

Molluscs (gastropoda, bivalvia) from the Pannonian deposits of the western part of Danube Basin (Pezinok-clay pit)

KLEMENT FORDINÁL

Geological Survey of Slovak Republik, Mlynská dolina 1, 817 04 Bratislava

Abstract: Rich assemblages of molluscs were found in deposits of a clay pit, which is a part of the brick kiln facility located near the town of Pezinok on the western margin of the Danube lowland. The evaluation of molluscs suggested the assignment of fossil bearing deposits to the Pannonian zone E. Thirty species (subspecies) of gastropods were described; one of them was described as cf. and one only as genus. Seventeen species (subspecies) of bivalvia were described; one of them as cf., one as a possible new subspecies and one only as a genus.

Key words: Danube Basin, Pannonian, Gastropoda, Bivalvia, Systematics

Introduction

Pannonian deposits of the Danube lowland are mostly known only from boreholes. Outcrops are very scarce due to the great thickness of Pliocene and Quaternary deposits. One of the most important outcrops is at the clay pit of brick kiln in Pezinok. This outcrop is located in the Trnava - Dubnica Basin (a part of Danube Basin), more precisely, in Blatna depression (Vasss and others, 1988).

The clay pit of the brick kiln is located about 1 km southeast of the railway station Pezinok (Fig. 1). Recently the outcrop was studied by Fordinal (1986) and Holec and others (1987). The molluscs (gastropods and bivalves) were described by Holec and others (1987) and are also the objective of this paper revised. These molluscs are the objective of this paper.

Review of previous researches

The oldest report on mollusc occurrence from the Pezinok surroundings was given by Horusitzky (1907). He reported a rich mollusc assemblage from the base of the pit at the brick kiln near the road to Schweinbsbach (Viničné). He found the following species: *Congeria neumayri* Andrusov, *Congeria* sp., *Dreissensia auricularis* Fuchs, *Unio atavus* Partsch, *U. matyasovzkyi* Halav., *U. neumayri* Penecke, *Anodonta* cfr. *pontica* Lörenthey, *Limnocardium conjungens* Partsch, *Valvata variabilis* Fuchs, *V. kupensis* Fuchs, *Pyrgula*

(*Micromelania*) *schwabenaui* Fuchs, *Melanopsis sturii* Fuchs, *M. entzi* Brusina, *M. pygmaea* Partsch, *M. (Lyrcaea)* cfr. *vindobonensis* Fuchs, a transition form between *M. vindobonensis* and *M. impressa*, *Planorbis* cfr. *cornu* (Brougn.), *Helix* cfr. *baconicus* Halavats, *Limnaea* sp.

Horusitzky (1907) assigned the fossiliferous deposits sensu Halavats to the uppermost part of the horizon with the *Congeria balatonica*, which passes upward into horizon with *C. rhomboidea* (Middle Pontian) According to Lörenthey he put these deposits after horizon characterized by the species *Congeria triangularis* and *C. balatonica* (Upper Pannonian). He explained the mixed character of mollusc fauna by the existence of a creek flowing into a brackish lake nearby Pezinok.

Pokorný (1946) reports the following occurrence of species from the old clay pit: *Congeria subglobosa* Partsch and *C. unguicaprae* Münster.

At the same sites palynomorphs in the Pannonian clays were studied by Sitár (1958). He found that the basal layers of the clay pit contain temperate plant forms (*Ginkgo*, *Magnolia* and *Podocarpus*) but in these upper layers do not. Genera typical of cooler climate started to occur and in highest beds (immediately underlying loess) genera of today's types occur (*Betula* sp., *Tilia* sp., *Alnus* sp.).

Čilek (1960) assigned the deposits in the clay pit of the brick kiln to the Lower and Middle Pannonian. He found the following mollusc species: *Congeria subglobosa* Partsch, *Melanopsis bouei* Fér., *M. pygmaea*

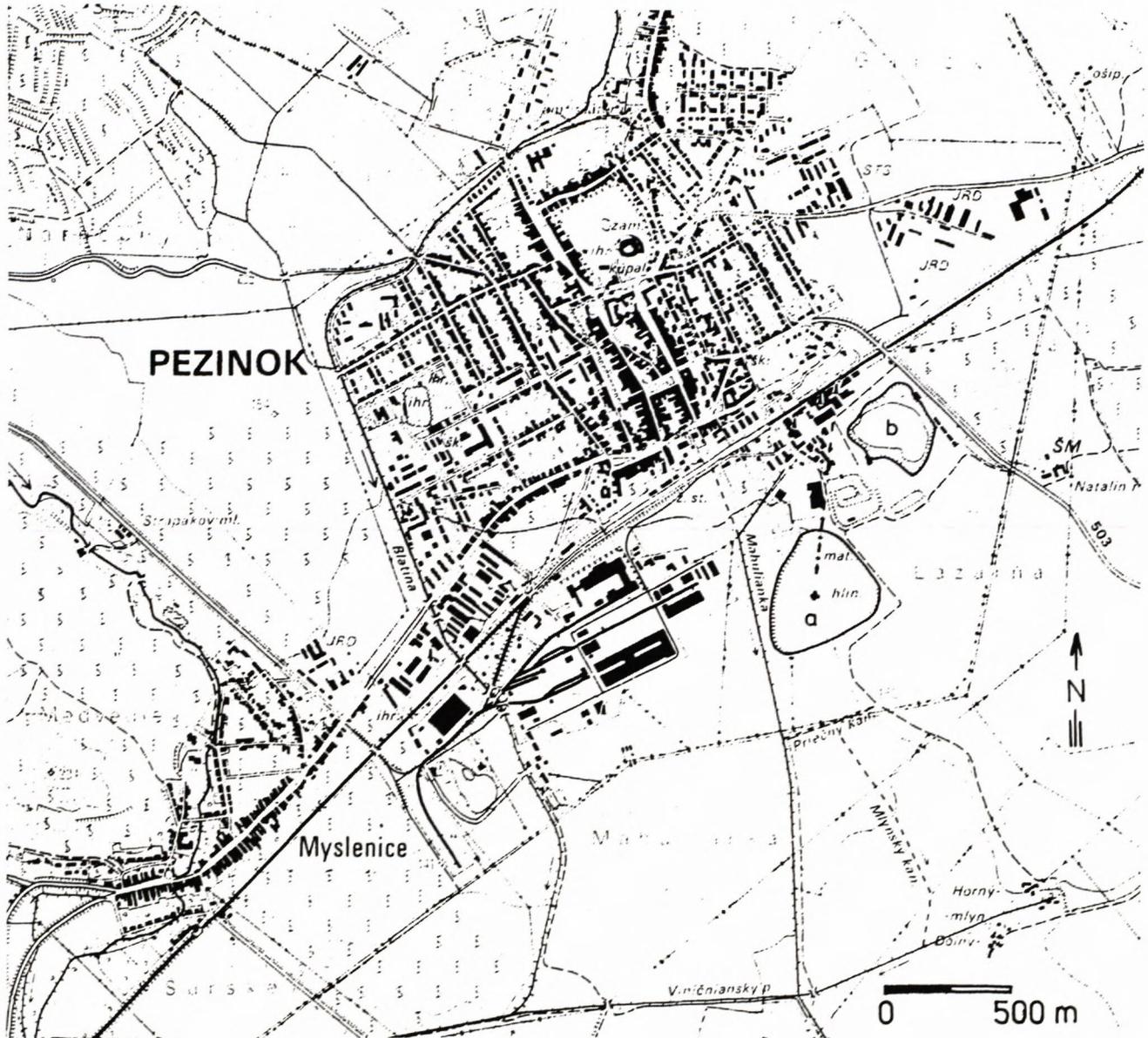


Fig. 1: Location of the clay pit for the brick kiln in Pezinok. a - "new" clay pit b - "old" clay pit (present covered)

Partsch, *Cardium* sp. and ostracods: *Cyprideis heterostigma sublitoralis* Pok., *C. pannonica* (Meh.), *Candona unguiculus* (Reuss), *C. multipora* Pok., *Candona* sp., *Erpetocypris recta* (Rss.), *E. abscissa* (Rss.), *Hemicythere* cf. *lörenthey* (Meh.) and *Hemicythere* sp..

From the "new" clay pit of the Pezinok brick kiln (Fig. 1) Holec (1981) reports finding a tooth belonging to the species *Hipparion primigenium* (H.v. Meyer).

The palaeoecology of the Pannonian - Pontian transition period was reconstructed from the palynology mollusc fauna and clay Rtg analyses (Holec et al. 1987).

The species *Congerina dodderleini* Brusina from this deposits was biometrically evaluated (Fordinál 1991).

Description of the clay pit deposits

The deposits consisting mostly of clays and some sands beds. A sequence of 48 petrographically distinct beds were described by Fordinál (1986) and Holec and others (1987). A molluscan fauna was found in four beds 26, 34, 36 and 42 (Fig. 2).

Bed 26 (Fig. 4) - consists of sand. Among the abundant molluscan fragments and the following species: *Theodoxus soceni* Jekelius, *T. postcrenulatus* Papp, *Valvata obtusaeformis* Lörenthey, *Melanopsis pygmaea mucronata* Handmann, *Congerina neumayri* Andrusov etc.

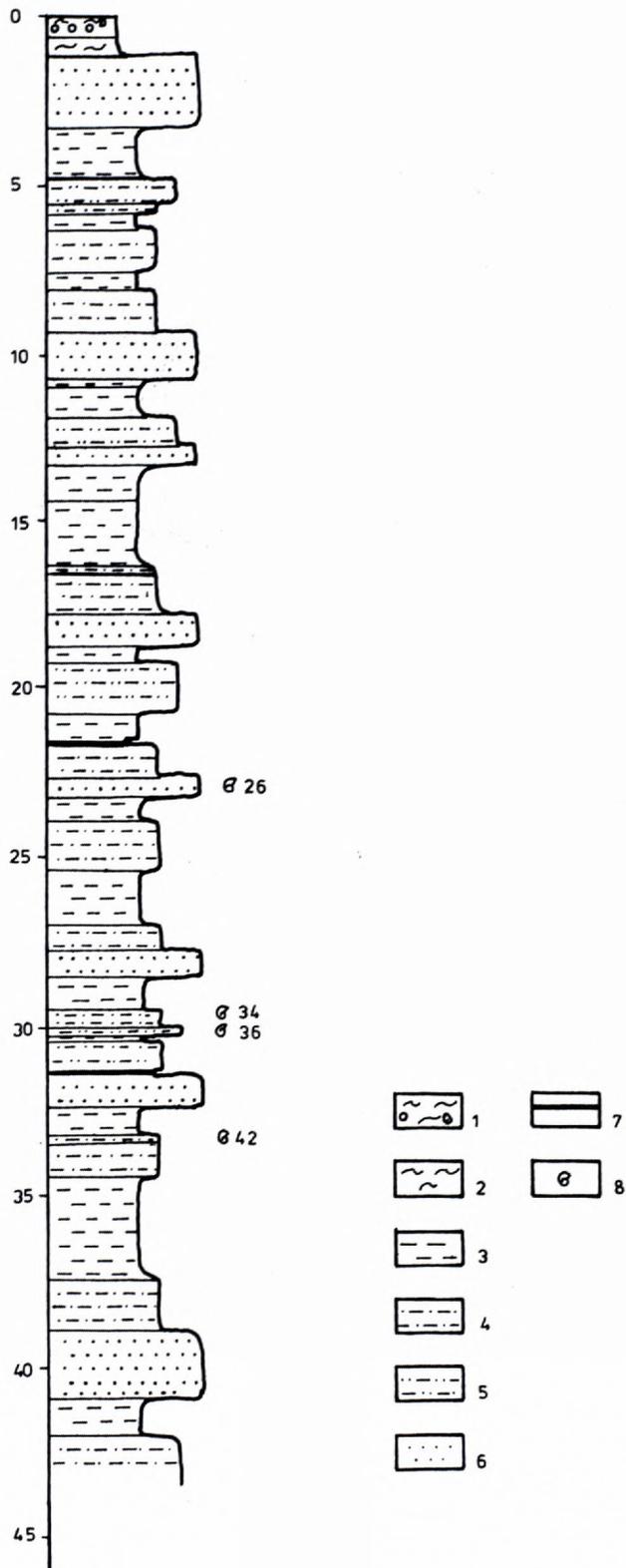


Fig. 2: Schematic lithologic profile through the clay pit in Pezinok. 1 - loam with clasts, 2- loam, 3- clay, 4 - sandy clay, 5 - clayey sand, 6 - sand, 7- lignite, 8- mollusc occurrence

Bed 34 consist of sandy clay containing abundant of bivalvia shells *Congeria ungulacaprae* Münster, *C. subglobosa subglobosa* Partsch, *C. spathulata* n. ssp.?. It also contains the gastropods: *Micromelania loczyi* Lörenthey, *Melanopsis affinis* Handmann, *Stenothyrella ovoidea* (Pavlovic) etc.

Bed 36 (Fig. 5) - comprises clayey sand containing abundant shell fragments and the following gastropods were: Subfacies *Melanopsis impressa* Krauss, *M. pygmaea pygmaea* M. Hoernes, *M. pygmaea mucronata* Handmann, *Pyrgula hungarica* Lörenthey and bivalvia *Congeria ungulacaprae* Münster, *C. dodderleini* Brusina, *Dreissena bipartita* Brusina, *Lymnocardium conjungens* (Hoernes) etc.

Bed 42 is a sandy clay containing a poor molluscan assemblage of the gastropods *Melanopsis sturii* Fuchs and *Valvata obtusaeformis* Lörenthey.

Biostratigraphic assignment

The biostratigraphic assignment of the Pezinok clay pit deposits was made on the basis of the mollusc assemblages. I used the division of the Pannonian sensu Papp (1951) and Rögl et al. (1993) (Tab. 2). A total of 47 species and subspecies of mollusc, a 30 were gastropods and were bivalves (Tab. 1).

The mollusc assemblages contained species known from the entire Pannonian age. These species are only of minor biostratigraphic importance. They include: *Theodoxus intracarpaticus* Jekelius, *Micromelania variabilis* Lörenthey, *Melanopsis bouei affinis* Handmann, *M. bouei sturii* Fuchs, *M. pygmaea pygmaea* M. Hoernes, *Congeria neumayri* Andrusov etc.

Species *Dreissenomya primiformis* Papp, *Congeria subglobosa subglobosa* Partsch, *C. subglobosa longitesta* Papp, *Lymnocardium edlaueri* Papp, *L. conjungens* (Hoernes), *Monodacna viennensis* Papp and *Didacna deserta* (Stoliczka), had a great importance as to stratigraphic assignment of the sediment studied. They enabled to assign the fossiliferous beds to the Pannonian E zone. Stratotype locality of the Pannonian E zone is Karagac (Stevanovic, 1985).

Nine of forty seven molluscs found in the Pezinok clay pit are identical to the mollusc of stratotype locality. They are: *Stenothyrella ovoidea* (Pavlovic), *Pyrgula hungarica* Lörenthey, *Bithynia jurinaci* (Brusina), *Melanopsis impressa* Krauss, *M. pygmaea* M. Hoernes, *M. vindobonensis* Fuchs *Congeria ungulacaprae* (Münster), *Dreissena bipartita* (Brusina) and *Didacna deserta* (Stoliczka).



Fig. 3: View of the southern part of the clay pit. Photo M. Horník



Fig. 4: Close-up of bed 26. Photo M. Horník



Fig. 5: Close-up of bed 36. Photo M. Horník

Tab. 1: The occurrence of species in the individual beds of the Pezinok clay pit

Species	Number of layers			
	26	34	36	42
GASTROPODA				
<i>Theodoxus postcrenulatus</i>	+			
<i>Theodoxus soceni</i>	+			
<i>Theodoxus intracarpaticus</i>		+		
<i>Theodoxus leobersdorfensis dacicus</i>	+			
<i>Theodoxus turislavicus turislavicus</i>	+		+	
<i>Valvata obtusaeformis</i>	+			+
<i>Valvata gradata globulosa</i>		+		
<i>Stenothyrella ovoidea</i>		+	+	
<i>Prososthenia cf. serbica</i>		+		
<i>Pyrgula hungarica</i>			+	
<i>Pyrgula uncarinata</i>			+	
<i>Pyrgula incisa</i>			+	
<i>Bithynia jurinaci</i>			+	+
<i>Micromelania loczyi</i>		+		
<i>Micromelania banatica fuchsi</i>			+	
<i>Micromelania variabilis</i>	+		+	
<i>Micromelania bielzi</i>		+		
<i>Caspia sp.</i>	+			
<i>Melanopsis impressa impressa</i>			+	
<i>Melanopsis impressa carinatissima</i>			+	
<i>Melanopsis impressa pseudonarzolina</i>			+	
<i>Melanopsis impressa posterior</i>			+	
<i>Melanopsis vindobonensis</i>		+		
<i>Melanopsis affinis</i>		+	+	
<i>Melanopsis sturii</i>				+
<i>Melanopsis bouei multicostata</i>			+	
<i>Melanopsis pygmaea pygmaea</i>			+	
<i>Melanopsis pygmaea mucronata</i>	+		+	
<i>Melanopsis pygmaea turrata</i>	+		+	
<i>Melanopsis handmanni</i>			+	
<i>Gyraulus chaenostomus</i>			+	
BIVALVIA				
<i>Congeria neumayri</i>	+		+	
<i>Congeria spathulata nov. ssp.?</i>		+		
<i>Congeria doderleini</i>			+	
<i>Congeria ringeiseni</i>		+		
<i>Congeria gitneri</i>			+	
<i>Congeria ungalacprae</i>			+	
<i>Congeria croatica</i>			+	
<i>Congeria subglobosa subglobosa</i>		+		
<i>Congeria subglobosa longitesta</i>		+		
<i>Dreissena bipartita</i>			+	
<i>Dreissena cf. turislavica</i>			+	
<i>Dreissenomya primiformis</i>			+	
<i>Psilunio atavus</i>			+	
<i>Lymnocardium edlaueri</i>	+			
<i>Lymnocardium conjungens</i>		+		
<i>Didacna deserta</i>			+	
<i>Monodacna viennensis</i>		+		
<i>Pisidium sp.</i>	+			

Tab. 2 Opinions of the stratigraphic ranging of the Pannonian zones into individual stages

Papp, 1951		Papp, 1985	Bartha, 1971		Rogl et al., 1993
PANNONIAN	H	PONTIAN	PANNONIAN	Upper	PANNONIAN
	G			middle part	
	F			lower part	
	E				
	D	PANNONIAN	PANNONIAN	Lower	PANNONIAN
	C				
	B				
	A				

Systematic part

Classis *GASTROPODA*
 Subclassis *PROSOBRANCHIA*
 Ordo *ARCHAEOGASTROPODA*
 Familia *NERITIDAE*
 Subfamilia *NERITINAE*
 Genus *Theodoxus* Monfort, 1810
 Typical species *Theodoxus fluviatilis* (Linnaeus)

***Theodoxus (Theodoxus) postcrenulatus* Papp, 1953**
(Tab. I, Fig. 1)

1953 *Theodoxus (Theodoxus) postcrenulatus* n.sp. - Papp: p. 96, Tab. 2, Fig. 1-3

Sample: 5 individuals

Description: Papp (1953) p. 96

Size: Tab. I, Fig. 1 height = 3,6 mm width = 5,4 mm

Occurrence: Pezinok, bed 26

Stratigraphic and geographic extent: The species known only from the Pannonian zone F of Austria (Götzendorf).

***Theodoxus (Theodoxus) soceni* Jekelius, 1944**
(Tab. I, Fig. 5)

1944 *Theodoxus soceni* n.sp. - Jekelius: p. 51, Tab. 5, Fig. 7-26, p.113, Tab. 41, Fig. 25-26

1953 *Theodoxus (Theodoxus) soceni* Jekelius - Papp: p. 96, Tab. 2, Fig. 12-15

1979 *Theodoxus (Theodoxus) pilari soceni* (Jekelius)-Jurašić-Polšak: p. 20, Tab. 4, Fig. 3-6

Sample: 32 individuals

Description: Jekelius (1944) p. 51, 113

Size: Tab. I, Fig. 5 height = 4,0 mm width = 5,8 mm

Occurrence: Pezinok, bed 26

Stratigraphic and geographic extent: The species is known from the Sarmatian and Pannonian of Romania and from the Pannonian D-E zone of Austria (Vösendorf, Gaja).

***Theodoxus (Theodoxus) intracarpaticus* Jekelius, 1944**
(Tab. I, Fig. 3)

- 1944 *Theodoxus intracarpaticus* n.sp. - Jekelius: p. 112, Tab. 41, Fig. 1-24
 1953 *Theodoxus (Theodoxus) intracarpaticus* Jekelius - Papp: p. 97, Tab. 2, Fig. 4-11
 1992 *Theodoxus intracarpaticus* Jekelius - Magyar: p.297, Tab. 4, Fig. 1-3

Sample: 1 individual

Description: Jekelius (1944) p. 112

Size: Tab. I, Fig. 3 height = 2,0 mm width = 3,0 mm

Occurrence: Pezinok, bed 34

Stratigraphic and geographic extent: The species is known from the Pannonian C-E zone of Austria (Vösendorf, Leobersdorf, Siegendorf, Regelsbrunn, Laaerberg), the Pannonian C-D zone of Romania (Turislav) and in the Upper Pannonian of Hungary.

***Theodoxus (Theodoxus) leobersdorfensis dacicus* Jekelius, 1944**

(Tab. I, Fig. 4)

- 1944 *Theodoxus dacicus* n.sp. - Jekelius: p. 114, Tab. 42, Fig. 8-11
 1953 *Theodoxus (Theodoxus) leobersdorfensis dacicus* Jekelius - Papp: p. 99, Tab. 2, Fig. 32
 1979 *Theodoxus (Theodoxus) leobersdorfensis dacicus* (Jekelius) - Jurišić - Polšak: p. 20, Tab. 4, Figs. 3-6

Sample: 1 individual

Description: Jekelius (1944) p.114

Size: Tab. I, Fig. 4 height = 2,5 mm width = 3,5 mm

Occurrence: Pezinok, bed 26

Stratigraphic and geographic extent: This subspecies is known from the Pannonian D/E zone of Austria (Vösendorf, Gaja) and in the Pannonian C-D zone of Romania (Turislav).

***Theodoxus turislavicus turislavicus* Jekelius, 1944**

(Tab. I, Fig. 2)

- 1944 *Theodoxus turislavicus* n. sp. - Jekelius: p. 114, Tab. 42, Figs. 17-19
 1953 *Theodoxus (Theodoxus) turislavicus turislavicus* Jekelius - Papp: p. 100, Tab. 2, Fig. 16-18

Sample: 16 individuals

Description: Jekelius (1944) p. 114

Size: Tab. I, Fig. 2 height = 2,8 mm width = 3,4 mm

Occurrence: Pezinok, beds 26 and 36

Stratigraphic and geographic extent: This taxon is known from the Pannonian C zone of Austria (Leobersdorf) and the Pannonian C-D zone of Romania (Turislav).

Ordo *MESOGASTROPODA*
 Familia *VALVATIDAE*
 Genus *VALVATA* Müller, 1774
 Subgenus *CINCINNA* Ferussac, 1821

Typical species *Valvata piscinalis* Müller

***Valvata (Cincinna) obtusaeformis* Lörenthey, 1911**

- 1911 *Valvata (Cincinna) obtusaeformis* nov. sp. - Lörenthey: p. 147, Tab. 3, Fig. 20
 1953 *Valvata (Cincinna) obtusaeformis* Lörenthey - Papp: p. 110, Tab. 3, Figs. 20-22, Tab. 5, Fig. 2

Sample: 462 individuals

Description: Lörenthey (1911) p. 174

Occurrence: Pezinok, beds 26 and 42

Stratigraphic and geographic extent: This species occurs in the Pannonian F/G zone of Austria (Moosbrunn) and in the Upper Pannonian of Hungary (Öcs).

***Valvata (Cincinna) gradata globulosa* Jekelius, 1944**

(Tab. I, Fig. 6)

- 1944 *Valvata (Cincinna) gradata globulosa* n.var. - Jekelius: p. 117, Tab. 43, Fig. 18-20

Sample: 5 individuals

Description: Jekelius (1944) p. 117

Size: Tab. I, Fig. 6 height = 2,2 mm, size = 2,5 mm

Occurrence: Pezinok, bed 34

Stratigraphic and geographic extent: The subspecies is known only from the Pannonian C-D zone of Romania (Turislav).

Familia *STENOTHYRIDAE*

Genus *STENOTHYRELLA* Wenz, 1939

Typical species *Stenothyrella lubricella* (Sandberger)

***Stenothyrella ovoidea* (Pavlovic, 1927)**

(Tab. I, Fig. 7)

- 1927 *Nematurella? ovoidea* nov. spec. - Pavlovic: p. 103, Tab. 14, Figs. 22-23
 1944 *Stenothyrella ovoidea* Pavlovic - Jekelius: p. 122, Tab. 45, Figs. 6-8
 1953 *Stenothyrella ovoidea* (Pavlovic) - Papp: p. 115, Tab. 7, Figs. 5-6

Sample: 15 individuals

Description: Pavlovic (1927) p. 103

Size: Tab. I, Fig. 7 height = 2,9 mm, width = 1,5 mm

Occurrence: Pezinok, beds 34 and 36

Stratigraphic and geographic extent: This species is known from the Pannonian of Serbia, from the Pannonian C-D zone of Romania (Turislav) and from the Pannonian C zone of Austria (Leobersdorf).

Genus *PROSOSTHENIA* Neumayr, 1869

Typical species: *Prososthenia schwartzi* Neumayr

***Prososthenia cf. serbica* Brusina**

(Tab. II Fig. 7)

- 1902 *Prososthenia serbica* Brusina- Brusina: Tab. 8, Figs. 21-23

Sample: 3 individuals

Size: Tab. II, Fig. 7 height = 4,0 mm width = 1,5 mm

Occurrence: Pezinok, beds 34

Stratigraphic and geographic extent: This species is known from the Pannonian of Serbia.

Familia *TRUNCATELLIDAE*

Genus *PYRGULA* Christoferi et Jan, 1832

Typical species *Paludina annulata* Linnaeus

***Pyrgula hungarica* Lörenthey, 1894**

(Tab. II, Fig. 5)

1894 *Pyrgula hungarica* nov. form. - Lörenthey: p. 86, Tab. 2, Fig. 9

1927 *Pyrgula hungarica* Lörentz. - Pavlovic. p. 100

Sample: 5 individuals

Description: Lörenthey (1894) p. 86

Size: Tab. II, Fig. 5 height = 3,37mm, width = 1,26mm

Occurrence: Pezinok, bed 36

Stratigraphic and geographic extent: This species is known only from the Upper Pannonian of Hungaria (Kurd) and the Pannonian of Serbia.

***Pyrgula unicarinata* Brusina, 1902**

(Tab. II, Fig. 1)

1902 *Pyrgula unicarinata* Brus. - Brusina: Tab. 7, Fig. 83-85

1944 *Pyrgula unicarinata* Brus. var. - Jekelius: p. 122

Sample: 4 individuals

Size: Tab. II, Fig. 1 height = 3,6 mm, width = ?

Occurrence: Pezinok, bed 36

Stratigraphic and geographic extent: The species known only from the Pannonian C-D zone of Romania.

***Pyrgula incisa* Fuchs 1870**

(Tab. II, Fig. 4)

1870 *Pyrgula incisa* Fuchs - Fuchs: p. 351, Tab. 14, Fig. 20-23

1902 *Pyrgula incisa* Fuchs - Lörenthey: p. 276

1911 *Pyrgula incisa* Fuchs - Lörenthey: p. 142

Sample: 20 individuals

Description: Fuchs (1870) p. 351

Size: Tab. II, Fig. 4 height = 3,6 mm width = 1,6 mm

Occurrence: Pezinok, bed 36

Stratigraphic and geographic extent: The subspecies is known from the Pannonian of Hungaria (Tihany, Fonyod) and Romania (Radmanest).

Familia *BITHYNIIDAE*

Genus *BITHYNIA* Risso, 1826

Typical species *Paludina tentaculata* Linnaeus

***Bithynia jurinaci* Brusina, 1884**

(Tab. III, Fig. 10)

1884 *Bythinia Jurinaci* Brus. - Brusina: p. 31, 37

1902 *Bythinia Jurinaci* - Lörenthey: p. 243, Tab. 14, Fig. 5, Tab. 16, Fig. 6

1907 *Bithynia Jurinaci* Brus. - Troll: p. 52

1921 *Bithynia Jurinaci* Brusina - Wenz: p. 78

1927 *Bythinia Jurinaci* Brus. - Pavlovic: p. 102

1953 *Bulimus (Bulimus) jurinaci* (Brusina) - Papp: p. 119, Tab. 3, Fig. 24, 25

Sample: 11 individuals

Description: Brusina (1884) p. 31

Size: Tab. III, Fig. 10 height = 6,5 mm width = 4,0 mm

Occurrence: Pezinok, beds 36 and 42

Stratigraphic and geographic extent: The species occurs in the Pannonian zones C (Leobersdorf), E (Vösendorf), F (Götzendorf) and H (Eichkogel) of Austria and in the Pannonian of Hungaria (Tinnye).

Familia *MICROMELANIINAE*

Genus *MICROMELANIA* Brusina, 1874

Typical species *Micromelania cerithioides* Brusina

***Micromelania loczyi* Lörenthey, 1894**

(Tab. II, Fig. 9)

1894 *Micromelania Lóczyi* Nov. Form. - Lörenthey: p. 84, Tab. 2, Figs. 6-8, 10

Sample: 10 individuals

Description: Lörenthey (1894) p. 84

Size: Tab. II, Fig. 9 height = 3,0 mm, width = ?

Occurrence: Pezinok, bed 34

Stratigraphic and geographic extent: The species is only known from the Upper Pannonian of Hungary (Kurd).

***Micromelania banatica fuchsi* Papp, 1953**

(Tab. II, Fig. 2)

1928 *Goniochilus croaticus* (Brusina) - Wenz: p. 7, Abb. 1

1953 *Micromelania (Goniochilus) banatica fuchsi* n. ssp. - Papp: p. 122, Tab. 6, Fig. 9

Sample: 70 individuals

Description: Papp (1953) p. 122

Size: Tab. II, Fig. 2 height = 4,0 mm, width = 1,4 mm

Occurrence: Pezinok, bed 36

Stratigraphic and geographic extent: The subspecies known only from the Pannonian C zone of Austria (Leobersdorf).

***Micromelania variabilis* Lörenthey, 1902**

(Tab. II, Fig. 8)

1902 *Micromelania variabilis* nov. sp. - Lörenthey: p. 237, Tab. 18, Figs. 20, 23, 25

1944 *Micromelania variabilis* Lörenthey - Jekelius: p. 123, Tab. 45, Figs. 14-23

1953 *Micromelania (Goniochilus) variabilis* Lörenthey - Papp: p. 123, Tab. 6, Figs. 5-6

Sample: 400 individuals

Description: Lörenthey (1902)

Size: Tab. II, Fig. 8 height = 3,0 mm width = 1,25 mm
 Occurrence: Pezinok, beds 26 and 36
 Stratigraphic and geographic extent: The species is known from the Pannonian D-F zone of Austria (Simmering, Stammersdorf), the Pannonian C-D zone of Romania (Turislav) and from the Pannonian in Hungaria (Tinnye).

***Micromelania bielzi* Brusina**

(Tab. II, Fig. 6)

1902 *Prososthenia?* *Bielzi* Brus. - Brusina: Tab. 8, Figs. 39-41
 1911 *Pyrgula* (*Prososthenia?*) *Bielzi* Brusina - Halavats: p. 47, Tab. 2, Fig. 11
 1911 *Micromelania Bielzi* Brusina sp. - Lörenthey: p. 149, Tab. 2, Figs. 2-5

Sample: 1 individual

Description: Halavats (1911) p. 47

Size: Tab. II Fig. 6 height = 2,8 mm width = 1,0 mm

Occurrence: Pezinok, bed 34

Stratigraphic and geographic extent: The species is known from the Pannonian of Hungary.

Genus *CASPIA* W. Dybowski, 1888

Typical species *Caspia baerii* Dybowski

***Caspia* sp.**

(Tab. III, Fig. 9)

Sample: 1900 individuals

Size: Tab. III, Fig. 9 height = 4,0 mm width = 1,5 mm

Occurrence: Pezinok, bed 26

Notes: In bed 26 abundant of individuals of this genera occurs. We were not able to identify them.

Familia *THIARIDAE*

Subfamilia *MELANOPSINAE*

Genus *MELANOPSIS* Ferussac, 1807

Typical species *Melanopsis praerosa* (Linnaeus))

***Melanopsis impressa impressa* Krauss, 1852**

(Tab. III, Fig. 1)

1852 *Melanopsis impressa* n. sp. - Krauss: p. 143, Tab. 3, Fig. 3
 1856 *Melanopsis impressa* Kraus - Hoernes: 596, Tab. 49, Fig. 10
 1902 *Melanopsis impressa* Krauss - Brusina: Tab. 5, Figs. 33-36
 1902 *Melanopsis impressa* Krauss - Lörenthey: p. 219, Tab. 15, Fig. 7
 1944 *Melanopsis impressa* Krauss - Jekelius: p. 73, Tab. 16, Figs. 1-13
 1953 *Melanopsis impressa impressa* Krauss - Papp: p. 130, Tab. 9, Figs. 1-4

Sample: 40 individuals

Description: Krauss (1852) p. 143

Size: Tab. III, Fig. 1 height = 14,5 mm width = 8,5 mm

Occurrence: Pezinok, bed 36

Stratigraphic and geographic extent: The species occurs in the Sarmatian of Romania (Politioana) of the Pannonian in Hungaria (Tinnye) and of Austria (Rückersdorf, Gundersdorf).

***Melanopsis impressa carinatissima* Sacco, 1889**

(Tab. III, Fig. 2)

1953 *Melanopsis impressa carinatissima* Sacco - Papp: p. 131, Tab. 9, Figs. 12-13

Sample: 7 individuals

Description: Papp (1953) p. 131

Size: Tab. III, Fig. 2 height = 20,0 mm width = 10,7 mm

Occurrence: Pezinok, bed 36

Stratigraphic and geographic extent: The subspecies is known from the Pannonian B zone of Austria (Heiligenberg, Zehmendor) and from the Pannonian of Hungary (Tinnye).

***Melanopsis impressa pseudonarzolina* Papp, 1953**

(Tab. III, Fig. 5)

1953 *Melanopsis impressa pseudonarzolina* n. ssp. - Papp: p. 132, Tab. 9, Figs. 14-18

Sample: 75 individuals

Description: Papp (1953) p. 132

Size: Tab. III, Fig. 5 height = 27,3 mm width = 14,0 mm

Occurrence: Pezinok, bed 36

Stratigraphic and geographic extent: The species is known from the Sarmatian (Wiesen) and the Pannonian B-C zone of Austria.

***Melanopsis impressa posterior* Papp, 1953**

(Tab. III, Fig. 4)

1953 *Melanopsis impressa posterior* n. ssp. - Papp: p. 133, Tab. 9, Fig. 19-23

Sample: 130 individuals

Description: Papp (1953) p. 133

Size: Tab. III, Fig. 4 height = 21,3 mm width = 12,7 mm

Occurrence: Pezinok, bed 36

Stratigraphic and geographic extent: The taxon is known only from the Pannonian B zone of Austria (Heiligenberg).

***Melanopsis vindobonensis* Fuchs, 1870**

(Tab. III, Fig. 3)

1870 *Melanopsis Vindobonensis* - Fuchs-Karrer: p. 139, Fig. 5

1887 *Melanopsis Vindobonensis* Fuchs - Handmann: p. Tab. 5, Figs. 8 - 13

1902 *Melanopsis vindobonensis* Fuchs - Lörenthey: p. 222, Tab. 15, Fig. 6

- 1927 *Melanopsis (Lyraea) Vindobonensis* Fuchs - Pavlovic: p. 82, Tab. 11, Figs. 1-6
 1944 *Melanopsis vindobonensis* Fuchs - Jekelius: p. 135, Tab. 53, Fig. 1-17
 1953 *Melanopsis vindobonensis vindobonensis* Fuchs - Papp: p. 137, Tab. 11, Figs. 13-16

Sample: 20 individuals

Description: Fuchs-Karrer (1870) p. 139

Size: Tab. III, Fig. 3 height = 20,5 mm width = 14,0 mm

Occurrence: Pezinok, bed 34

Stratigraphic and geographic extent: The species is known from the Pannonian B-E zone of Austria, from the Pannonian C-D zone of Romania and in the Upper Pannonian of Hungary.

***Melanopsis affinis* Handmann, 1882**

(Tab. III, Fig. 13)

- 1882 *Melanopsis affinis* n.f. - Handmann: p. 558
 1887 *Mel. Canthidomus affinis* Handm. - Handmann: p. 32, Tab. 7, Figs. 9-12
 1902 *Melanopsis affinis* Handmann - Lörenthey: p. 214, Tab. 17, Figs. 1-15
 1944 *Melanopsis bouei affinis* Handmann - Jekelius: p. 129, Tab. 48, Figs. 14-17
 1953 *Melanopsis bouei affinis* Handmann - Papp: p. 146, Tab. 12, Figs. 9-11
 1955 *Melanopsis bouei affinis* Handmann - Bartha: p. 299
 1955 *Melanopsis bouei affinis* Handmann - Bartha-Soós: p. 62, Tab. 4, Figs. 1-3
 1971 *Melanopsis affinis* Handmann: Švagróvský: p.324, Tab. 55, Figs. 8-9
 1976 *Melanopsis bouei affinis* Handmann - Čtyroký-Knobloch: p. 110, Tab. 4, Figs. 19-20
 1993 *Melanopsis bouei affinis* Handmann, 1882 - Fordinál: p. 61, Tab. 12, Fig. 3.

Sample: 120 individuals

Description: Handmann (1882) p. 558

Size: Tab. III, Fig. 13 height = 13,3 mm width = 6,3 mm

Occurrence: Pezinok, beds 34 and 36

Stratigraphic and geographic extent: The species is known from the Sarmatian of Austria and Bohemia, from the Pannonian of Slovakia, Austria, Hungary and Romania.

***Melanopsis sturii* Fuchs, 1873**

(Tab. III, Fig. 14)

- 1873 *Melanopsis Sturii* nov. sp. - Fuchs: p. 21, Tab. 4, Figs. 18-19
 1902 *Melanopsis Sturii* Fuchs - Lörenthey: p. 211, Tab. 17, Figs. 16-17
 1911 *Melanopsis Sturii* Fuchs - Lörenthey: p. 130
 1944 *Melanopsis sturii* Fuchs - Jekelius: p. 74, Tab. 17, Figs. 1-17
 1953 *Melanopsis bouei sturii* Fuchs - Papp: p. 146, Tab. 12, Figs. 15-17
 1955 *Melanopsis bouei sturii* (Fuchs) - Bartha: p. 298, Tab. 1, Figs. 2-3
 1993 *Melanopsis bouei sturii* Fuchs - Fordinál: p.62, Tab. 12, Figs. 4-5

Sample: 140 individuals

Description: Fuchs (1873) p. 21

Size: Tab. III, Fig. 14 height = 14,5 mm width = 6,6 mm

Occurrence: Pezinok, bed 42

Stratigraphic and geographic extent: It occurs in the Pannonian of Austria, Hungary, Slovakia and Romania.

***Melanopsis bouei multcostata* Handmann, 1882**

(Tab. III, Fig. 7)

- 1882 *Melanopsis Bouei* Fér. var. *multcostata* - Handmann: p. 557
 1887 *Mel. Canthidomus Bouei* Fér. var. *multcostata* - Handmann: p. 36, Tab. 8, Figs. 10-12
 1902 *Melanopsis Bouei* Fér. var. *multcostata* Handm. - Lörenthey: p.211
 1944 *Melanopsis bouei multcostata* Handmann - Jekelius: p. 75, 130, Tab. 48, Figs. 18-22
 1953 *Melanopsis bouei multcostata* Handmann - Papp: p. 146, Tab.12, Figs. 12-14
 1969 *Melanopsis (Canthidomus) bouei multcostata* Handmann, 1887 - Kojumdgieva: p. 98, Tab. 34, Figs. 3-6
 1976 *Melanopsis bouei multcostata* Handmann - Čtyroký - Knobloch: p. 110

Sample: 3 individuals

Description: Handmann (1882) p.557

Size: Tab. III, Fig. 7 height = 6,8 mm width = 4,0 mm

Occurrence: Pezinok, bed 36

Stratigraphic and geographic extent: The subspecies occurs in the Middle Sarmatian of Bulgaria, in the Pannonian C zone of Austria, the Pannonian C-D zone of Romania (Turislav) and the Pannonian B zone of Bohemia.

***Melanopsis pygmaea pygmaea* M. Hoernes, 1856**

(Tab. III, Fig. 12)

- 1856 *Melanopsis pygmaea* Partsch - Hoernes: p. 599, Tab. 49, Fig. 13
 1870 *Melanopsis pygmaea* Partsch - Fuchs: p. 545, Tab. 22, Figs. 9-10
 1887 *Mel. Homalia pygmaea* Partsch - Handmann: p. 12, Tab. 1, Figs. 2-3 (non 1, 4-5)
 1892 *Melanopsis pygmaea* Partsch - Brusina: p. 140
 1942 *Melanopsis pygmaea* Partsch - Strausz: p. 88, Tab. 5, Figs. 25-28
 1953 *Melanopsis pygmaea pygmaea* M. Hoernes - Papp: p. 149, Tab. 12, Figs. 28-30, 33-34
 1976 *Melanopsis pygmaea pygmaea* M. Höernes - Čtyroký-Knobloch: p. 111
 1993 *Melanopsis pygmaea pygmaea* M. Hoernes, 1856 - Fordinál: p. 64, Tab. 13, Fig. 5

Sample: 260 individuals

Description: M. Hoernes (1856) p. 599

Size: Tab. III, Fig. 12 height = 11,5 mm width = 4,8 mm

Occurrence: Pezinok, bed 36

Stratigraphic and geographic extent: The subspecies is known from the Pannonian of Austria, Moravia, Hungary and Slovakia.

Melanopsis pygmaea mucronata Handmann, 1887

(Tab. III, Fig. 11)

1887 *Mel. Homalia pygmaea* Partsch var. *mucronata* - Handmann: p. 13, Tab. 1, Fig. 11902 *Melanopsis eulimopsis* Brus. - Brusina: Tab. 5, Figs. 42-441953 *Melanopsis pygmaea mucronata* Handmann - Papp: p. 150, Tab. 12, Figs. 31-321980 *Melanopsis pygmaea mucronata* Handmann, 1887 - Lueger: p. 105, Tab. 1, Figs. 12-131993 *Melanopsis pygmaea mucronata* Handmann, 1887 - Fordinál: p. 65,

Sample: 670 individuals

Description: Handmann (1887) p. 13

Size: Tab. III, Fig. 11 height = 10,8 mm width = 4,0 mm

Occurrence: Pezinok, beds 26 and 36

Stratigraphic and geographic extent: The subspecies occurs in the Pannonian of Austria, Hungary and Slovakia.

Melanopsis pygmaea turrita Handmann, 1887

(Tab. III, Fig. 8)

1887 *Mel. Canthidomus turritus* Handm. - Handmann: p. 32, Tab. 7, Fig. 131953 *Melanopsis pygmaea turrita* Handmann - Papp: p. 150, Tab. 12, Figs. 24-27

Sample: 18 individuals

Description: Handmann (1887) p. 32

Size: Tab. III, Fig. 8 height = 10 mm width = 5 mm

Occurrence: Pezinok, bed 36

Stratigraphic and geographic extent: The subspecies is known only from the Pannonian C zone of Austria (Leobersdorf).

Melanopsis handmanni Brusina, 1892

(Tab. III, Fig. 6)

1892 *Melanopsis Handmanni* Brusina - Brusina: p. 281894 *Melanopsis Handmanni* Brusina - Lörenthey: p. 154, Tab. 2, Fig. 231902 *Melanopsis Handmanni* Brus. - Brusina: Tab. 6, Fig. 26-291944 *Melanopsis handmanni* Brusina - Jekelius: p. 133, Tab. 50, Figs. 18-221953 *Melanopsis handmanni* Brusina - Papp: p. 150, Tab. 12, Figs. 35-37

Sample: 50 individuals

Description: Brusina (1892) p. 28

Size: Tab. III, Fig. 6 height = 8,3 mm width = 4,0 mm

Occurrence: Pezinok, bed 36

Stratigraphic and geographic extent: The species occurs in the Pannonian B (Heiligenberg) and C (Leobersdorf) zones of Austria, in the Pannonian C-D zones of Romania (Turislav) and in the Pannonian of Hungary (Kurd).

Subclassis *PULMONATA*Ordo *BASOMMATOPHORA*Familia *PLANORBIDAE*Genus *GYRAULUS* Charpentier, 1837Typical species *Planorbis albus* Müller**Gyraulus chaenostomus Brusina, 1902**1902 *Planorbis chaenostomus* Brus.-Brusina: Tab. 3, Figs. 4-61907 *Planorbis chaenostomus* Brus. - Wenz: p. 76

Sample: 6 individuals

Occurrence: Pezinok, bed 36

Stratigraphic and geographic extent: The species is known from the Pannonian of Hungary (Kúp) and of Austria (Leobersdorf).

Classis *BIVALVIA*Ordo *VENEROIDEA*Familia *DREISSENIDAE*Genus *CONGERIA* Partsch, 1836Typical species *Congeria subglobosa* Partsch**MYTILIFORMES****Congeria neumayri Andrusov, 1897**

(Tab. IV, Fig. 5)

1897 *Congeria Neumayri* nov. sp. - Andrusov: p. 83, Tab. 1, Figs. 8-141942 *Congeria Neumayri* Andr. - Strausz: p. 751944 *Congeria neumayri* Andrusov - Jekelius: p. 142, Tab. 59, Fig. 171953 *Congeria neumayri* Andrusov - Papp: p. 156, Tab. 13, Figs. 1-41955 *Congeria neumayri* Andrusov - Bartha: p. 313, Tab. 1, Figs. 11, 14, 161968 *Congeria neumayri neumayri* Andrusov - Kojumdjiewa: p. 192, Tab. 1, Figs. 1-31995 *Congeria neumayri* Andrusov, 1897 - Fordinál: p. 28, Tab. 1, Fig. 1

Sample: 4 individuals

Description: Kojumdjiewa (1968) p. 192

Size: Tab. IV, Fig. 5 length = 19 mm, height = 10 mm

Occurrence: Pezinok, beds 26 and 36

Stratigraphic and geographic extent: The species is known from the Karpatian of Austria, Middle Sarmatian of Bulgaria, from the Pannonian of Austria, Hungary, Romania and Slovakia.

Congeria spathulata nov. ssp.?

(Tab. VI, Fig. 5)

Sample: 2 individuals

Size: Tab. VI, Fig. 7 length = 80 mm height = 45 mm

Occurrence: Pezinok, bed 34

Note: Only two individuals have been found. The shells resemble subspecies *C. spathulata antulae* Pavlovic. They

differ by their narrower and longer frontal part of the shell. Because of the small amount of material I do not divide it into a new subspecies.

***Congeria doderleini* Brusina, 1892**

(Tab. IV, Fig. 3)

- 1892 *Congeria Doderleini* Brusina n.sp. - Brusina: p. 71
 1897 *Congeria Doderleini* Brus. - Andrusov: p. 126, Tab. 3, Figs. 23-30
 1902 *Congeria Doderleini* Brus. - Lörenthey: p. 150, Tab. 10, Figs. 16-18
 1911 *Congeria Doderleini* Brusina - Lörenthey: p. 56
 1927 *Congeria Doderleini* Brusina - Pavlovic: p. 9
 1944 *Congeria doderleini* Brusina - Jekelius: p. 142, Tab. 59, Figs. 11-16
 1953 *Congeria doderleini* Brusina - Papp: p. 164, Tab. 13, Figs. 8-12, Tab. 25, Figs. 6-7
 1991 *Congeria doderleini* Brusina - Fordinál: p. 72, Tab. 61 Figs. 1-6, Tab. 62, Figs. 1-4

Sample: 80 individuals

Description: Brusina (1892) p. 71

Size: Tab. IV, Fig. 3 length = 10 mm height = 5,4 mm

Occurrence: Pezinok, bed 36

Stratigraphic and geographic extent: The subspecies is known from the Pannonian of Austria, Hungary, Romania and Slovakia.

***Congeria ringeiseni* Jekelius, 1944**

(Tab. IV, Fig. 4)

- 1944 *Congeria ringeiseni* n. sp. - Jekelius: p. 93, Tab. 27, Figs. 17-18

Sample: 1 individual

Description: Jekelius (1944) p. 93

Size: Tab. IV Fig. 4 length = 6,8 mm height = 3,0 mm

Occurrence: Pezinok, bed 34

Stratigraphic and geographic extent: The species is known only from the Sarmatian of Romania (Politoana).

MODIOLAEFORMIS

***Congeria gitneri* Brusina, 1892**

(Tab. IV, Fig. 2)

- 1892 *Congeria Gitneri* Brusina n.sp. - Brusina: p. 72
 1897 *Congeria Gitneri* Brus. - Andrusov: p. 189, Tab. 8, Figs. 33-36
 1902 *Congeria Gitneri* Brus. - Brusina: Tab. 19, Figs. 18-21
 1902 *Congeria Gitneri* Brus. - Lörenthey: p. 158, Tab. 10, Figs. 11, 14
 1927 *Congeria Gitneri* Brus. - Pavlovic: p. 18
 1944 *Congeria gitneri* Brusina - Jekelius: p. 143, Tab. 59, Figs. 24-26
 1953 *Congeria gitneri* Brusina-Papp: p. 166, Tab. 13, Figs. 18-21

Sample: 1 individual

Description: Brusina (1892) p. 72

Size: Tab. IV, Fig. 2 length = 5,0 mm height = 2,5 mm

Occurrence: Pezinok, bed 36

Stratigraphic and geographic extent: The species occurs in the Pannonian C-E zones of Austria (Stammersdorf, Regelsbrunn, Leobersdorf), in the Pannonian C-D zones of Romania (Turislav) and in the Pannonian of Hungary.

***Congeria ungulacaprae* (Muenster, 1839)**

(Tab. IV, Fig. 6)

- 1870 *Congeria Balatonica* Partsch var. *crassitesta* - Fuchs: p. 548, Tab. 22, Figs. 15-16
 1892 *Congeria ungula caprae* Münst. - Brusina: p. 196
 1897 *Congeria ungula caprae* Mu. - Andrusov: p. 158, Tab. 5, Figs. 18-22
 1902 *Congeria ungula caprae* (Münster) - Brusina: Tab. 18, Figs. 32-35
 1902 *Congeria ungula-caprae* Münster - Lörenthey: p. 257, Tab. 19, Figs. 1-2, 4, Tab. 20, Fig. 1
 1951 *Congeria ungula-caprae* Münst. - Stevanovic: p. 209
 1953 *Congeria ungula-caprae* (Muenster) - Papp: p. 169, Tab. 15, Figs. 8-9

Sample: 2 individuals

Description: Stevanovic (1951) p. 209

Size: Tab. IV, Fig. 6, length = 65 mm height = 44 mm

Occurrence: Pezinok, bed 36

Stratigraphic and geographic extent: The species occurs in the Pannonian of Hungary (Budapest-Köbánya) and Serbia (Konoplište).

***Congeria croatica* (Brusina, 1874)**

(Tab. IV, Fig. 7)

- 1884 *Dreissena croatica* Brusina - Brusina: p. 181, Tab. 27, Figs. 53-54
 1897 *Congeria croatica* Brus. - Andrusov: p. 163, Tab. 6, Figs. 4-5, 8-11
 1944 *Congeria croatica* Brusina - Jekelius: p. Tab. 60, Fig. 3
 1951 *Congeria croatica* Brus. - Stevanovic: p. 208, Tab. 3, Figs. 2-6, Tab. 11, Fig. 5
 1953 *Congeria croatica* Brusina - Papp: Tab. 18, Figs. 4, 6
 1992 *Congeria croatica* (Brusina) - Basch-Zakar-Sakač: p. 37, Tab. 9, Figs. 5-6, Tab. 10, Figs. 1-5, Tab. 11, Fig. 1

Sample: 2 individuals

Description: Brusina (1884) p. 181

Size: Tab. IV Fig. 7 length = 65 mm height = 55 mm

Note: Individuals from Pezinok do not have the sharp keel as it has the holotyp (Basch-Zagar-Sakač, 1992, Tab. 10, Fig. 1)

Occurrence: Pezinok, bed 36

Stratigraphic and geographic extent: The species is known from the Pannonian of Hungary and Croatia.

SUBGLOBOSAE

***Congeria subglobosa subglobosa* Partsch, 1836**

(Tab. V, Fig. 1)

- 1836 *Congeria subglobosa subglobosa* Nobis - Partsch: p. 97, Tab. 11, Figs. 1-8, 10

- 1870 *Congeria subglobosa* Partsch - Hoernes: p. 362, Tab. 47, Figs. 1, 3
 1884 *Dreissena subglobosa* Partsch - Brusina: p. 134
 1897 *Congeria subglobosa* Partsch - Andrusov: p. 220, Tab. 12, Figs. 12-16
 1907 *Congeria subglobosa* Partsch - Troll: p. 42
 1927 *Congeria subglobosa* Partsch - Pavlovic: p. 19
 1953 *Congeria subglobosa subglobosa* Partsch - Papp: p. 179, Tab. 19, Fig. 4

Sample: 5 individuals

Description: Partsch (1836) p. 97

Size: Tab. V, Fig. 1 length = 70 mm height = 52 mm

Occurrence: Pezinok, bed 34

Stratigraphic and geographic extent: The species has been known from the Pannonian E zone of Austria (Vösendorf, Inzersdorf, Hennersdorf, Leobersdorf).

Congeria subglobosa longitesta Papp, 1953

(Tab. V, Fig. 2)

- 1870 *Congeria subglobosa* Partsch - Hoernes: p. 362, Tab. 47, Fig. 2
 1953 *Congeria subglobosa longitesta* n. ssp. - Papp: p. 177, Tab. 19, Fig. 2

Sample: 3 individuals

Description: Papp (1953) p. 177

Size: Tab. V, Fig. 2 length = 69 mm height = 40 mm

Occurrence: Pezinok, bed 34

Stratigraphic and geographic extent: The subspecies occurs in the Pannonian D-E zones of Austria (Matzleinsdorf, Vösendorf, Siegendorf).

Genus *DREISSENA* van Beneden, 1835

Typical species *Dreissena polymorpha* (Pallas)

Dreissena bipartita Brusina

(Tab. VI, Figs. 1-2)

- 1897 *Dreissensia bipartita* Brus. - Andrusov: p. 301, Tab. 16, Figs. 31-32
 1902 *Congeria bipartita* Brus. - Brusina: Tab. 20, Fig. 36
 1902 *Dreissensia bipartita* Brusina - Lörenthey: p. 263
 1911 *Congeria bipartita* Brusina - Lörenthey: p. 56
 1927 *Dreissensia bipartita* Brus. - Pavlovic: p. 24

Sample: 4 individuals

Description: Andrusov (1897) p. 301

Size: Tab. VI Fig. 1 length = 1,9 mm height = 0,9 mm;
 Tab. VI Fig. 2 length = 2,7 mm height = 1,3 mm

Occurrence: Pezinok, bed 36

Stratigraphic and geographic extent: The species is known from the Pannonian of Hungary (Kup, Fehépart, Budapest-Köbánya) and from the Pannonian E zone of Serbia (Karagac).

Dreissena cf. turislavica Jekelius, 1944

(Tab. IV, Fig. 1)

- 1944 *Dreissena turislavica* n. sp. - Jekelius: p. 141, Tab. 59, Figs. 1-10
 1953 *Dreissena turislavica* Jekelius - Papp: p. 186, Tab. 21, Figs. 1-4

Sample: 6 individuals

Description: Jekelius (1944) p. 141

Size: Tab. IV, Fig. 1 length = 4,8 mm height = 1,0 mm

Occurrence: Pezinok, bed 36

Stratigraphic and geographic extent: The species occurs in the Pannonian C-D zone of Romania and Austria.

Genus *DREISSENYMYA* Fuchs, 1870

Subgenus *SINUCONGERIA* Lörenthey, 1894

Typical species *Congeria arcuata* Fuchs

Dreissenomya primiformis Papp, 1949

(Tab. VI, Fig. 3)

- 1953 *Dreissenomya primiformis* PAPP - Papp: p. 189, Tab. 21, Figs. 9-13
 1977 *Dreissenomya (Sinucongeria) primiformis* Papp, 1949 - Marinescu: p. 92, Tab. 6, Fig. 1-2, (in text) Fig. 17

Sample: 2 individuals

Description: Marinescu (1977) p. 92

Size: Tab. VI, Fig. 3, length = 3,0 mm height = 1,5 mm

Occurrence: Pezinok, bed 36

Stratigraphic and geographic extent: The species is known from the Pannonian E zone of Austria (Vösendorf, Leobersdorf, Inzensdorf, Simmering, Mannersdorf, Regelsbrunn) and Romania (Mermesti).

Familia *UNIONIDAE*

Genus *PSILUNIO* Stefanescu, 1896

Typical species *Psilunio littoralis* Lamarck

Psilunio (Psilunio) atavus (M. Hoernes, 1870)

- 1837 *Unio atavus* - Hauer: p. 424 (nom. nud.)
 1870 *Unio atavus* - Hoernes: p. 286, Tab. 37, Fig. 2
 1953 *Psilunio (Psilunio) atavus* (Partsch, M. Hoernes) - Papp: p. 189, Tab. 17, Fig. 3

Sample: 1 individual

Description: Hoernes (1870) p. 286

Occurrence: Pezinok, beds 36

Stratigraphic and geographic extent: The species is known from the Pannonian E zone in Austria (Vösendorf).

Familia *CARDIIDAE*

Subfamilia *LYMNOCARDIINAE*

Genus *LYMNOCARDIUM* Stoliczka, 1871

Typical species *Cardium haueri* M. Hörnes

***Lymnocardium edlaueri* Papp, 1953**

- 1953 *Lymnocardium edlaueri* nov. sp. - Papp: p. 194, Tab. 23, Figs. 7-9
 1967 *Lymnocardium edlaueri* Papp - Spajic: p. 114, Tab. 2, Figs. 11-12
 1995 *Lymnocardium edlaueri* Papp, 1953 - Fordinál: p. 31

Sample: 38 individuals

Description: Papp (1953) p. 194

Occurrence: Pezinok, bed 26

Stratigraphic and geographic extent: The species occurs in the Pannonian D-E zones of Austria (Laaerberg, Vösendorf, Stammersdorf), in the Pannonian D zone of Slovakia (Bratislava), in the Pannonian E zone of Serbia (Topolovnik) and Moravia (Kyjov, Czech Republic) (Čtyroký, 1975)

***Lymnocardium conjungens* (Hoernes, 1870)**

(Tab. VI, Fig. 4)

- 1837 *Cardium conjungens* Partsch - Hauer: p. 423
 1870 *Cardium conjungens* - Hörnes: p. 206, Tab. 30, Fig. 4
 1892 *Lymnocardium conjungens* (Partsch, 1837) - Brusina: p. 185
 1953 *Lymnocardium conjungens* (Partsch) - Papp: p. 196, Tab. 23, Figs. 5-6, 10-12
 1959 *Lymnocardium conjungens* Partsch - Miletic-Spajic: Tab. 8, Fig. 4
 1964 *Lymnocardium conjungens* Partsch - Andrusov: p. 467, Tab. 3, Figs. 16-18
 1967 *Lymnocardium conjungens* Partsch - Spajic: p. 115, Tab. 1, Figs. 1-9
 1995 *Lymnocardium conjungens* (Hoernes) - Fordinál: p. 31, Tab. 5, Fig. 1

Sample: 1 individual

Description: Hornes (1870) p. 206

Occurrence: Pezinok, bed 34

Stratigraphic and geographic extent: The species is known from the Pannonian D-E zones of Austria (Vösendorf, Regelsbrunn, Hengersdorf, Stegersbach), from the Pannonian D zone of Slovakia (Bratislava), E zone of Croatia (Markuševac), Serbia (Topolovnik), Moravia (Kyjov, Czech Republic) (Čtyroký, 1975) and from the Upper Pannonian of Hungaria (Lázi) (Bartha, 1963).

Subfamilia *DIDACNINAE*

Genus *DIDACNA* Eichwald, 1838

Typical species *Cardium trigonoides* Pallas

***Didacna deserta* (Stoliczka, 1862)**

- 1862 *Cardium desertum* Stol. - Stoliczka: p. 538, Tab. 17, Fig. 10

- 1892 *Lymnocardium desertum* (Stoliczka, 1862) - Brusina: p. 187,
 1902 *Lymnocardium desertum* (Stol.) - Brusina: Tab. 28, Figs. 24-25
 1907 *Lymnocardium desertum* Stol. - Troll: p. 44
 1921 *Lymnocardium desertum* (Stoliczka) - Wenz: p. 84
 1927 *Lymnocardium desertum* Stoliczka sp. - Pavlovic: p. 40
 1953 *Didacna deserta deserta* (Stoliczka) - Papp: p. 201, Tab. 23, Figs. 15-16
 1959 *Didacna deserta* (Stoliczka) - Miletic - Spajic: Tab. 7, Figs. 7-8
 1967 *Didacna deserta* (Stoliczka) - Spajic: p. 117, Tab. 2, Figs. 15-16
 1980 *Didacna deserta* (Stoliczka, 1862) - Lueger: p. 114, Tab. 3, Fig. 3
 1990 *Didacna deserta* (Stoliczka) - Basch: p. 73
 1995 *Didacna deserta* (Stoliczka) - Fordinál: p. 32, Tab. 6, Figs. 2-3

Sample: 1 individual

Description: Papp (1953) p. 201

Occurrence: Pezinok, bed 36

Stratigraphic and geographic extent: The species is known from the Pannonian of Croatia, Serbia, Austria and Slovakia.

Subfamilia *ADACNINAE*

Genus *MONODACNA* Eichwald, 1838

Typical species *Corbula caspia* Eichwald

***Monodacna vienensis* Papp, 1953**

- 1953 *Monodacna vienensis* n. sp. - Papp: p. 200, Tab. 22, Figs. 19-21
 1995 *Monodacna viennensis* Papp, 1953 - Fordinál: p. 34,

Sample: 1 individual

Description: Papp (1953) p. 200

Occurrence: Pezinok, bed

Stratigraphic and geographic extent: The species is known from the Pannonian D (Föllig) and E (Vösendorf) zones of Austria and from the Pannonian D zone of Slovakia (Bratislava).

Familia *SPHAERIIDAE*

Genus *PISIDIUM* Pfeiffer, 1821

Typical species *Tellina amnica* Müller

***Pisidium* sp.**

Sample: 7 individuals

Occurrence: Pezinok, bed 26

Notes: Small shells of genus *Pisidium* were found in the sand of the bed 26. I was not able to identify them more precisely.

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The captions to the photographs

Tab. I

- Fig. 1 *Theodoxus postcrenulatus* Papp, bed 26, enlarged 6x
- Fig. 2 *Theodoxus turislavicus* Jekelius, bed 26, enlarged 10x
- Fig. 3 *Theodoxus intracarpaticus* Jekelius, bed 34, enlarged 10x
- Fig. 4 *Theodoxus leobersdorfensis dacicus* Jekelius, bed 26, enlarged 10x
- Fig. 5 *Theodoxus soceni* Jekelius, bed 26, enlarged 6x
- Fig. 6 *Valvata gradata globulosa* Jekelius, bed 34
- Fig. 7 *Stenothyrella ovoidea* (Pavlovic), bed 34

Tab. II

- Fig. 1 *Pyrgula unicarinata* Brusina, bed 36
- Fig. 2 *Micromelania banatica fuchsi* Papp, bed 36
- Fig. 3 *Micromelania* sp., bed 36
- Fig. 4 *Pyrgula incisa* Fuchs, bed 36
- Fig. 5 *Pyrgula hungarica* Lörenthey, bed 36
- Fig. 6 *Micromelania bielzi* Brusina, beds 34
- Fig. 7 *Prososthenia serbica* Brusina, bed 34
- Fig. 8 *Micromelania variabilis* Lörenthey, bed 36
- Fig. 9 *Micromelania loczyi* Lörenthey, bed 34

Tab. III

- Fig. 1 *Melanopsis impressa impressa* Krauss, bed 36, enlarged 1,5x
- Fig. 2 *Melanopsis impressa carinitissima* Sacco, bed 36, enlarged 1,5x
- Fig. 3 *Melanopsis vindobonensis* Fuchs, bed 36, enlarged 1,5x

- Fig. 4 *Melanopsis impressa posterior* Papp, bed 36, enlarged 1,5x
- Fig. 5 *Melanopsis impressa pseudonarzolina* Papp, bed 36, enlarged 1,5x
- Fig. 6 *Melanopsis handmanni* Brusina, bed 36, enlarged 4x
- Fig. 7 *Melanopsis bouei multicostata* Handmann, bed 36, enlarged 5x
- Fig. 8 *Melanopsis pygmaea turrata* Handmann, bed 36, enlarged 4x
- Fig. 9 *Caspia* sp. bed 26, enlarged 10x
- Fig. 10 *Bithynia jurinaci* (Brusina), bed 42, enlarged 5x
- Fig. 11 *Melanopsis pygmaea mucronata* Handmann, bed 36, enlarged 4x
- Fig. 12 *Melanopsis pygmaea pygmaea* Handmann, bed 36, enlarged 4x
- Fig. 13 *Melanopsis affinis* Handmann, bed 36, enlarged 4x
- Fig. 14 *Melanopsis sturii* Fuchs, bed 42, enlarged 4x

Tab. IV

- Fig. 1 *Dreissena cf. turislavica* Jekelius, bed 36, enlarged 7,8x
- Fig. 2 *Congeria gitneri* Brusina, bed 36, enlarged 7,8x
- Fig. 3 *Congeria doderleini* Brusina, bed 36, enlarged 4x
- Fig. 4 *Congeria ringeiseni* Jekelius, bed 34, enlarged 6,2x
- Fig. 5 *Congeria neumayri* Andrusov, bed 26, enlarged 2,6x
- Fig. 6 *Congeria unguilacaprae* Münster, bed 36, natural size
- Fig. 7 *Congeria croatica* Brusina, bed 36 natural size

Tab. V

- Fig. 1 *Congeria subglobosa subglobosa* Partsch, bed 34, natural size
- Fig. 2 *Congeria subglobosa longitesta* Papp, bed 34, natural size

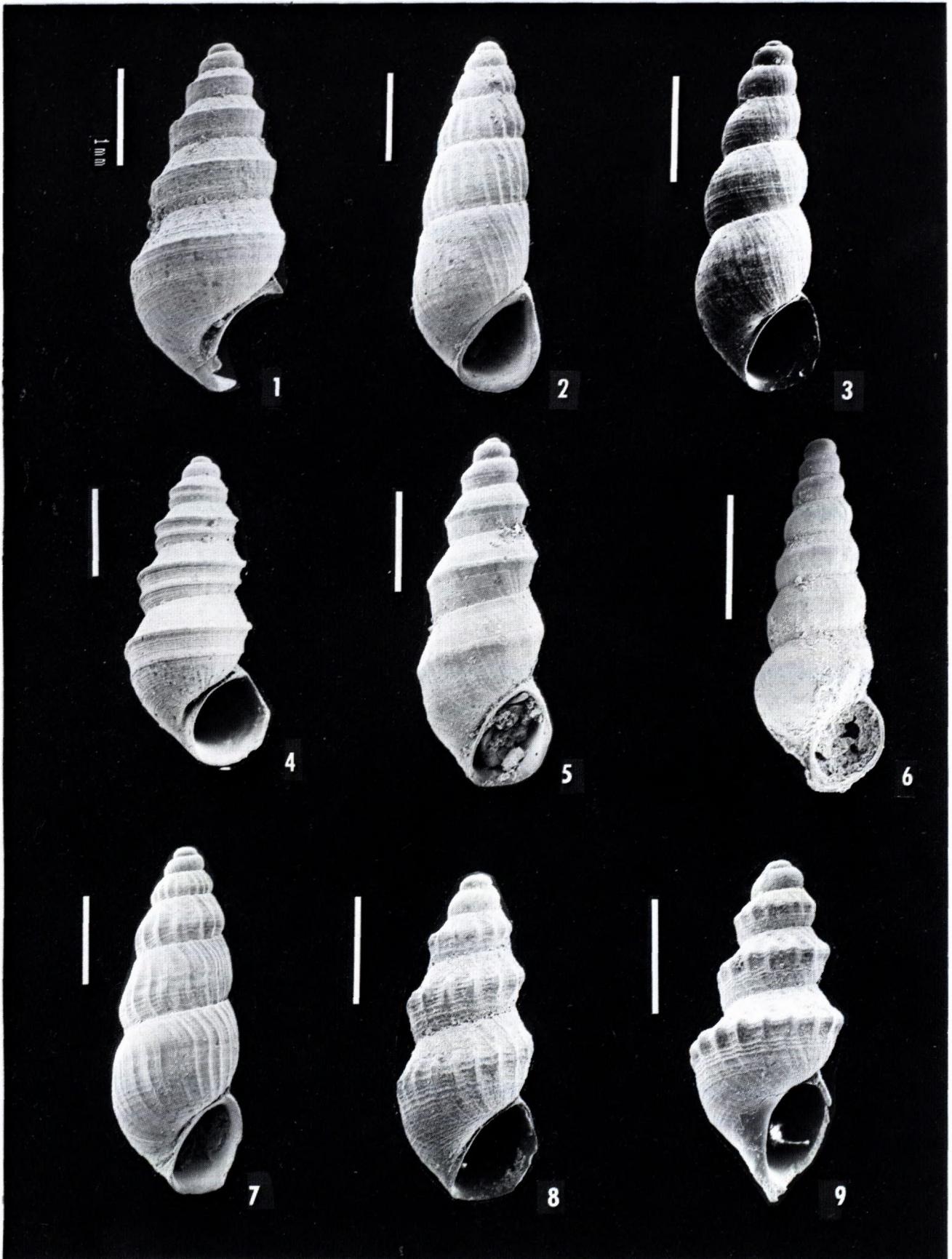
Tab. VI

- Fig. 1-2 *Dreissena bipartita* Brusina, bed 36
- Fig. 3 *Dreissenomya primiformis* Papp, bed 36
- Fig. 4 *Lymnocardium conjungens* (M. Hoernes), beds 34, enlarged 2,7x
- Fig. 5 *Congeria spatulata* nov. ssp.? bed 34, natural size

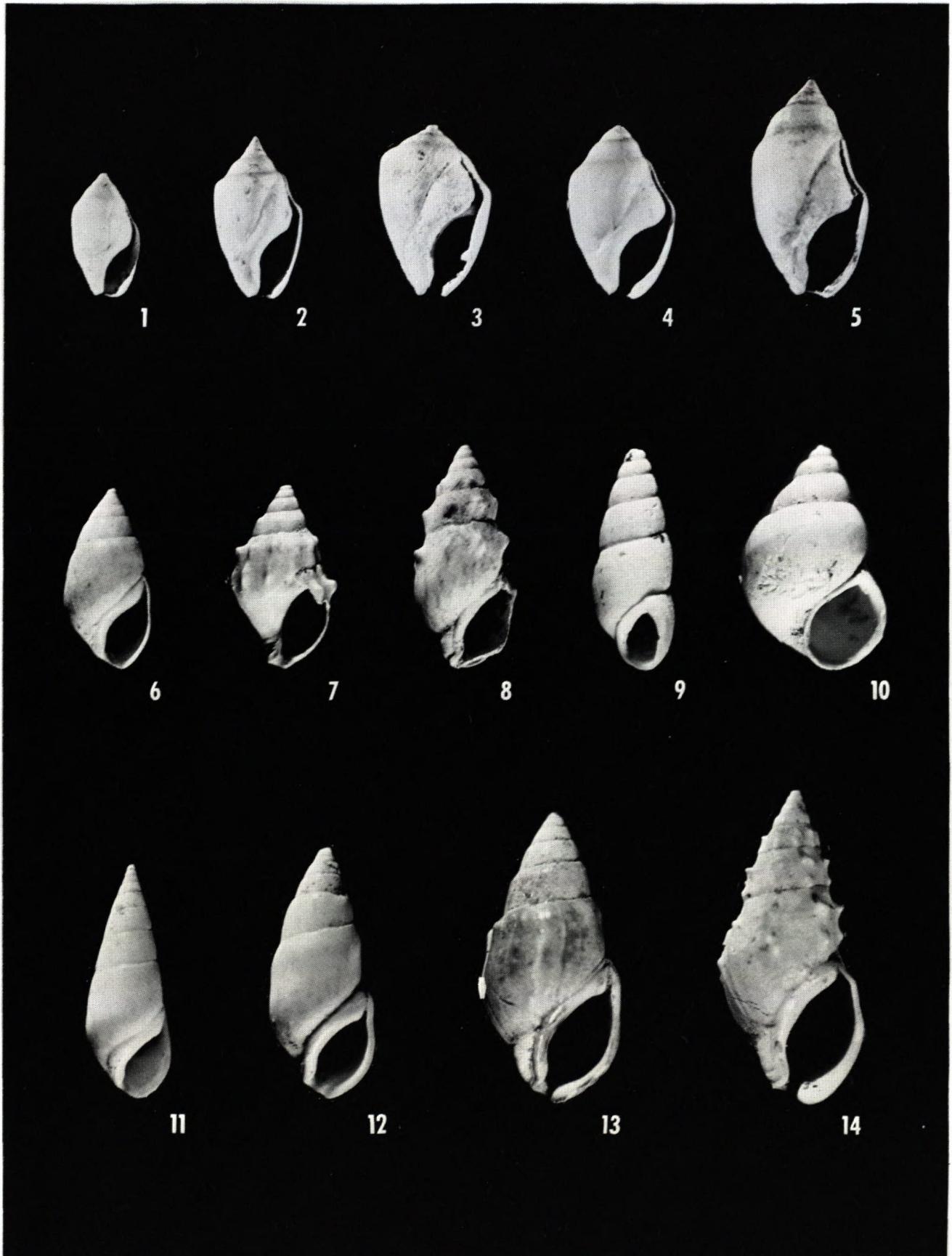
Fossils on the Tab. I, Figs. 6-7, Tab. III and Tab. VI, Figs. 1-3 were photographed on the SEM Jeol-840 at the Geological Survey of Slovak Republic (operator J. Stankovič); other photographs were taken by L. Osvald.



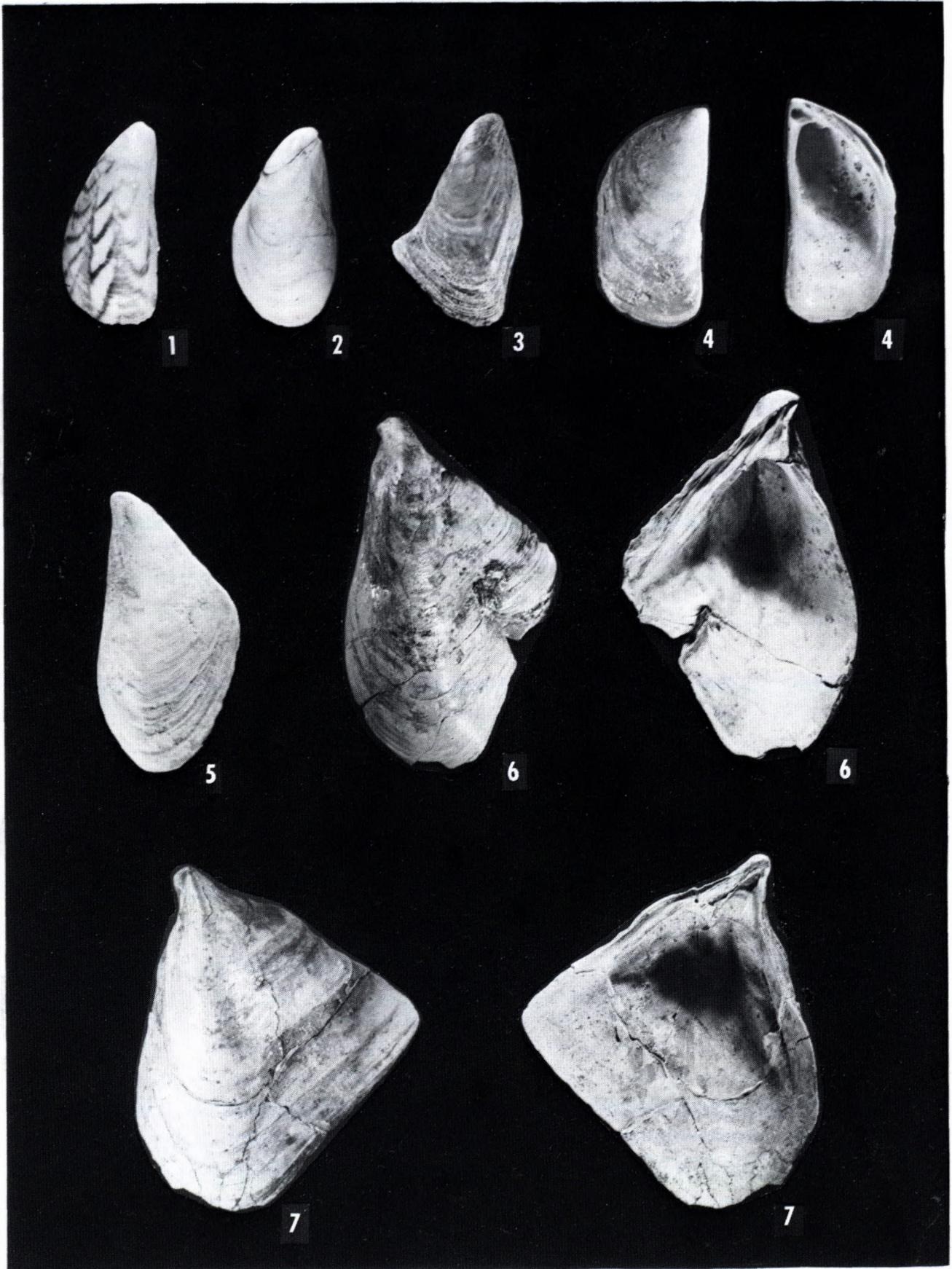
Tab. II

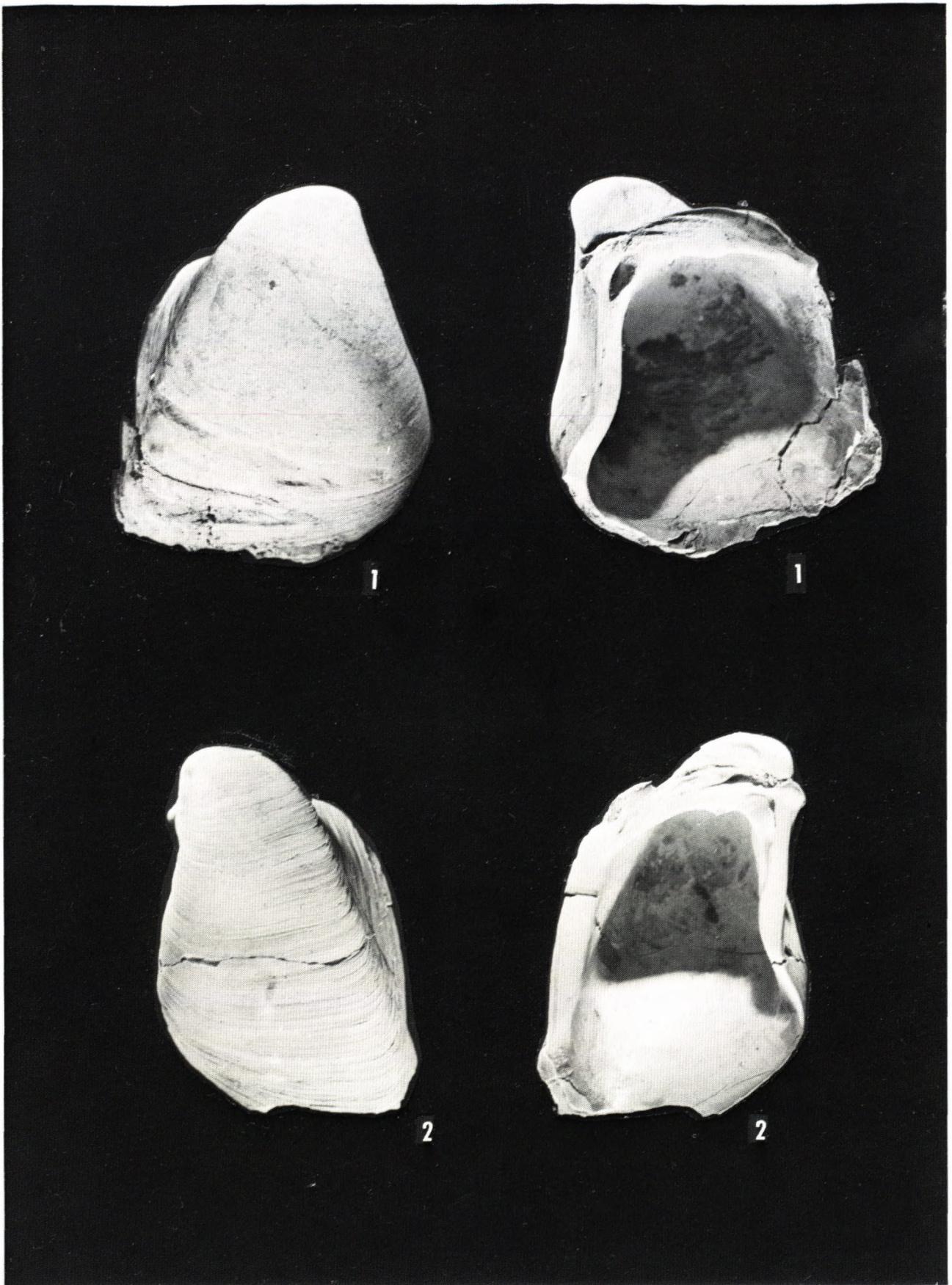


Tab. III



Tab. IV





Tab. VI

