 $M_1 L = 1.50, W = 0.88$

right mandible fragment

$M_2 L = 1.29, W = 0.78$

2 right mandible fragments without teeth.

#### *Peskő Cave*

Material and measurements – Inv. Nr. V.14400:  
skull fragment

left  $P^4$   $BL = 1.53, LL = 1.13, W = 1.63$   
 $M^1$   $BL = 1.45, LL = 1.38, AW = 1.53, PW = 1.63$   
 $M^2$   $BL = 1.30, LL = 1.29, AW = 1.67, PW = 1.50$   
 right  $P^4$   $BL = 4.50, LL = 1.10, W = 1.63$   
 $M^1$   $BL = 1.50, LL = 1.45, AW = 1.50, PW = 1.55$   
 $M^2$   $BL = 1.25, LL = 1.30, AW = 1.53, PW = 1.46$

*Petényi Cave*

Material and measurements – from P1 layer: Inv. Nr: V. 62.654:

left mandible fragment

A<sub>2</sub> L = 1.29, H = 0.95

M<sub>1</sub> L = 1.73, W = 0.90

M<sub>2</sub> L = 1.43, W = 0.79

M<sub>3</sub> L = 1.15, W = 0.68

Inv. Nr: V. 62.655: left mandible

I<sub>1</sub> L = 1.64, H = 1.09

A<sub>2</sub> L = 1.35, H = 0.94

M<sub>1</sub> L = 1.63, W = 0.90

M<sub>2</sub> L = 1.40, W = 0.88

M<sub>3</sub> L = 1.05, W = 0.63

right mandible fragment without ramus mandibulae

I<sub>1</sub> L = 4.06, H = 1.05

A<sub>1</sub> L = 1.20, H = 0.75

A<sub>2</sub> L = 1.48, H = 0.98

M<sub>1</sub> L = 1.63, W = 0.93

M<sub>2</sub> L = 1.33, W = 0.80

M<sub>3</sub> L = 1.05, W = 0.66

right mandible fragment with fragmentary A<sub>2</sub>,

M<sub>1</sub> L = 1.63, W = 0.95

M<sub>2</sub> L = 1.38, W = 0.85

M<sub>3</sub> L = 1.05, W = 0.68)

right mandible fragment with fragmentary M<sub>1</sub>;

right mandible fragment

M<sub>1</sub> W = 0.95

M<sub>2</sub> L = 1.35, W = 0.85

M<sub>3</sub> L = 1.05, W = 0.63

left mandible fragment

A<sub>1</sub> L = 0.93, H = 0.66

A<sub>2</sub> L = 1.03, H = 0.89

M<sub>1</sub> L = 1.50, W = 0.85

M<sub>2</sub> L = 1.30, W = 0.75

right mandible fragment without the back part

I<sub>1</sub> L = 3.71, H = 1.14

A<sub>1</sub> L = 1.13, H = 0.70

A<sub>2</sub> L = 1.28, H = 0.78

M<sub>1</sub> L = 1.63, W = 0.98

left mandible fragment without the back part

I<sub>1</sub> L = 4.00, H = 0.85

A<sub>1</sub> L = 1.00, H = 0.75

A<sub>2</sub> L = 1.18, H = 0.86

left mandible fragment without teeth;

from H3 layer: Inv. Nr: V. 62.797:

right mandible fragment with

M<sub>3</sub> L = 1.00, W = 0.55

### Description

The internal temporal fossa is deep and wide. The upper condylar facet is cylinder-shaped, mesially not protruding. Its length is less than the width of the interarticular area. The tiny mental foramen is situated under the M<sub>1</sub> re-entrant valley or protocone. I<sub>1</sub> is long and tricuspidate. There is a wide cingulum in the lower antemolars and molars. There is only one cusp on the A<sub>1</sub>, but A<sub>2</sub> is bicuspidate. Entoconid is separate from entostyloid in M<sub>1</sub> and M<sub>2</sub>. Hypoconid and entoconid are present in M<sub>3</sub>.

*Sorex alpinus* SHINZ, 1837  
Pl. 1, Figs 6-8

### Ecology

*S. alpinus* is limited to European high mountains and in the lower, but wet-climated hills in the surroundings of them.

### Balla Cave

Material and measurements – Inv. Nr. V.10146:

complete right mandible

I<sub>1</sub> L = 3.80, H = 1.00

A<sub>1</sub> L = 1.13, H = 0.68

A<sub>2</sub> L = 1.23, H = 0.69

M<sub>1</sub> L = 1.50, W = 0.88

M<sub>2</sub> L = 1.25, W = 0.78

M<sub>3</sub> L = 1.03, W = 0.58

left mandible

I<sub>1</sub> L = 3.52, H = 1.00

A<sub>2</sub> L = 1.20, H = 0.70

M<sub>1</sub> L = 1.75, W = 0.95

M<sub>2</sub> L = 1.45, W = 0.88

M<sub>3</sub> L = 1.05, W = 0.75

left mandible fragment

A<sub>2</sub> L = 1.10, H = 0.75

M<sub>1</sub> L = 1.68, W = 0.93

M<sub>2</sub> L = 1.50, W = 0.85

left mandible fragment with eroded I<sub>1</sub>,

A<sub>2</sub> L = 1.20, H = 0.85

M<sub>1</sub> L = 1.75, W = 1.10

right mandible

I<sub>1</sub> L = 4.06, H = 1.05

A<sub>2</sub> L = 1.33, H = 0.85

M<sub>1</sub> L = 1.63, W = 0.95

M<sub>2</sub> L = 1.25, W = 0.85

M<sub>3</sub> L = 1.03, W = 0.78

right mandible

I<sub>1</sub> L = 4.00, H = 0.98

$A_2$  L = 1.20, H = 0.80  
 $M_1$  L = 1.55, W = 0.90  
 $M_2$  L = 1.35, W = 0.86  
 right mandible  
 $I_1$  L = 4.22, H = 1.13  
 $A_2$  L = 1.38, H = 0.88  
 $M_1$  L = 1.75, W = 0.95  
 $M_3$  L = 1.10, W = 0.63  
 right mandible fragment  
 $I_1$  L = 3.94, H = 1.04  
 $A_2$  L = 1.35, H = 0.83  
 $M_1$  L = 1.43, W = 0.93  
 $M_2$  L = 1.00, W = 0.63  
 with right mandible fragment  
 $A_1$  L = 1.18, H = 0.88  
 $A_2$  L = 1.30, H = 0.80  
 $M_1$  L = 1.60, W = 0.90  
 $M_2$  L = 1.28, W = 0.84  
 right mandible fragment  
 $M_1$  L = 1.75, W = 0.95  
 $M_2$  L = 1.35, W = 0.83  
 edentulous right mandible fragment,  
 Inv. nr. V.10146, in a separate vial: complete right mandible  
 $I_1$  L = 4.00, H = 1.03  
 $A_1$  L = 1.28, H = 0.68  
 $A_2$  L = 1.40, H = 0.85  
 $M_1$  L = 1.80, W = 0.98  
 $M_2$  L = 1.35, W = 0.88  
 $M_3$  L = 1.15, W = 0.65  
 left mandible  
 $I_1$  L = 4.19, H = 1.00  
 $A_2$  L = 1.25, H = 0.78  
 $M_1$  L = 1.68, W = 0.95  
 $M_2$  L = 1.55, W = 0.83  
 $M_3$  L = 1.05, W = 0.65

*Petényi Cave*

Material and measurements - from P1 layer: Inv. Nr: V. 62.10: left mandible fragment without teeth;  
 Inv. Nr: V. 62.655: right mandible fragment  
 $A_2$  L = 1.13, H = 0.75  
 $M_1$  L = 1.50, W = 0.88  
 $M_2$  L = 1.28, W = 0.80  
 $M_3$  L = 1.03, W = 0.58  
 right mandible fragment  
 $A_2$  L = 1.20, H = 0.83  
 $M_1$  L = 1.45, W = 0.95  
 $M_2$  L = 1.35, W = 0.85  
 $M_3$  L = 1.05, W = 0.68

right mandible fragment

$A_2$  L = 1.11, H = 0.75

$M_1$  L = 1.50, W = 0.90

$M_2$  L = 1.30, W = 0.86

right mandible fragment

$A_2$  L = 1.15, H = 0.93

$M_1$  L = 1.50

$M_2$  L = 1.30, W = 0.83

#### *Description*

The morphology of *S. alpinus* is very similar to that of the previous species, but the upper condyloid facet of processus condyloideus is mesially projecting, the lower one laterally widening. The interarticular facet is quite narrow.  $A_2$  is bicuspid.

*Sorex* sp. indet. (*araneus* or *alpinus*)

Pl. 1, Fig. 9.

#### *Balla Cave*

Material and measurements – Inv. Nr. V.10146:

left maxillary fragment

$P^4$  BL = 1.69, LL = 1.34, W = 1.90

left mandible

$I_1$  L = 3.64, H = 0.96

$A_2$  L = 1.28, H = 0.85

$M_1$  L = 1.63, W = 0.95

$M_2$  L = 1.45, W = 0.86

$M_3$  L = 1.05, W = 0.73

right mandible

$I_1$  L = 4.19, H = 1.00

$A_2$  L = 1.35, H = 0.90

$M_1$  L = 1.68, W = 0.90

$M_2$  L = 1.25, W = 1.00

$M_3$  L = 1.03, W = 0.75

#### *Pilisszántó Shelter*

Material and measurements - from the brown clay layer:

right mandible fragment

$A_2$  L = 1.50, H = 0.94

$M_1$  L = 1.75, W = 1.00

right mandible fragment

$M_2$  L = 1.20, W = 0.76

#### *Petényi Cave*

Material and measurements - from P1 layer: Inv. Nr: V. 62.655:

back part of the left mandible, without condyle;

left mandible fragment  
 $A_2 L = 1.25, H = 0.88$   
 $M_1 L = 1.58, W = 0.90$

left mandible fragment  
 $A_2 L = 1.29$   
 $M_1 L = 1.63, W = 0.95$

right mandible fragment  
 $A_2 L = 1.08, H = 0.80$   
 $M_1 L = 1.45, W = 0.90$   
 $M_2 L = 1.30, W = 0.89$

right mandible fragment  
 $A_2 L = 1.41, H = 1.13$

from H1-H2 layer: Inv. Nr: V. 62.725:

right mandible fragment without ramus mandibulae  
 $I_1 L = 4.17, H = 0.99$   
 $A_2 L = 1.33, H = 0.86$   
 $M_1 L = 1.63, W = 0.90$   
 $M_2 L = 1.38, W = 0.85$   
 $M_3 L = 1.13, W = 0.63$

from H5 layer: Inv. Nr: V. 62.31:

left mandible fragment  
 $A_2 L = 1.05, H = 0.95$   
 $M_1 W = 0.90$   
 $M_2 L = 1.35, W = 0.80$

right mandible fragment  
 $M_1 L = 1.58, W = 0.85$   
 $M_2 L = 1.38, W = 0.80$   
 $M_3 L = 1.08, W = 0.64$

#### Remarks

Because *S. alpinus* and *S. araneus* are very similar form in most of the morphological characters and the measurements, the detailed taxonomical determination was not possible in the case of some fragmentary remains. These specimens belong to *S. araneus* or *S. alpinus*, but without the differential characters, so we determined them as *Sorex* sp. indet.

## Discussion

#### Taxonomy

Measurements of *S. alpinus* considerably overlap those of *S. araneus* (Fig. 1). The two forms can be distinguished by the shorter  $I^1$  talon, the bicuspid  $A_1$ , the more posteriorly situated foramen lacrimale and the mesially projecting upper condyloid facet of the Alpine species (UJHELYI 1994). Mainly the processus condyloideus and the number of the cusps of  $A_1$  were useful among the differential characters in the separation of the mandibles of *S. alpinus* and *S. araneus* from the studied assemblages (Fig. 2). Bicuspidate  $A_1$  was well-identifiable mainly in some Balla Cave mandibles.

Well-preserved upper teeth and maxillae were present only in the Balla Cave material. Except for one *S. alpinus* specimen we determined these maxillary fragments as *S. araneus* on the basis of the anterior position of the foramen lacrimale

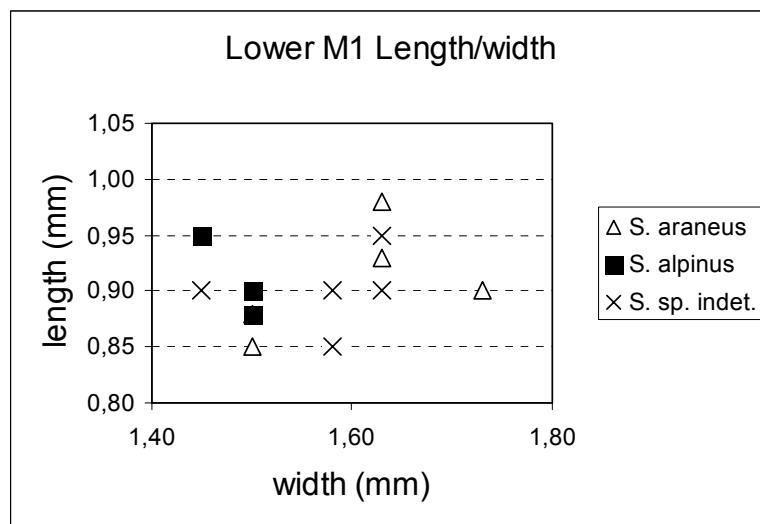


Fig. 1. Scatter diagram of  $M_1$  size of *S. araneus* and *S. alpinus*

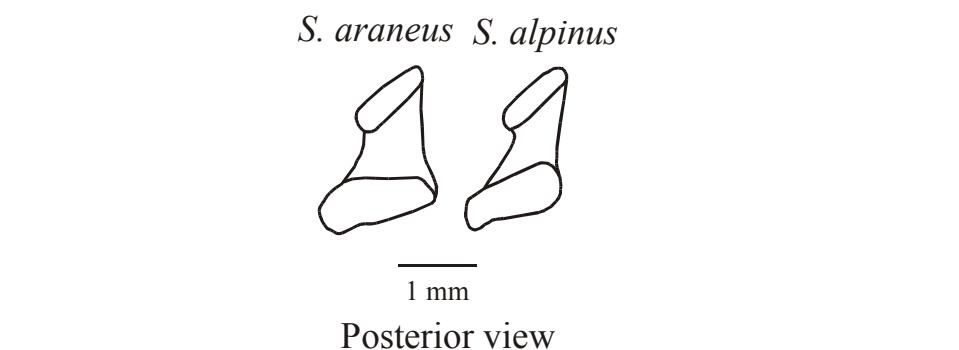


Fig. 2. Differences between the processus condyloideus of *S. araneus* and *S. alpinus* (Petényi Cave, HNMF, Inv. Nr. V.62.655).

#### *Climate*

According to REUMER (1984) fossil *Sorex* is indicative for a moist environment with well-developed vegetation. The species recently have a preference for wooded or bushy areas. We therefore assume a humid environment with a good vegetation cover in the time of the deposition of the Balla Cave, Bivak Cave, Peskő Cave, Petényi Cave and Pilisszántó Shelter sediments.

According to JÁNOSSY (1979) Pilisszántó Horizon was the last cold period of the Pleistocene. This is supported by generic composition of the studied samples. During the cold episodes of the Pleistocene the shrew fauna of Europe was dominated by the genus *Sorex* (RZEBIK-KOWALSKA 1975). All of the studied faunae include other indicator species of cold climate (JÁNOSSY 1979). According to JÁNOSSY (1979) this cold period in Hungary was characterized by a fauna reflecting the climate of the boundary zone between tundra and taiga of today.

#### *Ecotype*

*Sorex alpinus* was present in Balla Cave and Petényi Cave samples, but in Bivak Cave, Peskő Cave and Pilisszántó Shelter material it could not be found by the present studies. This Alpine shrew recently lives mainly in the mountain forests of the high mountains of Europe: Pyrenees, Alps, Balkans, Harz, Carpathians, Sudetenland. Its ecotype today is situated also at higher altitude than 1500 m above see level in the Alps.

Few specimens of *S. alpinus* have been also recently reported in the western frontier of Hungary (UJHELYI 1994). However, considering the reports of VÉRTES (1965) and MÉSZÁROS (1999, 2003) on the Late Würm presence of the Alpine shrew in Peskő Cave and Vaskapu Cave, we know four sure occurrences from the Bükk Mountains. These data suggest that the Pilisszántóian occurrence of *S. alpinus* in the Bükk Mountains was not so sporadic as today in Western Hungary.

By the occurrence of *Sorex alpinus* we can suppose that in the named sites, which are only about in 400-800 m above see level, the mountainous relief and the periglacial climate caused the occurrence of open mountain vegetation. This zone would be very similar to the recent mountain ecotype, which situated in the Carpathians and the Alps above the pine forests. This view is supported by the fact that not even arctic but also typical Alpine species were extremely abundant in the studied faunae.

VÖRÖS (1986 and 1987) gives a finer subdivision for Pilisszántó Horizon (22 000 - 12 000 BP). He names the end of the period (16 000 - 12 000 BP) as Bajót climato-fauna phase. According to his studies occasionally the July mean temperature was not above 12.2 °C in this time. Peskő Cave and Petényi Cave are ranged in this period by VÖRÖS (1987).

Today we can find areas with temperature data like the mentioned ones in the northern side of Europe (at the margin of the Scandinavian Mountain Range) (PÉCZELY 1984). The upper border of the pine forest zone is really in about 500-1000 m above see level in these areas, as we suppose it in the Bükk Mountains during the studied period.

*S. alpinus* occurrences were found only in the Bükk Mountains, in a relatively small area (its diameter is about 8 km). We suppose, that the hypothetical ecotype was not extensive at the end of the Pilisszántó Horizon.

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Plate I

Figs 1-5. *Sorex araneus* LINNAEUS 1758

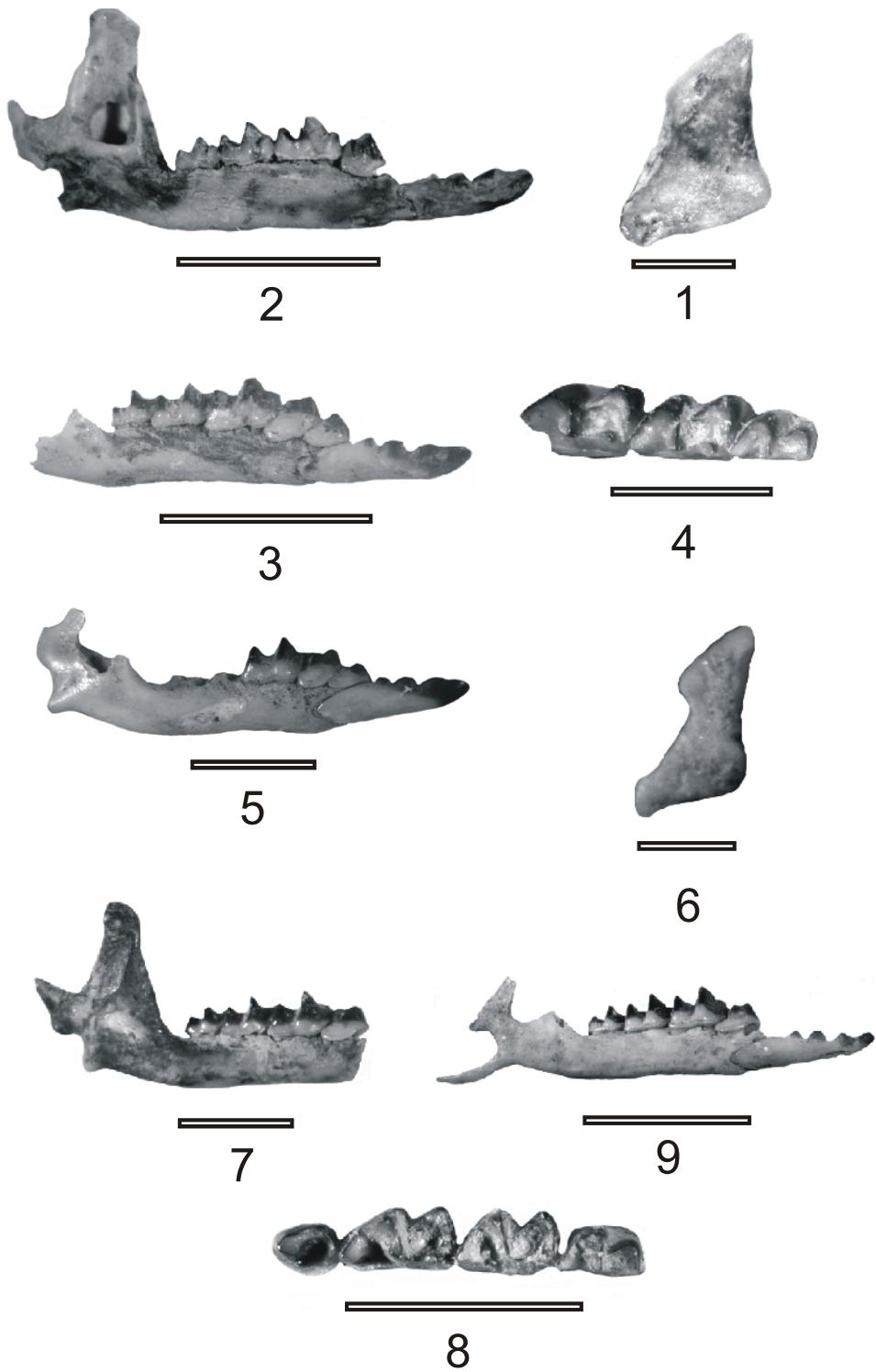
1. Condylloid process of right mandible fragment, posterior view, Petényi Cave, P1 layer, V.62.655. (Scale bar = 1 mm)
2. Left mandible, lingual view, Petényi Cave, P1 layer, V.62.655. (Scale bar = 5 mm)
3. Right mandible fragment without ramus mandibulae, buccal view, Petényi Cave, P1 layer, V.62.655. (Scale bar = 5 mm)
4. M<sub>1</sub>-M<sub>3</sub> teeth of right mandible fragment, occlusal view, Petényi Cave, P1 layer, V.62.655. (Scale bar = 2 mm)
5. Right mandible fragment without ramus mandibulae, buccal view, Pilisszántó Shelter, HNHM, brown clay layer. (Scale bar = 3 mm)

Figs 6-8. *Sorex alpinus* SHINZ 1837

6. Condylloid process of right mandible fragment, posterior view, Petényi Cave, P1 layer, V.62.655. (Scale bar = 1 mm)
7. Right mandible fragment, with A<sub>2</sub>-M<sub>3</sub>, buccal view, Petényi Cave, P1 layer, V.62.655. (Scale bar = 3 mm)
8. A<sub>2</sub>-M<sub>3</sub> teeth of right mandible fragment, occlusal view, Petényi Cave, P1 layer, V.62.655. (Scale bar = 3 mm)

Fig. 9. *Sorex* sp. indet. Right mandible fragment without ramus mandibulae, buccal view, Petényi Cave, H1-2 layer, V.62.725. (Scale bar = 5 mm)

Plate 1





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## Lower Oligocene (Kiscellian) ostracods in Hungary – Systematic description

Miklós MONOSTORI<sup>1</sup>

(with 28 plates)

### Abstract

This work is the first part of a monograph describing the ostracod fauna of the Oligocene sediments of Hungary. It contains the description of the forms occurring in the Lower Oligocene (Kiscellian stage): *Cytherella compressa* (VON MÜNSTER, 1830), *Cytherella dentifera* (MÉHES, 1941), *Cytherella* ex gr. *beyrichi* (REUSS, 1851), *Cytherella draco* PIETRZENIUK, 1969, *Cytherella hyalina* MÉHES, 1941, *Cytherella mehesi* BRESTENSKÁ, 1975, *Cytherella transversa* SPEYER, 1863, s. l., *Cytherella* (*Cytherelloidea*) cf. *hieroglyphica* (BOSQUET, 1852), *Cardobairdia boldi* PIETRZENIUK, 1969, *Bairdia rupelica* MONOSTORI, 1982, *Bairdia?* sp. 1, *Cytheromorpha subalpina dorsodepressa* MONOSTORI, 1985, *Schizocythere?* sp., *Schizocythere?* sp. juv., *Paijenborchella* (*Eopaijenborchella*) *sturovensis* BRESTENSKÁ, 1975, *Callistocythere* sp., *Eucytheridea reticulata* GOERLICH, 1953, *Cytheridea* ex gr. *mülleri* (VON MÜNSTER, 1830), *Cytheridea* ex gr. *pernota* OERTLI et KEIJ, 1956, *Miocyprideis rara* (GOERLICH, 1953), *Cyamocytheridea punctatella* (BOSQUET, 1852), *Hemicyprideis anterocostata* MONOSTORI, 1982, *Hemicyprideis helvetica* (LIENENKLAUS, 1895), *Hemicyprideis parvula* MALZ & TRIEBEL, 1970, *Schuleridea rauracica* OERTLI, 1956, *Schuleridea rauraciformis* MONOSTORI, 1985, *Cuneocythere* (*Cuneocythere*) *marginata* *anterodepressa* MONOSTORI, 1982, *Cuneocythere* (*Cuneocythere*) *truncata* LIENENKLAUS, 1894, *Krithe papillosa* (BOSQUET, 1852), *Krithe pernoides* (BORNEMANN, 1855), *Krithe* sp. 1, *Krithe* sp. 2, *Parakrithe costatomarginata* MONOSTORI, 1982, *Parakrithe* sp. 1, *Trachyleberis* cf. *spinosa* (LIENENKLAUS, 1900), *Costa hermi* WITT, 1967, *Agrenocythere ordinata* (DELTEL, 1961), *Pterygocythereis* cf. *ceratoptera* (BOSQUET, 1852), *Pterygocythereis* n. sp. ?, *Echinocythereis ligula* LIENENKLAUS, 1896, *Henryhowella asperrima* (REUSS, 1850), *Protobuntonia sublatissima arcuatocosta* (BRESTENSKÁ, 1975), *Leguminocythereis sorneana* OERTLI, 1956, *Leguminocythereis?* *cellulataformis* n. sp., *Megahemicythere oertlii* WITT, 1967, *Pokornyella?* sp. 1, *Grinioneis* sp., *Hornibrookella* ex gr. *macropora* (BOSQUET, 1852), *Bosquetina brestenskae* n. sp., *Bosquetina zalanyii* BRESTENSKÁ, 1975, *Occultocythereis rupelica* MONOSTORI, 1982, *Occultocythereis* ex gr. *mutabilis* TRIEBEL, 1961, *Cytheretta posticalis* TRIEBEL, 1952, *Cytheretta variabilis* OERTLI, 1956, *Loxoconcha carinata tardense* MONOSTORI, 1985, *Loxoconcha delemontensis hungarica* MONOSTORI, 1982, *Loxoconcha favata* KUIPER, 1918, *Loxoconcha subovata* (VON MÜNSTER, 1830) sensu BRESTENSKÁ, 1975, *Loxoconcha* ex gr. *aequapunctata* DELTEL, 1964, *Loxoconcha* sp. 1, *Eucytherura dentata* LIENENKLAUS, 1905, *Cytheropteron emmeneggeri* SCHERER, 1964, *Cytheropteron* cf. *triangulare* LIENENKLAUS, 1900, *Uroleberis striatopunctata* DUCASSE, 1967, *Protoargilloecia angulata* Deltel, 1961, *Paracypris?* *rupelica* MONOSTORI, 1982, *Paracypris?*

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*kisegedensis* n. sp., *Paracypris ex gr. propinqua* TRIEBEL, 1963, *Paracypris cf. bouldnorensis* KEEN, 1978, *Candona fertilis* TRIEBEL, 1963, *Candona? recta* LIENENKLAUS, 1905, *Candona? sp.* indet., *Moenocypris bockenheimensis* TRIEBEL, 1963, *Curvopsis curvata* (LIENENKLAUS, 1905), ?*Curvopsis curvata* (LIENENKLAUS, 1905), *Cypridopsinae* gen et sp. indet 3, 1982.

Localities will be figured in a forthcoming paper on palaeoecological results.

All specimens are deposited in the Collection of the Palaeontological Department of Eötvös University. This study was supported by Hungarian OTKA Fundation, Project N° T 032472.

### Systematic description

Subclass Ostracoda LATREILLE, 1806  
 Order Podocopida G. W. MÜLLER, 1894  
 Suborder Platycopida SARS, 1866  
 Familia Cytherellidae SARS, 1866  
 Genus *Cytherella* JONES, 1849

*Cytherella compressa* (VON MÜNSTER, 1830)  
 Pl. 1, figs 1–4.

1830. *Cythere compressa* n. sp. – MÜNSTER, p. 64.  
 1982. *Cytherella compressa* (VON MÜNSTER) – MONOSTORI, pp. 45–47, Pl. II, f. 6–9. (cum syn.)  
 1985. *Cytherella (Cytherella) compressa* (VON MÜNSTER, 1830) – MONOSTORI, pp. 165–166.

#### Remarks

In the description from 1982 (p. 46) the right and left valves are changed, in the text of the figs (Pl. II, f. 6–9.) they are correct. There are some variations in the lengthening of the carapace. See: remarks at *C. dentifera*

#### Dimensions

Carapace L = 0.78–0.86 mm  
 H = 0.48–0.54 mm  
 L/H = 1.53–1.69  
 W = 0.35–0.40 mm

#### Occurrence

Kiscell-1 borehole 91.5 m; Budapest, Metro H-1 borehole 25.0–60.0 m; Budapest, Metro H-3 borehole 58.6–61.6 m; Budapest, Metro H-5/1 borehole 41.0 m; Budapest, Metro H-7 borehole 24.0–105.5 m; Budapest, Metro H-7/1 borehole 54.5–55.5 m; Budapest, Metro H-8 borehole 36.0–55.0 m; Budapest, Metro H-8/1 borehole 28.0–32.0 m; Budapest, Metro H-9 borehole 19.5–59.8 m; Budapest, Metro H-11 borehole 23.5m; Budafok-2 borehole 357.0–461.4 m; Szentendre-2 borehole 764.0–1020.0 m; Cserépváralja-1 borehole 402.0–407.6 m; Varbó-50 borehole 404.8–546.8 m; Noszvaj, Síkfökút quarry samples 11, 18; Eger Wind brickyard borehole 52.9–77.1 m; Kiseged,

manganiferous clay sample N°4; Alcsútdoboz–3 borehole 487.1 m.

*Material*

156 specimens.

*Stratigraphical range without Hungary*

Belgium: Upper Ypresian–Rupelian; The Netherlands: Bartonian–Rupelian?; Great Britain: Bartonian; Austria: Middle Eocene; Ukraine: Eocene; Czechoslovakia: Lower Oligocene–Upper Oligocene.

*Stratigraphical range in Hungary*

Priabonian–Upper Oligocene

*Cytherella dentifera* MÉHES, 1941

Pl. 1, Figs 5–7.

1941. *Cytherella dentifera* n. sp. – MÉHES, pp. 78–90, Pl. VII, figs 12–16, textfigs 20a, 94, 103.

1975. *Cytherella dentifera* MÉHES – BRESTENSKÁ, p. 381, Pl. 3, figs 10–14.

1982. *Cytherella dentifera* MÉHES, 1941 – MONOSTORI, pp. 47–48, Pl. III, figs 1–4.

*Remarks*

There are some specimens very similar in their form to *C. compressa* and having minor anterior wrinkles and posterior denticles. They were described by MÉHES (1941) as *Cytherella dentifera*. I think, the wrinkles and denticles are not correct species characters but their occurrence may be an occasional individual phenomena. In this case *C. dentifera* = *C. compressa*.

*Dimensions*

carapace L = 0.76–0.87 mm  
H = 0.48–0.54 mm  
L/H = 1.54–1.68.

*Occurrence*

Kiscell–1 borehole 89.5 m; Budapest, Metro H–3 borehole 51.0–54.8 m; Budapest, Metro H–7 borehole 55.0–60.0 m; Budapest, Metro H–7/1 borehole, 50.0–52.0 m; Budapest, Metro H–8 borehole 18.0 m; Budapest, Metro H–9 borehole 52.0–55.6 m; Budapest, SzOT–1 borehole 16.0 m; Szentendre–2 borehole 819.0–1031.0 m; Alcsútdoboz–3 borehole 487.1 m.

*Material*

25 specimens

*Stratigraphical range without Hungary*

Czechoslovakia: Oligocene.

*Stratigraphical range in Hungary*  
Priabonian–Upper Oligocene

*Cytherella ex gr. beyrichi* (REUSS, 1851)  
Pl. 1, fig. 8, Pl. 2, fig. 1.

*Remarks*

Original and most of the other figures show a densely pitted rectangular form with rounded corners. On BRESTENSKÁ's (1975) figure the posterior end is narrower than the anterior one. That is true also for the forms described here. There is a dense pitting on the lateral surface. Characteristic is a wide anterior and a small posteroventral depressed rim.

*Dimensions*

carapace L = 0.78 mm  
H = 0.47 mm  
L/H = 1.66

*Occurrence*

Varbó–50 borehole 433.6–439.5 m; Eger Wind brickyard borehole 69.8–73.1 m.

*Material*

5 specimens.

*Stratigraphical range in Hungary*  
Oligocene.

*Cytherella ex gr. draco* PIETRZENIUK, 1969  
Pl. 2, fig 2.

1982. *Cytherella draco* PIETRZENIUK, 1969 – MONOSTORI, pp. 49–50, Pl. IV, figs 1–3.

*Remarks*

Characteristical the nearly oval form, another *Cytherella* species of the Hungarian Oligocene have more „quadrate” outline.

*Dimensions*

carapace L = 0.81–0.86 mm  
H = 0.55–0.58 mm  
L/H = 1.46–1.48

*Occurrence*

Budapest, Metro H–1 borehole 25.0–34.8 m; Budafok–2 borehole 378.4–384.1 m; Varbó–50 borehole 445.0–460.0 m; Eger Wind brickyard borehole 53.8–71.5 m.

*Material*

22 specimens.

*Stratigraphical range in Hungary*

Priabonian–Upper Oligocene.

*Cytherella hyalina* MÉHES, 1941

Pl. 2, figs. 3–5.

1941. *Cytherella hyalina* n. sp. – MÉHES, p. 78, Pl. VII, figs 7–9.

1975. *Cytherella hyalina* MÉHES, 1941 – BRESTENSKÁ, pp. 381–382, Pl. 1, figs 12–14, Pl. 2, figs 1–3.

1982. *Cytherella* aff. *mehesi* BRESTENSKÁ, 1975 – MONOSTORI, pp. 50–51, Pl. IV, figs 4–7. (pars)

1985. *Cytherella* aff. *mehesi* BRESTENSKÁ, 1975 – MONOSTORI, p. 166, Pl. 1, figs 3–4. (pars)

*Remarks*

Many specimens have shape similar to *Cytherella mehesi* and have anterior wrinkles and posterior denticles. Similarly to the *C. dentifera*, the denticles and wrinkles q54 maybe not specific characters, in this case *C. hyalina* = *C. mehesi* (see also remarks at *C. dentifera*).

*Dimensions*

carapaces L = 0.76–0.88 mm  
H = 0.49–0.56 mm  
L/H = 1.52–1.63

*Occurrence*

Kiscell-1 borehole 83.4 m; Budapest, Metro H-3 borehole 50.3–53.3 m; Budapest, Metro H-7/1 borehole 26.0–47.7 m; Budapest, Metro H-9 borehole 24.0–28.0 m; Budapest, Metro H-11 borehole 23.5 m; Budapest, Ibolya u. quarry 7.0 m; Budapest, SzOT-1 borehole 5.5 m; Budapest, SzOT-2 borehole 46.0–58.0 m; Budafok-2 borehole 393.0–454.6 m; Szentendre-2 borehole 626.0–817.0 m; Varbó-50 borehole 416.1–420.0 m; Cserépváralja-1 borehole 407.4–407.6 m; Eger Wind brickyard borehole 50.3–77.1 m; Alcsútdoboz-3 borehole 455.5–487.1 m.

*Material*

70 specimens

*Stratigraphical range without Hungary*

Czechoslovakia: Oligocene.

*Stratigraphical range in Hungary*

Priabonian–Upper Oligocene.

*Cytherella mehesi* BRESTENSKÁ, 1975  
Pl. 2, figs 6–8.

1975. *Cytherella mehesi* n. sp. – BRESTENSKÁ, pp. 234–235, Pl. 2, figs 4–8.  
1982. *Cytherella aff. mehesi* BRESTENSKÁ, 1975 – MONOSTORI, pp. 50–51, Pl. 4, figs 4–7. (pars)  
1985. *Cytherella aff. méhesi* BRESTENSKÁ, 1975 – MONOSTORI, p. 166, Pl. 1, figs 3–4. (pars)

*Remarks*

The form is rather variable (MONOSTORI, 1982, 1985) After investigation of the Eger material belonging to this species is obvious. See: remarks at *C. hyalina*.

*Dimensions*

carapaces L = 0.78–0.86 mm  
H = 0.46–0.54 mm  
L/H = 1.54–1.77

*Occurrence*

Kiscell-1 borehole 83.4 m; Budapest, Metro H-1 borehole 25.0–60.0 m; Budapest, Metro H-3 borehole 41.8–120.5 m; Budapest, Metro H-7 borehole 19.8–84.0 m; Budapest, Metro H-8 borehole 36.0 m; Budapest, Metro H-9 borehole 19.5–55.6 m; Budapest, Ibolya u. quarry 7.0 m; Budapest, SzOT-1 borehole 5.5 m; Budapest, SzOT-2 borehole 46.0–58.0; Budafok-2 borehole 362.3–447.1 m; Szentendre-2 borehole 746.0–1020.0 m; Varbó-50 borehole 423.7–530.3 m; Noszvaj, Síkfőkút quarry, sample 18; Eger Wind brickyard borehole 50.3–77.1 m; Alcsútdoboz-3 borehole 455.5–487.1 m.

*Material*

90 specimens.

*Stratigraphical range without Hungary*  
Czechoslovakia: Oligocene

*Stratigraphical range in Hungary*  
Priabonian–Upper Oligocene.

*Cytherella transversa* SPEYER, 1863 s. l.  
Pl. 3, figs 1–4.

1863. *Cytherella transversa* n. sp. – SPEYER, p. 56, Pl. I, fig. 2.  
1941. *Cytherelloidea pestiensis* n. sp. – MÉHES, pp. 81–82, Pl. VII, figs 21–22, textfigs 18, 95, 105.  
1957. *Cytherella transversa* SPEYER, 1863 – KEIJ, p. 47, Pl. I, fig. 2.  
1961. *Cytherella transversa* SPEYER, 1863 – DELTEL, p. 17, Pl. II, figs 22–23.  
1963. *Cytherella transversa* SPEYER, 1863 – STCHÉPINSKY, p. XXX, Pl. I, figs 1–3.  
1969. *Cytherella transversa* SPEYER, 1863 – PIETRZENIUK, p. 13, Pl. I, figs 11–12.

1969. *Cytherella transversa* SPEYER, 1863 – SCHEREMETA, 1969, p. 45, Pl. I, figs 8–89.  
 1969. *Cytherella transversa* SPEYER, 1863 – DUCASSE, p. 12, Pl. I, figs 11.  
 1975. *Cytherella pestiensis* (MÉHES) – BRESTENSKÁ, pp. 382–383, Pl. 1, figs 1–9.  
 1975. *Cytherella transversa* SPEYER, 1863 – FAUPEL, p. 64, Pl. 10, figs 5–6.  
 1981. *Cytherella transversa* SPEYER, 1863 – DUCASSE, p. 175–176, Pl. II, figs 4–9 (forme „ovoïde”), figs 10–11 (forme „pentagonale”), figs 12–14 (forme „infléchie”), fig. 15 (forme „hastée”).  
 1982. *Cytherella pestiensis* (MÉHES, 1941) – MONOSTORI, pp. 48–49, Pl. III, figs 5–8.  
 1985. *Cytherella (Cytherella) pestiensis* (MÉHES, 1941) – MONOSTORI, pp. 166–167, Pl. 1, figs 5–7.  
 1985. *Cytherella transversa* SPEYER, 1863 – DUCASSE et al., Pl. 71, fig. 16.  
 1988. *Cytherella gr. transversa* SPEYER, 1863 – BARBIN & GUERNET, pp. 215–216, Pl. 1, figs 4–5.  
 1989. *Cytherella transversa* SPEYER, 1863 – KEEN, Pl. 2, fig. 7.

#### *Remarks*

This species has a large variability in shape, in the fine ornamentation and in the development of the posterior „ear” of the left valve (see MONOSTORI, 1982, 1985). The investigated materials is so close to *Cytherella transversa* SPEYER, 1863 (including the variable forms figured in the literature as *transversa*) that the species *pestiensis* is obviously a synonym of the *C. transversa* SPEYER, 1863 s. l.

We can see in the literature two group of specimens: the type form of *transversa* at SPEYER (1863) and specimens on scanning photos FAUPEL (1975) having flat and angular valves, and other forms having an asymmetric-lenticular form, similarly to materials of Hungary.

#### *Dimensions*

right valve	L = 0.74–0.78 mm H = 0.45–0.51 mm L/H = 1.53–1.66
left valve	L = 0.72–0.79 mm H = 0.38–0.42 mm L/H = 1.79–1.94
carapaces:	L = 0.79–0.83 mm H = 0.47–0.51 mm L/H = 1.63–1.65 W = 0.34–0.35 mm

#### *Occurrence*

Budapest, Metro H–7 borehole 29.0–94.0 m; Budapest, Metro H–7/1 borehole 37.4–69.5 m; Budapest, Metro H–8 borehole 18.0–36.0 m; Budapest, Metro H–9 borehole, 19.5–49.9 m; Budapest, Rókahegy sample; Budapest, Ibolya u. quarry 6.0 m; Budapest, SzOT–2 borehole 46.0 m; Budapest, SzOT–6 borehole 10.8–11.0 m; Budafok–2 borehole 362.3–429.2 m; Szentendre–2 borehole 1025.0–1026.0 m; Cserépváralja–1 borehole 382.5–407.6 m; Varbó–50 borehole 433.6–439.5 m; Noszvaj, Síkfőkút quarry sample 18; Eger Wind brickyard borehole 50.3–73.1 m.

*Material*

133 specimens.

*Stratigraphical range without Hungary*

Germany: Upper Eocene–Oligocene, France: Eocene–Oligocene, The Netherlands: Oligocene, Belgium: Rupelian, Czechoslovakia: Oligocene.

*Stratigraphical range in Hungary*

Upper Eocene–Oligocene.

*Cytherella (Cyperelloidea) cf. hieroglyphica* (BOSQUET, 1852)

*Remarks*

Only 3 specimens, poorly preserved resembling this species

*Occurrence*

Budapest, Zugliget outcrop sample 3; Budapest, SzOT–4 borehole 54.0 m.

*Materials*

3 specimens.

Suborder Metacopa SYLVESTER-BRADLEY, 1967

Superfamily Healdiacea HARLTON, 1933

Family Saipanettidae MCKENZIE, 1968

Genus *Cardobairdia* VAN DEN BOLD, 1960

*Cardobairdia boldi* PIETRZENIUK, 1969

Pl. 3, fig. 5.

1969. *Cardobairdia boldi* n. sp. – PIETRZENIUK, p. 16, Pl. VII, figs 1–3, Pl. XVII, figs 7–8.

1982. *Cardobairdia hungarica* n. sp. – MONOSTORI, pp. 5–152, Pl. IV, f. 8–9.

1985. *Cardobairdia hungarica* MONOSTORI, 1982 – MONOSTORI, p. 168, Pl. 2, f. 1.

*Remarks*

Rare specimens are known from the Lower Oligocene Kiscell Clay Formation. After the revision of all material from the Eocene/Oligocene boundary sections of Hungary it appeared that this is a rather common species in the Upper Eocene Buda Marl Formation and its variability coincide with that of the *Cardobairdia boldi* PIETRZENIUK, 1969.

*Dimensions*

carapaces L = 0.41–0.50 mm  
 H = 0.44–0.27 mm  
 L/H = 0.71–2.05

*Occurrence*

Budapest, Metro H–2 borehole 17.9–19.3 m; Budapest, Metro H–3 borehole 59.6–61.6 m; Budapest, Metro H–7/1 borehole 50.5–75.0 m; Budapest, Metro H–9 borehole 53.5–55.6 m; Budapest, Ibolya u. quarry, 7.0 m; Cserépváralja–1 borehole 407.4–407.6 m.

*Material*

7 specimens

*Stratigraphical range without Hungary*

Germany: Eocene.

*Stratigraphical range in Hungary*

Priabonian–Lower Oligocene.

Suborder Podocopa SARS, 1866  
 Superfamily Bairdiacea SARS, 1866  
     Family Bairdidae SARS, 1888  
     Genus *Bairdia* MCCOY, 1844  
*Bairdia rupelica* MONOSTORI, 1982  
 Pl. 3, fig. 6.

1982. *Bairdia rupelica* n. sp. – MONOSTORI, pp. 52–53, pl. V, f. 1–2.

1985. *Bairdia rupelica* MONOSTORI, 1982 – MONOSTORI, p. 170, Pl. 2, f. 6.

*Remarks*

This species was described after sporadical specimens from Lower Oligocene (Kiscell Clay Formation). The subsequent investigations demonstrated its presence in the Upper Eocene (Priabonian) beds of Buda Marl Formation.

*Dimensions*

carapaces L = 1.00–1.09 mm  
 H = 0.63–0.72 mm  
 L/H = 1.51–1.60

*Occurrence*

Budapest, Metro H–1 borehole 19.8–18.0 m; Budapest, Metro H–3 borehole 41.8–68.3 m; Budapest, Ibolya u. quarry 7.9 m; Budapest, SzOT–1 borehole 7.0 m; Budapest, SzOT–6 borehole 6.0–10.8 m; Cserépváralja–1 borehole 407.4–407.6 m.

*Material*

10 specimens.

*Stratigraphical range in Hungary*

Priabonian–Lower Oligocene.

*Bairdia?* sp 1.

Pl. 3, fig. 7.

*Remarks*

Low form with „bairdoid” outlines. The anterior outline is asymmetrical, the dorsal one first slight depressed than convex and continuously turns to the blunt posterior outline bending over at the lower 1/3 of the height. The ventral outline is slightly concave at about the half of the length. The surface is smooth.

*Dimensions*

carapace L = 0.81 mm  
H = 0.42 m  
L/H = 1.93

*Occurrence*

Kiscell-1 borehole 83.4 m; Budapest, Ibolya u. quarry 7.9 m; Budapest, SzOT-1 borehole 7.0 m; Budapest, SzOT-6 borehole 10.8 m; Cserépváralja-1 borehole 407.4–407.6 m; Budapest, SzOT-2 borehole 58.0 m; Budapest, SzOT-4 borehole 54.0 m.

*Material*

12 specimens.

*Stratigraphical range in Hungary*

Priabonian–Lower Oligocene.

Genus *Cytheromorpha* HIRSCHMANN, 1909

*Cytheromorpha subalpina dorsodepressa* MONOSTORI, 1985

Pl. 4, figs 1–5.

1985. *Cytheromorpha subalpina dorsodepressa* n. ssp. – MONOSTORI, pp. 171–172.

*Remarks*

Specimens of the Hungarian material are wider and sometimes inflated posteriorly compared to type of the *subalpina* from Switzerland (SCHERER, 1964).

*Dimensions*

carapaces L = 0.38–0.41 mm  
 H = 0.21–0.22 mm  
 L/H = 1.94–1.98  
 W = 0.18–0.19 mm

*Occurrence*

Budapest, Kiscell–1 borehole 55.5–62.5 m; Budapest, Metro–3 borehole 36.0–37.0 m; Budapest, Zugliget outcrop samples 7; Kiseged, 1987 outcrop samples 2 and 3.

*Material*

42 specimens.

*Stratigraphical range in Hungary*

Lower Oligocene.

Superfamilia Cytheracea BAIRD, 1850  
 Familia Cytheridae BAIRD, 1850  
 Subfamilia Cytherinae BAIRD, 1850  
*Schizocythere?* sp.

1985. *Schizocythere?* sp. – MONOSTORI, p. 173.

*Remarks*

Poorly preserved specimens, perhaps transported or resedimented.

*Occurrence*

Kiscell–1 borehole 57.5 m; Budapest, Ibolya u. quarry 1.2–7.9 m; Noszvaj, Síkfőkút quarry sample 18.

*Material*

5 specimens.

*Schizocythere?* sp. juv.

1985. *Schizocythere?* sp. juv. – MONOSTORI, p. 173.

*Remarks*

Juvenile valves and carapaces, perhaps transported (there are no adult specimens).

*Occurrence*

Kiscell–1 borehole 89.5 m; Cserépváralja–1 borehole 240–265.6 m.

*Material*

6 specimens.

Genus *Paijenborchella* KINGMA, 1978  
Subgenus *Eopaijenborchella* KEIJ, 1966

*Paijenborchella (Eopaijenborchella) sturovensis* BRESTENSKÁ, 1975  
Pl. 4, figs 6–7.

1975. *Paijenborchella (Eopaijenborchella) sturovensis* n. sp. – BRESTENSKÁ, pp. 401–403, Pl. 9,  
f. 1–9.  
1985. *Paijenborchella (Eopaijenborchella) sturovensis* BRESTENSKÁ, 1975 – MONOSTORI, pp.  
73–174, Pl. 2, f. 9.

*Remarks*

2 specimens originate from Eger, Wind brickyard, where it was detected by BRESTENSKÁ (1975).

*Dimensions*

left valve L = 0.48 mm  
H = 0.30 mm  
L/H = 1.60

*Occurrence*

Eger, Wind brickyard borehole 71.5–77.1 m, Alcsútdoboz–3 borehole 455.5 m

*Material*

3 specimens.

*Stratigraphical range without Hungary*

Czechoslovakia: Oligocene.

*Stratigraphical range in Hungary*

Oligocene.

Familia Leptocytheridae HANAI, 1957  
Genus *Callistocythere* RUGGIERI, 1953

*Callistocythere* sp.  
Pl. 5, fig. 1.

1982. *Callistocythere* sp. – MONOSTORI, p. 67, Pl. VII, f. 4.  
1985. *Callistocythere* sp. – MONOSTORI, pp. 174–175.

*Remarks*

The sporadical specimens have poor preservation, probably transported material.

*Occurrence*

Kiscell-1 borehole 57.5 m; Budapest, Metro H-3 borehole 195.0 m; Városmajor-1 borehole 96.7–97.8 m.

*Material*

3 specimens.

Familia Cytherideidae SARS, 1925  
 Subfamilia Cytherideinae SARS, 1925  
 Genus *Eucytheridea* BRONSTEIN, 1930  
*Eucytheridea reticulata* GOERLICH, 1953  
 Pl. 5, figs 2–7, Pl. 6, figs 1–2.

1953. *Cytheridea (Eucytheridea) reticulata* n. sp. – GOERLICH, pp. 137–138, Pl. 5, figs 40–42.  
 1982. *Eucytheridea reticulata* GOERLICH, 1953 – MONOSTORI, pp. 67–68, Pl. VII, figs 5–7(cum syn).  
 1985. *Eucytheridea reticulata* GOERLICH, 1953 – MONOSTORI, pp. 175–176, Pl. 2, fig. 10.

*Remarks*

The large variation of the shape and ornamentation (the length of the straight dorsal part, the length/height ratio of the valves, the sharpness of the reticulation, the dimension of the pits in the reticulation, the degrees of the convergency of dorsal and ventral outlines) are visible on the SEM photos.

*Dimensions*

right valves L = 0.67–0.80 mm (adult) 0.53–0.58 mm (juvenile),  
 H = 0.38–0.39 mm (adult) 0.33–0.34 mm (juvenile),  
 L/H = 1.78–1.85 (adult), 1.61–1.69 (juvenile)

carapaces L = 0.68–0.74 mm  
 H = 0.38–0.40 mm  
 L/H = 1.79–1.85  
 W = 0.31–0.34 mm

*Occurrence*

Kiscell-1 borehole 59.5–62.5 m; Budapest, Metro H-3 borehole 195.0 m; Budapest, Metro H-12 borehole 32.0–33.0 m; Budapest, Ibolya u. quarry 4.4 m; Budapest, Zugliget outcrop sample 3; Budapest, Törökvesz-6 borehole 4.0–6.5 m; Budapest, Törökvesz-8 borehole 3.5–5.5 m; Budapest, Törökvesz-13 borehole 2.5 m; Cserépváralja-1 borehole 336.8–337.0 m; Kiseged road cut samples 2a, 3a, 3b, 3, 13; Kiseged, 1987 outcrop samples 1, 2, 3.

*Material*

333 specimens.

*Stratigraphical range without Hungary*  
Germany: Rupelian, Switzerland: Rupelian.

*Stratigraphical range in Hungary*  
Lower Oligocene.

Genus *Cytheridea* BOSQUET, 1852  
*Cytheridea* ex gr. *mülleri* (VON MÜNSTER, 1830)  
Pl. 6, fig. 3.

*Remarks*

The single carapace are similar to *C. mülleri truncatula* GOERLICH, 1953, the height is shifted backward.

*Dimensions*

right valve    L = 0.67 mm  
                  H = 0.36 mm  
                  L/H = 1.86

*Occurrence*

Budafok–2 borehole 425.3–449.6 m; Szentendre–2 borehole 1070.0 m.

*Material*

3 specimens.

*Stratigraphical range in Hungary*  
Oligocene.

*Cytheridea* ex gr. *pernota* OERTLI et KEIJ, 1956  
Pl. 6, fig. 4.

*Remarks*

The outlines are close to this species. The ornamentation is somewhat reduced.

*Dimensions*

left valve L = 0.93 mm  
                  H = 0.50 mm  
                  L/H = 1.86

*Occurrence*

Varbó–50 borehole 541.7–543.2 m.

*Material*

1 specimen.

Genus *Miocyprideis* KOLLMANN, 1960

*Miocyprideis rara* (GOERLICH, 1953)  
Pl. 6, figs 5–8, Pl. 7, fig. 1.

1953. *Cyprideis? rara* n. sp. – GOERLICH, pp. 130–131, T. 1., f. 1.  
 1957. *Cyprideis rara* GOERLICH – GOERLICH, p. 78,  
 1975. *Miocyprideis rara* (GOERLICH) – BRESTENSKÁ, p. 398, T. 5, f. 1–6.  
 1982. *Miocyprideis rara derupta* n. ssp. – MONOSTORI, pp. 36–37, Pl. IX, figs 8–9.  
 1985. *Miocyprideis rara* (GOERLICH, 1953) – MONOSTORI, pp. 182–183, Pl. 3, f. 9–10, Pl. 4., f. 1.

*Remarks*

In MONOSTORI (1985) the large variability of the species in several Oligocene sections is described. In Hárshegy Sandstone Formation an ecological variety is present with circummarginal break of valves, named in MONOSTORI (1982) as subspecies *derupta*.

*Dimensions*

carapaces L = 0.59–0.65 mm  
 H = 0.31–0.34 mm  
 L/H = 1.74–1.97

*Occurrence*

Pilisszentkereszt Sz 1–74 section samples g, h, i, i<sub>2</sub>, j.

*Material*

321 specimens.

*Stratigraphical range without Hungary*

Germany: Rupelian; Switzerland: Rupelian.

*Stratigraphical range in Hungary*

Oligocene.

Genus *Cyamocytheridea* OERTLI, 1956

*Cyamocytheridea punctatella* (BOSQUET, 1852)  
Pl. 7, figs 2–3.

1852. *Bairdia punctatella* n. sp. – BOSQUET, p. 26, Pl. 1, fig. 10.  
 1985. *Cyamocytheridea punctatella* (BOSQUET, 1852) – MONOSTORI, pp. 180–181, Pl. 3, fig. 6.  
 (cum syn)

*Remarks*

The shape of valves with sporadical pores are characteristic for this species although the preservation is poor.

*Dimensions*

carapace L = 0.62 mm  
H = 0.32 mm  
L/H = 1.94  
W = 0.30 mm

*Occurrence*

Pilisszentkereszt Sz 1–74 section, samples i, i<sub>2</sub>

*Material*

2 specimens.

*Stratigraphical range without Hungary*

France: Stampian–Aquitanian; Switzerland: Rupelian–Chattian; Germany: Rupelian; Czechoslovakia: Egerian.

*Stratigraphical range in Hungary*

Oligocene.

Genus *Hemicyprideis* MALZ et TRIEBEL, 1970

*Hemicyprideis anterocostata* MONOSTORI, 1982

Pl. 7, figs 4–7.

1982. *Hemicyprideis?* *anterocostata* n. sp. – MONOSTORI, pp. 32–34., Pl. I., f. 2.

*Remarks*

Characteristic are the „frame-like” ornamental elements in lateral view and the large dimensions compared to similar *H. helvetica*. Variations are described in MONOSTORI (1982).

*Dimensions*

carapaces L = 0.90–0.98 mm  
H = 0.46–0.54 mm  
L/H = 1.81–1.96

*Occurrence*

Pilisszentkereszt Sz 1–74 section samples h, i, i<sub>2</sub>, j.

*Material*

14 specimens.

*Stratigraphical range in Hungary*

Lower Oligocene.

*Hemicyprideis helvetica* (LIENENKLAUS, 1895)

Pl. 7, fig. 8, Pl. 8, figs 1–4.

1895. *Cytheridea mülleri* var. *helvetica* n. var. – LIENENKLAUS, p. 26, Pl. II, fig. 6.  
 1970. *Hemicyprideis helvetica* (LIENENKLAUS, 1895) – MALZ et TRIEBEL p. 13, pl. 13, figs 102–105.  
 1972. *Hemicyprideis helvetica* (LIENENKLAUS, 1895) – CARBONNEL, Pl. IV, f. 11–12.  
 1972. *Hemicyprideis helvetica* (LIENENKLAUS, 1895) – KEEN, Pl. 52, f. 11–12.  
 1972. *Hemicyprideis helvetica* (LIENENKLAUS, 1895) – DOEBL & SONNE, p. 72, Pl. 14, f. 12 a, c.  
 1978. *Hemicyprideis helvetica* (LIENENKLAUS, 1895) – MALZ, Pl. 1, f. 1–2.  
 1982. *Hemicyprideis helvetica* (LIENENKLAUS, 1895) – MONOSTORI, pp. 34–35, Pl. I, figs 3–5.  
 (cum syn.)  
 1983. *Hemicyprideis helvetica* (LIENENKLAUS, 1895) – JIŘÍČEK, Pl. I, f. 1.  
 1985. *Hemicyprideis helvetica* (LIENENKLAUS, 1895) – MONOSTORI, pp. 181–182, Pl. 3, figs 7–8.  
 1985. *Hemicyprideis helvetica* (LIENENKLAUS, 1895) – DUCASSE et al., Pl. 76, f. 15.  
 1992. *Hemicyprideis helvetica* (LIENENKLAUS, 1895) – APOSTOLESCU, GUERNET, p. 108, Pl. 2, f. 1, 4.  
 1993. *Hemicyprideis helvetica* (LIENENKLAUS, 1895) – OLLIVIER–PIERRE et al., Pl. IV, f. 3.  
 1995. *Hemicyprideis helvetica* (LIENENKLAUS, 1895) – DUCASSE, pp. 117–119, Pl. 3, f. 1–7.

*Remarks*

The ornamental elements are mainly well-distinct knobs and the dimensions are small compared to similar *H. anterocostata*. Variations are described in MONOSTORI (1982).

*Dimensions*

carapaces L = 0.59–0.68 mm  
 H = 0.32–0.35 mm  
 L/H = 1.80–2.06

*Occurrence*Pilisszentkereszt Sz 1–74 section samples g, h, i, i<sub>2</sub>, j.*Material*

372 specimens.

*Stratigraphical range without Hungary*

France: Oligocene; Belgium: Tongrian–Rupelian; Netherlands: Upper Tongrian; Germany: Chattian; Switzerland: Rupelian–Chattian; Czechoslovakia: Kiscellian–Egerian; Ukraine: Oligocene.

*Stratigraphical range in Hungary*

Oligocene.

*Hemicyprideis parvula* MALZ et TRIEBEL, 1970  
Pl. 8, figs 5–8.

1970. *Hemicyprideis parvula* n. sp. – MALZ et TRIEBEL, pp. 11–12, Pl. 6, figs 39–44.  
1982. Cytherideinae cf. *Hemicyprideis parvula* MALZ et TRIEBEL, 1970 – MONOSTORI, pp. 35–36, Pl. I, f. 6–8. (cum syn.)

*Remarks*

There are some specimens in Pilisszentkereszt outcrop and in Városmajor–1 borehole having shape characteristic for *Hemicyprideis olmensis* MALZ & TRIEBEL, 1970 (the straight middle part of the dorsal outline slopes moderately rather than breaking abruptly). There is a rather great variation of the outline in our material, so I think *olmensis* only is a morpha of the species *parvula*.

*Dimensions*

carapaces L = 0.84–0.92 mm  
H = 0.40–0.47 mm  
L/H = 1.81–2.10

*Occurrence*

Pilisszentkereszt Sz 1–74 section samples g, h, i, i<sub>2</sub>, j; Budapest, Városmajor–1 borehole 97.8–98.5 m.

*Material*

73 specimens.

*Stratigraphical range without Hungary*

Germany: Sannoian.

*Stratigraphical range in Hungary*

Lower Oligocene.

Subfamilia Schulerideinae MANDELSTAM, 1960  
Genus *Schuleridea* SWARTZ et SWAIN, 1946

*Schuleridea rauracica* OERTLI, 1956  
Pl. 9, figs 1–2.

1956. *Schuleridea rauracica* n. sp. – OERTLI, pp. 47–50, Pl. 5, figs 110–123.  
1982. *Schuleridea rauracica* OERTLI, 1956 – MONOSTORI, pp. 37–38, Pl. I, figs 9–13. (cum syn.)

*Remarks*

Shape and ornamentation characteristic for this species.

*Dimensions*

carapaces L = 0.80–0.87 mm  
 H = 0.51–0.54 mm  
 L/H = 1.57–1.61

*Occurrence*

Pilisszentkereszt Sz 1–74 section samples h, i<sub>2</sub>, j.

*Material*

7 specimens.

*Stratigraphical range without Hungary*

France: Stampian; Germany: Rupelian; Switzerland: Rupelian.

*Stratigraphical range in Hungary*

Lower Oligocene.

*Schuleridea rauraciformis* MONOSTORI, 1985  
 Pl. 9, figs 3–5.

1985. *Schuleridea rauraciformis* n. sp. – MONOSTORI, pp. 184–185., Pl. 4., fig. 3.

*Remarks*

On some scanning photos very dense and weak minor pits are visible on the surface of valves contrasted with the large, deep pits of *Sch. rauracica*.

*Dimensions*

carapaces L = 0.98–1.11 mm  
 H = 0.6–0.68 mm  
 L/H = 1.48–1.62  
 W = 0.47 mm

*Occurrence*

Budapest, Városmajor–1 borehole 96.7–98.5 m; Budapest, Zugliget outcrop sample N°3, Kiseged road cut section samples 3b, 12; Kiseged, 1987 outcrop sample 1.

*Material*

19 specimens.

*Stratigraphical range in Hungary*

Lower Oligocene.

Genus *Cuneocythere* LIENENKLAUS, 1894  
Subgenus *Cuneocythere* LIENENKLAUS, 1894

*Cuneocythere (Cuneocythere) marginata anterodepressa* MONOSTORI, 1982  
Pl. 9, figs 6–7, Pl. 10, figs 1–3.

1982. *Cuneocythere (Cuneocythere) marginata anterodepressa* n. sp. – MONOSTORI, pp. 68–70,  
Pl. VII, figs 8–10.  
1985. *Cuneocythere (Cuneocythere) marginata anterodepressa* MONOSTORI, 1982 – MONOSTORI,  
p. 185, Pl. 4, f. 4–6.  
1985. *Cuneocythere (Cuneocythere) marginata marginata* (LIENENKLAUS, 1895) – MONOSTORI,  
p. 186.

*Remarks*

A few specimens of Zugliget outcrop show somewhat stronger anterior  
ornamentation. These rare transitional forms in the material raise the question:  
subspecies or ecological morpha?

*Dimensions*

right valve    L = 0.57 mm  
                  H = 0.28 mm  
                  L/H = 2.00

left valves    L = 0.55–0.61 mm  
                  H = 0.33–0.40 mm  
                  L/H = 1.35–1.71

*Occurrence*

Kiscell-1 borehole 51.6–62.5 m; Budapest Metro H-3 borehole 193.0–195.0 m;  
Budapest Metro H-11/a borehole 59.0–61.0 m; Budapest Metro H-13 borehole 36.0–  
37.0 m; Budapest Törökvesz-6 borehole 2.5–4.5 m; Budapest Törökvesz-8 borehole  
2.5–3.5 m; Budapest Törökvesz-13 borehole 2.0–2.5 m; Budapest Városmajor-1  
borehole 96.7–98.5 m; Budapest Zugliget outcrop sample 7; Kiseged road cut section  
samples 2a, 3a, 3b, 4, 12, 13; Kiseged 1987 section samples 1, 2, 3.

*Material*

291 specimens.

*Stratigraphical range in Hungary*  
Lower Oligocene.

*Cuneocythere (Cuneocythere) truncata* LIENENKLAUS, 1894  
Pl. 10, fig 4.

1894. *Cuneocythere truncata* n. sp. – LIENENKLAUS, p. 260, T. XVIII, F. 6.  
1985. *Cuneocythere truncata* LIENENKLAUS, 1894 – MONOSTORI, pp. 186–188, Pl. 4, f. 7. (cum  
syn.)

*Remarks*

About the species-validity see MONOSTORI (1985).

*Dimensions*

left valve      L = 0.48 mm  
                   H = 0.31 mm  
                   L/H = 1.55

right valve     L = 0.51 mm  
                   H = 0.27 mm  
                   L/H = 1.89

*Occurrence*

Pilisszentkereszt Sz 1–74 section sample H; Szentendre–2 borehole 1071.0 m;  
 Alcsútdoboz–3 borehole 373.0 m.

*Material*

7 specimens.

*Stratigraphical range without Hungary*

Germany: Rupelian–Chattian, Czechoslovakia: Kiscellian–Egerian.

*Stratigraphical range in Hungary*

Oligocene.

Familia Krithidae MANDELSTAM, 1960  
 Genus *Krithe* BRADY, CROSSKEY & ROBERTSON, 1874

*Krithe papillosa* (BOSQUET, 1852)  
 Pl. 10, figs 5–7.

1852. *Cytheridea papillosa* n. sp. – BOSQUET, p. 42, Pl. III, f. 5.

1982. *Krithe papillosa* (BOSQUET, 1852) – MONOSTORI, pp. 138–140, Pl. I, fig. 14. (cum syn.)

*Remarks*

Description of the materials in MONOSTORI (1982).

*Dimensions*

carapaces L = 0.71–0.74 mm  
                   H = 0.31–0.39 mm  
                   L/H = 2.24–1.95

*Occurrence*

Pilisszentkereszt Sz 1–74 section samples h, i, i<sub>2</sub>, j.

*Material*

90 specimens.

*Stratigraphical range without Hungary*

Germany: Burdigalian; France: Lutetian?, Stampian–Burdigalian; Czechoslovakia: Egerian; Ukraine: Oligocene.

*Stratigraphical range in Hungary*

Lower Oligocene.

*Krithe pernoides* (BORNEMANN, 1855)  
Pl. 11, figs 1–6.

1855. *Bairdia pernoides* n. sp. – BORNEMANN, Pl. XX., figs 7–8.  
 1982. *Krithe pernoides* (BORNEMANN, 1855) – MONOSTORI, pp. 55–56, Pl. V, figs 4–10 (cum syn.)  
 1985. *Krithe pernoides* (BORNEMANN, 1855) – MONOSTORI, pp. 189–190, Pl. 4, f. 9.

*Remarks*

The frequent change of the L/H is conspicuous.

*Dimensions*

right valves	L = 0.63–0.72 mm H = 0.27–0.34 mm L/H = 2.10–2.30
left valves	L = 0.63–0.77 mm H = 0.30–0.38 mm L/H = 2.03–2.12
carapaces	L = 0.47–0.66 mm H = 0.26–0.33 mm L/H = 1.82–2.43 W = 0.20–0.32 mm

*Occurrence*

Kiscell–1 borehole 83.4 m; Budapest, Metro H–1 borehole 14.8–60.0 m; Budapest, Metro H–3 borehole 56.8–102.1 m; Budapest, Metro H–5/1 borehole 42.0–47.1 m; Budapest, Metro H–7 borehole 22.0–84.0 m; Budapest, Metro H–7/1 borehole 26.0–75.0 m; Budapest, Metro H–8/1 borehole 20–0–32.0 m; Budapest, Metro H–9 borehole 19.5–59.8 m; Budapest, Metro H–11 borehole 23.5 m; Budapest, Ibolya u. quarry 1.2 m; Budapest, SzOT–1 borehole 7.0 m; Budapest, SzOT–2 borehole 46.0 m; Budapest, SzOT–4 borehole 54.0 m; Szentendre–2 borehole 700.0–1200.0 m; Varbó–50 borehole 445.0–451.0 m; Cserépváralja–1 borehole 211.0–286.0 m; Eger Wind brickyard borehole 66.8–73.1 m; Kiseged manganiferous clay samples 1, 4; Szőlőske outcrop sample 13.

*Material*

217 specimens.

*Stratigraphical range without Hungary*

Germany: Upper Eocene–Lower Miocene; Belgium, Netherlands: Rupelian; Italy: Miocene; Ukraine: Oligocene.

*Stratigraphical range in Hungary*

Middle Eocene–Upper Oligocene.

*Krithe* sp. 1  
Pl. 11, fig. 7.

*Remarks*

Short form with broadly and asymmetrically rounded posterior end. The ventral outline nearly straight, the dorsal one broadly rounded. Similar to *Microcytherura antiqua* n. sp. in MÉHES (1941) with its outlines.

*Dimensions*

carapace L = 0.57 mm  
H = 0.30 mm  
L/H = 1.90

*Occurrence*

Budapest, Metro H–7/1 borehole 54.5–55.5 m; Budapest, Metro H–9 borehole 29.4–31.4 m; Szentendre–2 borehole 1068.0 m.

*Material*

3 specimens.

*Stratigraphical range in Hungary*

Lower Oligocene.

*Krithe* sp. 2  
Pl. 12, figs 1–2.

*Remarks*

Forms, similar to *bartonensis* or *rutoti* with their outlines, but less acuted posteriorly.

*Occurrence*

Eger, Wind brickyard borehole 50.3–77.1 m.

*Material*

11 specimens.

*Stratigraphical range in Hungary*

Lower Oligocene.

*Parakrithe costatomarginata* MONOSTORI, 1982

Pl. 12, fig. 3.

1982. *Parakrithe costatomarginata* n. sp. – MONOSTORI, pp. 54–55, Pl. V, fig. 3.

*Remarks*

According to new specimens only the anterior depressed area and the „rib” originated so are constant, the posterior marginal elevation is less characteristic.

*Dimensions:*

carapace L = 0.59 mm  
H = 0.20 mm  
L/H = 2.70

*Occurrence*

Budapest, Metro H-3 borehole 56.8–59.0 m; Kiseged, manganiferous clay sample 4.

*Material*

5 specimens.

*Stratigraphical range in Hungary*

Lower Oligocene.

*Parakrithe* sp. 1

Pl. 12, figs 4–5.

*Remarks*

This species is characterized by broadly rounded asymmetrical posterior end and deep and asymmetrical ventral embayment at 0.45 of the length.

*Dimensions*

carapace L = 0.54 mm  
H = 0.20 mm  
L/H = 2.70

*Occurrence*

Budapest, Metro H-7 borehole 94.0–99.0 m; Budapest, Metro H-8 borehole 18.0 m; Kiseged manganiferous clay sample 4.

*Material*

4 specimens.

*Stratigraphical range in Hungary*

Lower Oligocene.

Familia Trachyleberididae SYLVESTER-BRADLEY, 1948  
 Subfamilia Trachileberidinae SYLVESTER-BRADLEY, 1948  
 Genus *Trachyleberis* BRADY, 1898

*Trachyleberis* cf. *spinosa* (LIENENKLAUS, 1900)  
 Pl. 12, fig. 6.

1982. *Trachyleberis* cf. *spinosa* (LIENENKLAUS, 1900) – MONOSTORI, p. 56.

*Remarks*

The single left valve has shape of this species with remains of dense, unregular spines.

*Dimensions*

carapace L = 0.80 mm  
 H = 0.42 mm  
 L/H = 1.90

*Occurrence*

Budapest, Metro H-3 borehole 99.8–102.1 m; Budapest, Metro H-9 borehole 19.5–20 m; Budapest, SzOT-1 borehole 16.0 m.

*Material*

2 specimens.

Genus *Costa* NEVIANI, 1928

*Costa hermi* WITT, 1967  
 Pl. 12, fig. 7, Pl. 13, figs 1–7, Pl. 14, fig. 1.

1967. *Costa hermi* n. sp. – WITT, p. 30, Pl. 1, figs 21–26.

1982. *Costa hermi* WITT, 1967 – MONOSTORI, pp. 57–58, Pl. V, figs 11–12, Pl. VI, fig. 1. (cum syn.)

1982. *Costa* cf. *hermi* WITT, 1967 – MONOSTORI, pp. 40–41, Pl. II, fig. 1.

1985. *Costa* cf. *hermi* WITT, 1967 – MONOSTORI, p. 192.

*Remarks*

The large variability is discussed in MONOSTORI (1982). *Costa* cf. *hermi* in MONOSTORI (1982) according to new specimens fits into the variability detected at Oligocene materials of Hungary.

*Dimensions*

L = 0.81–0.94 mm

H = 0.42–0.51 mm

L/H = 1.84–1.96

*Occurrence*

Budapest, Metro H–1 borehole 11.8–60.0 m; Budapest, Metro H–2 borehole 32.7–34.6 m; Budapest, Metro H–3 borehole 19.5–68.3 m; Budapest, Metro H–7 borehole 24.0–99.0 m; Budapest, Metro H–7/1 borehole 37.4–42.0 m; Budapest, Metro H–8 borehole 18.0 m; Budapest, Metro H–9 borehole 47.4–59.8 m; Budapest, Róka hegy; Budafok–2 borehole 367.5–370.5 m; Solymár–72 borehole 297.4–298.0 m; Solymár brickyard outcrop sample 17; Pilisszentkereszt Sz 1–74 section samples g, i<sub>2</sub>; Szentendre–2 borehole 626.0–1100.0 m; Esztergom 123 borehole 199.0–410.0 m; Varbó–50 borehole 394.1–494.6 m; Eger Wind brickyard borehole 50.3–80.3 m; Szőlőske outcrop samples 11, 14; Alcsútdoboz–3 borehole 504.0 m.

*Material*

88 specimens.

*Stratigraphical range without Hungary*

Germany: Chattian–Aquitanian; Czechoslovakia: Kiscellian–Egerian.

*Stratigraphical range in Hungary*

Priabonian–Upper Oligocene.

Genus *Agrenocythere* BENSON, 1972

*Agrenocythere ordinata* (DETEL, 1961)

Pl. 14, figs 2–4.

1961. *Bradleya ordinata* n. sp. – DELTEL, pp. 159–161, pl. 15, figs 262–264.

1964. *Bradleya ordinata* n. sp. – DELTEL, pp. 187–189, figs 126–127.

1977. *Agrenocythere bensonii* n. sp. – POKORNÝ, pp. 384–390, text–figs 1–5, Pl. 1, figs 1–3.

1982. *Agrenocythere aculeataformis* n. sp. – MONOSTORI, pp. 58–60, Pl. VI, fig. 2.

1985. *Agrenocythere bensonii* POKORNÝ, 1977 – MONOSTORI, pp. 191–192, Pl. 5, f. 1–2.

1985. *Agrenocythere ordinata* (DETEL, 1964) – DUCASSE et al., p. 286, Pl. 79, figs 3–5.

1996. *Agrenocythere ordinata* (DETEL, 1961) – MONOSTORI, p. 49, Pl. 17, figs 7–8, Pl. 18, figs 1–3.

*Remarks*

Description details in MONOSTORI (1982).

*Dimensions (carapace)*

L = 0.98 mm

H = 0.53 mm

L/H = 1.85

*Occurrence*

Budapest, Metro H-7 borehole 22.0–36.0 m; Cserépváralja-1 borehole 407.4–407.6 m; Eger, Wind brickyard borehole 75.4–77.1 m.

*Material*

5 specimens.

*Stratigraphical range without Hungary*

France: Eocene–Oligocene; Czechoslovakia: Lower–Middle Eocene, Lower Oligocene?

*Stratigraphical range in Hungary*

Bartonian–Lower Oligocene.

Genus *Pterygocythereis* BLAKE, 1933

*Pterygocythereis* cf. *ceratoptera* (BOSQUET, 1852)

Pl. 14, figs 5–7.

*Remarks*

Poorly preserved specimens. The outlines and the visible ornamental elements are corresponding to that of the most figures in the literature (including BRESTENSKÁ, 1975 from Eger, Hungary).

*Dimensions*

carapace L = 0.92–0.83 mm

H = 0.41–0.48 mm

L/H = 1.91–2.07

W = 0.42 mm

*Occurrence*

Pilisszentkereszt Sz 1–74 section samples g, h, i, i<sub>2</sub>, j; Szentendre-2 borehole 809.0 m.

*Material*

26 specimens.

*Stratigraphical range in Hungary*

Oligocene.

*Pterygocythereis* n. sp?  
Pl. 15, figs 1–2.

*Remarks*

Poorly preserved specimens. The form has big and blunt anteromarginal spines, two to four, also big and blunt dorsal spines, rare posterior spines (the dorsal and ventral terminal ones are longer), the ventral keel is well developed in the median part of the length, with some – mainly indistinct – spines. The anteromarginal and ventral keels are disconnected, the anteromarginal keel runs somewhat below the ventral keel. The main part of the lateral surface is smooth.

*Dimensions*

carapace L = 1.17–1.18 mm  
H = 0.58 mm  
L/H = 2.02–2.03

*Occurrence*

Budapest, Törökvesz–8 borehole 3.0–7.0 m; Kiscell–1 borehole 59.6 m; Kiseged 1987 outcrop, sample 1.

*Material*

20 specimens.

*Stratigraphical range in Hungary*

Lower Oligocene.

Genus *Echinocythereis* PURI, 1954

*Echinocythereis ligula* LIENENKLAUS, 1896  
Pl. 15, fig. 3.

1896. *Cythere ligula* n. sp. – LIENENKLAUS, pp. Pl. II, fig. 3.  
1956. *Echinocythereis ? ligula* (LIENENKLAUS, 1896) – ÖERTLI, pp. 81–82, Pl. 10, figs 281–284, Pl. 11, figs 285–290.  
1969. *Echinocythereis ligula* (LIENENKLAUS, 1896) – SCHEREMETA, pp. 195–196, Pl. XVIII, fig. 12.  
1982. *Echinocythereis aff. ligula* (LIENENKLAUS, 1896) – MONOSTORI, pp. 41–42, Pl. II, fig. 2.

*Remarks*

After the new scanning photo the species determination is sure.

*Dimensions*

carapace L = 0.81 mm  
H = 0.41 mm  
L/H = 1.98

*Occurrence*

Pilisszentkereszt Sz1–74 section sample h.

*Material*

1 specimen.

*Stratigraphical range without Hungary*

Germany: Rupelian; Switzerland: Rupelian; Ukraine: Oligocene.

*Stratigraphical range in Hungary*

Lower Oligocene.

Genus *Henryhowella* PURI, 1957

*Henryhowella asperrima* (REUSS, 1850)

Pl. 15, figs 4–7, Pl. 16, figs 1–3.

1850. *Cypridina asperrima* n. sp. – REUSS, p. 74., pl. X., fig. 5.

1981. *Henryhowella asperrima* (REUSS, 1850) – MONOSTORI, pp. 195–196, Pl. 5, figs 5–6.

*Remarks*

The variability of the material of Hungary is described in MONOSTORI (1982, 1985).

*Dimensions*

carapace    L = 0.67–0.72 mm  
              H = 0.37–0.39 mm  
              L/H = 1.54–1.97  
              W = 0.32–0.33 mm

instars    L = 0.42–0.59 mm  
              H = 0.37–0.39 mm  
              L/H = 1.54–1.97

*Occurrence*

Kiscell–1 borehole 83.4 m; Budapest, Metro H–1 borehole 56.8–60.0 m; Budapest, Metro H–3 borehole 99.8–102.1 m; Budapest, Metro H–5/1 borehole 28.0–42.0 m; Budapest, Metro H–7 borehole 19.8–108.4 m; Budapest, Metro H–7/1 borehole 33.3–55.5 m; Budapest, Metro H–9 borehole 19.5–59.8 m; Budapest, Metro H–11 borehole 23.5 m; Szentendre–2 borehole 809.0 m; Varbó–50 borehole 396.0–530.0 m; Cserépváralja–1 borehole 265.4–387.7 m; Eger Wind brickyard borehole 50.3–54.2 m; Szőlőske outcrop samples 11, 13, 14.

*Material*

95 specimens.

*Stratigraphical range without Hungary*

Germany: Oligocene–Miocene; France: Oligocene–Pliocene; Italy: Miocene; Czechoslovakia: Oligocene–Miocene.

*Stratigraphical range in Hungary*

Bartonian–Upper Oligocene.

Subfamilia Buntoniinae APOSTOLESCU, 1961  
Genus *Protobuntonia* GREKOFF, 1954

*Protobuntonia sublatissima arcuatocosta* (BRESTENSKÁ, 1975)  
Pl. 16, figs 4–5.

1975. *Buntonia sublatissima arcuatocosta* n. ssp – BRESTENSKÁ, pp. 395–396, Pl. 9, figs 1–8.

1982. *Buntonia sublatissima arcuatocosta* BRESTENSKÁ, 1975 – MONOSTORI, pp. 62–63, Pl. VI, figs 6–7.

*Remarks*

The „sharpness” of the reticulation is variable.

*Dimensions*

carapaces L = 0.46–0.51 mm  
H = 0.31–0.34 mm  
L/H = 1.48–1.50

*Occurrence*

Budapest, Metro H–3 borehole 96.8–99.8 m; Budapest, Metro H–9 borehole 53.5–55.6 m; Eger, Wind brickyard borehole 73.1–73.6 m.

*Material*

5 specimens.

*Stratigraphical range without Hungary*

Czechoslovakia: Oligocene.

*Stratigraphical range in Hungary*

Oligocene.

Subfamilia Campylocytherinae PURI, 1960  
Genus *Leguminocythereis* HOWE et LAW, 1936

*Leguminocythereis sorneana* OERTLI, 1956  
Pl. 16, fig. 6.

1956. *Leguminocythereis sorneana* n. sp. – OERTLI, pp. 91–93, Pl. 12, figs 320–337.

1975. *Leguminocythereis sorneana* OERTLI, 1956 – DOEBL, SONNE, pp. 144–145, Pl. 3, figs 18a,

c

non 1980. *Leguminocythereis sorneana* OERTLI, 1956 – OLTEANU, pl. VI, fig. 11.

1982. *Leguminocythereis sorneana* OERTLI, 1956 – MONOSTORI, pp. 42–43, Pl. II, fig. 3.

*Dimensions*

carapace L = 1.12 mm

H = 0.54 mm

L/H = 2.07

*Occurrence*

Pilisszentkereszt Sz 1–74 section sample i.

*Material*

1 specimen.

*Stratigraphical range without Hungary*

Switzerland: Rupelian; Germany: Rupelian.

*Stratigraphical range in Hungary*

Lower Oligocene.

*Leguminocythereis ? cellulataformis* n. sp.

Pl. 16, fig. 7, Pl. 17, fig. 1.

1982. *Leguminocythereis ex gr. sorneana* OERTLI, 1956 – MONOSTORI, 1985, pp. 196–197, Pl. 5,  
figs 7–8.

*Derivatio nominis*

After the name of the similar species *L. cellulata* DUCASSE (1963).

*Holotypus*

Carapace.

*Locus typicus*

Kiseged road cut.

*Stratum typicum*

Kiscellian Tard Clay Formation, sample 12.

*Diagnosis*

The ornamentation is distinct and uniform polygonal network.

*Description*

The anterior outline of the left valves is asymmetrical, its ventral radius is smaller than the dorsal one. At 0.2 of the length the anterior outline connected with ~120° angle

to the straight dorsal outline abruptly between 0.6 and 0.8 of length by the dorsal swelling. The posterior outline begins after a ~100° break, its upper part is concave, lower part is convex with blunt denticles. The ventral outline nearly straight.

Ornamentation: distinct polygonal network covers the surface. It is obviously ordered only near the anterior and ventral margin. There is a blunt knot at the cardinal angle. There are ventral and posterodorsal swellings. The flat posterior end is nearly smooth. The right valve is very similar.

#### *Dimension (carapaces)*

L = 0.60–1.10 mm

H = 0.36–0.64 mm

L/H = 1.66–2.23

#### *Variations*

There are some more elongated specimens (perhaps males). Variable is the appearance of the ornamentation on the posterior end of the valves, the position and angle of the anterior-dorsal contact and the cardinal angle may be more or less protruding.

#### *Comparison*

The ornamentation and the shape of the carapace is not analogous those of the *L. sorneana*, as was believed in MONOSTORI (1982). Much more similar form is *L. cellulata* DUCASSE (1963), but details of the ornamentation differ.

#### *Occurrence*

Budapest, Zugliget outcrop sample 3; Kiseged road cut section, samples 3a, 12.

#### *Material*

13 specimens.

#### *Stratigraphical range in Hungary*

Lower Oligocene.

Familia Hemicytheridae PURI, 1953

Subfamilia Hemicytherinae PURI, 1953

Genus *Megahemicythere* WITT, 1967

*Megahemicythere oertlii* WITT, 1967

Pl. 17, figs 2–6.

1967. *Megahemicythere oertlii oertlii* n. sp. et ssp. – WITT, p. 69, Pl. 6, figs 9–12.

1985? *Megahemicythere oertlii* WITT, 1967 – MONOSTORI, p. 199.

*Remarks*

Most of the specimens have more reduced ornamentation as the type material of WITT (1967): they have practically smooth lateral surface. Characteristic is the sinuous dorsal outline and the blunt ventral swelling.

*Dimensions*

carapaces	L = 1.24–1.42 mm
	H = 0.76–0.79 mm
	L/H = 1.59–1.82
	W = 0.66 mm

*Occurrence*

Budapest, Városmajor–1 borehole 96.7–97.8 m; Budapest, Törökvész–8 borehole 3.5 m; Kiseged, 1987 outcrop samples 1, 2, 3; Kiseged road cut section samples 2a, 3a, 3d, 12.

*Material*

112 specimens.

*Stratigraphical range without Hungary*

Germany: Rupelian.

*Stratigraphical range in Hungary*

Lower Oligocene.

*Pokornyella?* sp. 1  
Pl. 17, fig. 7.

*Remarks*

The dorsal and ventral outlines are nearly parallel and nearly straight. The anterior outline is asymmetrical, it turns into the uneven dorsal outline at  $\frac{1}{4}$  of the length. The dorsal part of posterior outline after a perpendicular break at the 0.8 of the length is concave, the lower part is convex. They form a narrow caudal end near the ventral level. The ventral outline is undulate. The lateral surface is covered by a dense and irregular fine reticulation, around the wide depressive anterior-anterolateral parts with hardly visible ribs perpendicular to the margin. The caudal end holds some radial swellings. At the cardinal angle there is an elongated swelling and at the posterodorsal break a more distinct knot. This form is most close to genus *Pokornyella*, but I have not found similarly ornamented forms in the literature.

*Dimensions*

carapace	L = 0.73 mm
	H = 0.39 mm
	L/H = 1.87

*Occurrence*

Budapest, Városmajor–1 borehole 97.8–98.5 m.

*Material*

1 specimen.

*Stratigraphical range in Hungary*

Lower Oligocene

Subfamilia Thaerocytherinae HAZEL, 1967

Genus *Grinioneis*, LIEBAU, 1975

*Grinioneis* sp.  
Pl. 18, fig. 1.

*Remarks*

Damaged carapace with characters of this genus.

*Occurrence*

Budapest, Városmajor–1 borehole 96.7–97.8 m.

*Material*

1 specimen.

Genus *Hornbrookella* MOOS, 1965  
*Hornbrookella* ex gr. *macropora* (BOSQUET, 1852)  
Pl. 18, fig. 2.

*Remarks*

The ornamentation and outline of the specimen figured in this work obviously points at the *macropora* group.

*Dimensions*

carapace L = 0.80 mm  
H = 0.48 mm  
L/H = 1.67

*Occurrence*

Budapest, Ibolya u. quarry 1,2–9.9 m.

*Material*

2 carapaces.

Genus *Bosquetina* KEIJ, 1957*Bosquetina kisegedense* n. sp.

Pl. 18., figs 3–6.

?1918. *Cythereis dentata* G. W. MÜLLER – KUIPER, pp. 68–69, Pl. III, fig. 29.1985. *Bosquetina cf. reticulata* (SCHEREMETA, 1969) sensu BRESTENSKÁ, 1975 – MONOSTORI, p. 202, Pl. 7, figs 1–2.*Derivatio nominis*

After the type locality (Kiseged near town Eger, Hungary)

*Holotypus*

Left valve.

*Locus typicus*

Kiseged, road cut section.

*Stratum typicum*

Kiscellian Tard Clay Formation sample 12.

*Diagnosis*

The dorsal and ventral outlines run quickly towards each other, the median part of the valves are pitted.

*Description*

In the lateral view of the left valves the anterior outline is wide and asymmetrically rounded, its dorsal part are nearly straight. It turns at about the  $\frac{1}{4}$  of the length at  $120^\circ$  angles into the nearly straight dorsal outline (there is a slight elevation between  $\sim 0.5$ – $0.8$  of the length). The posterior outline is very asymmetrical. Its upper part from 0.9 of the length is slightly concave, the lower part is obviously convex and turn into the slightly convex ventral outline which quickly go away from the direction of the dorsal one.

Ornamentation: there is pitting on the middle of the surface from the dorsal outline up to the ventral keels with pits of different sizes. There are no pits in anterior and posterior quarters. There are some arcuated ventral keels (up to five), the first one ends with a knot at about 0.8 of the length. Another knot is posterodorsally before 0.9 of the length. An indistinct, large knot is in the cardinal angle. The anterior and posterior smooth parts are depressive.

The right valve is very similar, the overlap is indistinct.

In dorsal view of the carapace the valves are nearly parallel up to 0.18 of the length, then rise from  $45^\circ$  to  $0^\circ$  up to 0.4 of the length, then run nearly parallel up to the 0.8 of the length. From 0.8–0.9 the outlines are concave (from  $90$ – $45^\circ$ ), and there is a posterior end with parallel valves.

*Dimensions*

carapace L = 1.09–0.87 mm  
 H = 0.51–0.70 mm  
 L/H = 1.56–1.71  
 W = 0.45 mm

*Variations*

There is a variation in the degree of the pitting: on some specimens it surface is more limited and the pits are smaller.

*Comparison*

Scheremeta's *Brachycythere ventriculata* has not distinct ventral keel, it is not related to this form. KUIPER's (1918) *Cythereis dentata* G. W. MÜLLER have similar ornamentation, but the form is much more elongated. Large and regularly aequal pits in BRESTENSKÁ (1975) are different from this form.

*Occurrence*

Alcsútdoboz–3 borehole 455.5 m; Budapest, Városmajor–1 borehole 96.7–97.8 m; Kiseged road cut section samples 12, 13; Kiseged 1987 outcrop samples 1, 2, 3.

*Material*

36 specimens.

*Stratigraphical range in Hungary*

Oligocene.

*Bosquetina zalanyii* BRESTENSKÁ, 1975  
 Pl. 18, fig. 7, Pl. 19, figs 1–4.

1929. *Cythereis dentata* G. W. MÜLLER, 1878 – ZALÁNYI, 1929, pp. 111–118, Pl. I, figs 4–7, 12–13, Pl. III., figs 1–18, textfigs 49–50. (Partim)  
 1975. *Bosquetina zalanyii* n. sp. – BRESTENSKÁ, pp. 390–392, Pl. 8, figs 1–3.  
 1985. *Bosquetina zalanyii* BRESTENSKÁ, 1975 – MONOSTORI, p. 201, Pl. 6, figs 9–10.

*Remarks*

The lateral surface (apart from the ventral keel-row) is mainly smooth, on some scanning photos very fine punctuation is visible in the median part of the valves from the dorsal outline to the ventral keel-row.

*Dimensions*

carapaces L = 1.20 – 1.09 mm  
 H = 0.64–0.69 mm  
 L/H = 1.65–1.88  
 W = 0.66 mm

*Occurrence*

Kiscell-1 borehole 51.6–62.5 m; Budapest, Metro H–7/1 borehole 153.8–156.0 m; Budapest, Metro H–13 borehole 32.0–33.0 m; Budapest, Törökvesz–6 borehole 4.5 m; Budapest, Törökvesz–8 borehole 3.0–3.5 m; Budapest, Törökvesz–13 borehole 2.5 m; Budapest, Városmajor–1 borehole 96.7–97.8 m; Budapest, Diana u; Budapest, Zugliget outcrop samples N°3, 7; Budapest SzOT–4 borehole 54.0 m; Cserépváralja–1 borehole 336.8–337.0 m; Kiseged road cut section, samples 3a, 3b, 12; Kiseged 1987 outcrop samples 1, 2, 3; Alcsútdoboz–3 borehole 455.5–487.1 m.

*Material*

187 specimens.

*Stratigraphical range without Hungary*

Czechoslovakia: Kiscellian–Egerian.

*Stratigraphical range in Hungary*

Oligocene.

Genus *Occultocythereis* HOWE, 1951  
*Occultocythereis rupelica* MONOSTORI, 1982  
Pl. 19, fig. 5.

1982. *Occultocythereis rupelica* n. sp. – MONOSTORI, pp. 63–64, Pl. VII, fig. 1.

1985. *Occultocythereis rupelica* MONOSTORI, 1982 – MONOSTORI, 1985, p. 202.

*Remarks*

The description see in MONOSTORI (1982).

*Dimensions*

carapaces L = 0.54–0.57 mm  
H = 0.30 mm  
L/H = 1.80–1.90

*Occurrence*

Budapest, Metro H–3 borehole 56.8–59.0 m; Budapest, Metro H–9 borehole 29.4–31.4 m; Eger Wind brickyard borehole 50.3–50.9 m.

*Material*

4 specimens.

*Stratigraphical range in Hungary*

Upper Priabonian–Lower Oligocene.

*Occultocythereis ex gr. mutabilis* TRIEBEL, 1961

1985. *Occultocythereis ex gr. mutabilis* TRIEBEL, 1961 – MONOSTORI, p. 202.

*Remarks*

The visible ornamental elements point at this species.

*Occurrence*

Budapest, Ibolya-u. quarry 5.5 m; Noszvaj, Síkfőkút quarry, sample 20.

*Material*

2 carapaces.

Familia Cytheridae TRIEBEL, 1952  
Genus *Cytheretta* TRIEBEL, 1952

*Cytheretta posticalis* TRIEBEL, 1952  
Pl. 19, fig. 6.

1952. *Cytheretta posticalis* n. sp. – TRIEBEL, p. 23, Pl. 3, f. 18–21.

1985. *Cytheretta posticalis* TRIEBEL, 1952 – MONOSTORI, p. 203. (cum syn.)

*Remarks*

The description of the just figured specimens is in MONOSTORI (1982).

*Dimensions*

carapace L = 0.98 mm  
H = 0.52 mm  
L/H = 1.89  
W = 0.46 mm

*Occurrence*

Budapest, Zugliget outcrop sample 3.

*Material*

1 carapace.

*Stratigraphical range without Hungary*

Germany: Oligocene; Switzerland: Oligocene; Czechoslovakia: Oligocene.

*Stratigraphical range in Hungary*

Lower Oligocene.

*Cytheretta variabilis* OERTLI, 1956  
Pl. 19, figs 7–8.

1956. *Cytheretta variabilis* n. sp. – OERTLI, pp. 62–63, Pl. 7, figs 172, 180–188.  
1982. *Cytheretta variabilis* OERTLI, 1956 – MONOSTORI, pp. 43–44, Pl. II, figs 4–5.

*Remarks*

The description (MONOSTORI, 1982) needs to be corrected based on new SEM photos: the ventral ridge (swelling) begins near the anterior margin and runs nearly parallel with the ventral outline and terminate at 0.8–0.9 of the length expanded upwards. The „subcentral tubercle” is the remain a median ridge, as visible on some specimens. On the middle part of the dorsal outline there are weak traces of a dorsal ridge.

*Dimensions*

carapaces L = 0.89 mm  
H = 0.50–0.51 mm  
L/H = 1.75–1.78

*Occurrence*

Pilisszentkereszt Sz 1–74 section samples g, i.

*Material*

6 carapaces.

*Stratigraphical range without Hungary*

Switzerland: Rupelian.

*Stratigraphical range in Hungary*

Lower Oligocene.

Familia Loxoconchidae SARS, 1925  
Genus *Loxoconcha* SARS, 1866

*Loxoconcha carinata tardense* MONOSTORI, 1985  
Pl. 20, figs 1–6.

1985. *Loxoconcha carinata tardense* n. ssp.–MONOSTORI, pp. 204–205, Pl. 7, figs 3–4.

*Remarks*

The details of the reticulation are very variable.

*Dimensions*

carapace L = 0.40–0.45 mm  
H = 0.21 mm  
L/H = 1.89–2.11  
W = 0.22 mm

*Occurrence*

Kiscell-1 borehole 51.6–62.5 m; Budapest, Metro H-11a borehole 59.0–61.0, Budapest, Metro H-12 borehole 25.0–26.0 m; Budapest, H-13 borehole 36.0–37.0 m; Kiseged, road cut section samples 2a, 4, 12; Kiseged 1987 outcrop samples 1, 3.

*Material*

47 specimens.

*Stratigraphical range in Hungary*

Lower Oligocene.

*Lococoncha delemontensis hungarica* MONOSTORI, 1982

Pl. 20, fig. 7, Pl. 21, figs 1–5.

1982. *Loxoconcha delemontensis hungarica* n. ssp – MONOSTORI, pp. 71–72, Pl. VIII, figs 1–6.

1985. *Loxoconcha delemontensis hungarica* MONOSTORI, 1982 – MONOSTORI, pp. 205–206.

*Remarks*

The details of the reticulation are variable, the units of the ornamentation are mainly large.

*Dimensions*

carapaces L = 0.40–0.48 mm  
H = 0.21–0.25 mm  
L/H = 1.75–1.95  
W = 0.19–0.25

*Occurrence*

Kiscell-1 borehole 51.6–59.6 m; Budapest, Metro H-7/1 borehole 156.0–171.0 m; Budapest, Metro H-11/a borehole 59–61.0 m; Budapest, Metro H-12 borehole 21.0–22.0 m; Budapest, Metro H-13 borehole 32.0–33.0 m; Budapest, Törökvesz-6 borehole 3.5–4.0 m; Budapest, Törökvesz-8 borehole 2.5–30.5 m; Budapest, Törökvesz-13 borehole 2.0–2.5 m; Budapest, Diana u.; Budapest, Városmajor-1 borehole 97.8–103.7 m; Budapest, Zugliget outcrop samples 7, 11; Kiseged, road cut section samples N°3b, 12; Kiseged 1987 outcrop samples 1, 2, 3.

*Material*

179 specimens.

*Stratigraphical range in Hungary*

Lower Oligocene.

*Loxoconcha favata* KUIPER, 1918  
Pl. 21, figs 6–7, Pl. 22, fig. 1.

1982. *Loxoconcha cf. favata* KUIPER, 1918 – MONOSTORI, pp. 44–45.

1985. *Loxoconcha favata* KUIPER, 1918 – MONOSTORI, pp. 206–207, Pl. 7, figs 5–6. (cum syn.)

*Remarks*

The specimens from the Hárshegy Sandstone Formation fit with his variation into the forms mentioned in remarks of MONOSTORI (1985).

*Dimensions*

carapace L = 0.54–0.57 mm  
H = 0.30–0.32 mm  
L/H = 1.69–1.80

*Occurrence*

Pilisszentkereszt Sz1–74 section samples g, h, i, i<sub>2</sub>, j; Szentendre–2 borehole 1078.0–1084 m; Cserépváralja–1 borehole 336.8–337.0 m; Alcsútdoboz–3 borehole 336.0–413.0 m.

*Material*

39 carapaces.

*Stratigraphical range without Hungary*

Netherlands: Rupelian–Miocene; Switzerland: Rupelian; ?Ukraine: Oligocene; ?France: Miocene; ?Germany: Oligocene–Lower Miocene; Czechoslovakia: Egerian.

*Stratigraphical range in Hungary*

Oligocene.

*Loxoconcha subovata* (VON MÜNSTER, 1830) sensu BRESTENSKÁ, 1975  
Pl. 22, fig. 2.

1975. *Loxoconcha subovata* (MÜNSTER) – BRESTENSKÁ, p. 405, Pl. 12, figs 11–12.

1985. *Loxoconcha ex gr. subovata* (VON MÜNSTER, 1830) – MONOSTORI, pp. 207–208.

*Remarks*

Our specimens agree with figured specimens of BRESTENSKÁ (1975). The species – described from Eocene to Miocene – needs revision after the very variable figures. Our

material is not sufficient to establish a revision.

*Dimensions*

carapace L = 0.40 mm  
H = 0.32 mm  
L/H = 1.67

*Occurrence*

Alcsútdoboz–3 borehole 442.0 m.

*Material*

3 specimens.

*Loxoconcha ex gr. aequapunctata* DELTEL, 1964  
Pl. 22, fig. 3.

*Remarks*

Our form is similarly ornamented (densely pitted, with fine radial and concentrical riblets on the perifers). Depressed ventral and posterior parts are characteristic. The posterior end is more obtuse than those of the type, but similar to some morphas in BEKAERT et al. (1991).

*Dimensions*

carapace L = 0.54 mm  
H = 0.31 mm  
L/H = 1.74

*Occurrence*

Budapest, Városmajor–1 borehole 96.7–97.8 m.

*Material*

1 specimen.

*Loxoconcha* sp. 1  
Pl. 22, fig. 4.

*Remarks*

A stubby form. The anterior outline is moderately asymmetrical, the dorsal outline is slightly arcuate. The posterior outline is asymmetrical, its upper part is slightly concave, then turns in to the convex lower part. The ventral outline is somewhat sinuous. Up to 0.7 of the length it runs nearly parallel with dorsal outline or at a small angle to it, then they converge.

The lateral surface anterior and posterior smooth, the median part is finely pitted. The anterior and posteroventral rim is depressed. Near the ventral outline is a swelling

sometimes with a fine rib from ~0.3–0.6 of the length.

There is a slight swelling in the eye-knob area.

There are many similar forms in the Tertiary, but all they differ in the details.

#### *Dimensions*

carapaces L = 0.55–0.66 mm  
H = 0.31–0.40 mm  
L/H = 1.57–1.65

#### *Occurrence*

Kiscell-1 borehole 56.5 m; Budapest, Metro H-3 borehole 193.0–195.0 m; Budapest, Metro H-11a borehole 59.0–61.0 m; Kiseged 1987 outcrop sample 1.

#### *Material*

4 specimens.

#### *Stratigraphical range in Hungary*

Lower Oligocene.

#### *Eucytherura dentata* LIENENKLAUS, 1905

Pl. 22, fig. 5.

1905. *Eucytherura dentata* n. sp. – LIENENKLAUS, p. 57, Pl. IV, fig. 31.

1985. *Eucytherura dentata* LIENENKLAUS, 1905 – MONOSTORI, pp. 208–209, Pl. 7, fig. 7. (cum syn.)

#### *Remarks*

The spines on the anterior margin are not visible on the single specimen.

#### *Dimensions*

carapace L = 0.42 mm  
H = 0.24 mm  
L/H = 1.75

#### *Occurrence*

Kiseged, manganeseiferous clay sample 4.

#### *Material*

1 specimen.

#### *Stratigraphical range without Hungary*

Germany: Rupelian; Belgium: Bartonian–Rupelian; Czechoslovakia: Oligocene.

#### *Stratigraphical range in Hungary*

Upper Eocene–Oligocene.

*Cytheropteron emmeneggeri* SCHERER, 1964  
Pl. 22, figs 6–8, Pl. 23, figs 1–4.

1964. *Cytheropteron emmeneggeri* n. sp. – SCHERER, pp. 16–17, Pl. 2, figs 10–14.  
1982. *Cytheropteron emmeneggeri* SCHERER, 1964 – MONOSTORI, pp. 72–74, Pl. VIII, figs 7–11.  
1982. *Cytheropteron emmeneggeri* SCHERER, 1964 – CARBONNEL (in JUNG, 1982)  
1985. *Cytheropteron emmeneggeri* SCHERER, 1964 – MONOSTORI, p. 211.

*Description*

See in MONOSTORI (1982).

*Dimensions*

carapace L = 0.44–0.55 mm  
H = 0.25–0.31 mm  
L/H = 1.61–1.83  
W = 0.31–0.33 mm

*Occurrence*

Kiscell-1 borehole 51.6–62.5 m; Budapest, Metro H-3 borehole 193.0–195.0 m; Budapest, Metro h-7/1 borehole 161.0–171.2 m; Budapest, Metro H-11/a borehole 59.0–61.0 m; Budapest, Metro H-12 borehole 21.0–33.0 m; Budapest, Metro H-13 borehole 32.0–52.5 m; Budapest, Törökvesz-6 borehole 2.5–3.5 m; Budapest Törökvesz-8 borehole 2.5–7.5 m; Budapest, Törökvesz-13 borehole 2.0–2.5 m; Városmajor-1 borehole 95.6–103.7 m; Kiseged, road cut section samples 2a, 3a, 3b, 4, 12, 13; Kiseged 1987 outcrop samples 1, 2, 3.

*Material*

294 specimens.

*Stratigraphical range without Hungary*

Switzerland: Rupelian.

*Stratigraphical range in Hungary*

Lower Oligocene.

*Cytheropteron cf. triangulare* LIENENKLAUS, 1900  
Pl. 23, fig. 5.

1982. *Cytheropteron* sp. – MONOSTORI, p. 74, Pl. VIII, fig. 12.

*Remarks*

The single carapace is very similar the specimens figured by MOOS (1973).

*Dimensions*

carapace L = 0.46 mm  
 H = 0.36 (from the dorsal outline to the peak of the ventral  
 alar projection)  
 L/H = 1.28

*Occurrence*

Budapest, Metro H–13 borehole 36.0–37.0 m.

*Material*

1 specimen.

Familia Xestoleberididae SARS, 1928  
 Genus *Uroleberis* TRIEBEL, 1958

*Uroleberis striatopunctata* DUCASSE, 1967  
 Pl. 23, fig. 6.

- 1959. *Eocytheropteron striatopunctatum* n. sp. – DUCASSE, pp. 44–45, Pl. XIX, f. 2a–b.
- 1961. *Uroleberis striatopunctata* (DUCASSE, 1959) – DELTEL, 1961, p. 137, Pl. 12, f. 209.
- 1966. *Uroleberis striatopunctata* (DUCASSE, 1959) – MOUSSOU, p. 75, Pl. 21, f. 85a–b.
- 1967. *Uroleberis striatopunctata* n. sp. – DUCASSE, pp. 61–62, Pl. III, f. 67.
- 1969. *Uroleberis striatopunctata* DUCASSE – DUCASSE, p. 103, Pl. VII, f. 148.
- 1971. *Uroleberis striatopunctata* DUCASSE, 1959 – BLONDEAU, p. 97, Pl. X, f. 16.
- 1973. *Uroleberis striatopunctatum* DUCASSE, 1959 – SÖNMEZ-GÖKÇEN, p. 95, Pl. XII, f. 36–37.
- 1985. *Uroleberis striatopunctata* DUCASSE, 1967 – DUCASSE et al., Pl. 88, f. 3.
- 1985. *Uroleberis striatopunctata* DUCASSE, 1967 – MONOSTORI, 1985, pp. 124–125, Pl. XVI, f. 4–5.
- 1985a. *Uroleberis striatopunctata* DUCASSE, 1967 – MONOSTORI, pp. 213–214.
- 1993. *Uroleberis striatopunctata* DUCASSE-OLLIVIER-PIERRE et al., P. IV, f. 8.
- 2000. *Uroleberis striatopunctata* DUCASSE – MONOSTORI, p. 71, Pl. 12, f. 5.

*Remarks*

DUCASSE gives a description in her thesis (1959), but the valid „naming” is found in her later article (1967) according to her opinion (DUCASSE et al., 1985). The figured specimen from the Dorog basin is very close to the type figure (1967). The specimen from Síkfőkút figured in this work has somewhat less narrow anterior part and more straight ventral outline. This specimen is wrongly figured as age of Eocene in MONOSTORI (2000)

*Dimensions*

carapace: L = 0.55 mm  
 H = 0.39 mm  
 L/H = 1.41 mm.

*Occurrence*

Bükk area: Noszvaj, Síkfökút, quarry sample 21.

*Material*

1 carapaces.

*Stratigraphical distribution without Hungary*

France: Lower Eocene–Stampian, Turkey: Bartonian.

*Stratigraphical range in Hungary*

Middle and Upper Eocene (Upper Bartonian–Priabonian), lowermost Oligocene.

*Protoargilloecia angulata* DELTEL, 1961

Pl. 23, fig. 7, Pl. 24, figs 1–3.

1961. *Protoargilloecia angulata* n. sp. – DELTEL, pp. 42–44, Pl. 5, figs 66–69.

1963. *Protoargilloecia angulata* n. sp. – DELTEL, pp. 146–148, Pl. II, figs 32–24.

?1969 *Protoargilloecia angulata* DELTEL, 1961 – DUCASSE, p. 28, pl. 2, fig. 34.

1983. *Protoargilloecia angulata* DELTEL, 1961 – DUCASSE, pp. 276–279, Pl. I.

1985. *Protoargilloecia angulata* DELTEL, 1964 – DUCASSE et al., Pl. 88, fig. 14.

1985. *Argilloecia quasiramphasta* n. sp. – MONOSTORI, pp. 216–218, Pl. 8, figs 1–3.

*Remarks*

The Late Eocene–Early Oligocene material of Hungary (MONOSTORI, 1985) belongs to this species. On the main part of the Oligocene specimens the beak-formed posterior pointing rare, usually the posterior end is blunt-pointed, similarly to DUCASSE, 1983, Pl. I., figs 1–8, 14.

*Dimensions*

carapace L = 0.50–0.56 mm  
H = 0.22–0.28 mm  
L/H = 1.96–2.55  
W = 0.23 mm

*Occurrence*

Kiscell-1 borehole 83.4 m; Budapest, Metro H-1 borehole 14.8–34.8 m; Budapest, Metro H-2 borehole 36.4–55.0 m; Budapest, Metro H-3 borehole 50.3–59.0 m; Cserépváralja-1 borehole 240.0–240.2 m; Varbó-50 borehole 409.2–410.4 m; Eger, Wind brickyard borehole 71.5–73.1 m; Noszvaj, Síkfökút quarry samples 18, 21; Kiseged manganiferous clay sample 4.

*Material*

21 specimen.

*Stratigraphical range without Hungary*

France: Sparnacian–Chattian.

*Stratigraphical range in Hungary*  
Bartonian–Lower Oligocene.

Superfamilia Cypridacea BAIRD, 1845  
Familia Candonidae KAUFMANN, 1900  
Subfamilia Paracypriniae SARS, 1923  
Genus *Paracypris* SARS, 1866

*Paracypris?* *rupelica* MONOSTORI, 1982  
Pl. 24, figs 4–6.

1982. *Paracypris?* *rupelica* n. sp. – MONOSTORI, pp. 65–66, Pl. VII, figs 2–3.  
1985. *Paracypris?* *rupelica* MONOSTORI, 1982 – MONOSTORI, pp. 219–220.

*Dimensions*

carapaces L = 0.54–0.90 mm  
H = 0.34–0.47 mm  
L/H = 1.87–1.95

*Occurrence*

Budapest, Metro H–1 borehole 25.0–47.2 m; Budapest, Metro H–2 borehole 36.4–39.1 m; Budapest, SzOT–1 borehole 5.5–16.0 m; Budapest SzOT–4 borehole 54.0 m; Budapest, SzOT–6 borehole 10.8 m; Cserépváralja–1 borehole 240.0–296.0 m; Kiseged, manganiferous clay samples 1, 3, 4.

*Material*

52 specimens.

*Stratigraphical range in Hungary*  
Priabonian–Lower Oligocene.

*Paracypris?* *kisegedensis* n. sp.  
Pl. 24, fig. 7–8, Pl. 25, fig. 1.

*Derivatio nominis*

After the locality name.

*Holotypus*

A carapace.

*Locus typicus*

Kiseged road cut section.

*Stratum typicum*

Kiscellian, Tard Clay Formation, sample 12.

*Diagnosis*

Elongated form with nearly symmetrical anterior, hollowed ventral, blunt posterior and asymmetrically arched dorsal outlines.

*Description*

The anterior outline of the left valves is nearly symmetrically rounded. After a break at about of 0.1 of the length the dorsal outline is broadly arched up to 0.6–0.7 of the length, than nearly straight. The posterior outline is blunt, with rather large radius. The ventral outline has a shallow, symmetrical hollowing.

The right valve has a similar outline with a little depression on the anterior part of the dorsal outline and with a more deep ventral hollowing. The surface is unornamented. The left valve overlaps the right one. The inner features are not visible.

*Dimensions*

carapaces L = 0.83–1.02 mm  
H = 0.41–0.48 mm  
L/H = 2.02–2.17

*Variations*

Some minor variations are in the placing and strength of the posterodorsal break.

*Comparison*

Similar form is the *P. trosliensis* APOSTOLESCU, 1956, which is dorsally more arched.

*Occurrence*

Kiseged 1987 outcrop samples 1, 2; Kiseged road cut section samples 10, 12.

*Material*

8 specimens.

*Stratigraphical range in Hungary*

Lower Oligocene.

*Paracypris ex gr. propinqua* TRIEBEL, 1963  
Pl. 25, fig 2.

1985. Cypridacea fam., gen. et sp. indet. 2. – MONOSTORI, p. 223, Pl. 8, figs 7–8.

*Remarks*

The arc of the anterior outline is more wide and the posterior end is less pointed.

*Dimensions*

carapaces L = 1.04–1.22 mm  
 H = 0.38–0.44 mm  
 L/H = 2.74–2.77

*Occurrence*

Budapest, Törökvesz–6 borehole 6.5 m; Budapest, Törökvesz–8 borehole 5.5 m;  
 Kiseged 1987 outcrop sample 1.

*Material*

5 specimens.

*Paracypris cf. bouldnorensis* KEEN, 1978  
 Pl. 25, figs 3–5.

*Remarks*

Poorly preserved specimens. The anterior outline of the left valves is nearly symmetrically rounded, the dorsal outline has a very large arc, the posterior outline is symmetrically rounded, blunt, its terminal point is at lower 1/3 of the maximal height. The ventral outline is moderately hollowed. The outline of the right valve has deeper ventral hollow.

In dorsal view the emerging and sinking of the lateral surfaces are first very strong but then minimal (rather flat valves with proportionally thick perpendicular ends). The lateral surface seems to be smooth.

This form is most close to species *Paracypris bouldnorensis* KEEN, 1978. Difference is the more elongated shape, less arched dorsal outline, and the higher placing of the posterior terminal point.

*Dimensions*

carapaces L = 0.80–0.83 mm  
 H = 0.35–0.36 mm  
 L/H = 2.22–2.37  
 W = 0.28 mm

*Occurrence*

Pilisszentkereszt Sz 1–74 section samples g, h, i, i<sub>2</sub>.

*Material*

75 specimens.

*Stratigraphical range in Hungary*

Lower Oligocene.

Subfamilia Candoninae KAUFMANN, 1900  
Genus *Candona* BAIRD, 1845

*Candona fertilis* TRIEBEL, 1963  
Pl. 25, fig. 6.

1963. *Candona (Pseudocandona) fertilis fertilis* n. sp. – TRIEBEL, pp. 167–168, Pl. 27. figs 19–22, Pl. IX, fig. 1.  
1982. *Candona fertilis* TRIEBEL, 1963 – MONOSTORI, pp. 74–75, Pl. VIII, fig. 14, Pl. 9, fig. 1. (cum syn.)  
?1985. *Candona* sp. – MONOSTORI, p. 222.  
1985. *Pseudocandona fertilis* TRIEBEL, 1963 – CARBONNEL, WIEDMANN et BERGER, p. 227, Pl. V, figs 10–12.

As has written in MONOSTORI (1982), this form fits well in the variations of this species.

*Dimensions*

L = 1.00 mm  
H = 0.58 mm  
L/H = 1.72

*Occurrence*

Budapest, Törökvesz–8 borehole 7.5 m; Budapest, Törökvesz–13 borehole 2.0 m; Budapest, SzOT–1 borehole 16.0 m.

*Material*

7 specimens.

*Stratigraphical range without Hungary*

Germany: Oligocene; France: Chattian–Aquitanian; Switzerland: Oligocene.

*Stratigraphical range in Hungary*

Lower Oligocene.

*Candona? recta* LIENENKLAUS, 1905  
Pl. 25, figs 7–8, Pl. 26, figs 1–6.

1905. *Candona recta* n. sp. – LIENENKLAUS, pp. 22–23, Pl. I, fig. 6.  
1962. *Candona recta* LIENENKLAUS, 1905 – DOEBL & MALZ, p. 398, Pl.  
1982. *Candona? aff. recta* LIENENKLAUS, 1905 – MONOSTORI, pp. 75–76, Pl. IX, figs 2–3.  
1985. *Candona? recta* LIENENKLAUS, 1905 – MONOSTORI, pp. 221–222, Pl. 8, fig. 5.

*Dimensions*

L = 0.98–1.10 mm  
H = 0.45–0.53 mm

L/H = 2.07–2.13  
W = 0.39 mm

*Occurrence*

Kiscell-1 borehole 51.6–59.5 m; Budapest, Metro H-12 borehole 21.0–22.0 m; Budapest, Metro H-13 borehole 32.0–37.0 m; Budapest, Törökvesz-6 borehole 3.5 m; Budapest, Törökvesz-8 borehole 2.5–3.0 m; Budapest, Törökvesz-13 borehole 2.0 m; Budapest, Városmajor-1 borehole 96.7–97.8 m; Budapest, Zugliget outcrop samples 3, 7, 9; Kiseged road cut section samples 3a, 3b, 12; Kiseged 1987 outcrop samples 1, 2, 3.

*Material*

103 specimens.

*Stratigraphical range without Hungary*

Germany: Miocene.

*Stratigraphical range in Hungary*

Lower Oligocene.

*Candonia?* sp. indet.  
Pl. 27, fig. 1.

1985. Cypridacea fam. gen. et sp. indet. 4 – MONOSTORI, pp. 223–224, Pl. 8, fig. 11.

*Remarks*

The outlines are principally close to those of different species of *Lineocypris*, *Pseudocandonia* and *Candonia*.

*Occurrence*

Kiseged road cut section, samples N°3a, 3b.

*Material*

2 carapaces.

*Remarks*

There are 97 badly preserved carapaces in the Lower Oligocene (Tard Clay Formation) of the Budapest area with shape similar to Candonidae.

Familia Cyprididae BAIRD, 1845  
Subfamilia Eucypridinae BRONSTEIN, 1947  
Genus *Moenocypris* TRIEBEL, 1959

*Moenocypris bockenheimensis* TRIEBEL, 1963  
Pl. 27, figs 2–4.

1963. *Moenocypris bockenheimensis* n. sp. – TRIEBEL, pp. 179–180, Pl. 34, figs 58–61, Pl. 35, fig. 62.  
1963. *Moenocypris bockenheimensis* TRIEBEL, 1963 – TRIEBEL, fig. 35.  
1982. *Moenocypris cf. bockenheimensis* TRIEBEL, 1963 – MONOSTORI, p. 76–77, Pl. IX, fig. 4.  
1985. *Moenocypris bockenheimensis* TRIEBEL, 1963 – CARBONNEL et al., p. 226, Pl. VI, figs 1–4.

*Description*

The anterior outline of the left valves is asymmetrically rounded, the dorsal outline is trapezoidal. Anterior break ( $\sim 150^\circ$ ) on the dorsal outline is at 0.25 of the length, the posterior one ( $\sim 150^\circ$ ) at 0.75 of the length. The posterior outline is nearly symmetrically rounded, its radius is larger than that of the anterior outline. The ventral outline is hardly concave. The overlap of the left valve is conspicuous at the ventral outline, which has a long and shallow embayment. The lateral surface is smooth.

*Remarks*

The shape of the carapaces agree with those of the type, the L/H ratio is somewhat more variable.

*Dimensions*

carapaces L = 0.75–1.45 mm  
H = 0.34–0.74 mm  
L/H = 1.96–2.24

*Occurrence*

Budapest, Törökvesz–6 borehole 2.5–6.5 m; Budapest, Törökvesz–8 borehole 3.0–10.5 m; Budapest, Törökvesz–13 borehole 2.0 m; Kiseged road cut section samples N°3a; Kiseged 1987 outcrop samples 1, 2, 3.

*Material*

66 specimens.

*Stratigraphical range without Hungary*

Switzerland: Oligocene; Germany: Aquitanian.

*Stratigraphical range in Hungary*

Lower Oligocene.

Familia Cypridopsidae KAUFFMANN, 1900  
Subfamilia Cypridopsinae BRONSTEIN, 1947  
Genus *Curvopsis* MALZ, 1977

*Curvopsis curvata* (LIENENKLAUS, 1905)  
Pl. 27, figs 5–6, Pl. 28, figs 1–2.

1905. *Cypria curvata* n. sp. – LIENENKLAUS, pp. 19–20, Pl. I, Fig. 4.  
 1921. *Cypria curvata* LIENENKLAUS, 1905 – WENZ, pp. 160, 172, Pl. 25, figs 29–30.  
 1962. *Cypria? curvata* LIENENKLAUS, 1905 – DOEBL ET MALZ, p. 397, Pl. 58, figs 10–11.  
 1970. *Cypridopsis? curvata* (LIENENKLAUS, 1905) – WIESNER, p. 10, figs 2, 14.  
 1973. *Cypridopsis? curvata* (LIENENKLAUS, 1905) – WIESNER, Fig. 2, 3, 17.  
 1977. *Curvopsis curvata* (LIENENKLAUS, 1905) – MALZ, pp. 237–239, Pl. 1, figs 3–4, Pl. 2, figs 8–16, Pl. 3, fig. 23, Textfig. 4, 5c.  
 1982. Cypridopsinae gen. et sp. indet. 1 – MONOSTORI, p. 77.  
 1985. Cypridopsidae gen. et sp. indet. 1 – MONOSTORI, p. 222.

*Description*

Nearly trigonal form with similar anterior and posterior outline (the radius of the anterior outline is somewhat larger). The break of the dorsal outline is at ~0.5 of the length. The carapace is very high.

The left valve is somewhat larger. The ventral outline is straight on the left valve and obviously hollowing on the right one.

The lateral surface is smooth.

*Remarks*

The dorsal peak of the „triangle” differently rounded on the specimens, as seen in MALZ (1977), too.

*Dimensions*

carapaces L = 0.62–0.79 mm
H = 0.50–0.54 mm
L/H = 1.24–1.49

*Occurrence*

Budapest, Törökvesz–8 borehole 2.0–2.5 m; Budapest, Törökvesz–13 borehole 3.5–7.5 m; Budapest, Városmajor–1 borehole 96.7–97.8 m; Budapest, Diana u.; Budapest, Zugliget outcrop sample 3; Kiseged road cut samples 3b, 12; Kiseged 1987 outcrop sample 1.

*Material*

32 specimens.

*Stratigraphical range without Hungary*

Germany: Lower Miocene.

*Stratigraphical range in Hungary*

Lower Oligocene.

?*Curvopsis curvata* (LIENENKLAUS, 1905)  
Pl. 28, figs 3–4.

*Remarks*

Shape is very similar to that of the *Curvopsis curvata*, but less triangular, more hemicircular. Similar forms are also in MALZ (1977), so perhaps they fit in the variation of the species, but also similar is the outline of the *Cypria dorsata* n. sp. in MALZ & MOAYEDPOUR, 1973.

*Dimensions*

carapaces L = 0.61–0.63 mm  
H = 0.47–0.48 mm  
L/H = 1.29–1.31

*Occurrence*

Budapest, Törökvesz–8 borehole 7.5 m; Budapest, Zugliget outcrop sample N°7; Kiseged 1987 outcrop samples 2, 3.

*Material*

7 carapaces.

Cypridopsidae gen. et sp. indet. 3, 1982  
Pl. 28, fig. 5.

1982. Cypridopsinae gen. et sp. indet. 3 – Monostori, p. 77, Pl. IX, fig. 7.

*Remarks*

Moderately elongated form with blunt posterior and anterior end (the arc of the posterior end somewhat narrower than that of the anterior one). There is a triangular break at the half of the length. The ventral outline has a symmetrical shallow hollowing on the left and a deeper one on the right valve. The lateral surfaces are smooth. Similar outline have *Curvopsis propinqua* n. sp. and *Cavernopsis angusta* n. sp. in MALZ (1977).

*Dimensions*

carapaces L = 0.50–1.24 mm  
H = 0.28–0.70 mm  
L/H = 1.77

*Occurrence*

Budapest, Törökvesz–6 borehole 4.0 m; Kiseged road cut sample 3a.

*Material*

3 specimens.

Ostracoda gen. et sp. indet.  
Pl. 28., fig. 6.

*Remarks*

Very arcuate and elongated form. The ventral and dorsal outlines are nearly symmetrically arcuate. The posterior and anterior outlines are rounded, the anterior radius somewhat larger. Form of valves and indistinct remains of pitted surface remind of Cushmanidea.

*Dimensions*

carapaces L = 0.54 mm  
H = 0.22–0.26 mm  
L/H = 2.07–2.45

*Occurrence*

Szentendre–2 borehole 1082.4–1084.0 m.

*Material*

2 specimens.

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Plate 1

Figs 1–4. *Cytherella compressa* (VON MÜNSTER, 1830)

- Fig. 1. Carapace from the left valve. 52x  
Budapest, Metro H–7 borehole 24.0–29.0 m  
Fig. 2. Carapace from the left valve. 56x  
Szentendre–2 borehole 809.0 m  
Fig. 3. Carapace from the left valve. 56x  
Budapest, Metro H–9 borehole 47.4–94.9 m  
Fig. 4. Carapace from the left valve. 54x  
Varbó–50 borehole 494.6–503.0 m

Figs 5–7. *Cytherella dentifera* MÉHES, 1941

- Fig. 5. Carapace from the left valve. 47x  
Budapest, Metro H–6 borehole 37.0–41.0 m  
Fig. 6. Carapace from the right valve. 59x  
Alcsútdoboz–3 borehole 487.1 m  
Fig. 7. Carapace from the left valve. 59x  
Budapest, Metro H–7 borehole 94.0–99.0 m

Fig. 8. *Cytherella ex gr. beyrichi* (REUSS, 1851)

- Carapace from the left valve. 63x  
Eger Wind brickyard borehole 71.5–73.4 m

Plate 1

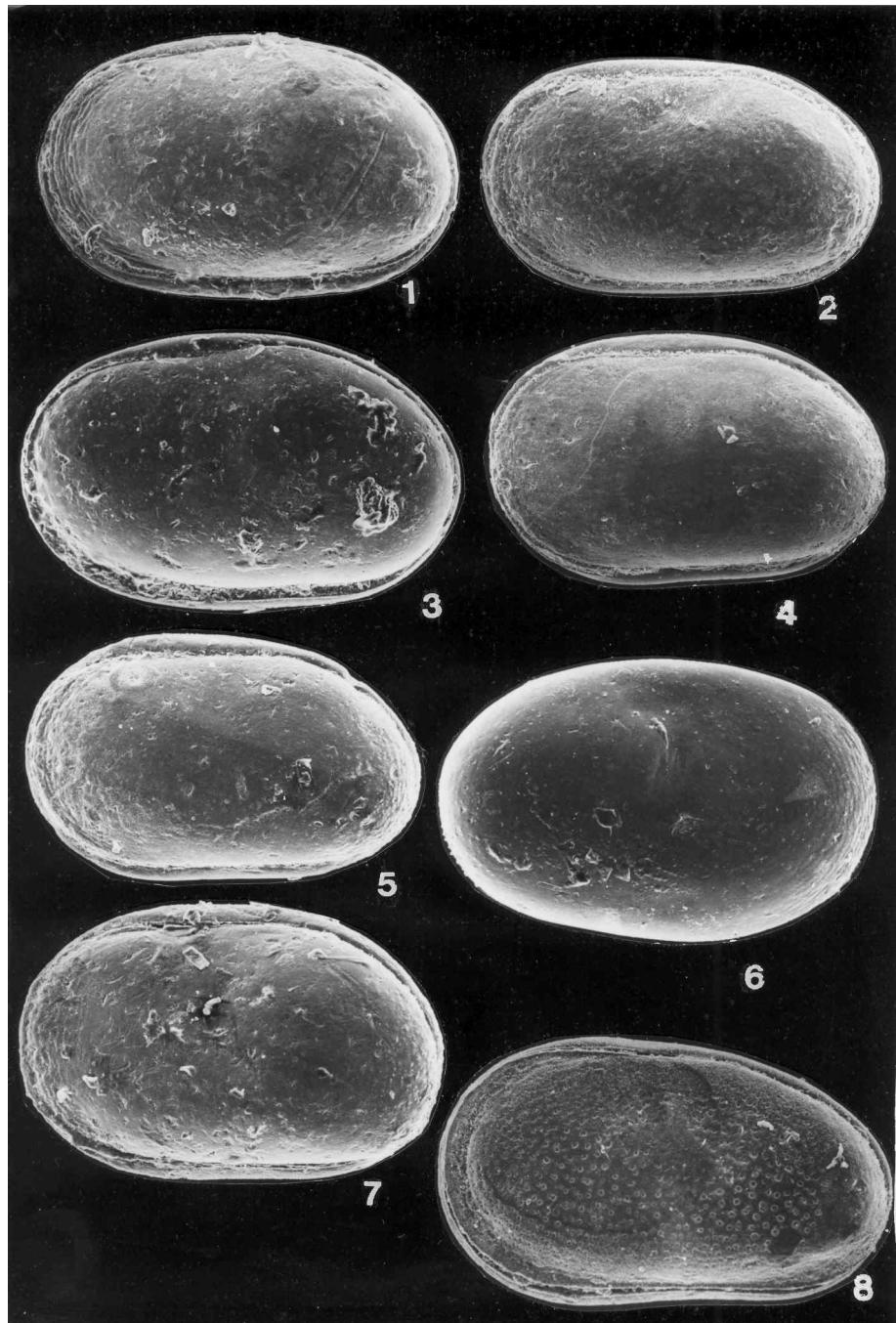


Plate 2

Fig. 1. *Cytherella ex gr. beyrichi* (REUSS, 1851)

Left valve. 61x.

Eger Wind brickyard borehole 69.8–70.5 m

Fig. 2. *Cytherella ex gr. draco* PIETRZENIUK, 1969.

Carapace from the left valve. 51x.

Budapest, Metro H–1 borehole 25.0–28.0 m

Figs 3–5. *Cytherella hyalina* MÉHES, 1941

Fig. 3. Carapace from the left valve. 56x

Budapest, Metro H–7/1 borehole 33.3–34.3 m

Fig. 4. Carapace from the left valve. 60x

Budapest, Metro H–3 borehole 91.0–94.8 m

Fig. 5. Carapace from the left valve. 54x

Varbó–50 borehole 416.1–420.0 m

Figs 6–8. *Cytherella mehesi* BRESTENSKÁ, 1975

Fig. 6. Right valve. 56x

Varbó–50 borehole 479.6–482.2 m

Fig. 7. Right valve. 50x

Budapest, Metro H–3 borehole 59.6–61.6 m

Fig. 8. Carapace from the left valve. 59x

Budapest, Metro H–1 borehole 32.2–34.8 m

Plate 2

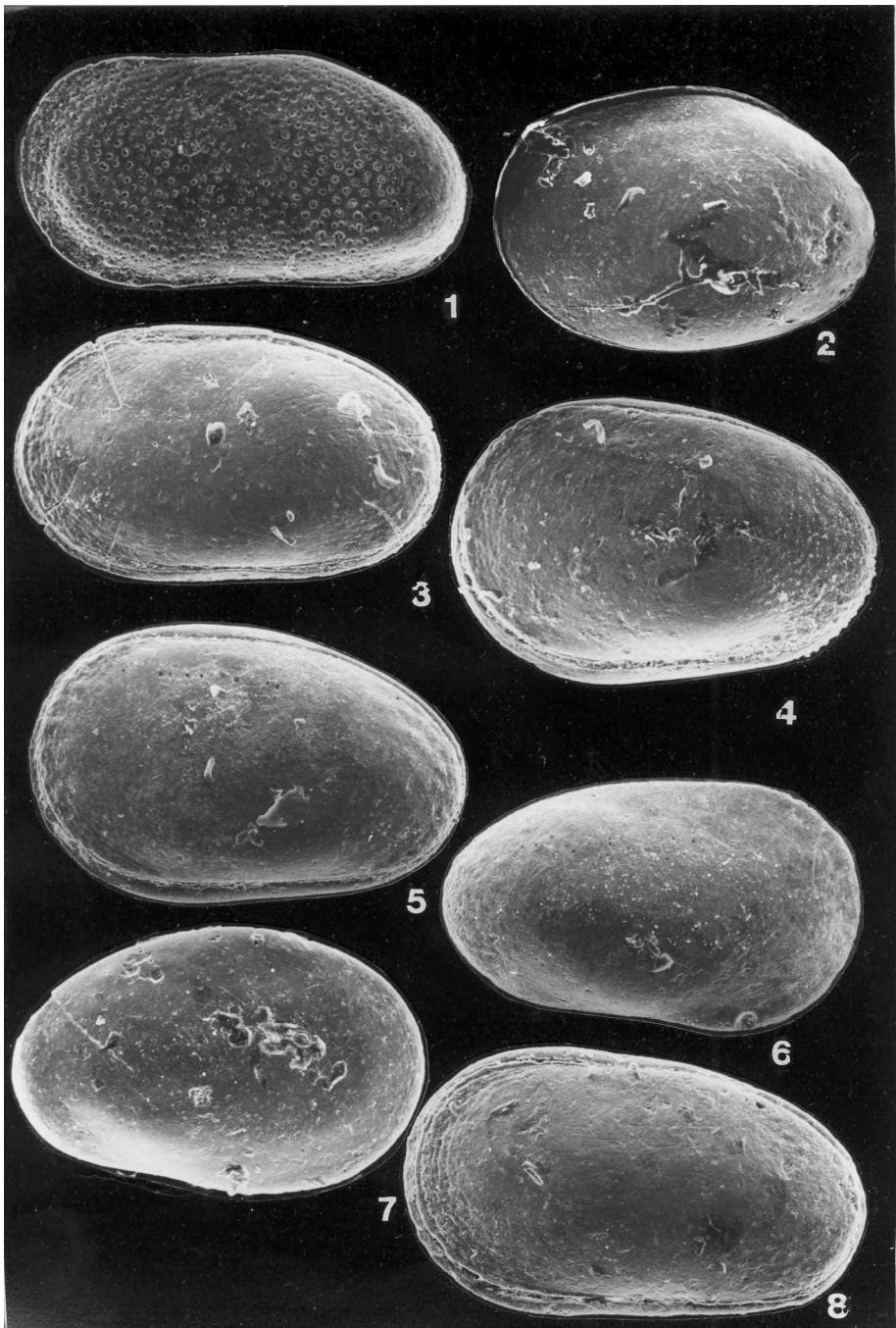


Plate 3

Figs 1–4. *Cytherella transversa* SPEYER, 1863

- Fig. 1. Left valve. 74x  
Alcsútdoboz–3 borehole 487.1 m
- Fig. 2. Carapace from the left valve. 56x  
Budapest, Metro H–7 borehole 60.0–63.0 m
- Fig. 3. Right valve. 65x  
Alcsútdoboz–3 borehole 487.1 m
- Fig. 4. Inside of the right valve. 68x  
Alcsútdoboz–3 borehole 455.5 m

Fig. 5. *Cardobairdia boldi* PIETRZENIUK, 1969  
Carapace from the right valve. 108x  
Budapest, Metro H–7/1 borehole 50.0–52.0 m

Fig. 6. *Bairdia rupelica* MONOSTORI, 1982  
Carapace from the right valve. 50x  
Budapest, Metro H–3 borehole 65.3–68.3 m

Fig. 7. *Bairdia?* sp. 1.  
Left valve. 63x  
Kiscell–1 borehole 83.4 m

Plate 3

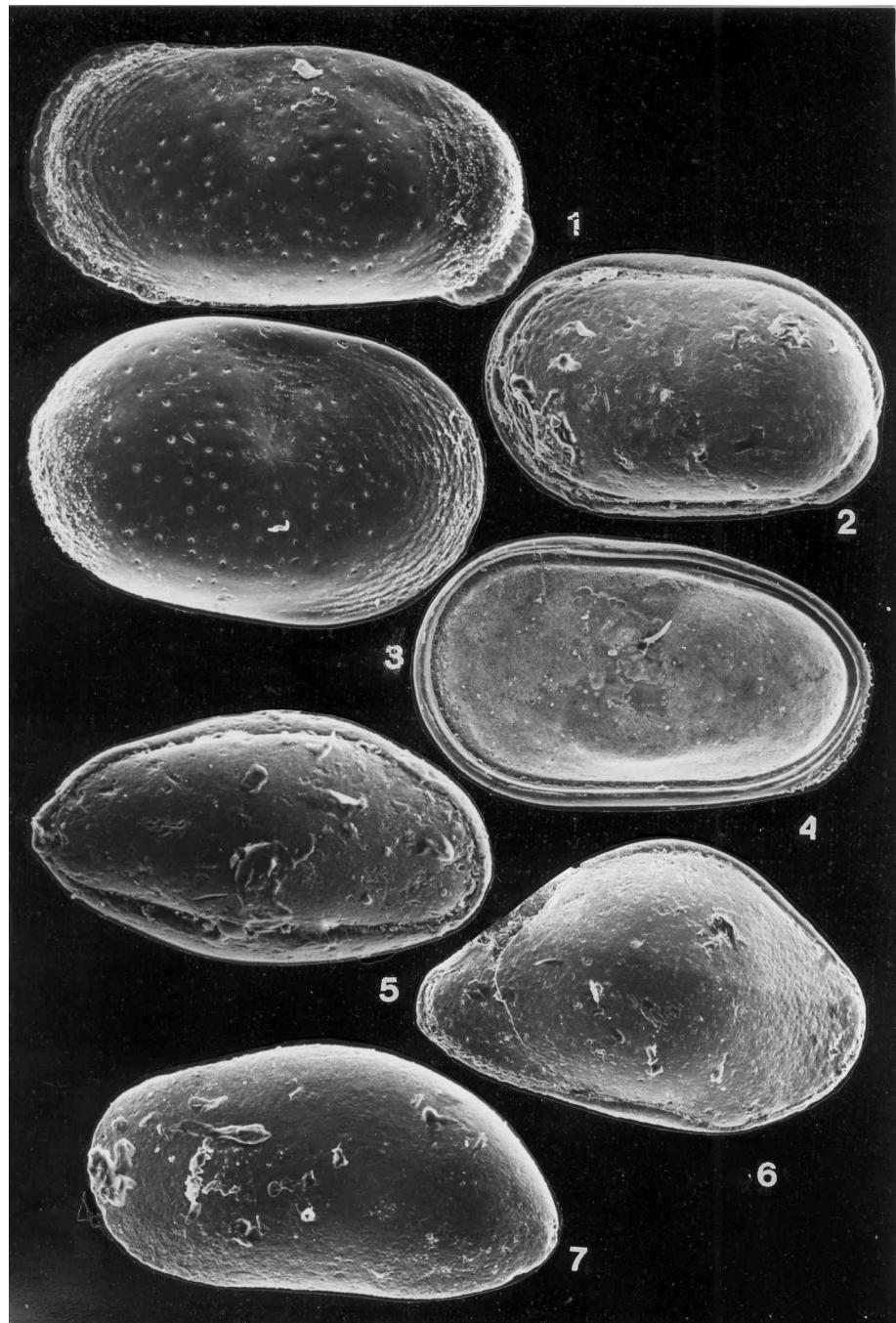


Plate 4

Figs 1–5. *Cytheromorpha subalpina dorsodepressa* MONOSTORI, 1985

- Fig. 1. Right valve. 126x  
Kiseged 1987 outcrop, sample N°3.  
Fig. 2. Right valve. 130x  
Kiscell-1 borehole 55.5 m  
Fig. 3. Carapace from the dorsal side. 142x  
Budapest, Zugliget outcrop, sample 7  
Fig. 4. Carapace from the left valve. 131x  
Kiscell-1 borehole 57.5 m  
Fig. 5. Inside of the left valve. 137x  
Kiscell-1 borehole 57.5 m

Figs 6–7. *Paijenborchella (Eopaijenborchella) sturovensis* BRESTENSKÁ, 1975

- Fig. 6. Left valve. 108x  
Eger Wind brickyard borehole 71.5–73.1 m  
Fig. 7. Right valve. 112x  
Eger Wind brickyard borehole 76.3–77.1 m

Plate 4

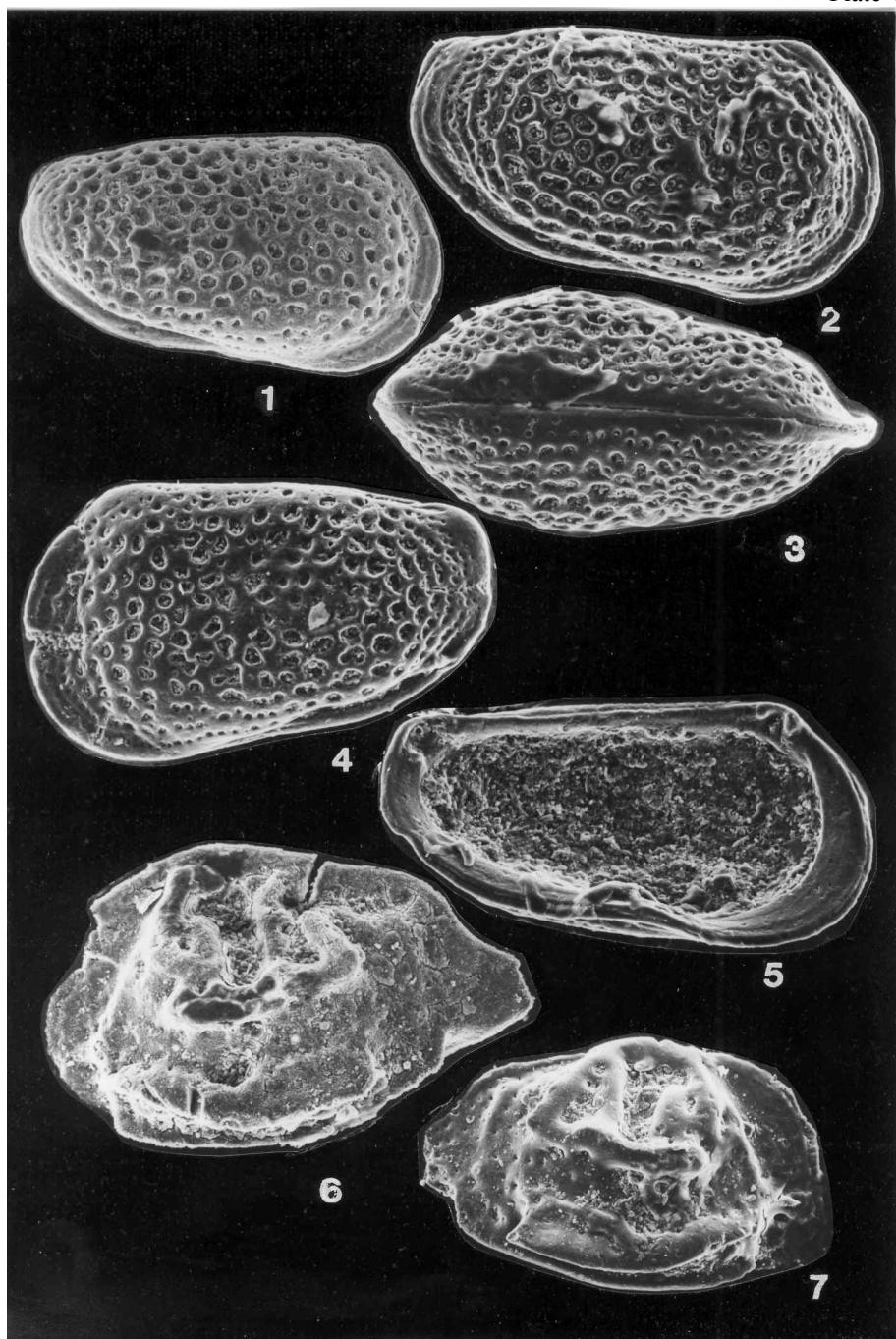


Plate 5

Fig. 1. *Callistocythere* sp.

Right valve. 86x

Budapest, Városmajor-1 borehole 96.7–98.7 m

Figs 2–7. *Eucytheridea reticulata* GOERLICH, 1953

Fig. 2. Left valve. 94x

Kiseged road cut section, sample 4

Fig. 3. Carapace from the right valve. 65x

Kiseged road cut section, sample 3a

Fig. 4. Carapace from the right valve. 77x

Kiseged road cut section, sample 12

Fig. 5. Inside of the right valve. 74x

Kiseged road cut section, sample 12

Fig. 6. Left valve. 77x

Kiseged road cut section, sample 12

Fig. 7. Carapace from the dorsal side. 63x

Kiseged 1987 outcrop, sample 1

Plate 5

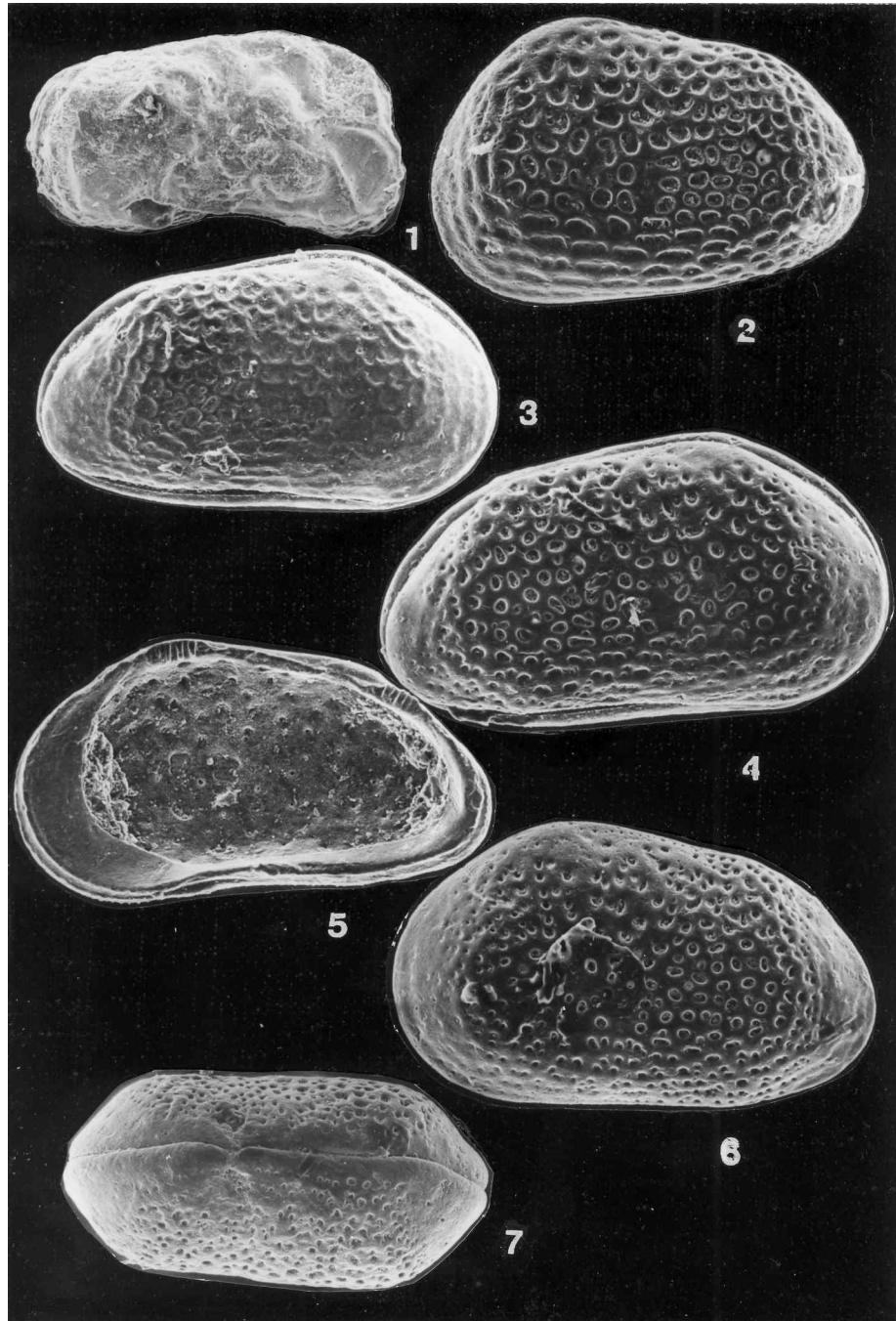


Plate 6

Figs 1–2. *Eucytheridea reticulata* GOERLICH, 1953

Fig. 1. Left valve. 72x  
Kiseged road cut section, sample 38  
Fig. 2. Carapace from the dorsal side. 63x  
Kiseged road cut section, sample 3a

Fig. 3. *Cytheridea ex gr. mülleri* (VON MÜNSTER, 1830)  
Right valve 74x  
Szentendre–2 borehole 1070.0 m

Fig. 4. *Cytheridea ex gr. pernota* OERTLI and KEY, 1956.  
Left valve. 56x  
Varbó–50 borehole 541.7–543.2 m

Figs 5–8. *Miocyprideis rara* (GOERLICH, 1953)

Fig. 5. Carapace from the right side. 85x  
Pilisszentkereszt Sz 1–74 section, sample h  
Fig. 6. Left valve. 77x  
Pilisszentkereszt Sz 1–74 section, sample h  
Fig. 7. Left valve. 72x  
Pilisszentkereszt Sz 1–74 section, sample i<sub>2</sub>  
Fig. 8. Carapace from the left side. 77x  
Pilisszentkereszt Sz 1–74 section, sample i<sub>2</sub>

Plate 6

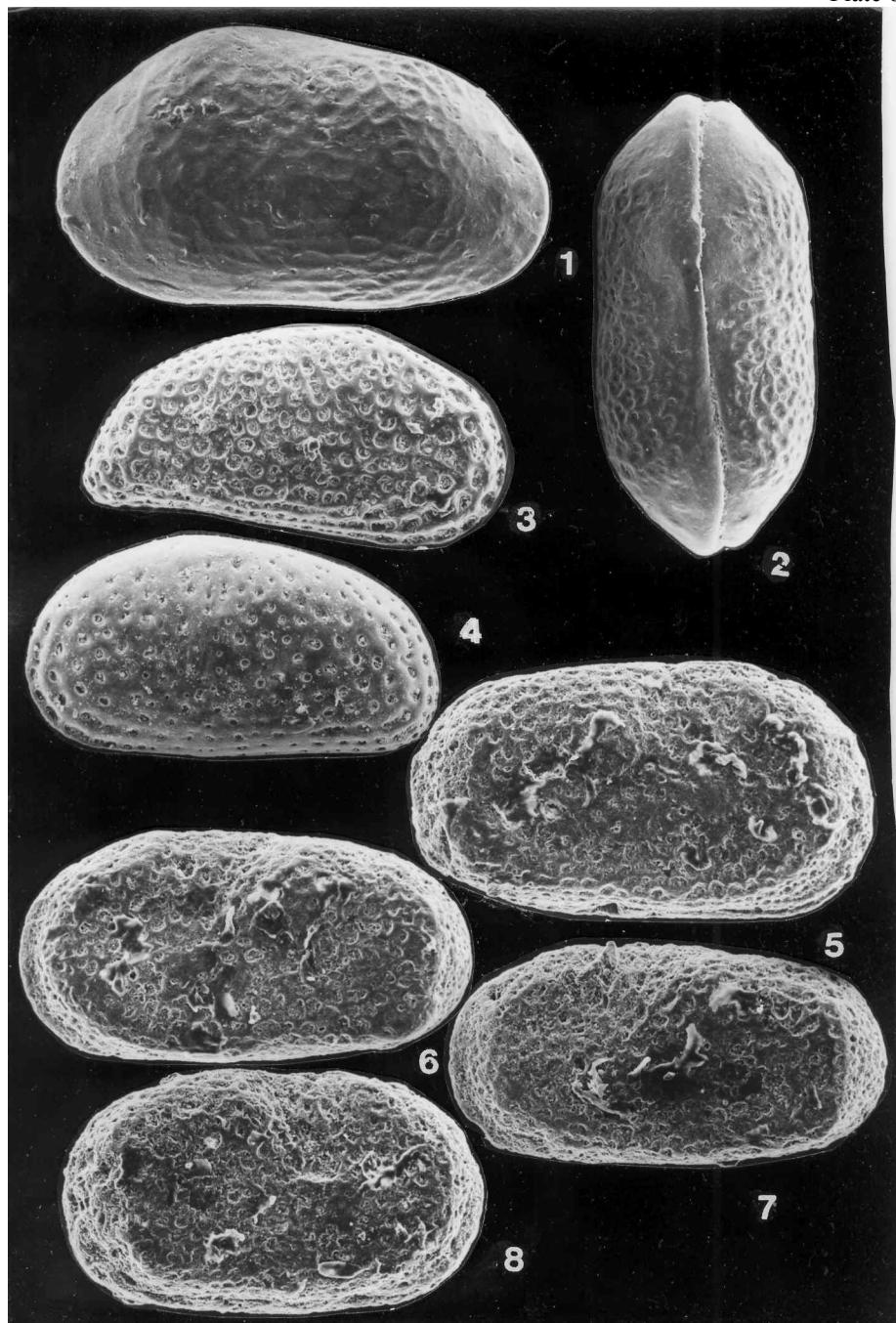


Plate 7

Fig. 1. *Miocyprideis rara* (GOERLICH, 1953).

Carapace from the dorsal side. 74x

Pilisszentkereszt Sz 1–74 section, sample i<sub>2</sub>

Figs 2–3. *Cyamocytheridea punctatella* (BOSQUET, 1852)

Fig. 2. Carapace from the right valve. 74x

Pilisszentkereszt Sz 1–74 section, sample i

Fig. 3. Carapace from the dorsal side. 74x

Pilisszentkereszt Sz 1–74 section, sample i<sub>2</sub>

Figs 4–7. *Hemicyprideis anterocostata* MONOSTORI, 1982

Fig. 4. Carapace from the dorsal side. 59x

Pilisszentkereszt Sz 1–74 section, sample h

Fig. 5. Carapace from the dorsal side. 56x

Pilisszentkereszt Sz 1–74 section, sample i

Fig. 6. Carapace from the right valve. 56x

Pilisszentkereszt Sz 1–74 section, sample i

Fig. 7. Carapace from the right valve. 50x

Pilisszentkereszt Sz 1–74 section, sample i<sub>2</sub>

Fig. 8. *Hemicyprideis helvetica* (LIENENKLAUS, 1895)

Carapace from the dorsal side. 70x

Pilisszentkereszt Sz 1–74 section, sample j

Plate 7

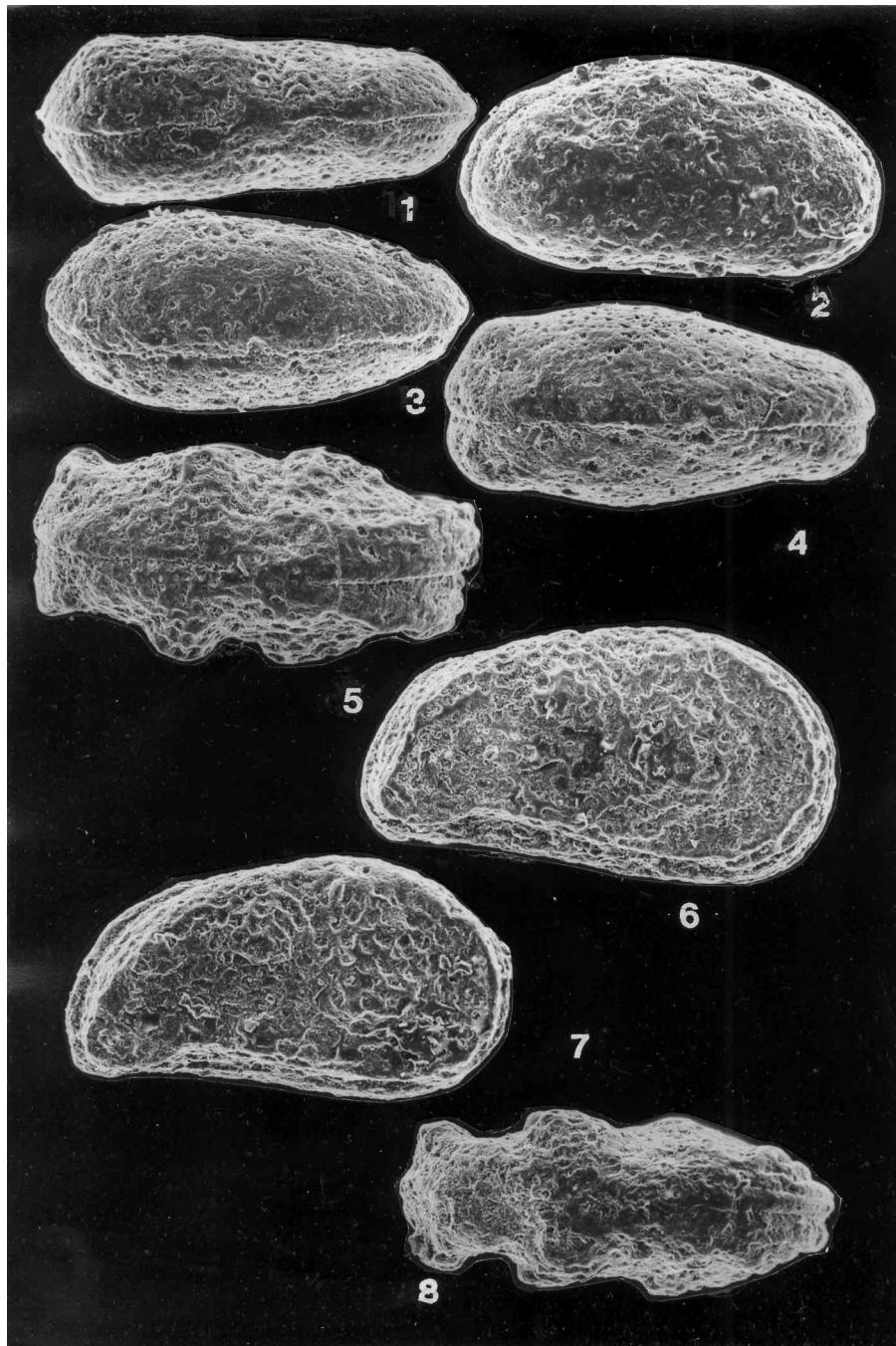


Plate 8

Figs 1–4. *Hemicyprideis helvetica* (LIENENKLAUS, 1895)

- Fig. 1. Carapace from the dorsal side. 81x  
Pilisszentkereszt Sz 1–74 section, sample i  
Fig. 2. Right valve. 65x  
Pilisszentkereszt Sz 1–74 section, sample j  
Fig. 3. Carapace from the right valve. 72x  
Pilisszentkereszt Sz 1–74 section, sample h  
Fig. 4. Left valve. 74x  
Pilisszentkereszt Sz 1–74 section, sample j

Figs 5–8. *Hemicyprideis parvula* MALZ & TRIEBEL, 1970

- Fig. 5. Carapace from the right side. 59x  
Pilisszentkereszt Sz 1–74 section, sample i<sub>2</sub>  
Fig. 6. Carapace from the dorsal side. 54x  
Pilisszentkereszt Sz 1–74 section, sample i<sub>2</sub>  
Fig. 7. Carapace from the left valve. 59x  
Pilisszentkereszt Sz 1–74 section, sample i  
Fig. 8. Right valve. 56x  
Pilisszentkereszt Sz 1–74 section, sample i<sub>2</sub>

Plate 8

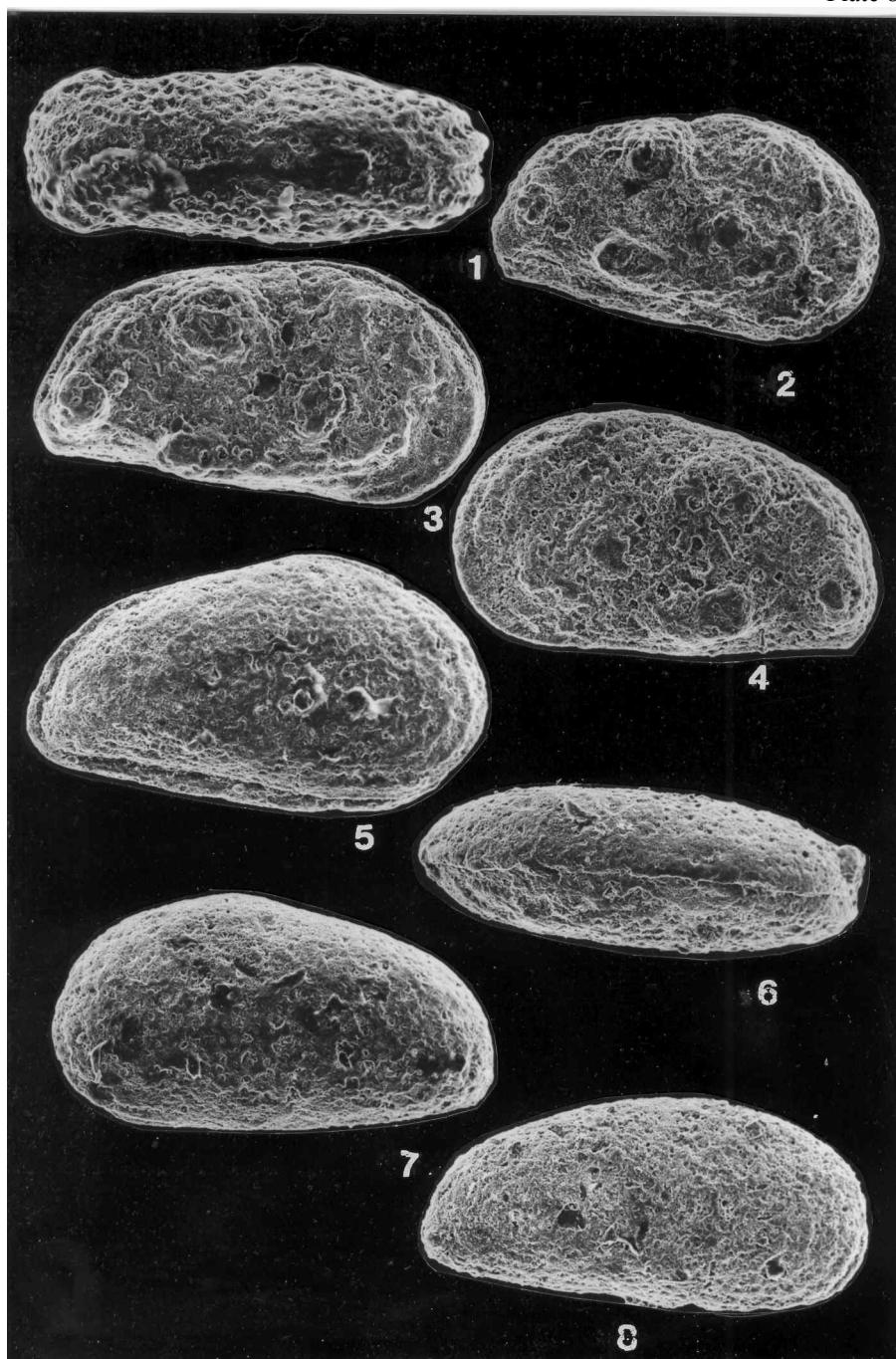


Plate 9

Figs 1–2. *Schuleridea rauracica* OERTLI, 1956

- Fig. 1. Carapace from the right valve. 59x  
Pilisszentkereszt Sz 1–74 section, sample i<sub>2</sub>  
Fig. 2. Carapace from the right valve. 54x  
Pilisszentkereszt Sz 1–74 section, sample j

Figs 3–5. *Schuleridea rauraciformis* MONOSTORI, 1985

- Fig. 3. Carapace from the dorsal side. 54x  
Kiseged road cut section, sample 3b  
Fig. 4. Carapace from the right valve. 47x  
Kiseged road cut section, sample 12  
Fig. 5. Carapace from the right valve. 41x  
Budapest, Városmajor–1 borehole 97.8–98.5 m

Figs 6–7. *Cuneocythere (Cuneocythere) marginata anterodepressa* MONOSTORI, 1982

- Fig. 6. Carapace from the right valve. 81x  
Kiseged 1987 outcrop, sample 3  
Fig. 7. Left valve. 94x  
Kiseged road cut section, sample 12

Plate 9

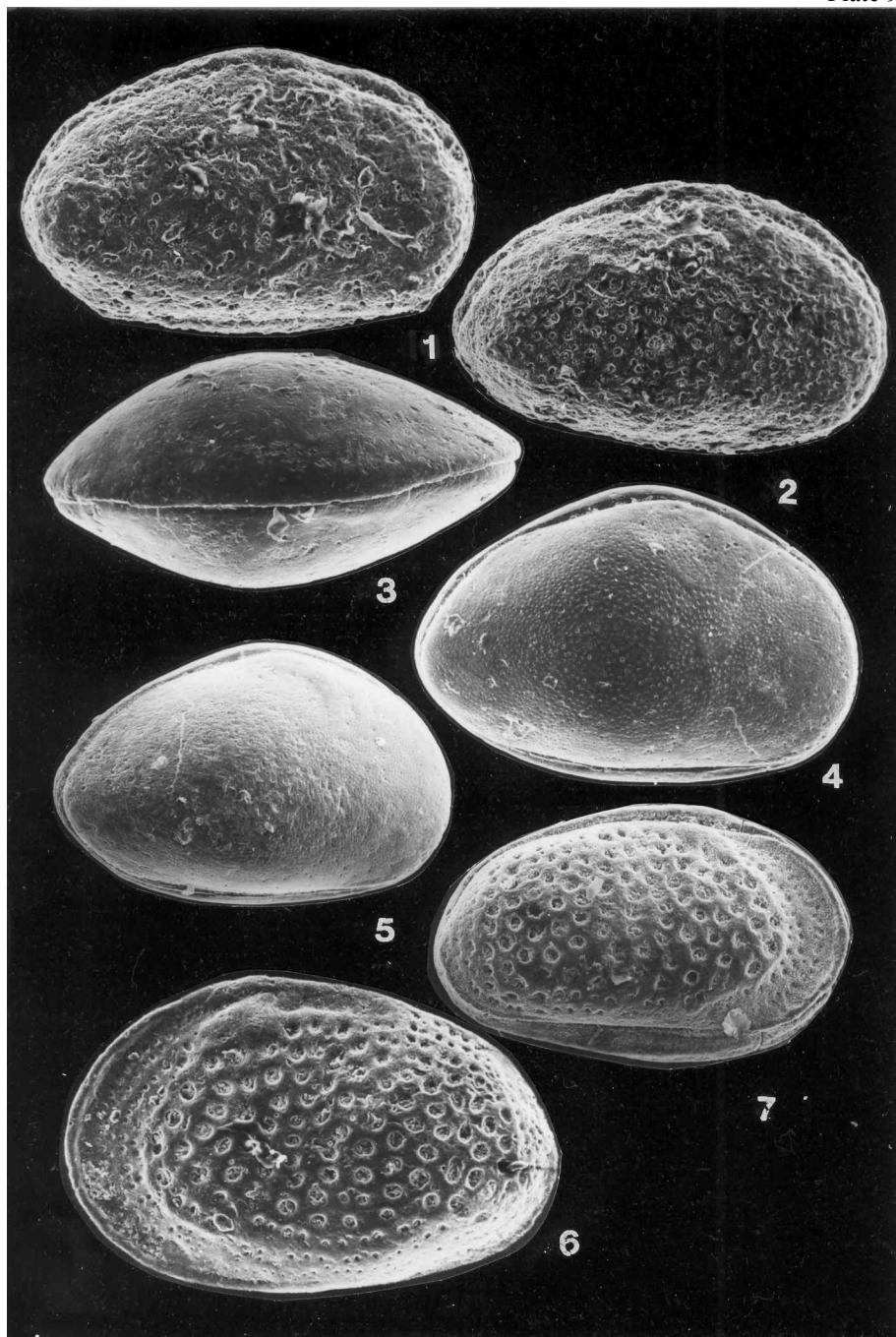


Plate 10

Figs 1–3. *Cuneocythere (Cuneocythere) marginata anterodepressa* MONOSTORI, 1982

Fig. 1. Carapace from the right valve. 96x

Kiseged road cut section, sample 12

Fig. 2. Left valve. 94x

Kiseged road cut section, sample 3a

Fig. 3. Carapace from the dorsal side. 94x

Kiseged road cut section, sample 12

Fig 4. *Cuneocythere (Cuneocythere) truncata* LIENENKLAUS, 1894

Carapace from the right valve. 80x

Szentendre–2 borehole 1070.0 m

Figs 5–7. *Krithe papillosa* (Bosquet, 1852)

Fig. 5. Left valve. 63x

Pilisszentkereszt Sz 1–74 section, sample i<sub>2</sub>

Fig. 6. Carapace from the right valve. 62x

Pilisszentkereszt Sz 1–74 section, sample h

Fig. 7. Carapace from the dorsal side. 59x

Pilisszentkereszt Sz 1–74 section, sample j

Plate 10

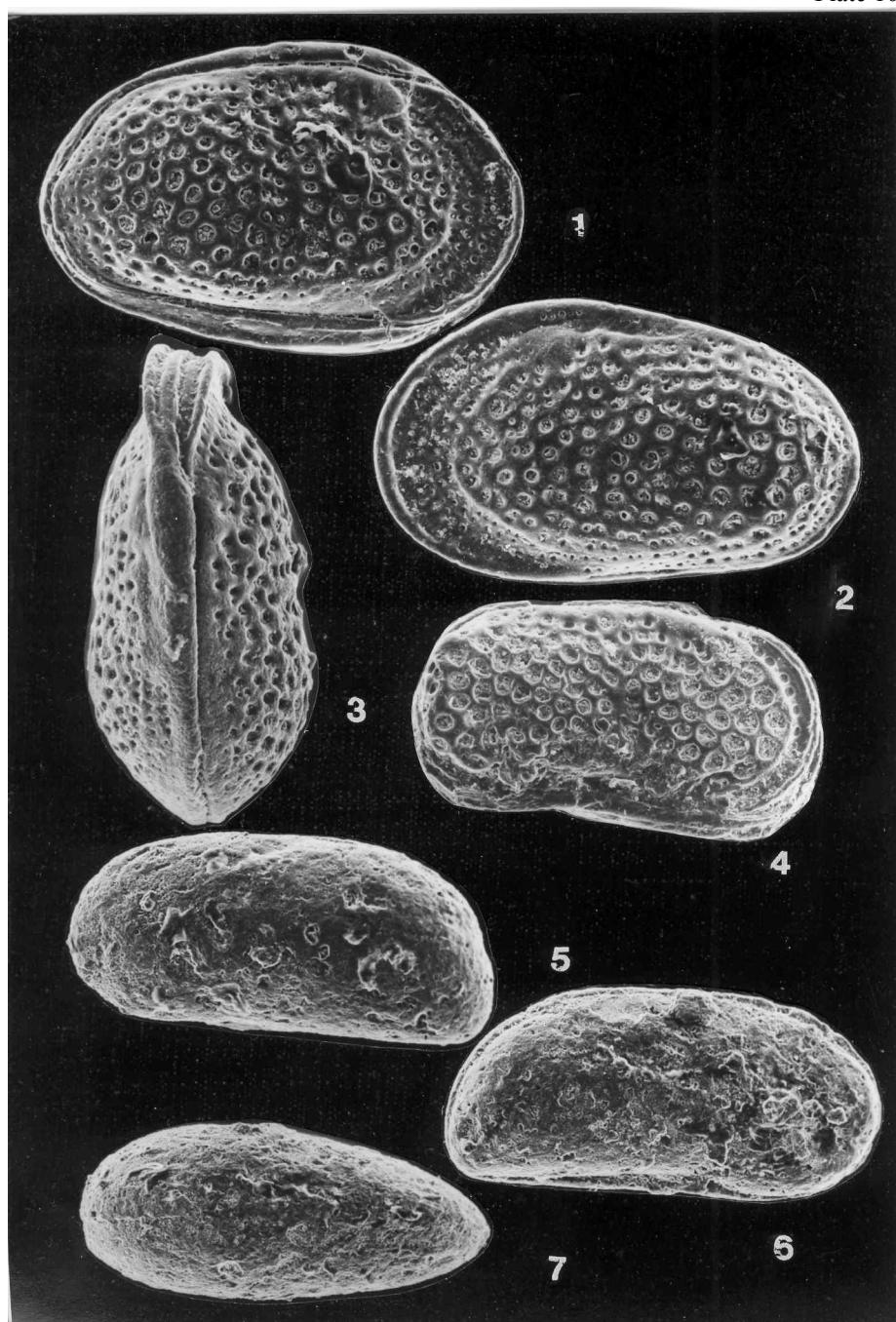


Plate 11

Figs 1–6. *Krithe pernoides* (BORNEMANN, 1855)

- Fig. 1. Carapace from the dorsal side. 68x  
Budapest, Metro H–3 borehole 91.0–94.8 m
- Fig. 2. Left valve. 83x  
Cserépváralja–2 borehole 262.0–262.2 m
- Fig. 3. Left valve. 65x  
Budapest, Metro H–3 borehole 99.8–102.1 m
- Fig. 4. Left valve. 77x  
Budapest, Metro H–7/1 borehole 54.5–55.5 m
- Fig. 5. Right valve. 90x  
Szentendre–2 borehole 710.0 m
- Fig. 6. Right valve. 70x  
Budapest, Metro H–8 borehole 24.0–28.0 m

Fig. 7. *Krithe* sp. 1.  
Carapace from the right valve. 90x  
Szentendre–2 borehole 1068.0 m

Plate 11

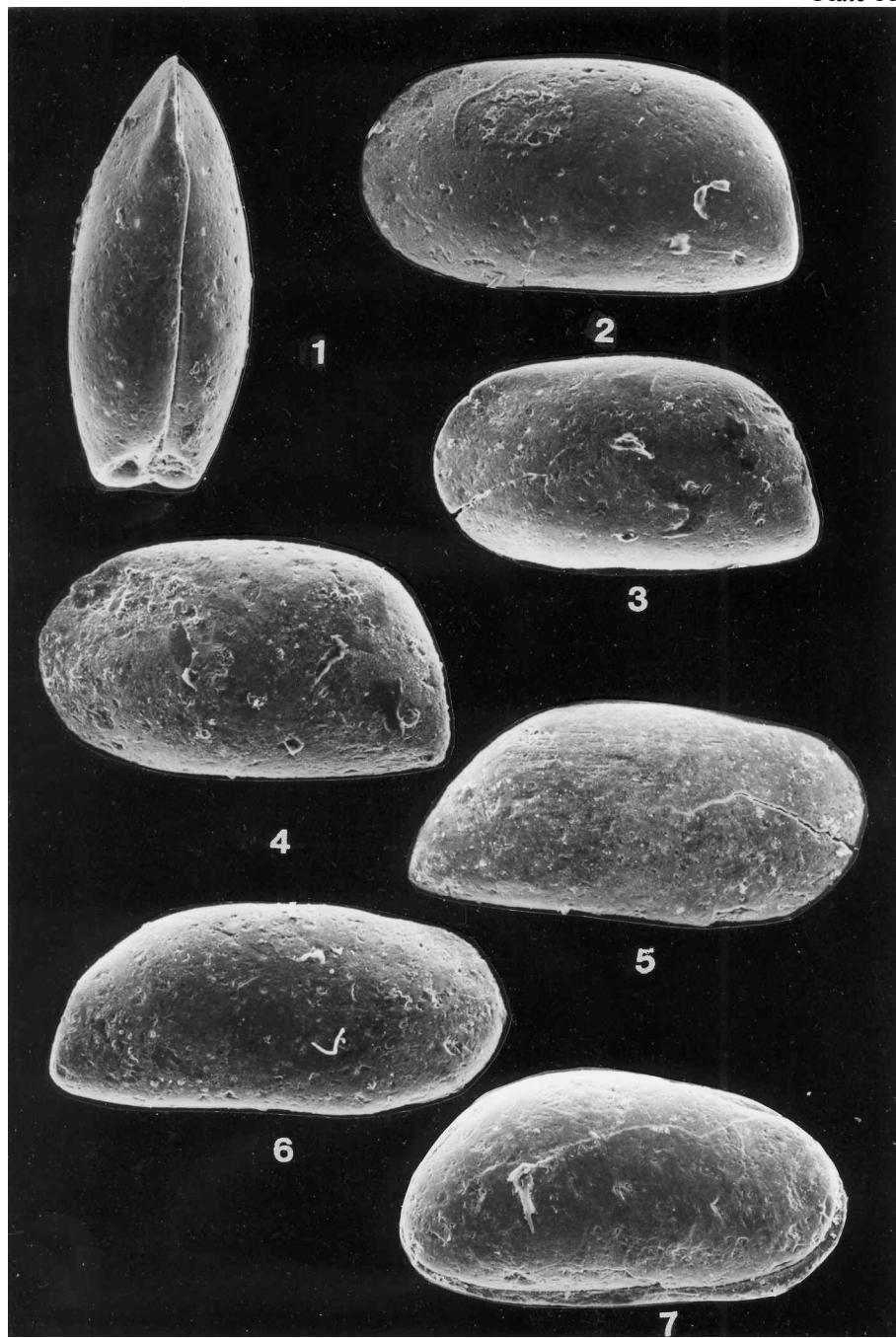


Plate 12

Figs 1–2. *Krithe* sp. 2.

Fig. 1. Inside of the right valve. x  
Eger Wind brickyard borehole 73.1–73.6 m  
Fig. 2. Right valve. x  
Eger Wind brickyard borehole 76.3–77.1 m

Figs 4–5. *Parakrithe* sp. 1.

Fig. 4. Left valve. 94x  
Kiseged manganeseous clay, sample 4  
Fig. 5. Carapace from the right valve. 90x  
Budapest, Metro H–7 borehole 94.0–99.0 m

Fig. 6. *Trachyleberis* cf. *spinosa* (LIENENKLAUS, 1900)

Left valve. 65x  
Budapest, Metro H–9 borehole 19.5–20.0 m

Fig. 7. *Costa hermi* Witt, 1967

Left valve. 66x  
Budapest, Metro H–9 borehole 57.6–59.8 m

Plate 12

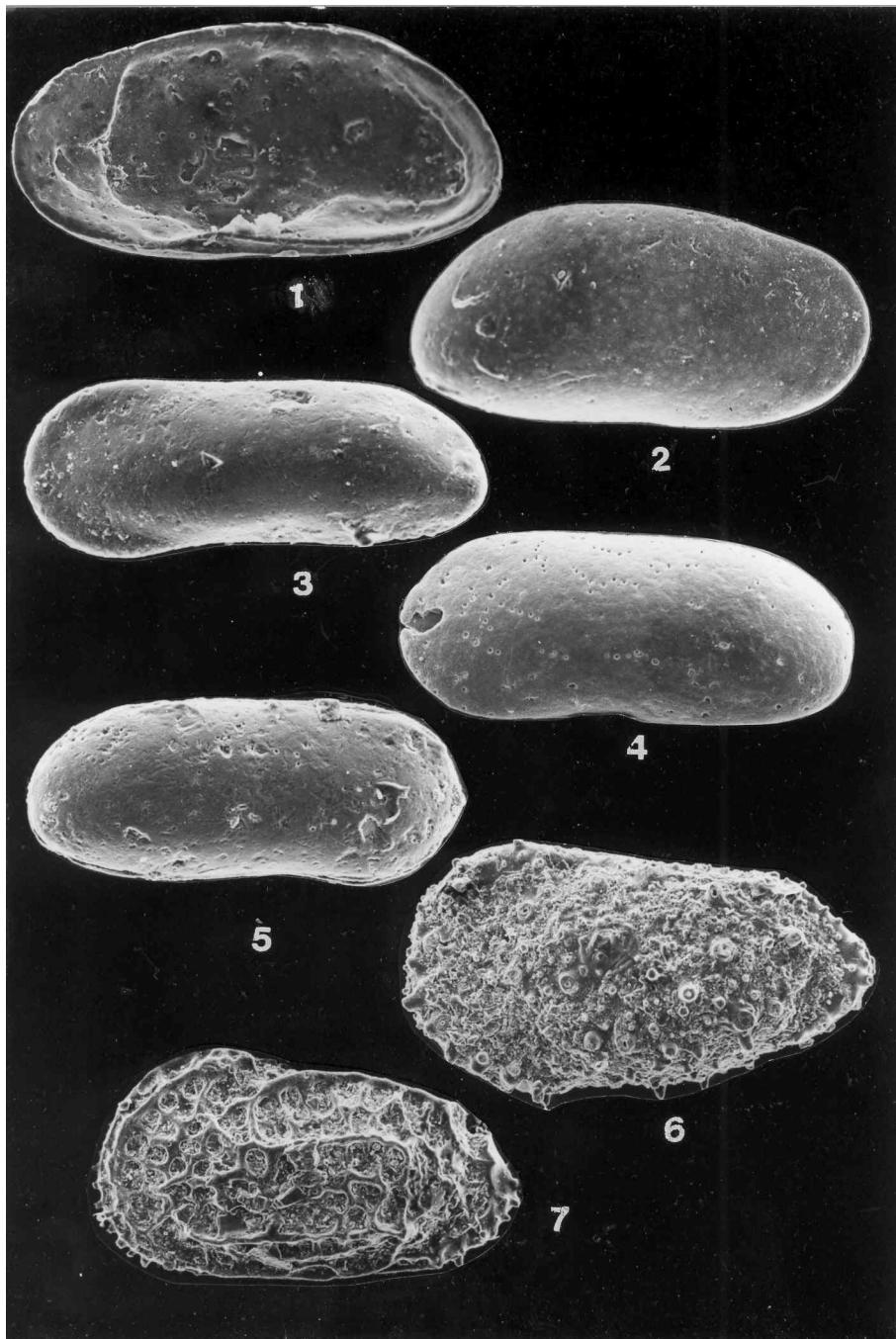


Plate 13

Figs 1–7. *Costa hermi* WITT, 1967

- Fig. 1. Left valve. 63x  
Budapest, Metro H–2 borehole 32.7–34.6 m
- Fig. 2. Left valve. 59x  
Szöllőcske outcrop, sample 11
- Fig. 3. Right valve. 50x  
Budapest, Metro H–1 borehole 56.8–60.0 m
- Fig. 4. Right valve. 59x  
Szöllőcske outcrop, sample 14
- Fig. 5. Right valve. 62x  
Eger Wind brickyard borehole 50.3–50.9 m
- Fig. 6. Inside of the left valve. 57x  
Esztergom–123 borehole 410.0 m
- Fig. 7. Carapace from the dorsal side. 59x  
Budapest, Metro H–7 borehole 55.0–60.0 m

Plate 13

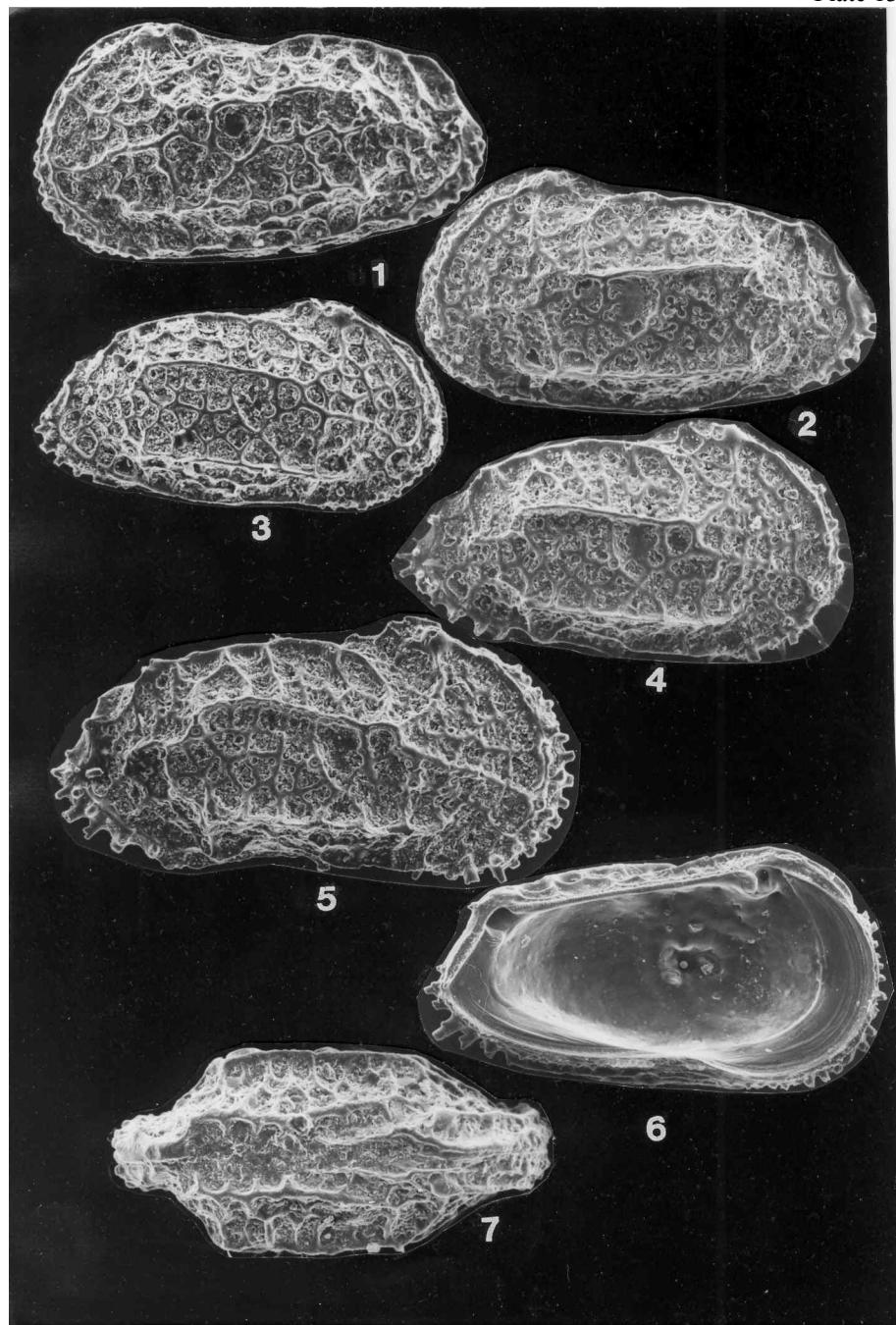


Plate 14

Fig. 1. *Costa hermi* WITT, 1967

Inside of the right valve. 61x  
Esztergom–123 borehole 398.5 m

Figs 2–4. *Agrenocythere ordinata* (DELTEL, 1961)

Fig. 2. Carapace from the left valve. 54x  
Budapest, Metro H–7 borehole 32.0–36.0 m

Fig. 3. Left valve. 63x  
Eger Wind brickyard borehole 76.3–77.1 m

Fig. 4. Right valve. 72x  
Eger Wind brickyard borehole 75.4–76.3 m

Figs 5–7. *Pterygocythereis* cf. *ceratoptera* (BOSQUET, 1852)

Fig. 5. Carapace from the dorsal side. 63x  
Pilisszentkereszt sz 1–74 section, sample h

Fig. 6. Left valve. 62x  
Pilisszentkereszt Sz 1–74 section, sample h

Fig. 7. Carapace from the right side. 63x  
Pilisszentkereszt Sz 1–74 section, sample i<sub>2</sub>

Plate 14

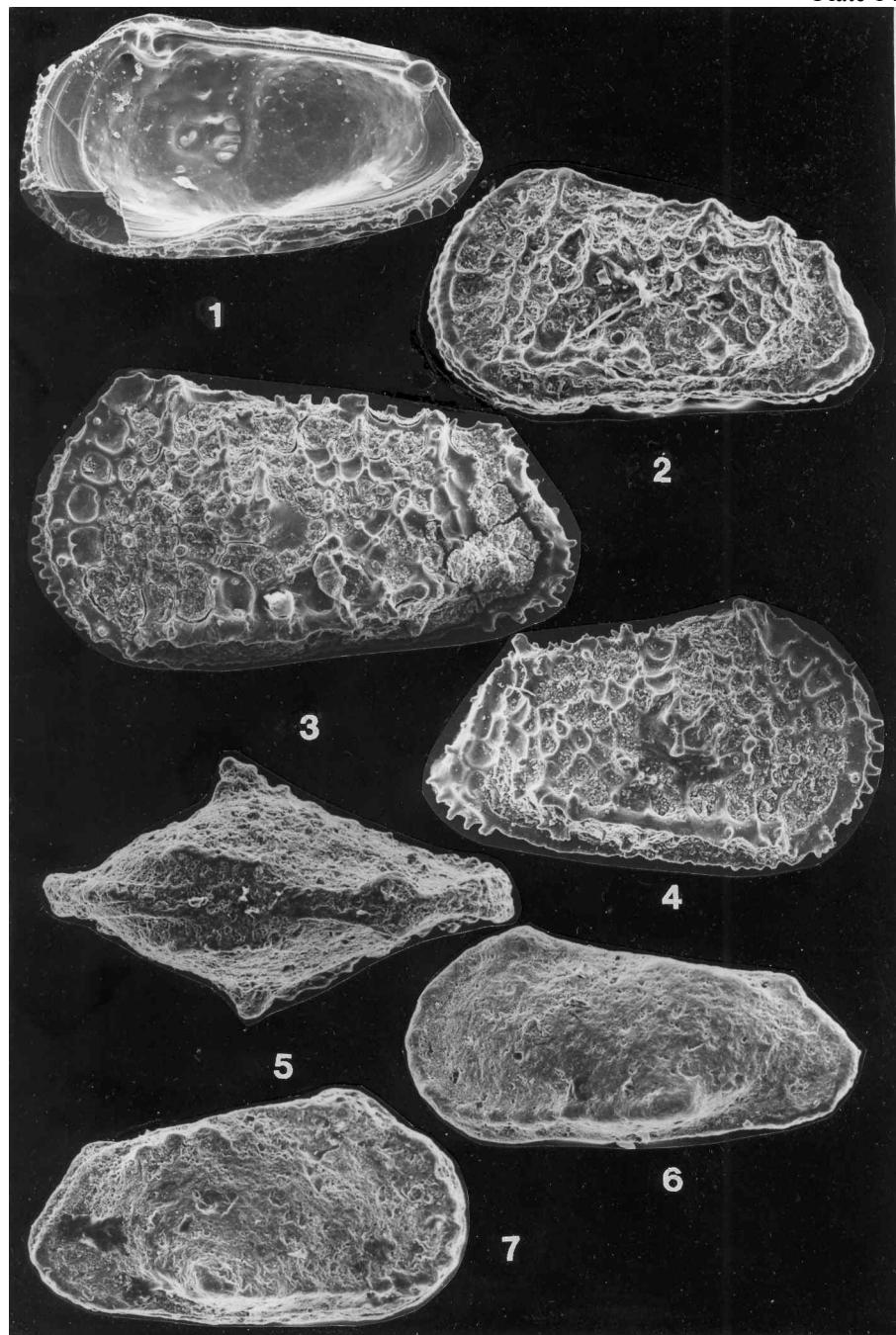


Plate 15

Figs 1–2. *Pterygocythereis* n. sp.?

Fig. 1. Carapace from the right valve. 41x

Kiseged 1987 outcrop, sample N°3

Fig. 2. Carapace from the left valve. 44x

Kiscell-1 borehole 59.6 m

Fig. 3. *Echinocythereis ligula* LIENENKLAUS, 1896

Carapace from the right side. 41x

Pilisszentkereszt Sz 1–74 section, sample h

Figs 4–7. *Henryhowella asperrima* (REUSS, 1850)

Fig. 4. Right valve. 68x

Szölöske outcrop, sample 11

Fig. 5. Left valve. 81x

Cserépváralja-1 borehole 387.5–387.7 m

Fig. 6. Left valve. 81x

Budapest, Metro H-9 borehole 47.4–49.9 m

Fig. 7. Inside of the left valve. 65x

Szölöske outcrop, sample 14

Plate 15

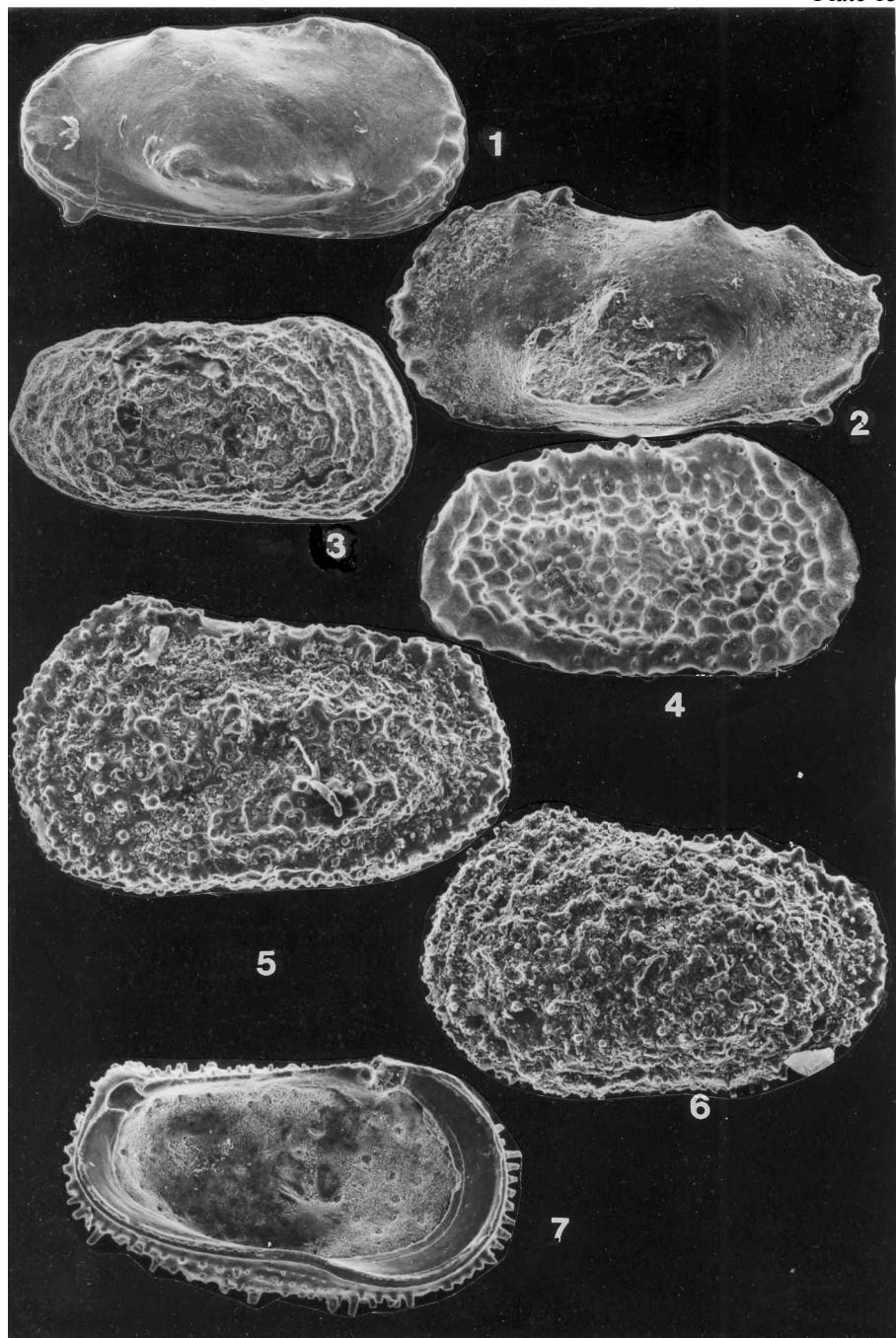


Plate 16

Figs 1–3. *Henryhowella asperrima* (REUSS, 1850)

- Fig. 1. Left valve. 74x  
Budapest, Metro H–1 borehole 56.8–60.0 m  
Fig. 2. Left valve. 59x  
Szentendre–2 borehole 809.0 m  
Fig. 3. Carapace from the dorsal side. 77x  
Budapest, Metro H–9 borehole 19.5–20.0 m

Figs 4–5. *Protobuntonia sublatissima arcuatocosta* (BRESTENSKÁ, 1975)

- Fig. 4. Left valve. 94x  
Eger Wind brickyard borehole 73.1–73.6 m  
Fig. 5. Left valve. 86x  
Budapest, Metro H–3 borehole 96.8–99.8 m

Fig. 6. *Leguminocythereis sorneana* Oertli, 1956  
Left valve. 43x  
Pilisszentkereszt Sz 1–74 section, sample i

Fig. 7. *Leguminocythereis? cellulataformis* n. sp.  
Carapace from the right valve. 50x  
Kiseged road cut section, sample 12

Plate 16

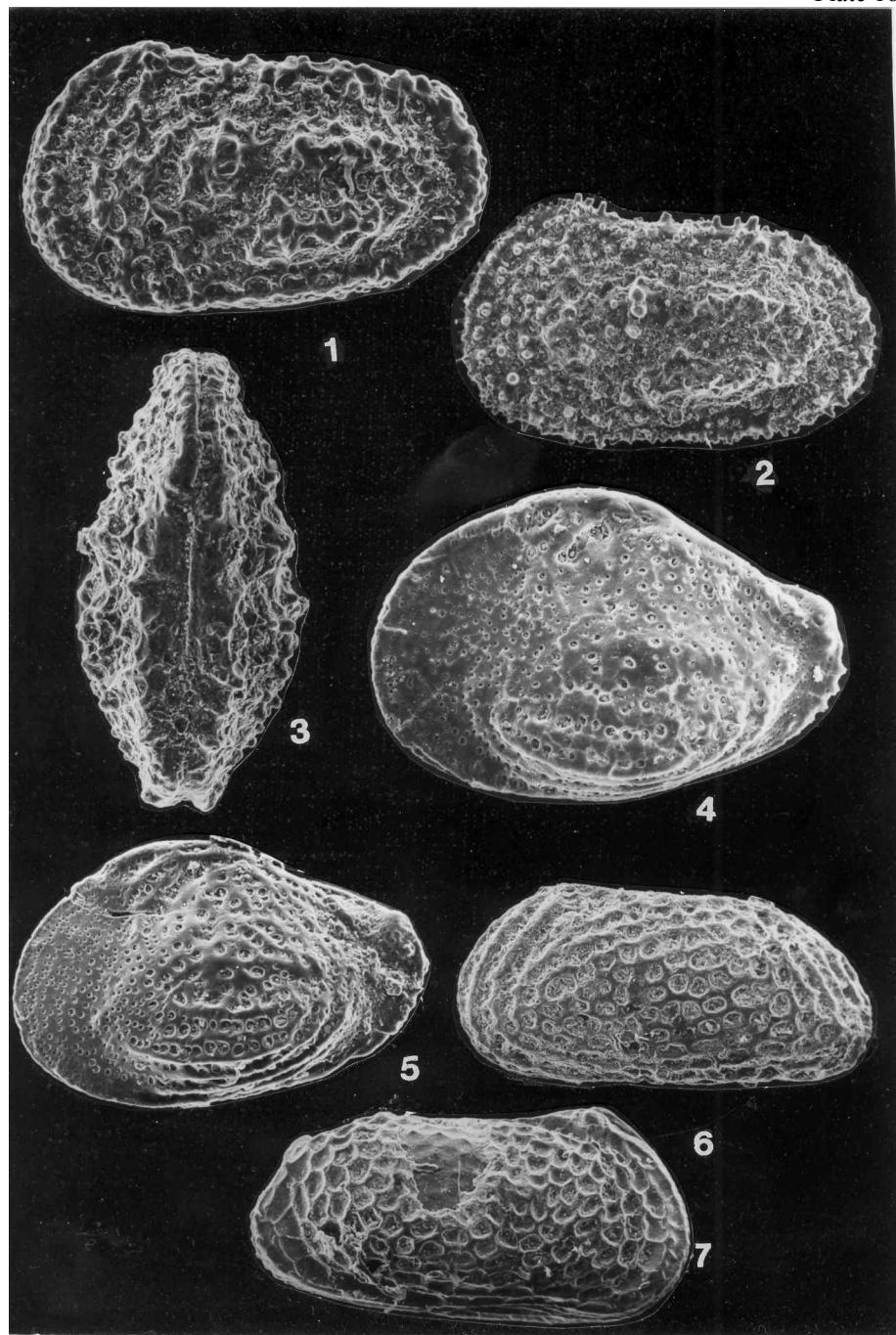


Plate 17

Fig. 1. *Leguminocythereis ? cellulataformis* n. sp. Holotypus.

Carapace from the left valve. 81x

Kiseged road cut section, sample 12

Figs 2–6. *Megahemicythere oertlii* WITT, 1967

Fig. 2. Carapace from the right side. 33x

Budapest, Városmajor–1 borehole 96.7–97.8 m

Fig. 3. Carapace from the right side. 30x

Kiseged 1987 outcrop, sample 1

Fig. 4. Carapace from the dorsal side. 38x

Kiseged road cut section, sample 12

Fig. 5. Left valve. 36x

Kiseged 1987 outcrop, sample N°1

Fig. 6. Left valve. 36x

Budapest, Törökvész–8 borehole 3.5 m

Fig. 7. *Pokornyella* ? sp. 1.

Carapace from the right valve. 63x

Budapest, Városmajor–1 borehole 97.8–98.5 m

Plate 17

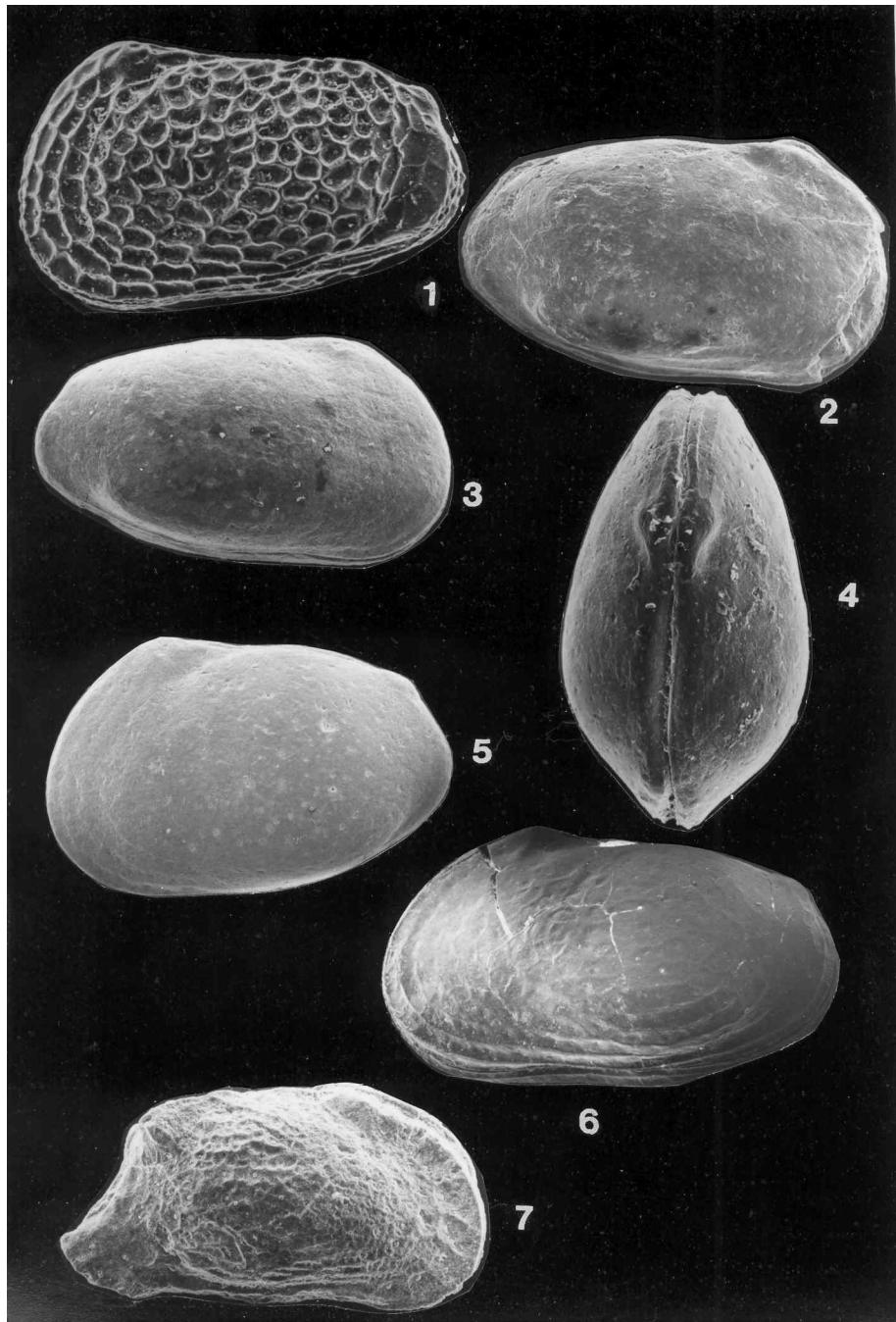


Plate 18

Fig. 1. *Grinioneis* sp.

Carapace from the left valve. 54x  
Budapest, Városmajor-1 borehole 97.8–98.5 m

Fig. 2. *Hornibrookella* ex gr. *macropora* (BOSQUET, 1852)

Carapace from the left valve. 54x  
Budapest, Ibolya u. quarry 1.2 m

Figs 3–6. *Bosquetina brestenskae* n. sp.

Fig. 3. Carapace from the right valve. 44x  
Budapest, Városmajor-1 borehole 96.7–97.8 m

Fig. 4. Carapace from the right valve. 50x  
Kiseged 1987 outcrop, sample 1

Fig. 5. Carapace from the left valve. 59x Holotypus.  
Kiseged road cut section, sample 13

Fig. 6. Carapace from the dorsal side. 53x  
Kiseged 1987 outcrop, sample 1

Fig. 7. *Bosquetina zalanyii* BRESTENSKÁ, 1975

Carapace from the dorsal side. 42x  
Kiseged 1987 outcrop, sample N°1

Plate 18

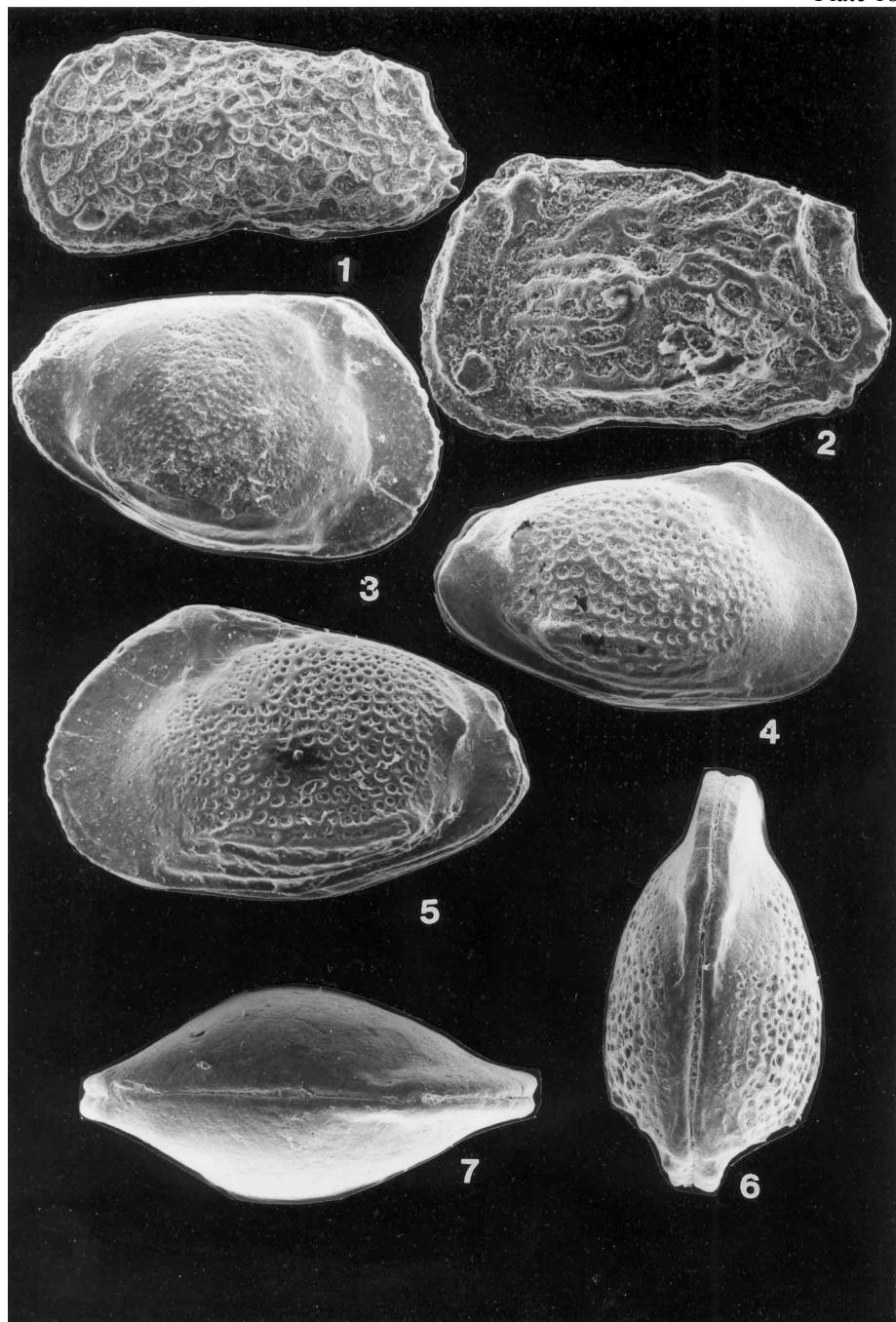


Plate 19

Figs 1–4. *Bosquetina zalanyii* BRESTENSKÁ, 1975

- Fig. 1. Carapace from the right valve. 47x  
Kiseged road cut section, sample 3a
- Fig. 2. Carapace from the right valve. 36x  
Budapest, Városmajor–1 borehole 96.7–97.8 m
- Fig. 3. Carapace from the left valve. 41x  
Budapest, Diana u.
- Fig. 4. Carapace from the left valve. 38x  
Kiseged 1987 outcrop, sample 1

Fig. 5. *Occultocythereis rupelica* MONOSTORI, 1982

- Right valve. 86x  
Budapest, Metro H–9 borehole 29.4–31.4 m

Fig. 6. *Cytheretta posticalis* TRIEBEL, 1952

- Carapace from the left valve. 52x  
Budapest, Zugliget outcrop, sample 3

Figs 7–8. *Cytheretta variabilis* OERTLI, 1956

- Fig. 7. Carapace from the right valve. 56x  
Pilisszentkereszt Sz 1–74 section, sample i<sub>2</sub>
- Fig. 8. Carapace from the left valve. 59x  
Pilisszentkereszt Sz 1–74 section, sample i

Plate 19

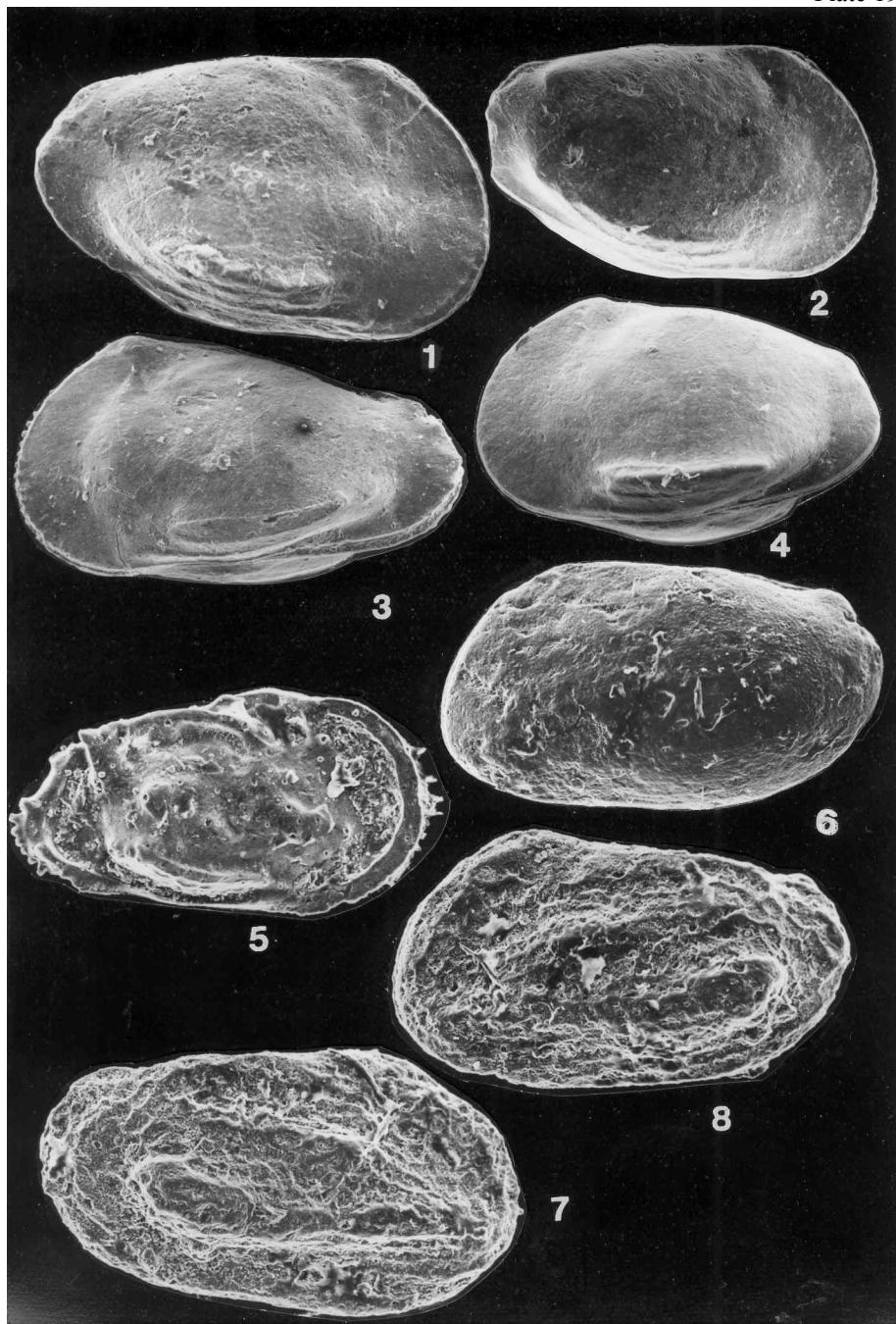


Plate 20

Figs 1–6. *Loxoconcha carinata tardense* MONOSTORI, 1985

- Fig. 1. Carapace from the right valve. 110x  
Kiseged road cut section, sample 12
- Fig. 2. Carapace from the right valve. 108x  
Kiscell-1 borehole 56.5 m
- Fig. 3. Carapace from the right valve. 110x  
Kiscell-1 borehole 51.6 m
- Fig. 4. Carapace from the left valve. 117x  
Kiseged road cut section, sample 4
- Fig. 5. Carapace from the dorsal side. 126x  
Kiseged 1987 outcrop, sample 3
- Fig. 6. Carapace from the dorsal side. 113x  
Kiscell-1 borehole 58.5 m

Fig. 7. *Loxoconcha delemontensis hungarica* MONOSTORI, 1982

- Carapace from the left valve. 108x  
Budapest, Zugliget outcrop, sample 7

Plate 20

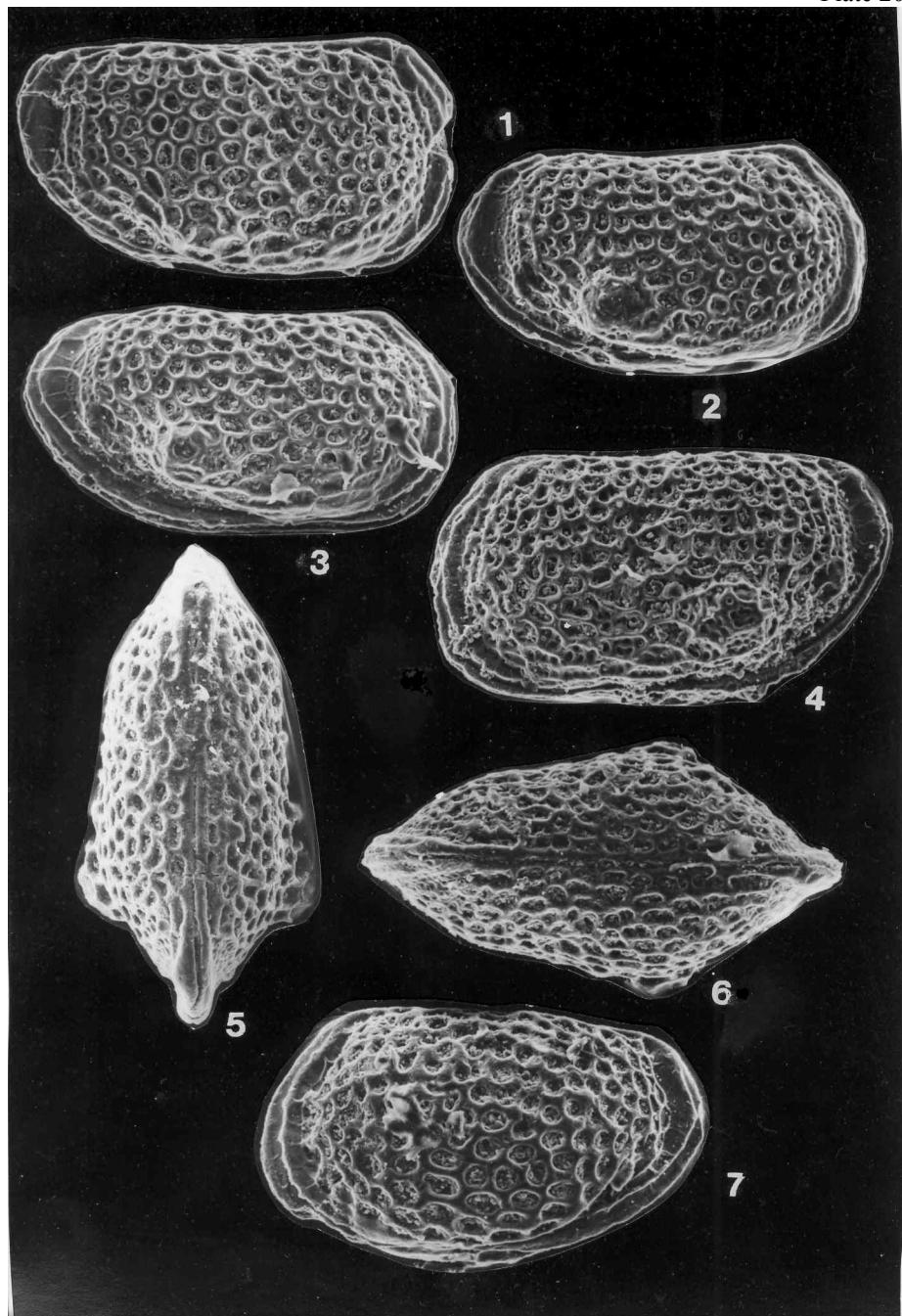


Plate 21

Figs 1–5. *Loxoconcha delemontensis hungarica* MONOSTORI, 1982

- Fig. 1. Carapace from the left valve. 104x  
Budapest, Zugliget outcrop, sample 7
- Fig. 2. Carapace from the left valve. 121x  
Kiscell–1 borehole 56.5 m
- Fig. 3. Carapace from the right valve. 113x  
Budapest, Metro H–12 borehole 21.0–22.0 m
- Fig. 4. Carapace from the dorsal side. 122x  
Kiscell–1 borehole 56.5 m
- Fig. 5. Carapace from the dorsal side. 104x  
Kiscell–1 borehole 58.5 m

Figs 6–7. *Loxoconcha favata* Kuiper, 1918

- Fig. 6. Carapace from the dorsal side. 90x  
Pilisszentkereszt Sz 1–74 section, sample i
- Fig. 7. Carapace from the left valve. 90x  
Pilisszentkereszt Sz 1–74 section, sample i

Plate 21

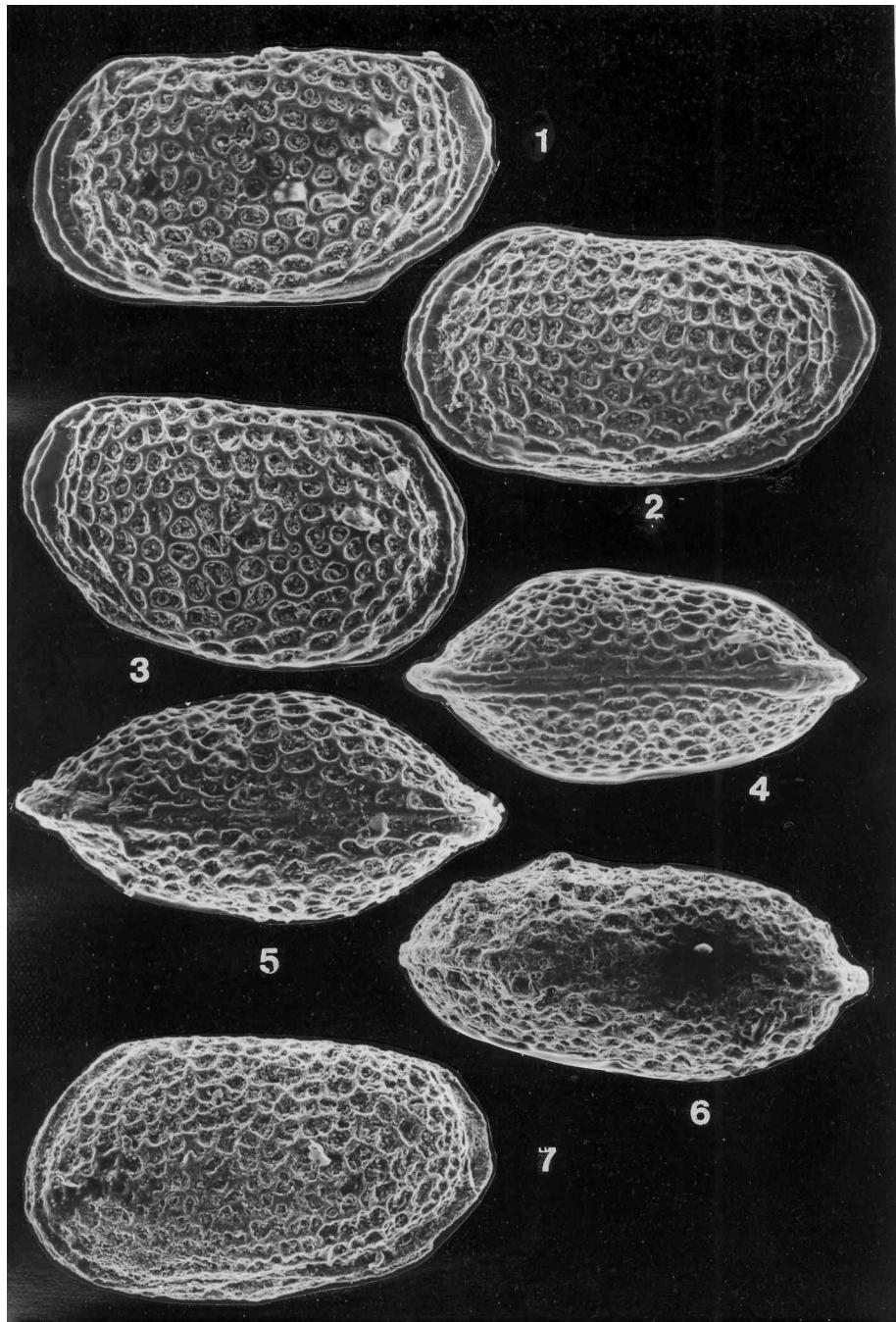


Plate 22

Fig. 1. *Loxoconcha favata* KUIPER, 1918

Carapace from the left valve. 86x

Pilisszentkereszt Sz 1–74 section, sample h

Fig. 2. *Loxoconcha subovata* (VON MÜNSTER, 1830) sensu BRESTENSKÁ, 1975

Carapace from the right valve. 106x

Alcsútdoboz–3 borehole 442.0 m

Fig. 3. *Loxoconcha ex gr. aequapunctata* DELTEL, 1964

Carapace from the right valve. 74x

Budapest, Városmajor–1 borehole 96.7–97.8 m

Fig. 4. *Loxoconcha* sp. 1

Carapace from the left valve. 81x

Budapest, Metro H–11/a borehole 59.0–61.0 m

Fig. 5. *Eucytherura dentata* LIENENKLAUS, 1905

Carapace from the left valve. 108x

Kiseged manganeseiferous clay, sample 4

Figs 6–8. *Cytheropteron emmeneggeri* SCHERER, 1984

Fig. 6. Inside of the right valve. 89x

Kiseged road cut section, sample 3b

Fig. 7. Carapace from the dorsal side. 99x

Kiseged road cut section, sample 2a

Fig. 8. Carapace from the dorsal side. 101x

Kiseged road cut section, sample 12

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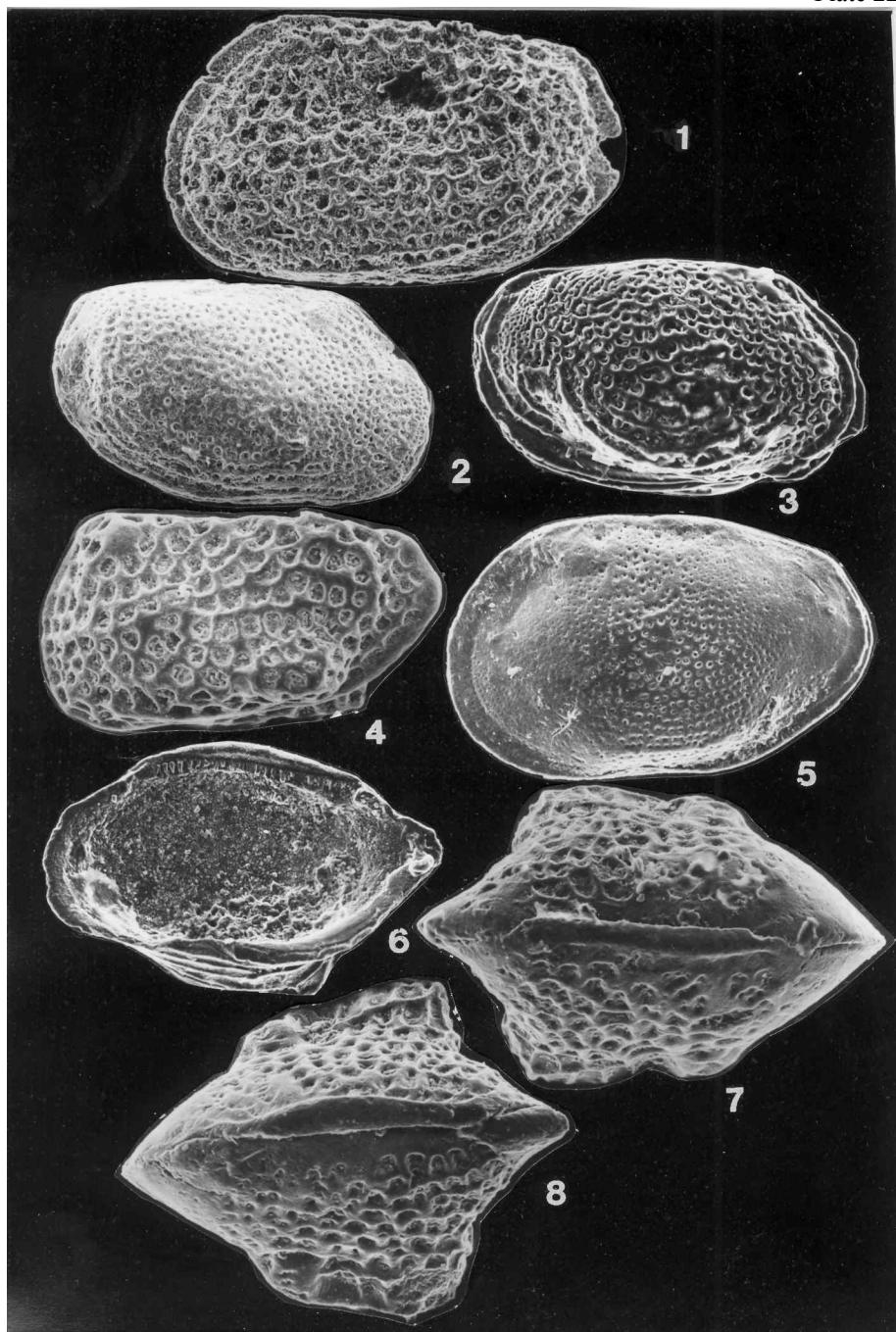


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Figs 1–4. *Cytheropteron emmeneggeri* SCHERER, 1964

- Fig. 1. Left valve. 99x  
Kiscell-1 borehole 59.5 m
- Fig. 2. Right valve. 86x  
Kiseged road cut section, sample 2a
- Fig. 3. Left valve. 99x  
Budapest, Metro H-11/a borehole 59.0–61.0 m
- Fig. 4. Carapace from the right valve. 95x  
Kiscell-1 borehole 58.5 m

Fig. 5. *Cytheropteron cf. triangulare* LIENENKLAUS, 1900

- Right valve. 99x  
Budapest, Metro H-13 borehole 36.0–37.0 m

Fig. 6. *Uroleberis striatopunctata* DUCASSE, 1967

- Carapace from the left valve. 81x  
Sikfölkút quarry, sample 21

Fig. 7. *Protoargilloecia angulata* DELTEL, 1961

- Carapace from the left valve. 80x  
Kiseged manganiferous clay, sample 4

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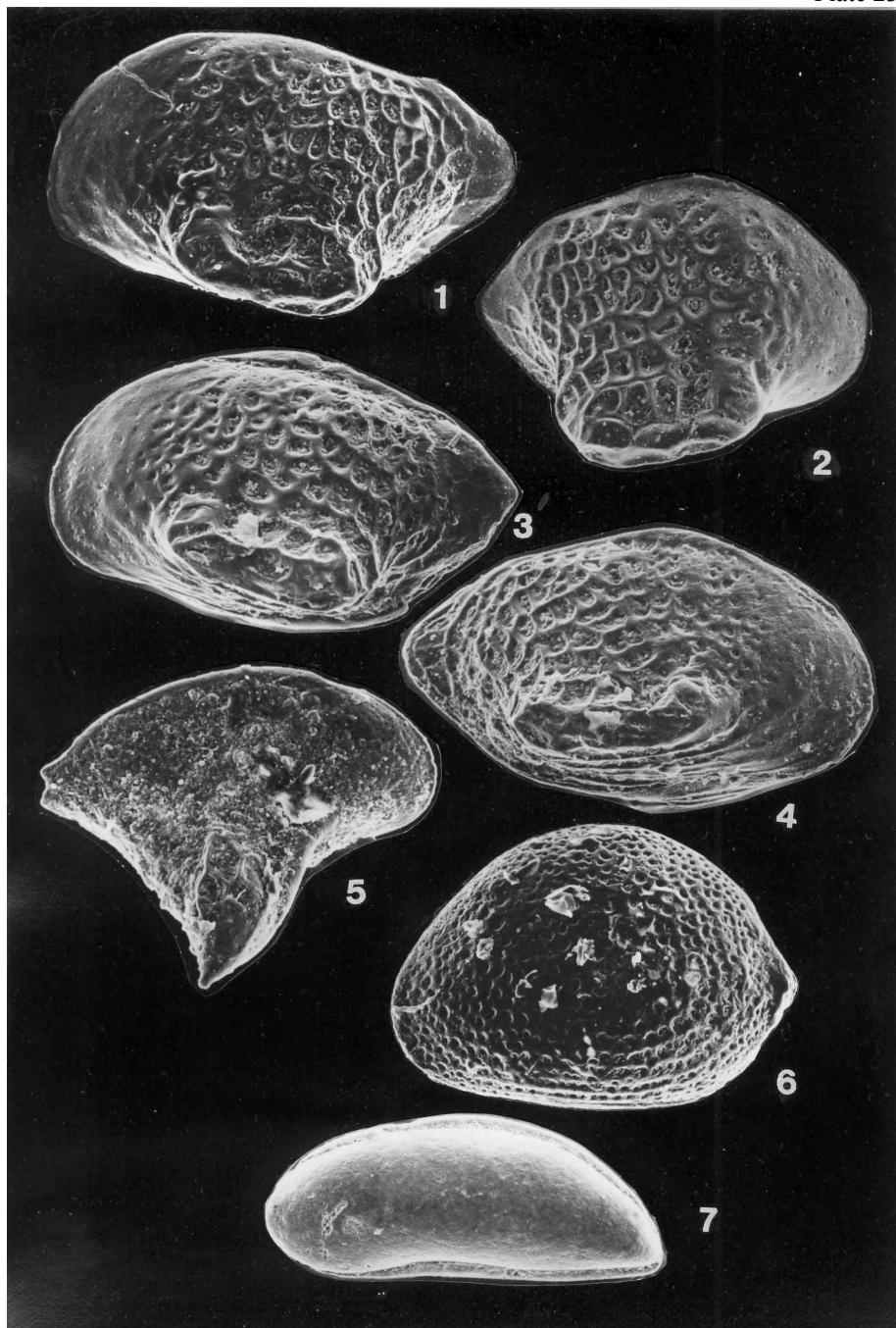


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Figs 1–3. *Protoargilloecia angulata* DELTEL, 1961

- Fig. 1. Carapace from the dorsal side. 83x  
Budapest, Metro H–2 borehole 52.0–55.0 m  
Fig. 2. Carapace from the left valve. 99x  
Budapest, Metro H–2 borehole 36.4–39.1 m  
Fig. 3. Carapace from the left valve. 99x  
Budapest, Metro H–2 borehole 56.6–61.6 m

Figs 4–6. *Paracypris?* *rupelica* MONOSTORI, 1982

- Fig. 4. Right valve. 59x  
Cserépváralja–1 borehole 285.8–286.8 m  
Fig. 5. Carapace from the right valve. 54x  
Kiseged manganeseiferous clay, sample 1  
Fig. 6. Left valve. 45x  
Budapest, Metro H–1 borehole 43.6–47.6 m

Figs 7–8. *Paracypris?* *kisegedensis* n. sp.

- Fig. 7. Left valve. 68x  
Kiseged 1987 outcrop, sample 1  
Fig. 8. Carapace from the right valve. 56x Holotypus  
Kiseged road cut section, sample 12

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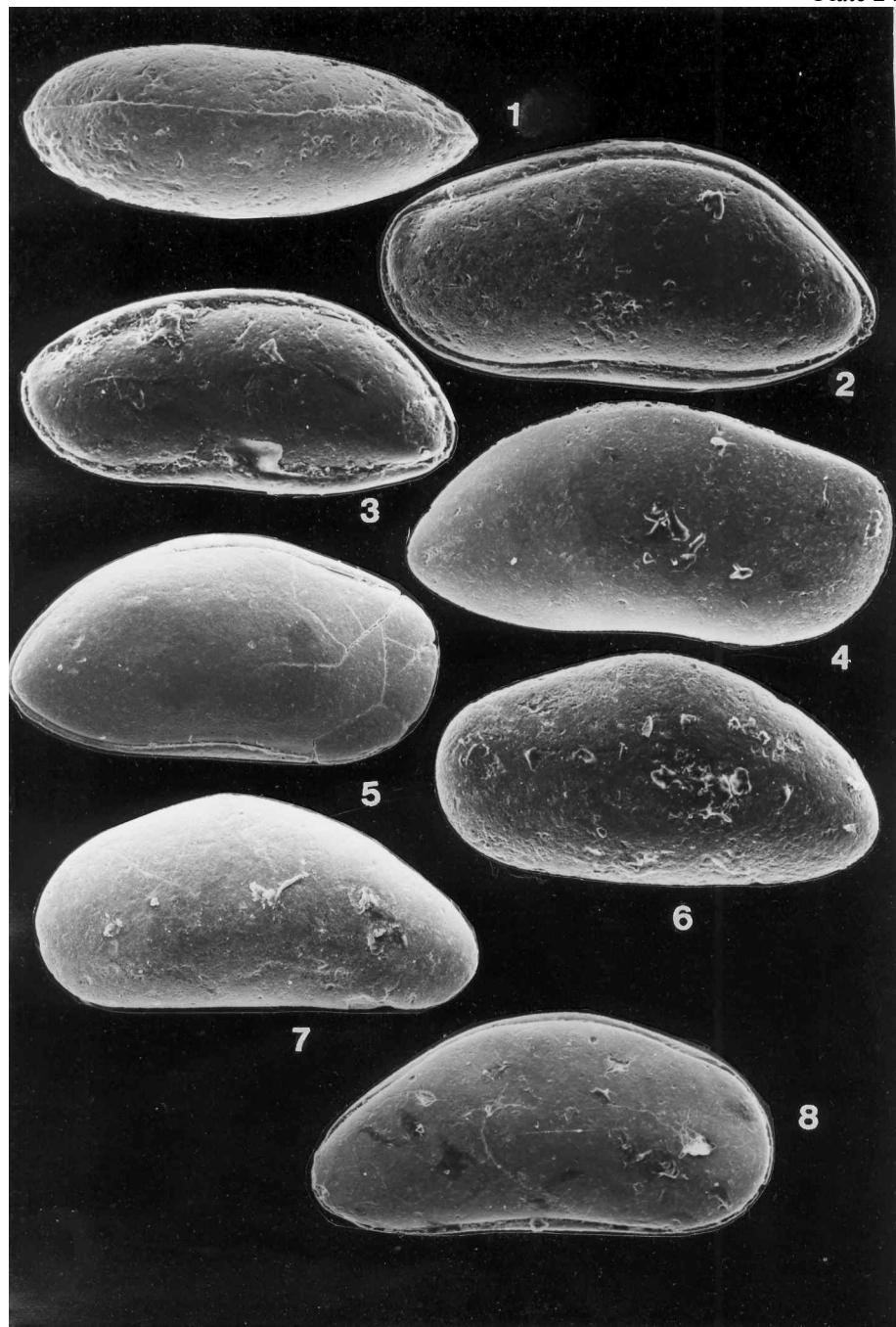


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Fig. 1. *Paracypris? kisegedensis* n. sp.

Carapace from the right valve. 47x

Kiseged 1987 outcrop, sample 1

Fig. 2. *Paracypris ex gr. propinqua* TRIEBEL, 1963

Carapace from the right valve. 47x

Kiseged 1987 outcrop, sample 1

Figs 3–5. *Paracypris cf. bouldnorensis* KEEN, 1978

Fig. 3. Carapace from the dorsal side. 61x

Pilisszentkereszt Sz 1–74 section, sample i<sub>2</sub>

Fig. 4. Carapace from the right valve. 67x

Pilisszentkereszt Sz 1–74 section, sample h

Fig. 5. Carapace from the left valve. 61x

Pilisszentkereszt Sz 1–74 section, sample h

Fig. 6. *Candona fertilis* TRIEBEL, 1963

Left valve. 50x

Budapest, Törökvensz–8 borehole 7.5 m

Figs 7–8. *Candona? recta* LIENENKLAUS, 1905

Fig. 7. Carapace from the dorsal side. 50x

Kiseged 1987 outcrop, sample 1

Fig. 8. Carapace from the right valve. 54x

Budapest, Törökvensz–13 borehole 20.0 m

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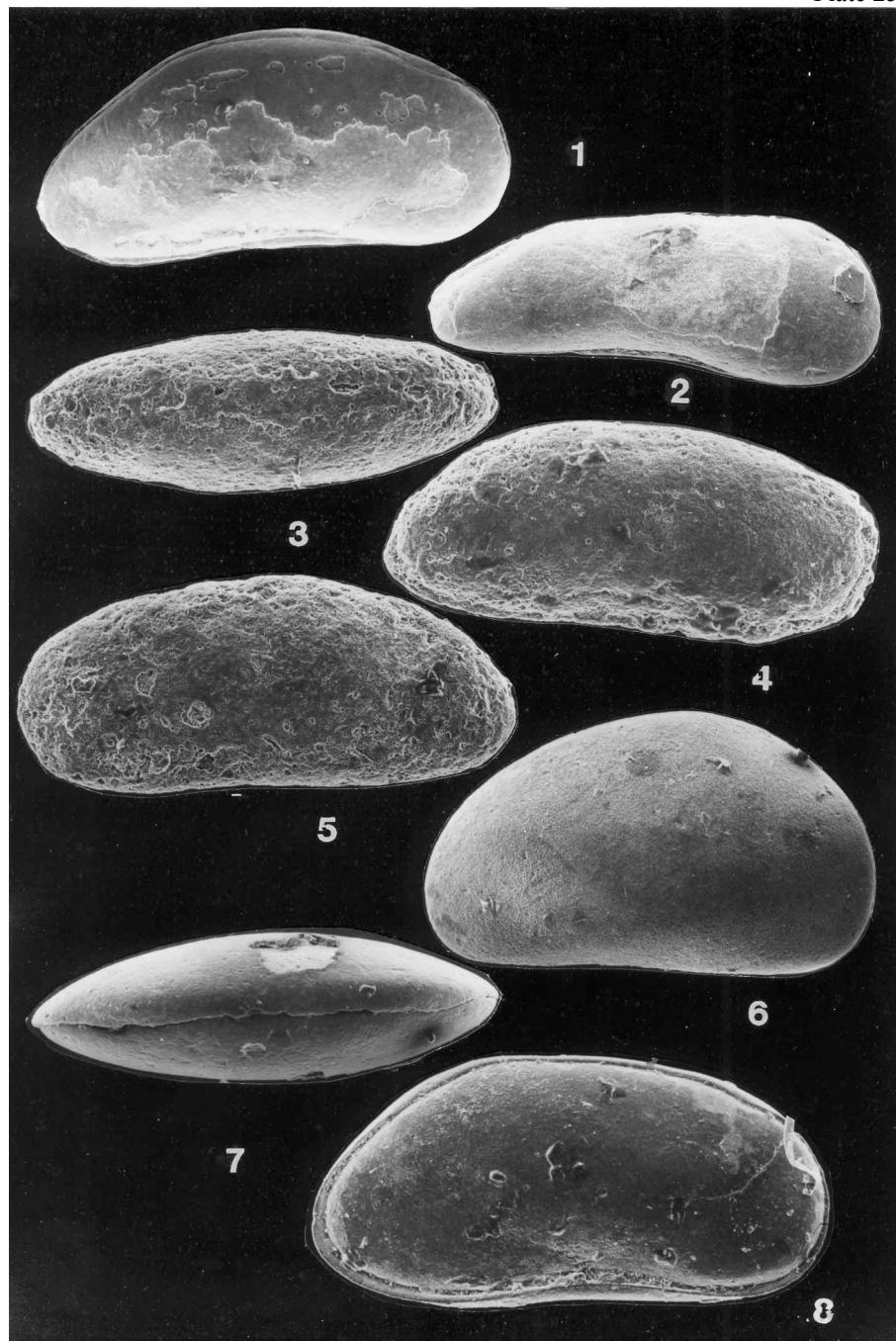


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Figs 1–6. *Candona? recta* LIENENKLAUS, 1905

- Fig. 1. Inside of the left valve. 61x  
Budapest, Törökvész–6 borehole 3.5 m
- Fig. 2. Carapace from the right valve. 52x  
Kiseged road cut section, sample 3a
- Fig. 3. Carapace from the right valve. 52x  
Kiseged road cut section, sample 3b
- Fig. 4. Inside of the left valve. 56x  
Budapest, Zugliget outcrop, sample N°7
- Fig. 5. Carapace from the right valve. 45x  
Budapest, Városmajor–1 borehole 96.7–97.8 m
- Fig. 6. Left valve. 52x  
Kiseged 1987 outcrop, sample 2

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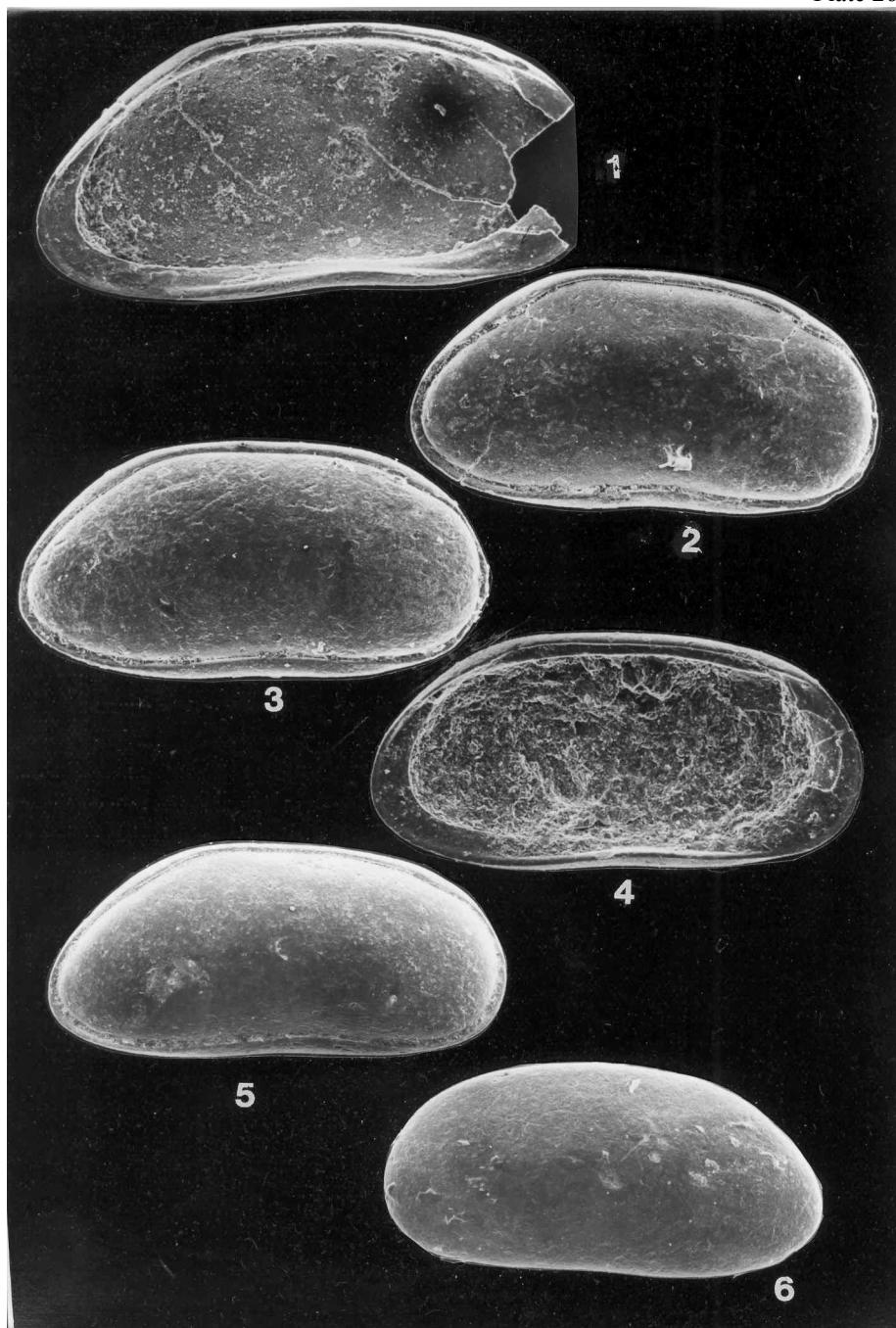


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Fig. 1. *Candona?* sp. indet

Carapace from the right valve. 44x  
Kiseged road cut section, sample 3b

Figs 2–4. *Moenocypris bockenheimensis* TRIEBEL, 1963

Fig. 2. Carapace from the right valve. 56x  
Kiseged 1987 outcrop, sample 1

Fig. 3. Carapace from the right valve. 57x  
Kiseged, 1987 outcrop, sample 2

Fig. 4. Carapace from the right valve. 65x  
Kiseged road cut section, sample 3a

Figs 5–6. *Curvopsis curvata* (LIENENKLAUS, 1905)

Fig. 5. Carapace from the right valve. 56x  
Kiseged 1987 outcrop, sample 3

Fig. 6. Carapace from the right valve. 56x  
Kiseged 1987 outcrop, sample 1

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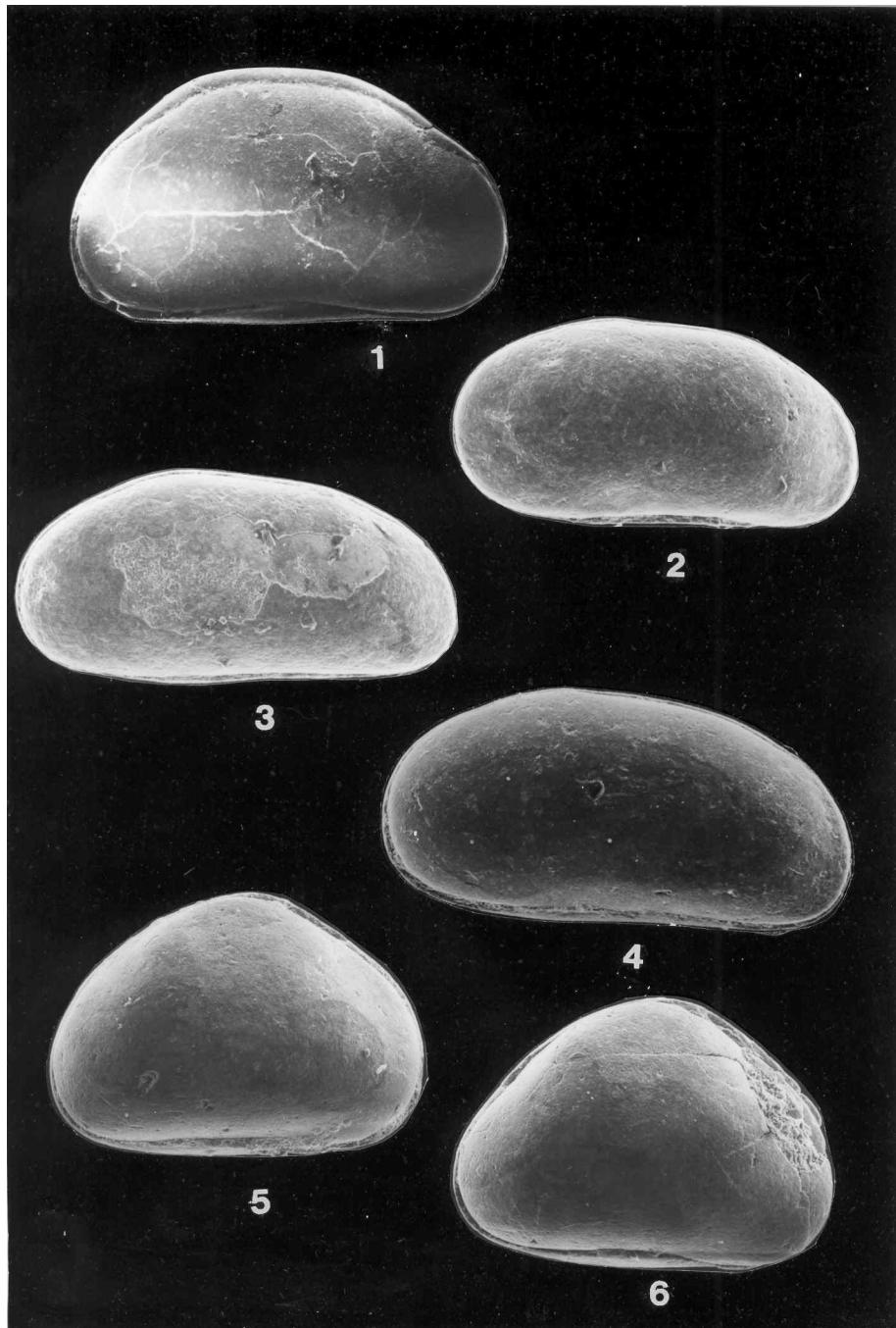


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Figs 1–2. *Curvopsis curvata* (LIENENKLAUS, 1905)

Fig. 1. Carapace from the right valve. 61x

Kiseged road cut section, sample 3b

Fig. 2. Left valve. 54x

Kiseged 1987 outcrop, sample 2

Figs 3–4. ? *Curvopsis curvata* (LIENENKLAUS, 1905)

Fig. 3. Left valve. 56x

Kiseged 1987 outcrop, sample 3

Fig. 4. Carapace from the right valve. 72x

Budapest, Törökvesz–8 borehole 7.5 m

Fig. 5. Cypridopsidae gen. et sp. indet. 3, 1982

Left valve. 101x

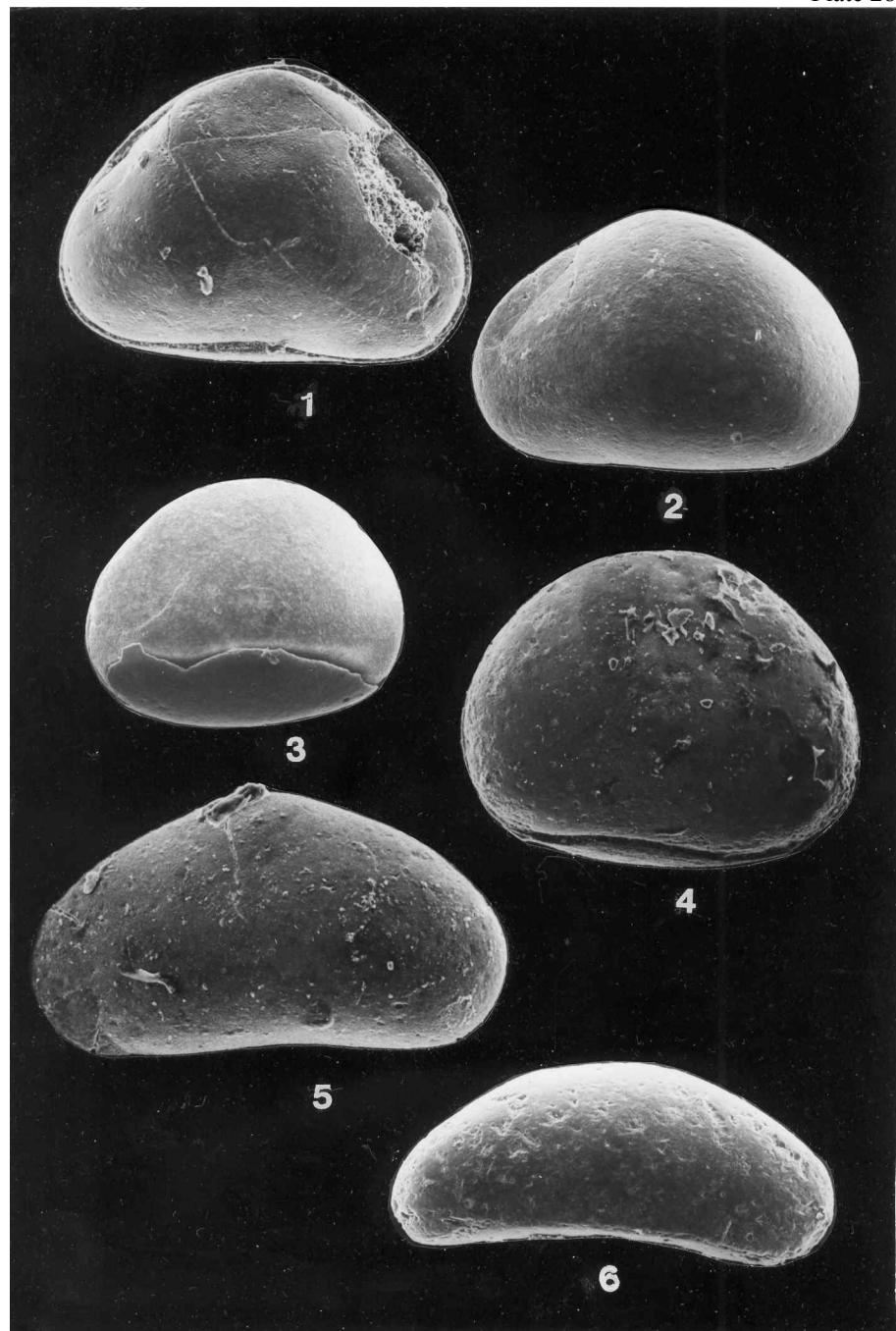
Budapest, Törökvesz–6 borehole 4.0 m

Fig. 6. Ostracoda gen. et sp. indet. 1.

Carapace from the left valve. 86x

Szentendre–2 borehole 1084.0 m

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\* \* \*

*Annales Universitatis Scientiarum Budapestinensis de Rolando Eötvös nominatae*  
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