

IDOCERATINAE (*PRESIMOCERAS*, *TRENERITES* AND *LESSINICERAS* GENERA) FROM “*ACANTHICUM* BEDS” OF THE HĂGHIMAȘ MTS. (THE EASTERN CARPATHIANS – ROMANIA)

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Abstract. This paper deals with the paleontological study on the Idoceratinae species (for *Presimoceras*, *Trenerites* and *Lessinicerias* genera) found in the Kimmeridgian deposits from Ghilcoș and Ciofronca (Hăghimaș Mts). The number of the identified species reaches 11 taxa. Also, there have been revised all species described by the previous authors: Herbich, Neumayr and Preda.

Keywords: Idoceratinae, taxonomy, Hăghimaș.

Rezumat. Idoceratinae (genurile *Presimoceras*, *Trenerites* și *Lessinicerias*) din „Stratele cu *Acanthicum*” din Munții Hăghimaș (Carpații Orientali – România). În lucrare este prezentat studiul taxonomic al speciilor din familia Idoceratinae (genurile *Presimoceras*, *Trenerites* și *Lessinicerias*) găsite în depozitele kimmeridgiene din Ghilcoș și Ciofronca (Munții Hăghimaș). Numărul speciilor identificate a ajuns la 11 taxoni. De asemenea, în lucrare sunt revizuite toate speciile descrise de autorii anteriori: Herbich, Neumayr și Preda.

Cuvinte cheie: Idoceratinae, taxonomie, Hăghimaș.

INTRODUCTION

The outcrops (F1, F2, F17 in GRIGORE et al., 2009) from which the studied fauna was collected are situated in the Hăghimaș Mts. Some of them (F1, F2) are included in the Cheile Bicazului – Hăghimaș National Park. From this region only 4 species from *Presimoceras* genus were known until now while other two genera *Trenerites* and *Lessinicerias* are documented. The number of identified species arises now to 11 taxa. Three holotypes are known from this region, being described by the previous authors.

Systematics

Abbreviations for the measurements, collections and outcrops:

D _{max} = maximal diameter	GIR = Geological Institute of Romania
D _{ph} = phragmocone diameter	GIA = Geological Institute of Austria (Bundesanstalt)
D = measured diameter	UBB = ”Babeș Bolyai” University from Cluj Napoca
U = diameter of umbilicus	LGB = Geology Laboratory of Bucharest University
H = height	LPB = Paleontology Lab. of Bucharest University
W = width	MNSPN = Museum of Natural Sciences - Piatra Neamt
N _i = number of inner ribs (primary (for one whorl or a half of this))	F1 = Outcrop from western Ghilcoș walls
N _e = number of external ribs (secondary (for the same whorl as N _i or a half of this))	F2 = Outcrop from north-western Ghilcoș slope
	F17 = Outcrop from “Ciofronca” all in GRIGORE et al, 2009
	A, D... K = studied profiles (in GRIGORE, 2002; in press)

Suprafamily Perisphinctaceae STEINMANN, 1890

Family Perisphinctidae STEINMANN, 1890

Subfamily Idoceratinae SPATH, 1924

Genus *Presimoceras* SARTI, 1990

Presimoceras herbichi (VON HAUER, 1866) in NEUMAYR, 1873

Pl. 1, Figs. 2, 4, 6, 7

1866 *Ammonites Herbichi* HAUER; p. 194

*1873 *Simoceras Herbichi* HAUER - NEUMAYR; p. 186; Pl. 40, Figs. 1, 2 (Holotype)

1878 *Simoceras Herbichi* HAUER-HERBICH; p. 168

1973 *Simoceras herbichi* (HAUER) - PREDA; Pl. 16, Fig. 2

1973 *Simoceras teres* NEUMAYR - PREDA; Pl. 14, Fig. 4

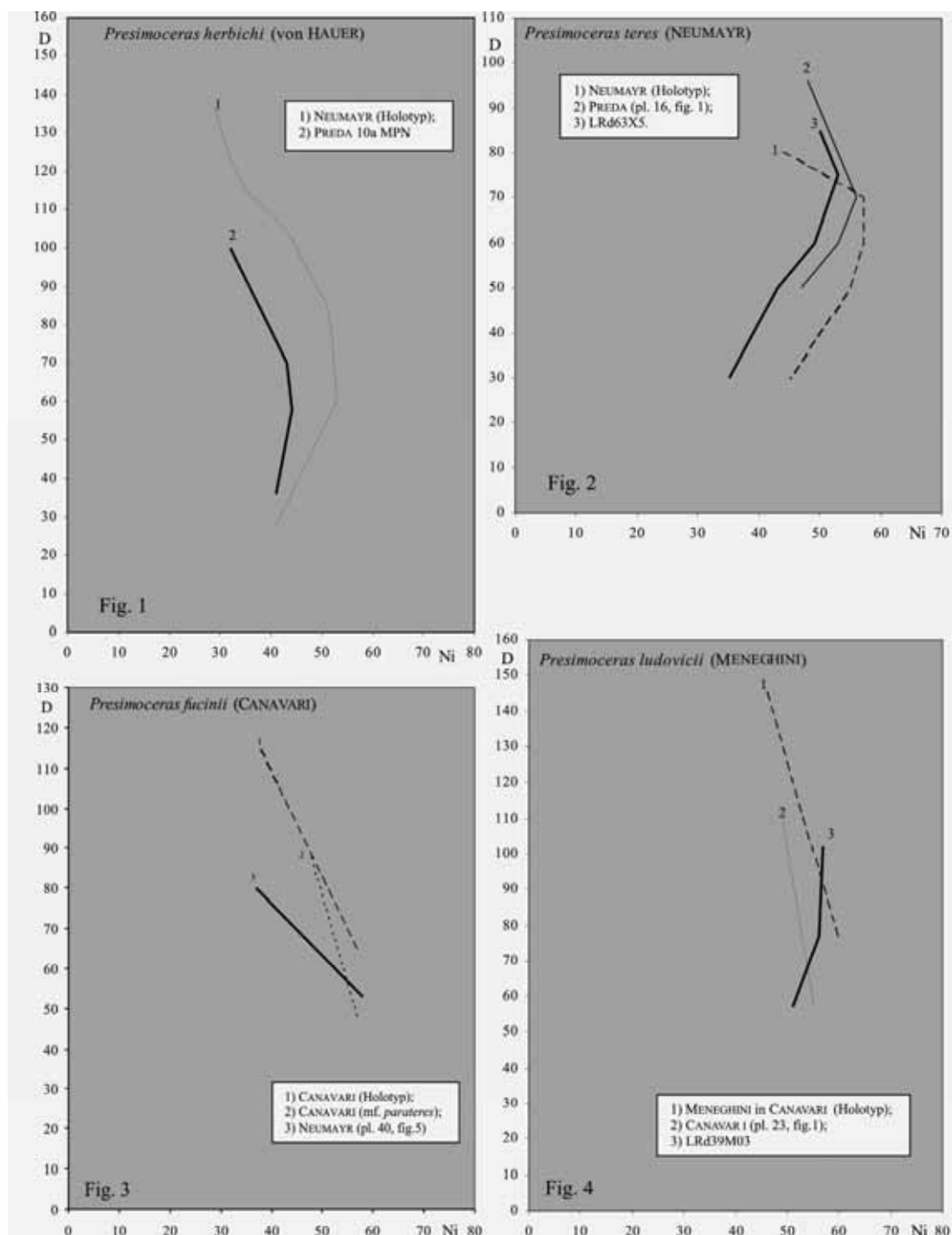
1990 *Presimoceras herbichi* (HAUER) - SARTI; p. 44, Fig. 10

Material (*Presimoceras* cf. *herbichi*): LRd55W5.0, LRd46A, LRd51A11, LRd65J, LRd64T1.0 Grigore Collection in GIR; Holotype (NEUMAYR 1873): inv. 2051 UC in the Collection of UBB, it originates from red nodular limestones of Ciofronca outcrop; Preda’s specimens (1973): inv. 10a MPN (Pl. 1, Fig. 2) in the Collection of MNSPN, it originates from grey nodular limestones and “D1” MPN (“*Simoceras teres*” Pl. 1, Fig. 4) probably moved in the Collection of LGB; it originates from grey nodular limestones – both specimens from Ghilcoș outcrop.

Table 1. Measurements of *Presimoceras herbichi* (VON HAUER, 1866) specimens.
 Tabel 1. Măsurători ale exemplarelor de *Presimoceras herbichi* (VON HAUER, 1866).

Specimen	Dmax	Dph	D	U	H	W	U/D	H/D	W/D	W/H	Ni
Holotype	140	95	140	85	31	29	0.61	0.22	0.21	0.94	26
Preda 10a MPN	101	93	101	59	22	22	0.58	0.22	0.22	1	32
Preda "D1 MPN"	103	-	103	61	26	-	0.59	0.25	-	-	-

Remarks: my specimens represent fragments of whorls from big phragmocones. They have been assigned to this species on the base of comparison at similar whorl heights of holotype. The 10aMPN specimen (Preda Collection) is medium sized and well preserved. It has 1/5 from the body chamber and its section is more isometric that at holotype. The D1MPN specimen (Preda) is a half from a medium sized conch which preserves 1/3 from the body chamber. Both preserve well the specific ornamentation (ribbing curves in Fig. 1).



Figures 1, 2, 3, 4: ribbing curves - 1) *Presimoceras herbichi*; 2) *Presimoceras teres*; 3) *Presimoceras fucinii*; 4) *Presimoceras ludovicii*. / Figurile 1, 2, 3, 4: curbe de costatie - 1) *Presimoceras herbichi*; 2) *Presimoceras teres*; 3) *Presimoceras fucinii*; 4) *Presimoceras ludovicii*.

Occurrence: Early Kimmeridgian–Divisum Zone in F1, F2 and F17 outcrops (W, T, A and J profiles); Early Kimmeridgian–Herbichi Zone in Italy and Divisum Zone in Spain, Germany.

Presimoceras teres (NEUMAYR, 1871)

1871 *Perisphinctes* (?) *teres* NEUMAYR; p. 23

1873 *Simoceras teres* NEUMAYR - NEUMAYR; p. 187; Pl. 40, Fig. 4, non Fig. 5 (= *Presimoceras fucinii*)

1878 *Simoceras teres* NEUMAYR - HERBICH; p. 169 (only specimen “A”, “B” specimen is *P. fucinii*)

Non 1973 *Simoceras teres* NEUMAYR - PREDA; Pl. 14, Fig. 3 (= *Presimoceras* cf. *planulacinctum*)

Non 1973 *Simoceras teres* NEUMAYR - PREDA; Pl. 14, Fig. 4 (= *Presimoceras herbichi*)

1973 *Simoceras teres* NEUMAYR - PREDA; Pl. 16, Fig. 1

1990 *Presimoceras teres* (NEUMAYR) - SARTI; p. 45; Fig. 9A

1993 *Presimoceras teres* (NEUMAYR) - SARTI; p. 110

Material: LRd63X5; *Presimoceras* cf. *teres*: LRd48A10 Grigore Collection in GIR; Neumayr’s holotype (1873): in the Collection of GIA, it originates from red nodular limestones of Ciofronca outcrop; Herbich’s “A” specimen: in the Collection of UBB, it originates from red nodular limestones of Ciofronca outcrop; Preda’s specimen (figured in 1973, Pl. 16, Fig. 1): “D2” MPN in Collection of MNISP moved in LGB, it originates from grey nodular limestones of Ghilcoș outcrop.

Table 2. Measurements of *Presimoceras teres* (NEUMAYR, 1871) specimens.
Tabel 2. Măsurători ale exemplarelor de *Presimoceras teres* (NEUMAYR, 1871).

Specimen	Dmax	Dph	D	U	H	W	U/D	H/D	W/D	W/H	Ni
Holotype	78	-	78	48	16	-	0.61	0.21	-	-	46
Herbich “A”	79	-	79	47	17	20	0.60	0.22	0.25	1.20	-
Preda “D2” MPN	96	-	96	56	23	-	0.58	0.24	-	-	-
LRd63X5	80	80	70	39	18	18	0.56	0.26	0.26	1	50

Remarks: the LRd63X5 specimen is a large phragmocone with the ornamentation well preserved. It differs from Neumayr’s specimen by number of bifurcated ribs, by the presence of radial constrictions and a narrow umbilicus. The assigned specimen represents a large whorl from a body chamber with the specific ornamentation well preserved. Herbich’s specimen is large sized, well preserved, and that of Preda’s („D”MPN) is a half of a large sized conch, which preserves 1/3 from the body chamber (ribbing curves in Fig. 2).

Occurrence: Early Kimmeridgian–Divisum Zone in F1, F2 and F17 outcrops (A, X profiles); Early Kimmeridgian–Herbichi Zone in Italy and Divisum Zone in Spain, Germany.

Presimoceras explanatum (NEUMAYR, 1871)

1871 *Perisphinctes* (?) *explanatus* NEUMAYR; p. 23

1873 *Simoceras explanatum* NEUMAYR - NEUMAYR; p. 187; Pl. 40, Fig. 3

1878 *Simoceras explanatum* NEUMAYR - HERBICH; p. 169

1973 *Simoceras explanatum* NEUMAYR - PREDA; Pl. 15, Fig. 2

Material: Neumayr’s Holotype: in Collection of GIA, it originates from red nodular limestones of Ciofronca outcrop; Preda’s specimen (1973): “D3” MPN (here) in the Collection of MNISP was refigured by M. Pelin (1976; Pl. 5, Fig. 1) and moved in the Collection of LGB; it originates from grey nodular limestones of Ghilcoș outcrop.

Table 3: Measurements of *Presimoceras explanatum* (NEUMAYR, 1871) specimens.
Tabel 3. Măsurători ale exemplarelor de *Presimoceras explanatum* (NEUMAYR, 1871).

Specimen	Dmax	Dph	D	U	H	W	U/D	H/D	W/D	W/H	Ni
Holotype	126	126	126	69	29	21	0.55	0.23	0.17	0.72	41
Preda “D3” MPN	94	94	92	49	23	20	0.53	0.25	0.22	0.87	38

Remarks: Preda’s specimen (“D3” MPN) is a large phragmocone with subrectangular cross-section, flat flanks and tabulated venter. Its ornamentation differs from Neumayr’s specimen by more rigid ribs and the point for decrease of density marked from 76 mm in diameter (not at 100 mm).

Occurrence: Early Kimmeridgian–Divisum Zone from F2 and F17 outcrops; Early Kimmeridgian–Herbichi Zone in Italy and Divisum Zone in Spain, Germany.

Presimoceras fucinii (CANAVARI, 1898)

1873 *Simoceras teres* NEUMAYR - NEUMAYR; Pl. 40, Fig. 5

1878 *Simoceras teres* NEUMAYR - HERBICH; p. 169

*1898 *Simoceras fucinii* nov. sp. - CANAVARI; p. 253; Pl. 22, Fig. 2 (Holotype)

1898 *Simoceras parateres* nov. sp. - CANAVARI; p. 255; Pl. 22, Fig. 1 non Pl. 23, Fig. 3

1990 *Presimoceras fucinii* (CANAVARI) - SARTI; p. 45, Fig. 3

Material: LRd53A7 (*Presimoceras* cf. *fucinii*) Grigore Collection in GIR; Neumayr’s (as *Simoceras teres*, Pl.

40, Fig. 5) specimen: in Collection of GIA, it originates from red nodular limestones of Ciofronca outcrop; Herbich's (as *Simoceras teres*) specimen: "B" (here) in Collection of UBB, it originates from grey nodular limestones of Ghilcoş outcrop.

Table 4. Measurements of *Presimoceras fucinii* (CANAVARI, 1898) specimens.
Tabel 4. Măsurători ale exemplarelor de *Presimoceras fucinii* (CANAVARI, 1898).

Specimen	Dmax	Dph	D	U	H	W	U/D	H/D	W/D	W/H	Ni
Holotype	120	90	120	72	26	30	0.60	0.22	0.25	1.15	36
Neumayr sp.	80	-	68	38	15	20	0.56	0.22	0.29	1.33	-
Herbich "B"	57	-	57	34	12	17	0.59	0.21	0.29	1.40	-

Remarks: my specimen is assigned to this species because it is only a whorl fragment which presents specific features at similar heights of whorls (compared to holotype). Revising the specimens of *Simoceras teres* described by Herbich and Neumayr, we found more similitudes with this *P. fucini* in morphology and in evolution of the ribs (Fig. 3).

Occurrence: Early Kimmeridgian–Divisum Zone in F2 and F17 outcrops; Early Kimmeridgian–Herbichi Zone in Italy and Divisum Zone in Spain, Germany.

Presimoceras ludovicii (MENEHINI, 1879)

Pl. 1, Figs. 1, 5

1879 *Simoceras Ludovicii* nov.sp. MENEHINI; p. 138; Pl. 10, Figs. 4, 5; in Canavari refig: Pl. 23, Fig. 2 (Holotype)

1900 *Simoceras Ludovicii* MENEHINI - CANAVARI; p. 257; Pl. 23, Figs. 1, 2

1990 *Presimoceras ludovicii* (MENEHINI) - SARTI; p. 45, Fig. 4

Material: LRd39M0.3, LRd58X5 Grigore Collection in GIR.

Table 5. Measurements of *Presimoceras ludovicii* (MENEHINI, 1879) specimens.
Tabel 5. Măsurători ale exemplarelor de *Presimoceras ludovicii* (MENEHINI, 1879).

Specimen	Dmax	Dph	D	U	H	W	U/D	H/D	W/D	W/H	Ni
Holotype	144	-	144	84	35	28	0.58	0.24	0.19	0.80	61
LRd39M0.3	102	100	102	54	27	25	0.53	0.26	0.24	0.92	59
LRd58X5	--	-	-	-	31	24	-	-	-	0.77	-

Remarks: my specimen (LRd39M0.3) is a large phragmocone which preserves well the ornamentation. Compared with the holotype it has narrower umbilicus and the section depressed. The LRd63X5 specimen is a whorl fragment of large size, with features comparable with that of the holotype (Fig. 4). Both specimens have characteristic sutures for this species.

Occurrence: Early Kimmeridgian–Divisum Zone in F2 outcrop (X and M profiles); Early Kimmeridgian–Herbichi Zone in Italy and Divisum Zone in Spain, Germany.

Presimoceras benianum (CATULLO, 1853)

1853 *Ammonites benianus* CATULLO; Pl. 2, Fig. 2

1872 *Simoceras benianum* (CATULLO) - GEMMELLARO; p. 54; Pl. 12, Fig. 1

1897 *Simoceras benianum* CATULLO - CANAVARI; p. 231; Pl. 30, Fig. 1

1873 *Simoceras benianum* CATULLO - NEUMAYR; p. 186

1878 *Simoceras benianum* CATULLO - HERBICH; p. 168

Material: Herbich's specimens: in Collection of UBB, it originates from red nodular limestones of Ciofronca outcrop.

Remarks: the specimens of Herbich's are known only from his paper (1878) and they are poorly described. It is noted the specific feature of ribs, which over passes ventral region only.

Occurrence: Early Kimmeridgian–Divisum Zone in F17 outcrop; Early Kimmeridgian–Herbichi Zone in Italy.

Presimoceras cf. planulascinctum (QUENSTEDT, 1888)

Pl. 1, Fig. 3

1888 *Ammonites planulascinctus* nov.sp. QUENSTEDT; p. 978; Pl. 108, Fig. 14

1959 *Nebroditis (Mesosimoceras) planulascinctus* (QUENSTEDT) - ZIEGLER; p. 42; Pl. 1, Fig. 20

1973 *Simoceras teres* NEUMAYR - PREDA; pl. 14, Fig. 3

1978 *Nebroditis (Mesosimoceras) planulascinctus* (QUENSTEDT) - OLORIZ; p. 191; Pl. 16, Figs. 3 a, b

1990 *Presimoceras planulascinctum* (QUENSTEDT) - SARTI; p. 45; Pl. 45, Fig. 3

Material: Preda's specimen: 44 MPN in the Collection of MNISP, it originates from red nodular limestones of Ghilcoş outcrop.

Remarks: Preda's specimen (44MPN) represents a segment of a conch, which preserves a part of the body chamber. The ornamentation is well preserved. Compared with the holotype it has a more compressed section and a slightly increased density of the ribs.

Occurrence: Kimmeridgian, Divisum Zone probably from F1 outcrop of Ghilcoș Mts.; Early Kimmeridgian–Herbichi Zone Italy and Divisum Zone in Spain, Germany.

Genus *Trenerites* SARTI, 1993

Trenerites enayi SARTI, 1993

1993 *Trenerites enayi* nov. sp. - SARTI; p. 107; Pl. 21, Figs. 1 a, b; Pl. 22, Figs. 2 a-d; text Figs. 51, 52

Material: LRd21F3 and *Trenerites* cf. *enayi*: LRd13F2, LRd12F4, LRd4F5, LRd5F1 and LRd70W1.0 Grigore Collection in GIR.

Table 6. Measurements of *Trenerites enayi* SARTI, 1993 specimens.
Tabel 6. Măsurători ale exemplarelor de *Trenerites enayi* SARTI, 1993.

Specimen	Dmax	Dph	D	U	H	W	U/D	H/D
Holotype	155	93.3	33.8	27	0.60	0.22	0.17	1.26
LRd21F3	-	-	30	23	-	-	-	1.30

Remarks: the LRd21F3 specimen represents a fragment from a large phragmocone and others five specimens are small - representing juveniles. The first was analyzed by comparison of its external features (whorl section, ribbing) and sutures with that of the holotype at comparable heights. The LRd13F2 and LRd12F4 are deformed; LRd70W1.0 is better preserved and all three are comparable with the Paratype features.

The LRd4F5 and LRd5F1 specimens differ from this species through a more compressed section under 30 mm diameter.

Occurrence: Early Kimmeridgian-Platynota (in top)/Strombecki (in base) interval in F1, F2 and F17 outcrops (F, W profiles); Early Kimmeridgian-Silenium Zone (*Trenerites* Subzone) in Italy.

Trenerites sp.

1993 *Trenerites* nov.sp.indet. SARTI; p. 106; Pl. 22, Figs. 1 a, b; text Figs. 50, 52 B

Material: LRd8E1, LRd7E2 Grigore Collection in GIR.

Table 7. Measurements of *Trenerites* sp. specimens.
Tabel 7. Măsurători ale exemplarelor de *Trenerites* sp.

Specimen	Dmax	Dph	D	U	H	W	U/D	H/D
Sarti sp. (P135A)	44	26.7	7.5	-	0.61	0.17	-	-
LRd8E1	25	15	6	6	0.60	0.24	0.24	1
LRd7E2	28	15	7	7.5	0.54	0.25	0.27	0.93

Remarks: two juvenile specimens with similar parameters of *Trenerites* sp. indet. (SARTI). Specimen LRd8E1 differs by an ogivale section and a medio-ventral groove; LRd7E2 has the ribs more projected.

Occurrence: Early Kimmeridgian-Platynota Zone (in top) in F2 outcrop (E profile); Early Kimmeridgian-Silenium /Strombecki interval in Italy.

Genus *Lessinicerias* PAVIA et al., 1987 emended by SARTI, 1993

Lessinicerias ptychodes (NEUMAYR 1873)

Pl. 2, Fig. 1

1873 *Perisphinctes ptychodes* nov.sp. NEUMAYR; p. 175; Pl. 36

1900 *Perisphinctes ptychodes* NEUMAYR - CANAVARI; p. 3; Pl. 2, Fig. 1

1986 *Mesosimoceras ptychodes* NEUMAYR - SARTI; p. 326; Pl. 1

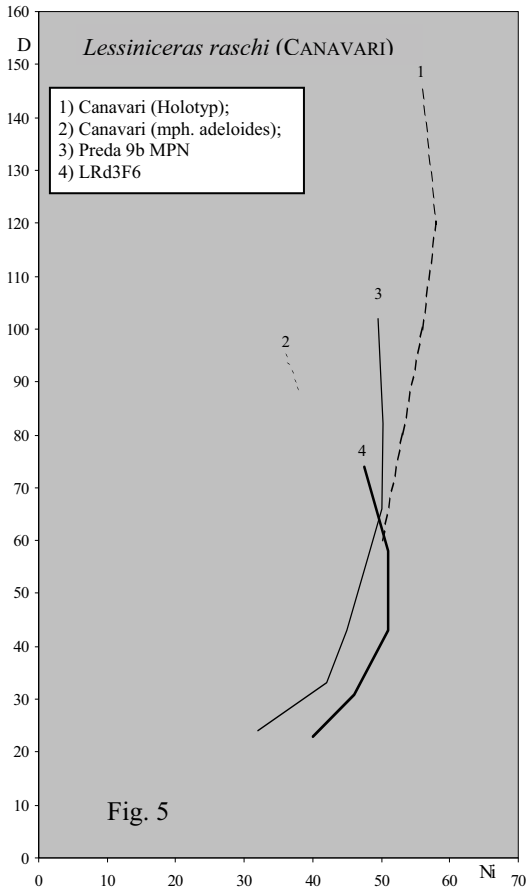
1987 *Idoceras (Lessinicerias) ptychodes* (NEUMAYR) - PAVIA et al.; p. 76; Pl. 2, Figs. 1, 2

1993 *Lessinicerias ptychodes* (NEUMAYR) - SARTI; p. 111; text Figs. 54 B-C, 55

Material: LRd2E2, LRd1E Grigore Collection in GIR.

Table 8. Measurements of *Lessinicerias ptychodes* (NEUMAYR, 1873) specimens.
Tabel 8. Măsurători ale exemplarelor de *Lessinicerias ptychodes* (NEUMAYR, 1873).

Specimen	Dmax	Dph	D	U	H	W	U/D	H/D
Holotype (ø1)	240	133	59	-	0.55	0.24	-	-
- (ø2)	181	96	48	-	0.53	0.26	-	-
- (ø3)	132	67	37	-	0.49	0.28	-	-
Canavari sp.	280	152	75	53	0.54	0.27	0.19	1.41
LRd2E2	140	75	37	27	0.53	0.26	0.19	1.37
LRd1E	130	63	36	25	0.48	0.28	0.19	1.44



Remarks: the LRd2E2 specimen is half of a big conch, which preserves the final part of the body chamber. The specimen is badly conserved, the ornamentation from the inner whorls being affected. The LRd1E specimen is a phragmocone affected by erosion, but with recognizable features of this species.

Occurrence: Early Kimmeridgian-Platynota Zone (in top) in F2 outcrop (E profile); Early Kimmeridgian-Strombecki/Herbichi interval in Italy.

Lessinicerias raschii (CANAVARI, 1879)

Pl. 2, Figs. 2, 3

1879 *Perisphinctes raschii* nov.sp. - CANAVARI; p. 225; Pl. 28, Fig. 1

1987 *Idoceras (Lessinicerias) raschii* (CANAVARI) - PAVIA et al.; p. 76; Pl. 2, Fig. 3; Pl. 3, Fig. 4

1993 *Lessinicerias raschii* (CANAVARI) - SARTI; p. 112; text Fig. 55

Material: LRd3F6, LRd6F4 Grigore Collection in GIR; Preda's specimen (1973): 9b MPN in the Collection of MNSPN, it originates from grey nodular limestones of Ghilcoş outcrop.

Figure 5. Ribbing curves – *Lessinicerias raschi*.

Figura 5. Curbe de costăție – *Lessinicerias raschi*.

Table 9. Measurements of *Lessinicerias raschii* (CANAVARI, 1879) specimens.
Tabel 9. Măsurători ale exemplarelor de *Lessinicerias raschii* (CANAVARI, 1879).

Specimen	Dmax	Dph	D	U	H	W	U/D	H/D	W/D	W/H	Ni	Ne
Holotype	145	145	145	64	46	32	0.44	0.32	0.22	0.70	56	92
Canavari (<i>dedaloides</i>)	95	-	95	31	37	22	0.33	0.39	0.23	0.59	46	72
Sarti sp. (LU108)	85	-	85	34	29	20	0.40	0.35	0.23	0.69	-	-
Preda 9b MPN	102	102	91	40	30	22	0.44	0.33	0.24	0.73	51	82
LRd3F6	74	73	66	26	23	16	0.39	0.35	0.24	0.70	46	76
LRd6F4	49	-	34	18	10	9	0.53	0.29	0.27	0.90	-	-

Remarks: the LRd3F6 is a phragmocone which has well preserved ornamentation. The ribs are more concave than at holotype, similar to Pavia's specimen (1987, Pl. 3, Fig. 4). LRd6F4 specimen is a juvenile that preserves the beginning of the body chamber; to a maximum diameter of 33 mm, it shows a rapid upward trend of whorl height. The ornamentation on the last portion of the whorls becomes concave and projected on ventral edge. Morphometrical parameters and morphology of both specimens fall within the specific variability (ribbing curves in Fig. 5). Preda's specimen is a phragmocone of big size, which preserves well the specific ornamentation.

Occurrence: Early Kimmeridgian-Platynota (in top)/Strombecki (in base) interval in F2 outcrop (F profile); Early Kimmeridgian-Silenum (in top)/Strombecki interval in Italy.

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PLATE 1

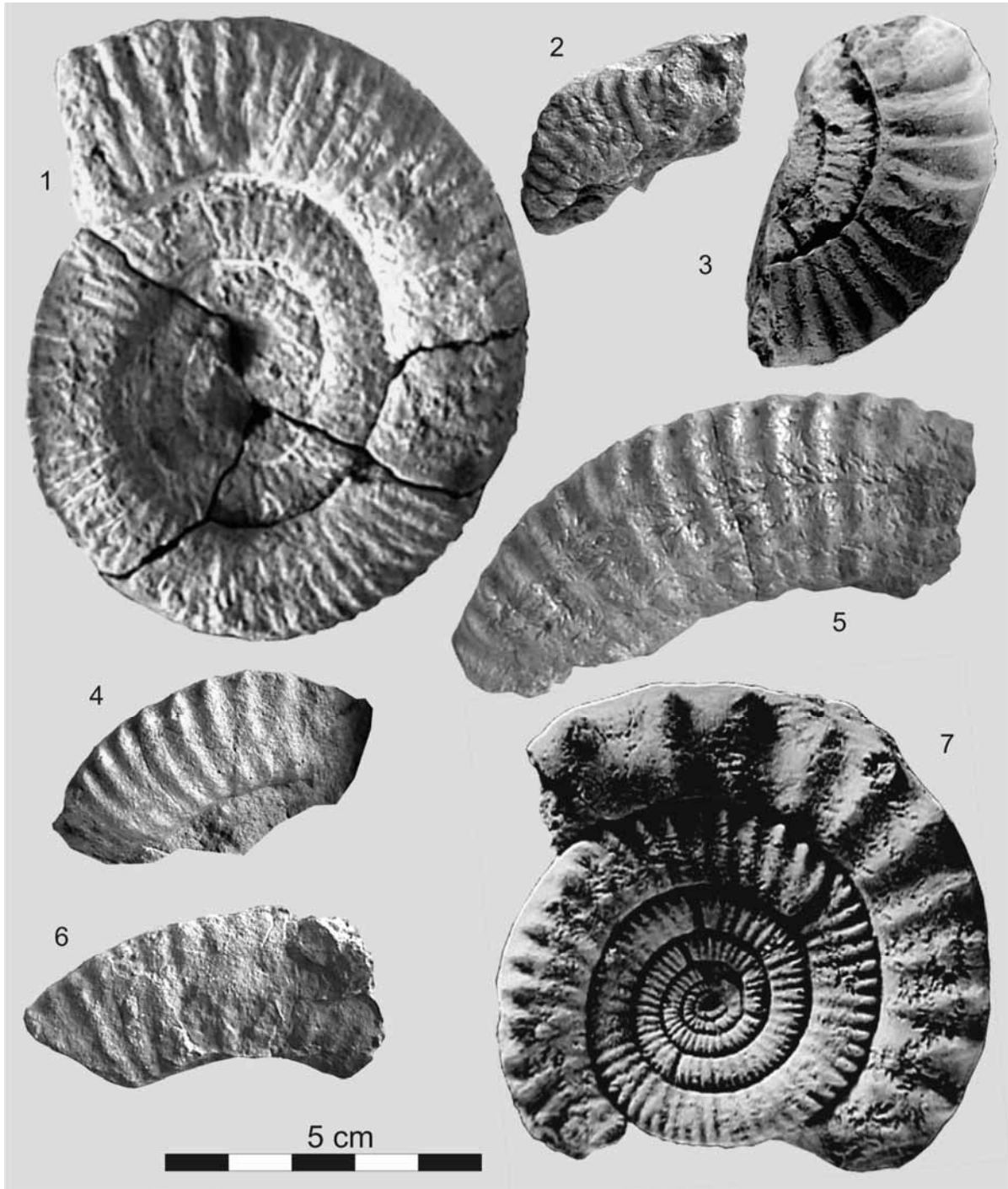


Figure 1. *Presimoceras ludovici* (CANAV.) (LRd39M0,3); green nodular limestone, Early Kimmeridgian – Divisum Zone, F2-Ghilcoş outcrop (x 1). Figure 2. *Presimoceras* cf. *herbichi* (HAUER) (LRd55W5,0); red nodular limestone, Early Kimmeridgian – Divisum Zone, F1-Ghilcoş outcrop (x 1). Figure 3. *Presimoceras* cf. *planulacinctum* (QUENST.) (44MPN); green nodular limestone, Early Kimmeridgian – Divisum Zone, F1-Ghilcoş outcrop (x 1). Figure 4. *Presimoceras* cf. *herbichi* (HAUER) (LRd46A); green nodular limestone, Early Kimmeridgian – Divisum Zone, F2-Ghilcoş outcrop (x 1). Figure 5. *Presimoceras ludovici* (CANAV.) (LRd58X5); green nodular limestone, Early Kimmeridgian – Divisum Zone, F2-Ghilcoş outcrop. Figure 6 (x 1). *Presimoceras* cf. *herbichi* (HAUER) (LRd64T1,0); green nodular limestone, Early Kimmeridgian – Divisum Zone, F1-Ghilcoş outcrop (x 1). Figure 7. *Presimoceras herbichi* (HAUER) (10MPN); green nodular limestone, Early Kimmeridgian – Divisum Zone; F2-Ghilcoş outcrop (x 1). (original).

Figura 1. *Presimoceras ludovici* (CANAV.) (LRd39M0,3); calc. nodulare verzui, Kimm. inf. - Zona Divisum, afl. F2 (x 1). Figura 2. *Presimoceras* cf. *herbichi* (HAUER) (LRd55W5,0); calcare nodulare rosii, Kimmeridgian inf. - Zona Divisum, afl. F1 (x 1). Figura 3. *Presimoceras* cf. *planulacinctum* (QUENST.) (44MPN); calc. nodulare rosii, Kimm. inf. -Zona Divisum, Ghilcoş (x 1). Figura 4. *Presimoceras* cf. *herbichi* (HAUER) (LRd46A); calcare nodulare verzui, Kimmeridgian inf. - Zona Divisum, afl. F2 (x 1) Figura 5. *Presimoceras ludovici* (CANAV.) (LRd58X5); calcare nodulare verzui, Kimmeridgian inf. - Zona Divisum, afl. F2 (x 1). Figura 6. *Presimoceras* cf. *herbichi* (HAUER) (LRd64T1,0); calc. nodulare rosii, Kimm. inf. - Zona Divisum, afl. F1 (x 1). Figura 7. *Presimoceras herbichi* (HAUER) (10MPN); calcare nodulare verzui, Kimm. inferior - Zona Divisum; afl. F2-Ghilcoş (x 1).

PLATE 2

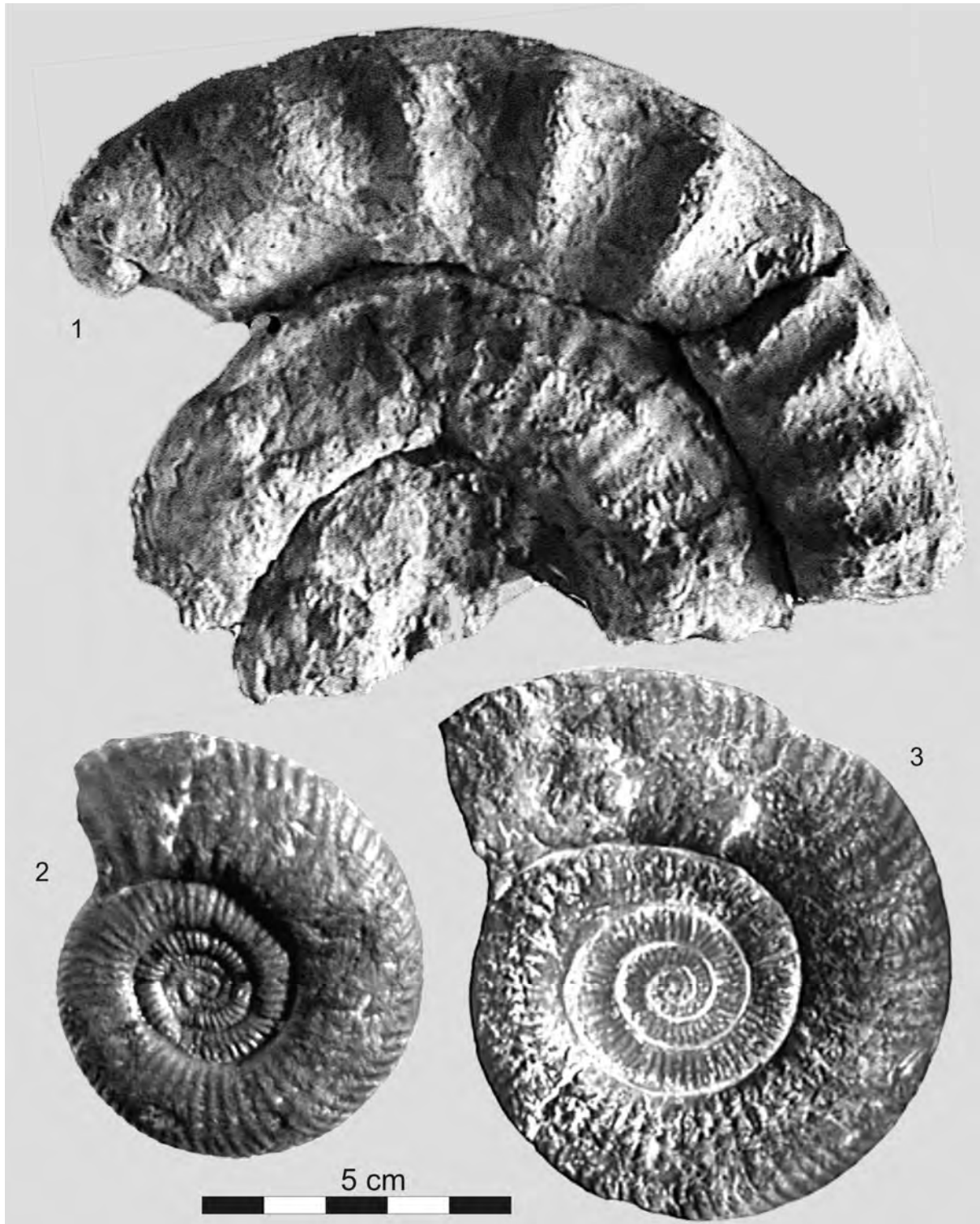


Figure 1. *Lessinicerias ptychodes* (NEUMAYR) (LRd2E2); green nodular limestone, Early Kimmeridgian – Hypselocyclum Zone (/Strombecki) (x 1), F2-Ghilcoș outcrop. Figure 2. *Lessinicerias raschii* (CANAVARI) (LRd3F6); green nodular limestone, Early Kimmeridgian - Hypselocyclum Zone (Strombecki, Raschi Subzone), F2-Ghilcoș outcrop (x 1). Figure 3. *Lessinicerias raschii* (CANAVARI) (Preda's specimen, 9bMPN); green nodular limestone, Early Kimmeridgian - Hypselocyclum Zone (/Strombecki), F2-Ghilcoș outcrop (x 1). (original).

Figura 1. *Lessinicerias ptychodes* (NEUMAYR) (LRd2E2); calcare nodulare verzui, Kimmeridgian inferior - Zona Hypselocyclum (/Strombecki), afloriment F2-Ghilcoș (x 1). Figura 2. *Lessinicerias raschii* (CANAVARI) (LRd3F6); calcare nodulare verzui, Kimmeridgian inferior - Zona Hypselocyclum (Strombecki, Subzona Raschi), afloriment F2-Ghilcoș (x 1). Figura 3. *Lessinicerias raschii* (CANAVARI) expl. Preda (9bMPN); calcare nodulare verzui, Kimmeridgian inferior - Zona Hypselocyclum (/Strombecki), afloriment F2-Ghilcoș (x 1).