REVISED AMMONITES FAUNA (*PHYLLOCERATIDS*, *LYTOCERATIDS* AND *ASPIDOCERATIDS-SUTNERIA* SPECIES) FROM "ACANTHICUM BEDS" OF THE HĂGHIMAŞ MTS. (EASTERN CARPATHIANS – ROMANIA)

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Abstract. In this paper there are described species from the groups of Phylloceratids, Lytoceratids and Aspidoceratids found in the Kimmeridgian-Tithonian deposits from Ghilcoş and Ciofronca (Hăghimaş Mts – Eastern Carpathians). There are presented 13 taxa of Phylloceratidae Family and all the species and specimens described by previous authors are revised: Herbich (1878), Neumayr (1871, 1873) and Preda (1973). *Ph. leptoptychum* described species and Herbich *Ph. bekasense* (1878) are proposed here for invalidation (*nomen nudum*). From the Lytoceratids that are first signalised in this region: *Lytoceras polycyclum camertinum, Lytoceras orsinii, Lytoceras sutile, Lytoceras liebigi, Lytoceras strambergense,* and *Protetragonites quadrisulcatus. P. quadrisulcatus* existentence is confirmed now here. From the Aspidoceratidae Family some specimens of the genera *Simocosmoceras* SPATH and *Sutneria* ZITTEL are described and are also revised the specimens of Herbich (1878), Neumayr (1873) and Preda (1973), belonging to mentioned genera. The group of *Sutneria* ZITTEL are presented here with new species discovered in this region, and with a rich assemblage that comprise 13 species and many specimens. Specimens previously collected by Herbich (1878), Neumayr (1873) and Preda (1973) and species of the groups of *S. platynota* (REINECKE) and *S. eumela* (D'ORBIGNY) are reviewed. The new species are: *Sutneria* (*S.*) *spinata, S.* (*S.*) *carpathica* and *S.* (*Enosphinctes*) *zeissi.*

Key words: Phylloceratids, Lytoceratids, Aspidoceratidae, Sutneria, Hăghimaş, Romania.

Résumé. Dans cet article sont décrites les espèces des groupes Phylloceratidae, Lytoceratidae et Aspidoceratidae trouvées dans les dépôts kimméridgien et tithonique de Ghilcoş et de Ciofronca (Hăghimaş Montagnes – Carpates Orientales). Treize taxons de la Famille Phylloceratidae sont présentés et toutes les espèces et les spécimens présentés par les auteurs Herbich (1878), Neumayr (1871, 1873) et Preda (1973) sont révisés. Les espèces *Ph. bekasense* et *Ph. leptoptychum* décrites par Herbich (1878) sont proposées ici pour radiation du nomenclateur des espèces (*nomen nudum*). Parmi les Lytoceratidaes sont signalés pour la première fois dans cette région: *Lytoceras polycyclum camertinum, Lytoceras orsini, Lytoceras sutile, Lytoceras liebigi, Lytoceras strambergense* et *Protetragonites quadrisulcatus* ; l'existence de *P. quadrisulcatus* ont confirmé ici. De la famille Aspidoceratidae sont décrits spécimens des genres *Simocosmoceras* SPATH et *Sutneria* ZITTEL et également sont révisés les spécimens des genres mentionnés ci-dessus d'auteurs Neumayr (1873), Herbich (1878) et Preda (1973). Sont présentées des nouvelles espèces de *Sutneria* ZITTEL découvertes dans cette région et une riche association qui contient 13 espèces et une nombreuse population. En outre, sont révisés les spécimens récoltés antérieur par Neumayr (1873), Herbich (1878) et Preda (1973) et les groupes d'espèces *S. platynota* (REINECKE) et *S. eumela* (D'ORBIGNY). Les nouvelles espèces sont: *Sutneria* (*S.*) *spinata*, *S.* (*S.*) *carpathica* et *S.* (*Enosphinctes*) *zeissi*.

Mots-clés: Phylloceratidae, Lytoceratidae, Aspidoceratidae, Sutneria, Hăghimaş, Roumanie.

INTRODUCTION

The outcrops (F1, F2, F17 in Grigore *et al*., 2009 and 2011a) that yielded the studied fauna are situated in Hăghimaş Mts. These outcrops are included in the Cheile Bicazului – Hăghimaş National Park. The outcrops are placed on the western slope and walls of Ghilcoş Massif, a large area with blocks, almost systematically studied in the last 20 years, which yielded one of the richest Kimmeridgian ammonite fauna (Grigore, 2000, 2002, 2011a).

The group of Phylloceratids is well represented in this region (number of species and specimens), two acme being registrated: first in Platynota Zone and the second, in Acanthicum Zone (Loryi Horizon). In this paper all the phylloceratids specimens described from these areas by previous authors are revised; it was the opportunity to reassess two Herbich's species: *Ph. bekasense* and *Ph. leptoptychum* (Grigore, 2011b).

From the Lytoceratids that are first signalised in this region: *Lytoceras polycyclum camertinum, Lytoceras orsinii, Lytoceras sutile, Lytoceras liebigi, Lytoceras strambergense,* and *Protetragonites quadrisulcatus* is confirmed now (Grigore, 2011c).

The Ghilcoş "Acanthicum Beds" used to be known only for four taxa (with few specimens) pertaining to *Sutneria* and *Simocosmoceras* genera. From Ghilcoş only two *Sutneria* species were known until now by few specimens, pertaining only to *S. platynota* and *S. eumela*. This study reveals for the first time the presence in this region of Eastern Carpathians of other 11 species of this genus, three of them new for science: *Sutneria* (*S.*) *spinata, S.* (*S.*) *carpathica* and *S.* (*E.*) *zeissi* (Grigore, 2009c). The presence of the 13 species (revealed now) of this genus among the other species from the Aspidoceratidae Family and a relative dense population of *Sutneria* founded in this area are good reasons to reevaluate the position of the Ghilcoş fauna (and region) betwen the Submediterranean and Mediterranean ones.

SYSTEMATICS

Abbreviations for the measurements, collections and outcrops:

Dmax = maximal diameter	GIR = Geological Institute of Romania
Dph = phragmocone diameter	GIA = Geological Institute of Austria (Bundesanstalt)
D = measured diameter	UBB = "Babeş Bolyai" University from Cluj Napoca
U = diameter of umbilicus	LGB = Geology Laboratory of Bucharest University
H = whorl height	LPB = Palaeontology Lab. of Bucharest University
W = whorl width	MPN = Museum of Natural Sciences – Piatra Neamţ

N_i = number of inner ribs (over one whorl or a half of this)
N_e = number of external ribs (over the same one whorl as N_i or a half of this)

F1	= Outcrop from western Ghilcoş walls
F2	= Outcrop from north-western Ghilcoş slope
F17	= Outcrop from "Ciofronca"; all in Grigore *et al*., 2009
A, D… K	= studied sections (Grigore, 2002, 2011a)

The "Acanthicum Beds" location for the studied outcrops and different profiles in Grigore (2000a, 2002 and 2011a)

Order Ammonoidea ZITTEL, 1884
Suborder Phylloceratina ARKELL, 1950
Family Phylloceratidae ZITTEL, 1884 (after Joly, 1976)
Subfamily Phylloceratinae ZITTEL, 1884
Genus *Phylloceras* SUESS, 1865

Phylloceras isotypum (BENECKE, 1866)
Pl. 1, Fig. 2

1865 *Ammonites isotypus* – BENECKE; p. 184; pl. 7, Figs. 1, 2.
1871 *Phylloceras isotypum* BENECKE – Neumayr; p. 314; pl. 13, Fig. 3.
*2011 *Phylloceras isotypum* (BENECKE) – Grigore; p. 191; pl. 1, Fig. 2; (*cum syn.*)
2011 *Phylloceras isotypum* (BENECKE) – Petti & Al.; p. 164; pl. 6, Figs. 3 and 5.
Material: LRh13G7, LRh14F7 Grigore Collection in GIR. Neumayr's specimens (1871):

Collection of GIA – originates from grey sandy limstone – Ghilcoş outcrop (F2) and red nodular limestone – Ciofronca outcrop. Herbich's specimen: Collection of UBB – originates from red nodular limestones – Ciofronca outcrop. Preda's specimen: Collection of MPN; originates from grey nodular limestones – Ghilcoş outcrop.

Measurements:

Specimen	Dmax	D	U	H	W	U/D	H/D	W/D	W/H
Holotype	–	110	7	64	40	0.06	0.58	0.36	0.62
Herbich specimen	–	69	3	38	27	0.04	0.55	0.39	0.71
LRh13G7	55	55	4	35	24	0.07	0.64	0.44	0.68
LRh14F7	35	35	3	20	15	0.08	0.57	0.43	0.75

After Sarti in 1986 the species includes two morphotypes: *isotypum* (BENECKE, 1866) – with subrectangular section and radial ribbing and second one – *apenninicum* CANAVARI, 1896 – with large oval section and curved ribbing.

Remarks: LRh13G7 is a phragmocone and LRh14F7, a juvenile (D = 35 mm) which preserve 1/3 of the living chamber, the specific ornamentation folded and with fine ribs, more visible on lateral sides.

Occurrence: Early Kimmeridgian in Ghilcoş (F, G profiles) and Ciofronca outcrops; Kimmeridgian in Italy, Sesquinodosum /Beckeri interval in Bulgaria, Yugoslavia.

Phylloceras saxonicum NEUMAYR, 1871

Pl. 1, Figs. 5, 6, 9

1871 *Phylloceras saxonicum* – Neumayr; p. 315; pl. 13, Fig. 4; pl. 14, Figs. 1 a, b, 2.

2011 *Phylloceras saxonicum* NEUMAYR – Grigore; p. 192; pl. 1, Figs. 5, 6, 9; (*cum syn.*)

2011 *Phylloceras* aff. *saxonicum* NEUMAYR – Baoudouin, Boselli & Bert; pl. 11, Fig. 9.

Material: LRh17M1, LRh18F6, LRh19W5.0, LRh40F2, LRh41J, LRh76T5.0, LRh83E1 Grigore Collection in GIR. Holotype: Collection of GIA – originates from limestone of Ghilcoş outcrop. Herbich's specimens: Collection of UBB – originates from red nodular limestone – Ghilcoş (F1) and Ciofronca outcrops. Preda's specimen: inv. 31MPN (pl.2, Fig.1) in Collection of MPN – originates from reddish nodular limestone (W profile) – base of Ghilcoş outcrop.

Measurements:

Specimen	Dmax	Dph	D	U	H	W	U/D	H/D	W/D	W/H
Holotype	98	98	98	3	56	28	0.03	0.58	0.29	0.50
Herbich specimen	250	–	–	–	–	–	–	–	–	–
Preda 31MPN specimen	100	100	71	5	45	23	0.07	0.63	0.32	0.51
LRh17M1	75	75	64	6	37	19	0.09	0.58	0.30	0.51
LRh18F6	63	75	63	5	35	19	0.08	0.56	0.30	0.54
LRh19W5,0	61	61	61	5	35	17	0.08	0.57	0.28	0.49
LRh40F2	53	53	53	4	30	15	0.07	0.57	0.28	0.50
LRh41J	75	75	75	5	45	22	0.07	0.60	0.29	0.49
LRh76T5,0	44	44	40	3	25	13	0.10	0.62	0.32	0.52
LRh83E1	46	40	40	3	24	13	0.07	0.60	0.32	0.54

Remarks: only LRh83E1 preserves a part from the living chamber the other being phragmocones. All specimens are medium or small in size and the best preserved is LRh17M1, which preserves the specific ornamentation. The Herbich's specimen is big sized and its suture line is presented by Neumayr (1871; pl. 14, Fig. 2). Preda's specimen is also big in size but in bad condition of preservation (eroded).

Occurrence: Early Kimmeridgian in Ghilcoş (W, T, F, M profiles) and Ciofronca outcrops; Early Kimmeridgian in Bulgaria, France, Switzerland and Madagascar.

Phylloceras consanguineum GEMMELLARO, 1876

Pl. 1, Figs. 4, 8, (*P. leptoptychum* HERBICH) 10 a, b

1876 *Phylloceras consanguineum* – Gemmellaro; p. 7; pl. 15, Figs. 2, 3.

*1878 *Phylloceras leptoptychum* – Herbich; p. 141; pl. 1, Figs. 5 a, b.

*1896 *Phylloceras consanguineum* GEMMELLARO – Canavari; p. 30; pl. 4, Fig. 3 (Neotype).

**2011 *Phylloceras consanguineum* GEMMELLARO – Grigore; p. 142; pl. 1,Figs. 4, 8, 10; (*cum syn.*)

Material: LRh16D3, LRh84A3, LRh85A1, LRh86K32, LRh87K32 Grigore Collection in GIR. Herbich's specimen (*Phylloceras leptoptychum*): inv. 2053 UC in Collection of UBB – originates from green sandy limestone – Ghilcoş outcrop. Preda's specimens: inv. 14aMPN**,** 62aMPN in Collection of MPN – both from grey nodular limestone; inv. 62bMPN originates from green sandstones – all from Ghilcoş outcrop.

Measurements:

Specimen	Dmax	Dph	D	U	H	W	U/D	H/D	W/D	W/H
Neotype	91	–	91	6	53	28	0.07	0.58	0.31	0.53
Herbich 2053 UC (*P. Leptoptychum*)	52	34	52	3	30	16	0.05	0.58	0.31	0.53
Preda 14aMPN specimen	64	64	64	4	38	21	0.06	0.59	0.33	0.55
Preda 62aMPN specimen	52	–	52	4	30	18	0.08	0.58	0.35	0.60
Preda 62bMPN specimen	46	–	46	3	27	18	0.06	0.59	0.39	0.67
LRh84A3	41	40	41	3	24	13	0.07	0.58	0.32	0.54
LRh85A1	32	–	30	2.5	18	11	0.08	0.60	0.37	0.61
LRh86K32	–	–	–	–	24	13	–	–	–	0.54
LRh87K32	26	–	26	2	15.5	9	0.08	0.60	0.35	0.58

Discussion: this species has raised concerns due to its morphology, however, most authors have finally put an equal sign between taxa *P. consanguineum*, *P. praeposterius* and *P. leptoptychum* presenting features and ornamental shells with identical morphometric; i.e. *P. leptoptychum* Herbich species become *nome nudum*.

Remarks: LRh16D3 and LRh86K32 are two fragments of big specimens which preserve very well the specific ornamentation; the other are phragmocones, small in size of which LRh84A3 is the best preserved (not deformed). Preda's 14aMPN specimen is a large phragmocone very well preserved.

Occurrence: Kimmeridgian/Early Tithonian – Divisum/Hybonotum interval (?) in Ghilcoş (K, D, A profiles) outcrop; Kimmeridgian /Early Tithonian – Divisum /Verruciferum interval in Italy and Early Kimmeridgian in Bulgaria.

Subfamily Calliphylloceratinae SPATH, 1927

Genus *Calliphylloceras* SPATH, 1927

Calliphylloceras manfredi (OPPEL, 1865)

Pl. 1, Figs. 7, 12

1865 *Ammonites Manfredi* – Oppel; p. 215; pl. 57, Figs. 2 a–c.

*2011 *Calliphylloceras manfredi* (OPPEL) – Grigore; p. 193; pl. 1, Fig. 7, 12; (*cum syn.*)

Material: LRh23F6, LRh24F5 LRh25F4, LRh26W, LRh27W5.0, LRh28F5, LRh37A9, LRh38R1, LRh39F3 Grigore Collection in GIR. Preda's specimens: three in Collection of MPN – inv. 24aMPN (pl. 18, Fig. 7) – originates from grey-greenish sandstones; 24bMPN (pl. 5, Fig. 3) – originates from grey limestone; 24cMPN – originates from green nodular limestone; all from Ghilcoş outcrop (F2).

Measurements:

Specimen	Dmax	Dph	D	U	H	W	U/D	H/D	W/D
Holotype	68	68	6	36	26	0.09	0.53	0.38	0.72
Preda 24aMPN specimen	59	59	5.5	24	8	0.09	0.41	0.14	0.33
Preda 24bMPN specimen	56	53	5	30	17	0.09	0.57	0.32	0.57
Preda 24cMPN specimen	28	26	4	13	10	0.15	0.50	0.38	0.77
LRh23F6	39	39	5	21	14	0.13	0.54	0.36	0.67
LRh24F5	34	34	4	18	11.5	0.12	0.53	0.34	0.64
LRh25F4	46	46	5	24	17	0.11	0.52	0.37	0.71
LRh26W	32	32	3.5	19	12	0.11	0.59	0.37	0.63
LRh27W5.0	25	25	3.5	14	11	0.14	0.56	0.44	0.78
LRh28F5	20.5	20.5	2.5	12	8.5	0.12	0.58	0.41	0.71
LRh37A9	35	35	4	19	13	0.11	0.54	0.37	0.68
LRh38R1	28	28	4	16	9.5	0.14	0.57	0.34	0.59
LRh39F3	41	34	4	19	15	0.12	0.56	0.44	0.79

Remarks: The specimens are small to medium sized phragmocones with close parameters to the holotype. Two of the Preda's specimens are large sized and preserves a small part of the living chamber.

Occurrence: Early Kimmeridgian in Ghilcoş (E, F, A, W, R profiles) outcrops; Oxfordian (to Early Kimmeridgian?) in Switzerland and Austria.

Calliphylloceras benacense (CATULLO, 1847) in NEUMAYR, 1871
Pl. 1, Figs. 1, 3; ("*P. bekasense*" HERBICH) pl. 2, Figs. 12 a, b

1847 *Ammonites benacensis* – Catullo; p. 9; pl. 13, Figs. 1 a, b.

*1871 *Phylloceras benacense* CATULLO – Neumayr; p. 336; pl. 15, Figs. 3 a, b, c.

?1878 *Phylloceras Bekasense* – Herbich; p. 143; pl. 3, Figs. 1 a, b.

2007 *Calliphylloceras benacense* (CATULLO) – Cecca & Savary: p. 514; Fig. 4A.

*2011 *Calliphylloceras benacense* (CATULLO) – Grigore; p. 194; pl. 1, Figs. 1,3; pl.2, Fig. 12; (*cum syn.*)

Material: LRh20D3, LRh21D10, LRh22G1, LRh75A, LRh74B15, LRh78K23, LRh82A1 Grigore Collection in GIR. Herbich's specimen in the Collection of UBB – was found by Herbich (1878, p. 142) and analyzed by Neumayr (1873, p. 159); is in bad condition of preservation.

Measurements:

Specimen	Dmax	Dph	D	U	H	W	U/D	H/D	W/D	W/H
Holotype	72	–	72	–	43	25	–	0.62	0.35	0.58
Herbich specimen	152	152	152	15	88	50	0.10	0.58	0.33	0.57
LRh22G1	46	–	36	4	19	›12	0.11	0.53	0.33	0.63
LRh74B15	77	–	˜77	˜5	˜48	›8	0.06	0.62	›0.10	›0.17
LRh75A3	76	75	65	4	39	20	0.06	0.60	0.31	0.51
LRh78K23	33	–	33	3	19	13	0.09	0.57	0.39	0.68
LRh82A1	52	49	48	5	28	17	0.10	0.58	0.35	0.61

Remarks: deformed (flattened) specimens from marls and silts deposits; all present the features of the Neumayr (1871) described specimen. LRh75A3 is the best preserved, with a long part of the living chamber deformed; LRh74B15 preserve also partially the fine ribbed wall of the conch.

Occurrence: Kimmeridgian – Divisum /Beckeri interval in Ghilcoş (K, G, A, D, B profiles) outcrops; Kimmeridgian – Italy (Northern and Sicily), Switzerland, Austria, India and Madagascar.

Calliphylloceras kochi (OPPEL, 1865) in ZITTEL, 1868
Pl. 1, Fig. 11

1865 *Ammonites Kochi* – Oppel; p. 550.
*1868 *Phylloceras Kochi* OPPEL – Zittel; p. 65; pl. 6, Fig. 1; pl. 7, Figs. 1, 2.
*2011 *Calliphylloceras kochi* (OPPEL) – Grigore; p. 194; pl. 1, Fig. 11; (*cum syn.*)
Material: LRh1K38 Grigore Collection in GIR.

Measurements:

Specimen	Dmax	Dph	D	U	H	W	U/D	H/D	W/D	W/H
Holotype	190	–	190	6	113	57	0.03	0.59	0.30	0.50
LRh1K38	56	35	˜56	3.5	29	›14	0.08	0.52	›0.25	›0.48

Remarks: my specimen is slightly deformed (provided by marls) and preserves ½ of the living chamber; also, it preserves partially the conch wall ornate with thin ribs, on the external side. By its features is more close to the Zittel specimen (pl. 7, Fig. 1 a, b).

Occurrence: Early Tithonian (Semiforme Zone) in Ghilcoş (K profile) outcrop; Early Tithonian in France; Tithonian in Switzerland, Cehia, Maroc and Madagascar.

Genus *Holcophylloceras* SPATH, 1927
Holcophylloceras polyolcum (BENECKE, 1866) in NEUMAYR, 1871
Pl. 2, Fig. 4

1866 *Ammonites polyolcus* – Benecke; p. 182; pl. 8, Figs. 1 a, b, 2.
*1871 *Phylloceras polyolcum* BENECKE – Neumayr; p.341; pl. 17, Figs. 6, 7.
2007 *Holcophylloceras polyolcum* (BENECKE) – Cecca & Savary; p. 516; Fig. 4C.
*2011 *Holcophylloceras polyolcum* (BENECKE) – Grigore; p. 195; pl. 2, Fig. 4; (*cum syn.*)
Material: LRh7F7, LRh8E1, LRh9F3, LRh10F4 Grigore Collection in GIR. Herbich's specimens: Collection of UBB; figured specimen originates from greenish sandy limestone – Ghilcoş outcrop (F2); other specimens originate from red nodular limestone – Ghilcoş (F1) and Ciofronca outcrops. Preda's specimens: three in Collection of MPN: inv. 20aMPN (pl. 2, Fig. 4) – originates from bluish nodular limestone (Platynota /Hypselocyclum interval); inv. 20bMPN (pl. 9, Fig. 3) – originates from red nodular limestone; inv. 65MPN – originates from green sandy limestone; all the specimens are from Ghilcoş outcrop.

Measurements:

Specimen	**Dmax**	**Dph**	**D**	**U**	**H**	**W**	**U/D**	**H/D**	**W/D**	**W/H**
Holotype	129	–	129	14	68	42.5	0.11	0.53	0.33	0.62
Herbich specimen	93	–	93	10	50	32	0.11	0.54	0.34	0.64
Preda 20aMPN specimen	69	64	57	8	31	˜12	0.14	0.54	0.21	˜0.39
Preda 20bMPN specimen	˜59	–	55	9.5	28	˜6	0.17	0.51	0.11	˜0.21
Preda 65MPN specimen	93	–	81	11	51	˜24	0.13	0.63	0.30	˜0.47
LRh7F7	122	102	102	13	56	36	0.13	0.55	0.35	0.64
LRh8E1	107	106	107	12	59	35	0.11	0.55	0.33	0.59

Remarks: all the specimens are phragmocones, only LRh7F7 and LRh8E1 are the best preserved; from the table we can see the variability of some parameters, such as the width in the juvenile stage.

Occurrence: Early Kimmeridgian in Ghilcoş (E, F, W, K profiles) and Ciofronca outcrops; Kimmeridgian in Italy, Switzerland, India and Madagascar.

Holcophylloceras mediterraneum (NEUMAYR, 1871) emended JOLY, 1976

Pl. 2, Figs. 6, 11

*1847 *Ammonites zignodianum* – d'Orbigny; p.; pl.182.

1871 *Phylloceras mediterraneum* – Neumayr; p. 340; pl. 17, Figs. 2, 3, 4, 5.

1976 *Holcophylloceras mediterraneum* (NEUMAYR) – Joly; p. 249; pl. 23, Fig. 5; pl. 26, Fig. 4.

2002 *Holcophylloceras zignodianum* (D'ORBIGNY) – Galacz; p. 55; pl. 1, Figs. 4, 5; pl. 2, Fig. 1.

*2011 *Holcophylloceras mediterraneum* (NEUMAYR) – Grigore; p. 195; pl. 2, Figs. 6, 11; (*cum syn.*)

2012 *Holcophylloceras zignodianum* (D'ORBIGNY) – Dietze & Hillebrandt; p. 31; pl. 2, Figs. 6, 8.

Material: LRh2F6, LRh6F1, LRh31F1 and morphotype *zignodianum* (D'ORBIGNY): LRh3F5, LRh4F8, LRh5F3, LRh15F3 Grigore Collection in GIR. Preda's specimen (inv. 16aMPN) in Collection of MPN – originates from red nodular limestone – Ghilcoş outcrop.

Measurements:

Specimen	Dmax	Dph	D	U	H	W	U/D	H/D	W/D	W/H
Holotype (morphotype *mediterraneum*)	107	–	107	14	56	32	0.13	0.52	0.30	0.57
LRh2F6	50	50	43	6	22	˜12	0.14	0.51	0.28	0.54
LRh31F1	75	62	75	9	39	˜19	0.12	0.52	0.25	0.49
Morphotype *zignodianum*	95	–	95	9.5	48	32	0.10	0.51	0.34	0.67
Preda 16aMPN specimen	34	27	34	7	17	9	0.20	0.50	0.26	0.53
LRh3F5	39	23	34	5	18	10	0.15	0.53	0.29	0.55
LRh4F8	35	35	35	4.5	18	˜11	0.13	0.51	0.31	0.61
LRh5F3	39	39	34	4.5	18	›11	0.13	0.53	0.32	0.61
LRh15F3	32	32	29	5	14.5	8.5	0.17	0.50	0.29	0.59

I take in consideration Joly's (1976, p. 243–249) observations, which put the *H. zignodianum* (d'Orbigny, 1847) in the *H. mediterraneum* species, as its microconch.

Remarks: only LRh31F1, LRh3F5 and 16aMPN preserves partially the living chamber other are phragmocons small in size except the first. Most of them present 5 to 6 constrictions/whorl, with *H. zignodianum* particularities in shape and only LRh31F1 and LRh2F6 respects Neumayr's features.

Occurrence: Early Kimmeridgian – Platynota/Strombecki interval in Ghilcoş (E, F and probably W profiles) outcrops; Oxfordian /Early Kimmeridgian in Italy, France, Germany, Austria, Hungary, Poland, Russia and Egypt.

Subfamily Ptychophylloceratinae COLLIGNON, 1955

Genus *Sowerbyceras* PARONA & BONARELLI, 1895

Sowerbyceras tortisulcatum (D'ORBIGNY, 1840)

Pl. 2, Figs. 1, 3

1840 *Ammonites tortisulcatus* – d'Orbigny; p. 161.

1849 *Ammonites tortisulcatus* D'ORBIGNY – d'Orbigny; p. 506; pl. 189.

2007 *Sowerbyceras tortisulcatum* (D'ORBIGNY) – Cecca & Savary: p. 514; Fig. 4B.

*2011 *Sowerbyceras tortisulcatum* (D'ORBIGNY) – Grigore; p. 196; pl. 2, Figs. 1, 3; (*cum syn.*)

Material: LRh42A10, LRh43E1, LRh44B5, LRh45F, LRh46F7, LRh47A10, LRh48A, LRh49F7 Grigore Collection in GIR. Herbich's specimens: Collection of UBB – the figured ones originate from nodular limestone of Ghilcoş outcrop; we don't have details about the others.

Measurements:

Specimen	Dmax	Dph	D	U	H	W	U/D	H/D	W/D	W/H
Holotype	88	–	88	23	38	28	0.26	0.43	0.32	0.74
Herbich specimen	75	–	75	14	35	38	0.19	0.47	0.51	1.08
LRh42A10	64	42	60	11	30	26	0.18	0.50	0.43	0.87
LRh43E1	64	40	61	11	29	27	0.18	0.48	0.44	0.93
LRh44B5	˜55	–	˜55	12	˜27	25	0.22	0.49	0.45	0.92
LRh45F	56	–	56	10.5	26	29	0.19	0.46	0.52	1.11
LRh46F7	˜54	–	˜54	˜9.5	˜26	25	0.18	0.48	0.46	0.96
LRh47A10	70	–	70	13	34	29	0.19	0.41	0.41	0.85
LRh48A10	56	–	56	8	28	24	0.24	0.50	0.43	0.86
LRh49F7	›73	54	64	13	30	›24	0.20	0.47	0.37	0.80

Remarks: only three specimens preserve a small part from the living chamber the others are phragmocones. Some of them have a narrow umbilicus and larger section than the holotype because are deformed.

Occurrence: Kimmeridgian – Platynota/Acanthicum interval in Ghilcoş (A, F, B profiles) and Ciofronca outcrops; Oxfordian /Early Kimmeridgian in France, Switzerland, Italy and Bulgaria.

Sowerbyceras silenum (FONTANNES, 1876)
Pl. 2, Figs. 5, 8, 10

1876 *Phylloceras tortisulcatus* D'ORBIGNY – Gemmellaro; p. 49; pl. 10, Figs. 1 a, b.

*1876 *Ammonites* (*Phylloceras*) *silenus* – Fontannes; p. 33; pl. 5, Fig. 2.

*2011 *Sowerbyceras silenum* (FONTANNES) – Grigore; p. 196; pl. 2, Figs. 5, 8, 10; (*cum syn.*)

Material: LRh23F1, LRh51F3, LRh52F5, LRh53E3, LRh54F4, LRh55F7, LRh56F1, LRh57F5, LRh58F1, LRh59F4, LRh60E1, LRh61F6, LRh62E1, LRh63F1, LRh64F6, LRh65E1, LRh66F1, LRh67G1, LRh68G1, LRh69T1.0, LRh80W1, LRh82W1 Grigore Collection in GIR. Preda's specimens: Collection of MPN (inv. 16bMPN /Fig. 7) originates from red nodular limestone; others from grey nodular limestone – both from Ghilcoş outcrops.

Measurements:

Specimen	Dmax	Dph	D	U	H	W	U/D	H/D	W/D	W/H
Holotype	63	–	63	14	31	26	0.23	0.49	0.41	0.84
Preda 16bMPN specimen	36	–	36	9	17	15	0.25	0.47	0.42	0.88
LRh51F3	63	–	63	14.5	29	›25	0.22	0.46	0.40	0.86
LRh52F5	49	–	41	9	21	19	0.22	0.51	0.46	0.90
LRh53E3	61	–	61	13	29	›28	0.21	0.47	0.47	0.96
LRh54F4	57	42	57	8	31	27	0.14	0.54	0.47	0.87
LRh55F7	49	46	46	9	25	23	0.20	0.54	0.50	0.92
LRh56F1	42	–	42	9	21	17	0.21	0.50	0.40	0.81
LRh57F5	37	–	37	7	19	17	0.19	0.51	0.46	0.89
LRh58F1	38	–	38	7	20	17	0.18	0.53	0.45	0.85
LRh59F4	43	35	35	8	17	17	0.23	0.49	0.48	1
LRh60E1	36	–	36	6	19	18	0.17	0.53	0.50	0.95
LRh61F6	34	28	34	7	17	13	0.21	0.50	0.38	0.76
LRh62E1	22	–	22	4.5	11	10	0.20	0.50	0.45	0.91
LRh63F1	41	–	41	13	17	16	0.32	0.41	0.39	0.94
LRh64F6	29	–	29	6	14	14	0.21	0.48	0.48	1

LRh65E1	26	–	26	4.5	14	11	0.17	0.54	0.42	0.78
LRh66F1	24	–	20	4.5	11	10	0.22	0.55	0.50	0.91
LRh67G1	33	–	33	6	17	14	0.18	0.51	0.42	0.82
LRh68G1	31	–	29	6	14	13	0.21	0.48	0.45	0.93
LRh69T1,0	32	–	30	5.5	16	13	0.18	0.53	0.43	0.81
LRh80W1	41	–	41	9	18	16	0.22	0.44	0.39	0.89
LRh82W1	28	–	28	6	13	11	0.21	0.72	0.39	0.85

Remarks: my specimens are of different dimensions but not exceeding 65 mm; only few of them partially preserve the living chamber. In this population a decrease with the size of constrictions number is observed, that are in juvenile stage. Preda's specimen presented as P. tortisulcatum presents the features of this species, with a more oval section and narrow umbilicus.

Occurrence: Early Kimmeridgian – Platynota/Divisum interval in Ghilcoş outcrops (W, T, G, F, E profiles); Early Kimmeridgian in Italy, France, Switzerland, Bulgaria.

Sowerbyceras loryi loryi (MUNIER CHALMAS, 1875) emended SARTI, 1993
Pl. 2, Figs. 7, 9

1875 *Sowerbyceras Loryi* – MUNIER-CHALMAS in Hebert; p. 388.

*2011 *Sowerbyceras loryi loryi* (MUNIER CHALMAS) – Grigore; p. 197; pl. 2, Figs. 7, ; (*cum syn.*).

Material: LRh29K6, LRh30K7, LRh50J, LRh70T6.0, LRh71D3, LRh72T1.0, LRh73T1.0 Grigore Collection in GIR. Preda's specimen: inv. 25MPN in Collection of MPN; originates from red nodular limestone of Ghilcoş (F1).

Measurements:

Specimen	Dmax	Dph	D	U	H	W	U/D	H/D	W/D	W/H
Sarti specimen (Fig.4)	64	41	64	11	32	29	0.17	0.50	0.45	0.85
Preda 25MPN specimen	54	–	54	9	25	22	0.17	0.46	0.41	0.88
LRh29K6	53	–	53	11	26	21	0.21	0.49	0.40	0.81
LRh30K7	41	–	33	6.5	18	15	0.20	0.56	0.45	0.83
LRh50J	55	32	49	10	23	›18	0.20	0.47	›0.37	›0.78
LRh70T6.0	35	–	28	5	15	13	0.18	0.54	0.46	0.87
LRh71D3	31	–	31	6	16	›10	0.19	0.52	›0.32	›0.62
LRh72T1,0	32	–	30	5	15	13	0.17	0.50	0.43	0.87
LRh73T1,0	24	–	22	4	11	9.5	0.18	0.50	0.43	0.86

Remarks: all the specimens are of a small or medium size and only LRh50J partially preserves the living chamber. Preda's specimen is better preserved but presents a narrower section than Sarti's one.

Occurrence: Late Kimmeridgian in Ghilcoş outcrops (K, T, D, J profiles); Kimmeridgian (Divisum/Beckeri interval) in Bulgaria, Italy, Switzerland, France.

Sowerbyceras loryi pseudosilenum SARTI, 1993
Pl. 2, Fig. 2

1993 *Sowerbyceras loryi* morphotyp *pseudosilenum* – Sarti; p. 55; pl. 1, Fig. 2.

2011 *Sowerbyceras loryi pseudosilenum* SARTI – Grigore; p. 197; pl. 2, Fig. 2.

Material: LRh32B15, LRh33B13, LRh34K32, LRh35B13, LRh36D23, LRh77D29, LRh79K23, LRh81K27 Grigore Collection in GIR.

Measurements:

Specimen	Dmax	Dph	D	U	H	W	U/D	H/D	W/D	W/H
Holotype	58	–	58	13	27	–	0.22	0.46	–	–
Paratype	48	–	48	10	22.5	18.5	0.21	0.47	0.39	0.82
LRh32B15	54	–	˜54	8	30	›12	0.15	0.56	›0.22	›0.40
LRh33B13	32	–	˜32	4	19	›7	0.13	0.59	›0.22	›0.37
LRh34K32	57	–	˜57	7	34	›11	0.12	0.60	›0.19	›0.32
LRh35B13	75	–	˜75	14	37	›11	0.19	0.49	›0.15	›0.30
LRh36D23	46	–	˜44	6	25	›10	0.14	0.57	›0.23	›0.40
LRh77D29	58	–	˜58	9	41	›13	0.15	0.71	›0.22	›0.32
LRh79K23	33	27	33	6	16	15	0.18	0.48	0.45	0.94
LRh81K27	42	–	42	9	20	›4	0.21	0.48	›0.09	›0.20

Remarks: here I have taken into account the observations of Sarti (2003). The LRh79K23 specimen is the only good preserved one; the others are deformed (flattened) providing from marls. All presents the features of this species, with a projected ventral groove and burelet.

Occurrence: Late Kimmeridgian – Eudoxus/Beckeri in Ghilcoş outcrops (K, B, D profiles); Beckeri Zone in Italy.

Genus *Ptychophylloceras* SPATH, 1927

Ptychophylloceras ptychoicum (QUENSTEDT, 1845)

1847 *Ammonites ptychoicum* – Quenstedt; p. 219; pl. 17, Figs. 12 a, b, c.

*2011 *Ptychophylloceras ptychoicum* (QUENSTEDT) – Grigore; p. 198; (*cum syn.*)

Material: LRh11K36, LRh12K32 Grigore Collection in GIR. Preda's specimen: Collection of LPB; originates from yellow sandstones – upper layers (= maybe levels through K30 – K40) – Ghilcoş outcrop (F1).

Remarks: Preda's specimen represents only a fragment from a whorl in a silts sample, which preserves some of the specific ornamental burelets. LRh11K36 specimen is almost similar, with more proeminent burelets; LRh12K32 is a juvenile with three thin and flexuous constrictions and burelets on the ventral side.

Occurrence: Early Tithonian – Hybonotum Zone in Ghilcoş outcrop (K profile); Tithonian from Europe (Italy, France, Switzerland, Germany, Poland, Bulgaria, Czech Republic), India, Crimea, Algeria, Madagascar.

Suborder Lytoceratina HYATT (1889) emendet ARKELL, 1950

Family Lytoceratidae NEUMAYR, 1875

Subfamily Lytoceratinae NEUMAYR, 1875

Genus Lytoceras SUESS, 1865

Type species: *Ammonites fimbiatus* SOWERBY, 1817

Lytoceras polycyclum polycyclum NEUMAYR, 1871 emended SARTI, 1993

1871 *Lytoceras polycyclum* – Neumayr; p. 24.

*1873 *Lytoceras polycyclum* NEUMAYR – Neumayr; p. 160; pl. 31, Figs. 4 a, b.

1877 *Lytoceras polycyclum* NEUMAYR – Gemmellaro; p. 188; pl. 16, Fig. 5.

1878 *Lytoceras polycyclum* NEUMAYR – Herbich; p. 146.

1960 *Lytoceras polycyclum* NEUMAYR – Christ; p. 64.

1973 *Lytoceras polycyclum* NEUMAYR – Preda; pl. 4, Figs. 3, 4.

1979 *Lytoceras polycyclum* NEUMAYR – Sapunov; p. 39; pl. 5, Figs. 3, 4.

1993 *Lytoceras polycyclum polycyclum* NEUMAYR – Sarti; p. 56.

2011 *Lytoceras polycyclum polycyclum* NEUMAYR – Grigore; p. 212.

Material: LRt20dp, LRt7F7, LRt18T3.0, LRt9E1, Grigore Collection in GIR. Holotype: Collection of GIA – originates from limestone of Ghilcoş outcrop (originates from green sandy limestone). Herbich's specimen in the Collection of UBB – originates from greenish silts deposits under Terebratula janitor from Ciofronca outcrop. Preda's specimens in Collection of MPN: figured once without inventory numbers originates from the grey limestone of Ghilcos outcrop.

Measurements:

Specimen	Dmax	Dph	D	U	H	W	U/D	H/D	W/D	W/H
Holotype	136	113	113	58	32	32	0.51	0.28	0.28	1
Herbich specimen	72	–	72	35	22	22	0.49	0.30	0.30	1
Preda specimen (fig.4)	135	135	135	67	41	40	0.50	0.30	0.30	1
Preda specimen (fig.3)	44	44	44	22	13	13	0.50	0.29	0.29	1
LRt20dp	135	115	135	70	38	37	0.52	0.28	0.27	0.97
LRt7F7	64	64	64	31	22	22	0.48	0.34	0.34	1
LRt18T3,0	19	–	19	9	5	5	0.47	0.26	0.26	1
LRt9E1	74	74	74	34	26	26	0.46	0.35	0.35	1

Diagnosis: lytoceratid of medium to large scale, with serpenticone advolute conch, it is characterised by a low growing whorl and a large, superficial umbilicus (U/D = 0.50). The whorl section is circular. The ornamental characters were established by Gemmellaro (1877) and Canavari (1986), on better conserved sepcimens than those of Neumayr; thus, this subspecies has straight ribs, emphasized especially on the conch's exterior, persisting along the entire conch, counting 5–6/whorl, also on the surface growing striae can be observed. This characters are less visible on the interior mold. The lobar line is densly firlled; the first lateral lobe is the most developed and has two branches slightly asimetrical. The general line of the lobes depicts an ascendig curve, from the edge of the ventrum towards the umbilicus.

Remarks: The LRt20dp specimen and the one described by Preda (pl. 4, fig 4) have a big size and are the closest to the type specimen, the first one conserving 1/4 of the living chanber; the LRt18T3.0 is a young specimen and the only one that preserves its typical constrictions. All the specimens are internal molds and have the morphometrical parameters comparable to the type specimen, with the exception of LRt9E1 that is deformed. On all the specimens the lobar line was prepared, and they don't have any special features from the one suggested by Neumayr.

Occurrence: Kimmeridgian – Platynota /Acanthicum (?) interval in Ghilcoş (T, F, ?A, ?D profiles); Kimmeridgian – Strombecki /Beckeri interval in Italy; Sesquinodosum (Acanthicum) / Beckeri interval in Bulgaria.

Lytoceras polycyclum camertinum CANAVARI, 1896, emended SARTI, 1993

*1896 *Lytoceras polycyclum* NEUMAYR var. *camertina* – Canavari; p. 40; pl. 8, Figs. 1, 2, 3.

1986 *Lytoceras polycyclum camertinum* CANAVARI – Sarti; p. 488.

2011 *Lytoceras polycyclum camertinum* CANAVARI – Grigore; p. 212.

Material: LRt8F8; *Lytoceras* aff. *polycyclum camertinum*: LRt12J, LRt16J, Grigore Collection in GIR. Preda's specimen in Collection of MPN: inv. 67MPN – originate from reddish nodular limestone Ghilcoş outcrop.

Measurements:

Specimen	Dmax	Dph	D	U	H	W	U/D	H/D	W/D	W/H
Sintype I	79	–	79	37	25	23	0.47	0.32	0.29	0.92
Preda 67 MPN specimen	60	60	54	23	20	19	0.43	0.37	0.35	0.95
LRt8F8	93	88	86	42	26	24	0.49	0.30	0.28	0.92
LRt12J	73	62	58	29	18	15	0.52	0.31	0.26	0.83
LRt16J	34	23	34	16	11	10	0.47	0.32	0.29	0.91

Diagnosis: lytoceratid with narrower umbilicus than the *L. p. polycyclum* subspecies. The whorl section is oval, more taller than wider. The ornamentation comes from it's ribs, weakly emphasized, only on the exterior of the conch, counting 4–5/whorl; these disappear on the last whorl-section. The lobar line has lobes and sattles almoust equal in height and an antisifonal lobe perpendicular to the umbilical ridge.

Remarks: Preda's specimen is a phragmocon of a large individual and differs from the type specimen by a narrower umbilicus and a thicker whorl. The LRt8F8 specimen conserves the beginning of the living chamber and its parameters are comparable to those of the type specimen. *Lytoceras* aff. *polycyclum camertinum*: specimens LRt12J and LRt16J resemble this subspecies through its compressed whorl, and the LRt16J specimen even has the mophometrical parameters comparable to the type specimen and has up to 6 constrictions per whorl, but is evolute and displays an umbilical wall that is protruded and incised; LRt12J specimen differs from the type specimen by a very large, superficial umbilicus, and a narrow, tubular whorl up until the final diameter (73 mm).

Occurrence: Early Kimmeridgian in Ghilcoş (F, T, J profiles); Kimmeridgian in Italy.

Lytoceras montanum (OPPEL, 1865) in ZITTEL, 1868
Pl. 3, Figs. 1, 4.

1865 *Ammonites montanus* – Oppel; p. 551.
1870 *Lytoceras montanum* OPPEL – Zittel; p. 45; pl. 26, Figs. 3, 4 a, b.
1870 *Lytoceras montanum* OPPEL – Gemmellaro; p. 33; pl. 5, Figs. 6–8; pl. 6, fig. 1.
1973 *Lytoceras montanum* OPPEL – Preda; pl. 5, Fig. 1.
1984 *Pterolytoceras montanum* (OPPEL) – Verma & Westermann; p. 33; pl. 2, Figs. 3 a, b.
1986 *Lytoceras montanum* (OPPEL) – Sarti; p. 487.
1993 *Lytoceras montanum* (OPPEL) – Sarti; p. 56.
2011 *Lytoceras montanum* (OPPEL) – Grigore; p. 212; pl. 1, Figs. 1, 4.

Material: LRt10A3, LRt11A2, Grigore Collection in GIR. Preda's specimens in Collection of MPN: inv. 67MPN – originate from reddish nodular limestone; inv. 16c MPN and inv. 19 MPN – originates from green sandy limestone all from Ghilcos outcrop.

Measurements:

Specimen	Dmax	Dph	D	U	H	W	U/D	H/D	W/D	W/H
Holotype	–	–	156	72	53	54	0.46	0.34	0.35	1.02
Preda 18 MPN specimen	114	94	114	42	44	48	0.37	0.38	0.42	1.09
Preda 16c MPN specimen	67	67	67	27	24	22	0.40	0.36	0.33	0.92
Preda 19 MPN specimen	172	172	172	77	51	48	0.45	0.30	0.28	0.94
LRt10A3	78	73	66	28	25	25	0.42	0.38	0.38	1
LRt11A2	65	65	57	25	22	23	0.44	0.38	0.40	1.04

Remarks: LRt10A3 specimen preserves the beginning of the living chamber, both specimens are medium sized and preserve in the interior whorls scraps of the conch, ornamented with fine crenulated ribs and growing striae. Morphometrical, it has some differences to the type specimen: the umbilicus

is narrower and the whorl is more developed (faster whorl growth). Specimen 18MPN preserves 1/4 of the whorl from the living chamber, is of medium size and has the same fast whorl growth, as my specimens. The other specimens have the morphometrical parameters closer to the type specimen, with the mention that the section is slightly compressed.

Occurrence: Kimmeridgian in Ghilcoş (A and probably K, T profiles); Kimmeridgian/Early Tithonian in Italy, Kenya.

Lytoceras orsinii GEMMELLARO, 1872
Pl. 3, Fig. 2, 3.

1872 *Lytoceras orsinii* – Gemmellaro; p. 40; pl. 8, Figs. 1, 2, 3.
1875 *Ammonites Orsinii* GEMMELLARO – Favre; p. 23; pl. 2, Figs. 5, 7; pl. 4, Fig. 6.
1879 *Ammonites* (*Lytoceras*) *Orsinii* GEMMELLARO – Fontannes; p. 7; pl. 1, Figs. 7, 8.
1896 *Lytoceras Orsinii* GEMMELLARO – Canavari; p. 39; pl. 6, Figs. 3, 4.
1960 *Lytoceras Orsinii* GEMMELLARO – Christ; p. 63.
1986 *Lytoceras orsinii* GEMMELLARO – Sarti; p. 487.
1993 *Lytoceras orsinii* GEMMELLARO – Sarti; p. 55.
2011 *Lytoceras orsinii* GEMMELLARO – Grigore; p. 212; pl. 1, Figs. 2, 3.
Material: LRt1K23, LRt14T7,0, LRt15K22, LRt17A, Grigore Collection in GIR.

Measurements:

Specimen	Dmax	Dph	D	U	H	W	U/D	H/D	W/D	W/H
Holotype	75	–	75	32	28.5	26	0.43	0.38	0.35	0.91
LRt1K23	160	–	118	52	37	33	0.44	0.31	0.28	0.89
LRt17A	38	34	34	15	13	11	0.44	0.38	0.32	0.85

Remarks: The LRt1K23 has a large size and is a sector a little larger than half of the shell, that conserves a large part of the living chamber and the conch with the specific ornamentation, with laminar ribs, weakly convexed into the internal whorls, growing to the external whorls – falcoidal. It's morphometrical parameters are comparable to the type specimen. The other specimens are small in size, two of which preserving the beginning of the living chamber, and LRt14T7.0 and the conch with the specific ornamentation; their morphometrical parameters are comparable to the type specimen, and the lobar line doesn't have any differences to the one suggested by Gemmellaro.

Occurrence: Kimmeridgian in Ghilcoş (K, T, A profiles); Kimmeridgian in Italy.

Lytoceras sutile (OPPEL, 1865) in ZITTEL, 1868
Pl. 3, Fig. 7.

1865 *Ammonites sutilis* – Oppel; p. 551.
*1868 *Lytoceras sutile* OPPEL – Zittel; p. 76; pl. 12, Figs. 1 a, b, 2, 3 a, b, 4 a–c, 5.
1870 *Lytoceras sutile* OPPEL – Zittel; p. 47; pl. 3, Figs. 1 a–c.
Non 1876 *Lytoceras sutile* OPPEL – Gemmellaro; p. 31; pl. 5, Figs. 1, 2, 3.
1960 *Lytoceras* cf. *sutile* OPPEL – Răileanu & Năstăseanu; p. 17; pl. 7, Fig. 20.
1976 *Lytoceras* cf. *sutile* (OPPEL) – Patrulius & Avram; p. 163; pl. 2, Fig. 1.
1979 *Lytoceras sutile* (OPPEL) – Sapunov; p. 40; pl. 6, Fig. 2.
1986 *Lytoceras* (*Pterolytoceras*) *sutile* (OPPEL) – Sarti; p. 488.
1994 *Lytoceras sutile* (OPPEL) – Zeiss & Al.; p. 370; pl. 2, Fig. 7.
2011 *Lytoceras sutile* (OPPEL) – Grigore; p. 212; pl. 1, Fig. 6.
Material: LRt5A, Grigore Collection in GIR.

Measurements:

Specimen	Dmax	Dph	D	U	H	W	U/D	H/D	W/D	W/H
Holotype	200	–	200	80	80	62	0.40	0.40	0.31	0.77
LRt5A	˜130	70	75	28	30	28	0.37	0.40	0.37	0.93

Remarks: The specimen is preserved in marlstone and therefore is partly deformed (the end of the living chamber is crushed, and the internal whorls – phragmocone – are compressed); has a large size and preserves the living chamber almoust entirely. The mophometrical parameters are comaprable to the type specimen, with the exception of the worhl thickness that is considerably larger; conserves the specific ornamentation well: frequent fine crenulated ribs, slightly rursiradiated, and thicker ribs, distributed unevenly, that correspond to some constrictions on the internal mold; in the internal whorls these constrictions are much more evident and 5–6/whorl.

Occurrence: Kimmeridgian in Ghilcoş (A profile); Tithonian /Berriasian in France, Italy, Slovakia, Bulgaria.

Lytoceras liebigi (OPPEL, 1865) in ZITTEL, 1868

1865 *Ammonites Liebigi* – Oppel; p. 551.
*1868 *Lytoceras Liebigi* OPPEL – Zittel; p. 74; pl. 9, Figs. 6 a–c, 7 a–c; pl. 10, Figs. 1 a–c.
1976 *Lytoceras liebigi* (OPPEL) – Avram; p. 21; pl. 7, Figs. 4 a, b.
1979 *Lytoceras liebigi* (OPPEL) – Sapunov: p. 37; pl. 5, Figs. 1, 2.
1986 *Lytoceras* (*Pterolytoceras*) *liebigi* (OPPEL) – Sarti; p. 490.
1994 *Lytoceras* cf. *liebigi* (OPPEL) – Zeiss & al.; p. 370; pl. 2, Fig. 4.
2011 *Lytoceras liebigi* (OPPEL) – Grigore; p. 212.
Material: LRt4K45, Grigore Collection in GIR.

Measurements:

Specimen	Dmax	Dph	D	U	H	W	U/D	H/D	W/D
Holotype	180	180	76	72	92	0.42	0.40	0.51	1.28
LRtK45	35	35	12	10	›8	0.34	0.28	›0.23	›0.80

Remarks: My specimen depicts a putter and the external mold (in coarse sandstones) of an individual of a small size; the putter is deformed, the morphometrical parameters are affected, but some proportions can still be apreciated. The determination was done especially on the specific ornamentation (with frequent thin ribs, softly crenulated and slightly concave, in internal whorls, powerfull radiar ribs, 4–5/whorl) that is preserved in good conditions.

Occurrence: Early Tithonian – Fallauxi Zone in Ghilcoş (K profile); Tithonian /Early Cretaceous in Italy, Bulgaria, Slovakia.

Lytoceras strambergense (ZITTEL, 1868)
Pl. 3, Fig. 6.

1868 *Ammonites Liebigi* OPPEL var. *Strambergensis* – Zittel; p.74; pl. 11, Figs. 1 a–c, 2, 3 a–c.
1979 *Lytoceras strambergense* ZITTEL – Sapunov; p. 40; pl. 6, Fig. 1.
2011 *Lytoceras strambergense* (ZITTEL) – Grigore; p. 212; pl. 1, Fig. 5.
Material: LRt2K30, Grigore Collection in GIR.

Remarks: My specimen is a deformed putter (from sandstones), that belonged to an large sized individual (H=63mm); it preserves the specific ornamentation, with crenulated ribs (laminar), thick,

concave, prorsiderated, slightly frequent ribs; on this overlapping a second set of ribs, stronger and with irregular distance between them, having the same aspect as the first one.

Occurrence: Late Kimmeridgian /Early Tithonian (?) – Beckeri Zone (Hybonotum?) in Ghilcoş (K profile); Tithonian in Bulgaria, Germany, Slovakia.

Family Protetragonitidae SPATH, 1927
Genus Protetragonites HYATT, 1900
Protetragonites quadrisulcatus (D'ORBIGNY, 1840)
Pl. 3, Fig. 5.

1896 *Ammonites quadrisulcatus* – d'Orbigny; p. 40; pl. 8, Figs. 1, 2, 3.
1868 *Lytoceras quadrisulcatus* D'ORBIGNY – Zittel; p. 71; pl. 9, Figs. 1, 2, 3, 4, 5.
1868–1876 *Lytoceras quadrisulcatum* D'ORBIGNY – Gemmellaro; p. 32; pl. 5, Figs. 4, 5.
1973 *Lytoceras* (*Protetragonites*) *quadrisulcatus* (D'ORBIGNY) – Preda; pl. 5, Fig. 2.
1976 *Protetragonites quadrisulcatus* (D'ORBIGNY) – Avram; p. 22; pl. 7, Figs. 6 a,b.
1976 *Protetragonites quadrisulcatus* (D'ORBIGNY) – Patrulius & Avram; p. 164; pl. 2, Fig. 3.
1979 *Protetragonites quadrisulcatus* (D'ORBIGNY) – Sapunov; p. 41; pl. 6, Figs. 3, 4 a, b.
2011 *Protetragonites quadrisulcatus* (D'ORBIGNY) – Grigore; p. 212.

Material: LRt19G12, Grigore Collection in GIR. Preda's specimen in Collection of MPN: inv. 58 MPN – originate from green-yellowish sandstones (K30 – K40 levels) – Ghilcoş outcrop.

Measurements:

Specimen	Dmax	Dph	D	U	H	W	U/D	H/D	W/D
Holotype	75	75	40,5	19	17	0.54	0.25	0.22	0.89
Preda 58 MPN specimen	35	25	11	8	›6	0.44	0.32	›0.24	›0.75

Remarks: Preda's specimen has a small size and is from sandstones, therefore the ornamentation isn't very well preserved; on the last whorl only three simple, powerfull ribs can be seen. The morphometrical proportions are affected, the specimen beeing deformed. My specimen represents half a conch, is of small size and preserved in the same conditions as Preda's; patrially preserves the specific ornamentation.

Occurrence: Early Tithonian in Ghilcoş (G and probably K – W profiles); Tithonian /Neocomian in Europe.

Suborder Ammonitina HYATT, 1900
Family Aspidoceratidae ZITTEL 1895
Genus *Simocosmoceras* SPATH, 1925 emendet SCHWEIGERT 1997
Simocosmoceras nitidulum (NEUMAYR, 1873)

1873 *Cosmoceras nitidulum* – Neumayr; p. 167; pl. 33, Fig. 6.
1973 *Simocosmoceras nitidulum* (NEUMAYR) – Preda; pl. 17, Fig. 8.
2009 *Simocosmoceras nitidulum* (NEUMAYR) – Grigore & Marcu; p. 352.

Material: Neumayr's specimen: Collection of the GIA (Bundesanstalt-Wien) – it originates from green nodular limestone from Ghilcoş outcrop; Preda's specimen: Collection of MPN – originating from red nodular limestone from Ghilcoş outcrop.

Remarks: with this opportunity we have the possibility to analyze Preda's specimen, poorly preserved; some peculiar features as the hexagonal whorl section and a smooth lateral tuberculation remind us of this species.

Occurrence: Kimmeridgian (?) from "Acanthicum Beds"– Hăşmaş Mts. Romania; this species is reported only in this region all over the world and for that reason it worth to be mentioned here.

Genus *Sutneria* ZITTEL, 1884 emendet SCHWEIGERT & AL. 2008
Type species: *Ammonites platynotus* REINECKE, 1818
Subgenus *Sutneria* (ZITTEL, 1884) emended GEYER, 1961

Small ammonites with irregular coiling and different morphology from inner to outer whorls, the ornamentation changing from ribbed to tuberculated one. Until now this subgenera comprised only three species: *S. platynota* (REINECKE), *S. galar* (OPPEL) and *S. cyclodorsata* (MOESCH); Schairer (1970) and Zeiss (1979) separated some subspecies from *S. platynota* ("A" "B" and "C" morphotypes) and *S. galar thieli* ZEISS. Here this group is revised once again and other new species are described: *S. spinata* and *S. carpathica*.

Sutneria* (*Sutneria*) *platynota (REINECKE, 1818)
Pl. 4, Figs. 1, 2, 5

1818 *Nautilus platynotus* – Reinecke in R.C.Moore; p. L327; Figs. 419/ 2 a, b, c

*1970 *Sutneria* (*Sutneria*) *platynota* (REINECKE) B morphotype – Schairer; p. 155; pl. 1, Figs. 2–12; pl. 2 , Figs. 1–13.

**non* 1888 *Ammonites platynotus* – Quenstedt; p. 999; pl. 112, Fig. 6; (= *S. spinata*).

**non* 1888 *Ammonites Reineckianus* – Quenstedt; p.1002 ; pl. 112 , Figs. 16,17; aff. (= *S. carpathica*).

**non* 1970 *Sutneria* (*Sutneria*) *Platynota* (REINECKE) form A– Schairer; p. 158; pl. 1, Fig. 1; (= *S. spinata*).

**non* 1970 *Sutneria* (*Sutneria*) *Platynota* (REINECKE) form C– Schairer; p. 158; pl. 2, Figs. 6 – 13 (= *S. carpathica*).

*2009 *Sutneria* (*Sutneria*) *platynota* (REINECKE) – Grigore; p. 367; pl. I, Figs. 1, 2, 5; (*cum syn*.)

Material: LRs1E1, LRs2E1, LRs3F1, LRs4F2, LRs5F5, LRs6F5, LRs7W0,1, LRs8W0.5 Grigore Collection in GIR. Neumayr's specimen: Collection of GIA; originates from red nodular limestone of Ciofronca outcrop. Herbich's specimen: Collection of UBB; originates from red nodular limestone of Ciofronca outcrop. Preda's specimens: two specimens in Collection of MPN; originate from the green nodular limestone of Ghilcoş outcrop (Inv. 69A MPN, 69B MPN) and one in the Collection of LGB (inv. 1sLGB); originates from the reddish nodular limestone of Ghilcoş outcrop. Dragastan's specimen: Collection of LPB (inv. 3284); originates from the reddish nodular limestone of Ghilcoş outcrop.

Diagnosis: globular conch – convolute with irregular coiling, straight deep umbilicus (U/D= 0.20) and large tabulate venter. Carenate umbilicus wall. Depressed whorl-section, with the maximum width in the external third of flanks on the body chamber. Ornamentation with polyploce and falcoid ribs in the inner whorls and simple rare and more powerful ribs, ending in small tubercles tangent to the venter on the body chamber.

Discussion: the large amount of specimens known until now, reported by former authors (Quenstedt, Schairer) included more aberrant individuals, which are exceeding an intraspecific variability. For that reason, Schairer in 1970 divided this species in three groups, named morphotypes "A" "B" and "C" each one based on morphological, morphometric and biostratigraphic features. This was the base for this new revision on the *S. platynota* species.

Remarks: only seven of my specimens are complete the last representing a body chamber. All specimens have morphological and morphometrical parameters comparable with those of the type species; the density of ornamentation on the body chambers is the only different feature, the LRs4F2 being the most ornamented one.

Occurrence: Early Kimmeridgian – Platynota Zone in the "Acanthicum Beds" (E, F, W profiles), from Ghilcoş and Ciofronca – Hăşmaş Mts., Romania; Early Kimmeridgian – Platynota Zone in Europe (Spain, France, Germany) and East Africa (Ethiopia).

Sutneria* (*Sutneria*) *spinata GRIGORE, 2009
Pl. 4, Fig. 3 (Holotype)

1888 *Ammonites platynotus* – Quenstedt; p. 999; pl. 112, Fig. 6
1970 *Sutneria* (*Sutneria*) *platynota* (REINECKE) „A" morphotype – Schairer; p. 158; pl. 1, Fig. 1.
*2009 *Sutneria* (*Sutneria*) *spinata* nov. sp. – Grigore; p. 367; pl. I, Fig. 3.
Holotypus: specimen LRs9F1 figurated in pl. 1, Fig. 3
Derivatio nominis: *"spinatus"*= with spines (in Latin) – after its ornamentation with external spines on the last whorl.
Locus tipicus: Haghimas Massif – *Acanthicum Beds* – Lacu Roşu, outcrop Ghilcoş.
Stratum tipicum: F1 level – in the base of Platynota Zone
Material: LRs9F1 and LRs10X1 Grigore Collection in GIR.

Measurements:

specimen	Dmax	D	U	H	W	O/D	H/D	W/D	H/W	*Ni	*Ne	N_e/N_i
Holotype (LRs9F1)	›16	14	3.5	6	6	0.25	0.43	0.43	1	7 Ni/2	7 Ne/2	–

Description: globular conch – convolute with irregular coiling, straight deep umbilicus (U/D= 0.25) and normal round venter. The whorl section is isometric, round with maximum width on the 1/3 of flank's height and slowly depressed on the body chamber. The umbilical wall is high and oblique. The Holotype preserves half of a whorl from the body chamber, devoid of the aperture region. The ornamentation is well preserved and is made up of inner whorls of fine dense ribs, bifurcate and trifurcate one's (divided at 2/3 of flanks), slowly falcoide. On the body chamber, the ribs transformed in bullae knee like, more rare and end in large spines on the imaginary limit with the venter. The spines have an elliptic base and are oblique with the venter.

Comparison: by *S.* (*S.*) *platynota* has the ornamentation on the body chamber with more prominent ribs (bullae), knee like, grate spines (spatulate) periventrally and a less larger venter; the new species has more affinities with that figured by Schairer in 1970 (pl. 1, Fig. 1).

Discussion: the specimens presented by Schairer (1970) as *S. platynota* form "A" they have a great variations over the features (whorl section, ornamentation) of the body chamber and they can be placed in isomorphic series type with *S. spinata* and *S. platynota* as extreme one's. I remind that the specimen discussed here was only figured by Quenstedt (1888 pl. 112, Fig. 6), for the first time. As long as we have two specimens in our region, it could give a possible biostratigraphical value for this species (as a subzone one).

Occurrence: Early Kimmeridgian – in the base of Platynota Zone (Spinata Subzone nov.sz.) in the Acanthicum Formation (F and X profiles) from Ghilcoş – Hăşmaş Mts., Romania; Early Kimmeridgian – Platynota Zone (Polygyratus Subzone) in Germany (Francoia) and France.

Sutneria* (*Sutneria*) *carpathica GRIGORE, 2009
Pl. 4, Fig. 4 (Holotype)

aff 1888 *Ammonites Reineckianus* – Quenstedt; p.1002; pl.112 , Figs. 16, 17.
1970 *Sutneria* (*Sutneria*) *Platynota* (REINECKE) C morphotype – Schairer; p. 159; pl. 2, Figs. 6–13.
*2009 *Sutneria* (*Sutneria*) *carpathica* nov.sp. – Grigore; p. 368; pl. I, Fig. 4.
Holotypus: specimen LRs11F4 figured in pl. 1, Fig. 4.

Derivatio nominis: "*carpathicus*" = carpathian (from Latin); which are meaning "specific to Carpathian Mts".

Locus tipicus: Haghimas Masiff – "*Acanthicum Beds"* – Lacu Roşu, outcrop Ghilcoş.

Stratum tipicum: level E_3 – in the top of Platynota Zone

Material: LRs11F4, LRs12F5 Grigore Collection in GIR.

Measurements:

specimen	Dmax	D	U	H	W	O/D	H/D	W/D	H/W	*Ni	*Ne	N_e/N_i
Holotype (LRs11F4)	20	17	4	6.5	6	0.23	0.38	0.35	1.08	6	10	1.7

Description: globular conch – convolute with irregular coiling, straight umbilicus (U/D= 0.23) and large round venter. The whorl section is isometric, round with maximum width on the middle flanks. Ornamentation with fine dense ribs which are bifurcate and trifurcate on the inner coiling; the ribs profile are slowly flexuous and divided from the 2/3 of its height (radiate secondary); on the body chamber the ornamentation became more rare, with rectiradiate lateral ribs thin tuberculation (peryventral) and a thin ribbing on the venter (which are specific).

Comparison: this taxon has many affinities with *S. platynota*, differing by its round venter and less powered ornamentation on the body chamber only.

Discussion: this taxon was separate as *S. platynota* form **C** by Schairer (1970; pl. 1, Fig. 1) in its revision. The specimens figured by Quenstedt (1888, pl. 112, Fig. 16, 17) can also being attached to this species, the differences being small ones.

Occurrence: Early Kimmeridgian – top of Platynota Zone (Guilherandense Subzone) in the "Acanthicum Beds" from Ghilcoş – Hăşmaş Mts., Romania; Early Kimmeridgian – top of Platynota Zone (Guilherandense Subzone) in Germany (Franconia) and France.

Sutneria* (*Sutneria*) *cyclodorsata (MOESCH, 1867)
Pl. 4, Figs. 13, 18, 23

1867 *Ammonites cyclodorsatus* – Moesch; p. 292; pl. 1, Fig. 1.
*2009 *Sutneria* (*Sutneria*) *cyclodorsata* (MOESCH) – Grigore; p. 368; pl. I, Figs. 13, 18, 23; (*cum syn.*).
Material: LRs13D2, LRs14D2; *S.* cf. *cyclodorsata*: LRs15W4 Grigore Collection in GIR.

Measurements:

specimen	Dmax	D	U	H	W	O/D	H/D	W/D	H/W	*Ni	*Ne	N_e/N_i
Loriol specimen	–	17	4.3	7	9	0.25	0.41	0.53	0.78	18	47	2.6
LRs13D2	–	16.2	4.2	7	8	0.26	0.43	0.49	0.87	7	~20	~2.8

Remarks: the two specimens (LRs13D2, LRs14D2) are preserving well the specific peristome with apophysis and partly the ornamentation with short, geniculate primary ribs (polyploce).

Occurrence: Late Kimmeridgian – Acanthicum Zone in the "Acanthicum Beds" (D profile) from Ghilcoş – Hăşmaş Mts., Romania; Early Kimmeridgian – in Germany, Switzerland, Spain and France.

Subgenus *Enosphinctes* (SCHINDERWOLF, 1925)
Type species: *Ammonites eumelus* D'ORBIGNY

Sutneria* (*Enosphinctes*) *pedinopleura SEEGER, 1961
Pl. 4, Fig. 7

1979 *Sutneria pedinopleura* SEEGER – Zeiss; p. 262; pl. 2, Figs. 6, 14.
*2009 *Sutneria* (*Enosphinctes*) *pedinopleura* SEEGER – Grigore; p. 368; pl. I, Fig. 7.
Material: LRs16E2 Grigore Collection in GIR.

Measurements:

specimen	Dmax	D	U	H	W	O/D	H/D	W/D	H/W	*Ni	*Ne	N_e/N_i
Zeiss specimen	–	30	7.5	12	9	0.25	0.40	0.30	1.33	12	24	2
LRs16E2	–	18	4.3	8	5.2	0.24	0.44	0.29	1.54	8	17	2.1

Remarks: my specimen is a small sized one, more compressed and densly ribbed than the specimen figured by Zeiss in 1979 (Fig. 6).

Occurrence: Early Kimmeridgian – Hypselocyclum Zone in the "Acanthicum Beds" (E profile) from Ghilcoş – Hăşmaş Mts., Romania; Late Kimmeridgian – Eudoxus Zone in France and Germany.

Sutneria* (*Enosphinctes*) *eumela (D'ORBIGNY, 1847) emended ZEISS, 1979
Pl. 4, Figs. 12, 14, 16, 20

1847 *Ammonites Eumelus* – d'Orbigny; p. 554; pl. 216, Figs. 1, 2, 3.

*1979 *Sutneria eumela* (D'ORBIGNY) – Zeiss; p. 263; pl. 3, Figs. 1–13 *non* Figs. 16,17 (= *S. zeisii*).

*2009 *Sutneria* (*Enosphinctes*) *eumela* (D'ORBIGNY) – Grigore; p. 369; pl. I, Figs. 12, 14, 16, 20; (*cum syn*.).

Material: LRs17T3,0, LRs18T5,0, LRs19D3, LRs20D3, LRs21D3, LRs22D4, LRs23D4, LRs24D10, LRs25K10, LRs26K18, LRs27A7, LRs28A9, LRs29A9 Grigore Collection in GIR. Neumayr's specimens: two in Collection of GIA – originate from green sandstones of Ghilcoş outcrop. Herbich's specimen: Collection of UBB – originates from red nodular limestone of Ciofronca outcrop.

Measurements:

specimen	Dmax	D	U	H	W	O/D	H/D	W/D	H/W	*Ni	*Ne	N_e/N_i
Lectotype	–	15	4.2	6.2	5.3	0.28	0.41	0.35	1.17	10	25	2.5
LRs17T3.0	–	15	3.8	6.5	6.3	0.25	0.43	0.42	1.03	10	27	2.7
LRs19D3	–	15	3.8	5.9	5.9	0.25	0.39	0.39	1	4	10	2.5
LRs29A9	–	14	3.5	5.5	5.9	0.25	0.39	0.42	0.93	10	25	2.5
LRs27A7	–	14	3.9	6	5.5	0.28	0.43	0.39	1.09	7	16	2.3
LRs20D3	–	16	4.5	6.2	6.7	0.28	0.39	0.42	0.92	6	14	2.3

Remarks: all specimens are comparable with the type species emended by Zeiss, with a variable ribbing alternant of the bi- or triplicates (intraspecific spectra). Only one specimen preserves the aperture lappets.

Occurrence: Kimmeridgian – the interval of Uhlandi to Eudoxus zones/subzones in the "Acanthicum Beds" (A, D, K and T profiles) from Ghilcoş – Hăşmaş Mts., Romania; Late Kimmeridgian – Acanthicum and Eudoxus zones in Europe (France, England, Spain, Switzerland, Poland, Bulgaria, Germany).

Sutneria* (*Enosphinctes*) *lorioli ZEISS, 1979
Pl. 4, Figs. 8, 17, 22

1872 *Ammonites eumelus* D'ORBIGNY – Loriol in Zeiss; p. 272, Fig. 5.

1979 *Sutneria lorioli* nov. nom. – Zeiss; p. 272; pl. 2, Fig. 1.

*2009 *Sutneria* (*Enosphinctes*) *lorioli* ZEISS – Grigore; p. 369; pl. I, Figs. 8, 17, 22.

Material: LRs30D14, LRs31D18, LRs32H11; *S.* cf. *lorioli* ZEISS: LRs33D3 Grigore Collection in GIR.

Measurements:

specimen	Dmax	D	U	H	W	O/D	H/D	W/D	H/W	*Ni	*Ne	N_e/N_i
Holotype	–	20	6.6	7.6	7.6	0.33	0.38	0.38	1	7	16	2.3
LRs30D14	–	15.5	4.8	5.5	5.5	0.34	0.35	0.35	1	9	–	–
LRs31D18	–	15.5	5	6	6	0.37	0.39	0.39	1	7	15	2.1

Remarks: damaged specimens: the LRs30D14 – the peristome and the ornamentation; the LRs31D18 and LRs32H11 – are more or less fragmentary, but all have preserved some specific features in the ornamentation or the aperture lappets. In the measurements only LRs30D14 specimen have a more closed umbilicus than the type one. The specimen LRs33D3 is comparable with that of Zeiss figured in 1979 (Fig. 6), with a thin secondary ribbing stile.

Occurrence: Late Kimmeridgian – Eudoxus and Beckeri zones in the "Acanthicum Beds" (D and H profiles) from Ghilcoş – Hăşmaş Mts., Romania; Late Kimmeridgian – Eudoxus Zone in Poland and Germany.

Sutneria* (*Enosphinctes*) *hoelderi ZEISS, 1979

Pl. 4, Figs. 10, 15

1959 *Sutneria cyclodorsata* (MOESCH) – Holder & Ziegler; p. 186; pl. 21, Fig. 4.
*1979 *Sutneria hoelderi* nov. nom. – Zeiss; p. 268; pl. 2, Fig. 3.
*2009 *Sutneria* (*Enosphinctes*) *hoelderi* ZEISS – Grigore; p. 369; pl. I, Figs. 10, 15; (*cum syn*.).
Material: LRs34A6, LRs35A8, LRs36A9 Grigore Collection in GIR.

Measurements:

specimen	Dmax	D	U	H	W	O/D	H/D	W/D	H/W	*Ni	*Ne	N_e/N_i
Holotype	–	15	5.3	6.2	5.6	0.35	0.41	0.37	1.11	12	41	3.4
LRs34A6	–	14	4.8	5.9	5.5	0.34	0.42	0.39	1.07	10	34	3.4
LRs35A8	–	16	5.2	6.4	5.5	0.32	0.40	0.34	1.16	8	29	3.6
LRs36A9	–	18	5.6	7.5	6.5	0.32	0.42	0.36	1.15	9	30	3.3

Remarks: specimen LRs34A6 has its morphological features and measurements close to those of the type species. The other specimens have the umbilicus more closed and the secondary ribs powerful on the LRs36A9.

Occurrence: Kimmeridgian – Divisum and Acanthicum zones in the "Acanthicum Beds" (A profile) from Ghilcoş – Hăşmaş Mts., Romania; Kimmeridgian – on the interval of Hypselocyclum to Acanthicum zones in Ethiopia, Germany, and France.

Sutneria* (*Enosphinctes*) *weidmanni ZEISS, 1979

Pl. 4, Fig. 19

1979 *Sutneria weidmanni* n. sp. – Zeiss; p. 271; pl. 3, Figs. 19, 20, text Fig. 4.
2009 *Sutneria* (*Enosphinctes*) *weidmanni* ZEISS – Grigore; p. 369; pl. I, Fig. 19.
Material: LRs37A7 Grigore Collection in GIR.

Measurements:

specimen	Dmax	D	U	H	W	O/D	H/D	W/D	H/W	*Ni	*Ne	N_e/N_i
Holotype	–	18	5.4	8.5	8.3	0.30	0.47	0.46	1.02	12	26	2.1
LRs37A7	–	15	4.5	6.7	6.5	0.30	0.45	0.43	1.03	9	18	2

Remarks: all the features of my specimen are comparable with those of the type species, the final sector with bifurcate starts at 6 mm diameter; my specimen is not preserving the peristome and a part of the outer whorl.

Occurrence: Early Kimmeridgian – Divisum Zone in the "Acanthicum Beds" (A profile) from Ghilcoş – Hăşmaş Mts., Romania; Kimmeridgian – Divisum and Acanthicum zones in Djibuti Republic and Yemen (East Africa and South Arabia).

Sutneria* (*Enosphinctes*) cf. *batalleri GEYER, 1963

Pl. 4, Fig. 6

cf 1963 *Sutneria* (*Enosphinctes*) *batalleri* n. sp. – Geyer; p. 189; pl. 18, Figs. 2, 3.

2009 *Sutneria* (*Enosphinctes*) cf. *batalleri* GEYER – Grigore; p. 369; pl. I, Fig. 6.

Material: LRs38G6, LRs39A7 Grigore Collection in GIR.

Remarks: the specimens features are comparable with the type species one, on the stile of ribbing but more powerful and rigid one. By the biostratigraphic point of view are founded in the same level.

Occurrence: Early Kimmeridgian – in the base of Divisum Zone in the "Acanthicum Beds" (A and G profiles) from Ghilcoş – Hăşmaş Mts., Romania; Early Kimmeridgian – at the limit of Hypselocyclum /Divisum zones in France.

Sutneria* (*Enosphinctes*) *zeissi GRIGORE, 2009

Pl. 4, Figs. 9, 11

*1878 *Ammonites cyclodorsatus* MOESCH – Loriol; p. 93; pl. 15, Fig. 4.

1979 *Sutneria* cf. *lorioli* n. nom. – Zeiss; p. 273; pl. 2, Figs. 4, 5, 6.

*2009 *Sutneria* (*Enosphinctes*) *zeissi* nov. nom. – Grigore; p. 370; pl. I, Figs. 9, 11.

Holotypus: specimen LRs40D2 figured in pl. I, Fig. 9.

Derivatio nominis: "*zeissi*" = dedicated to Prof. Arnold Zeiss.

Locus tipicus: Hăghimaş Masiff – *Acanthicum Beds* – Lacu Roşu, outcrop Ghilcoş.

Stratum tipicum: D 2 level – in the base of Acanthicum Zone.

Material: LRs40D2, LRs41D3; *S.* cf. *zeissi*: LRs42K10 Grigore Collection in GIR.

Measurements:

specimen	Dmax	D	U	H	W	O/D	H/D	W/D	H/W	*Ni	*Ne	N_e/N_i
Zeiss (*S.* cf. *lorioli*)	–	19	7.4	6.7	7.4	0.37	0.36	0.37	0.90	10	19	1,9
Holotype (LRs40D2)	–	17	6	6	6.5	0.35	0.35	0.38	0.92	9	17	1.9

Description: medium sized species convolute with a round whorl section. Ornamental features: with bifurcate and simple ribs (by the ending) and slow flexure of middle flanks – with the most rigid ribbing from this group (with equal power of the secondary and primary to). The peristome and suture are unknown.

Discussion: the features are compellable with that of *S. lorioli* ZEISS and *S. eumela* D'ORBIGNY; the first has a pronounced flexure of the ribs and the second one, the ribs are powerful and some trifurcate are present. The third specimen (LRs42K10) ventrally compressed and preserve on a half of the whorl a similar ribbing stile.

Occurrence: Late Kimmeridgian – Acanthicum Zone in the "Acanthicum Beds" (D profile) from Ghilcoş – Hăşmaş Mts., Romania; Kimmeridgian – Divisum and Acanthicum zones in Ethiopia.

Sutneria* (*Enosphinctes*) *subeumela SCHNEID, 1915
Pl. 4, Fig. 21

1915 *Sutneria subeumela* – Schneid; p. 124; pl. 6, Figs. 7, 7 a.
*2009 *Sutneria* (*Enosphinctes*) *subeumela* SCHNEID – Grigore; p. 370; pl. I, Fig. 21; (*cum syn*.).
Material: LRs43D30 Grigore Collection in GIR.

Measurements:

specimen	Dmax	D	U	H	W	O/D	H/D	W/D	H/W	*Ni	*Ne	N_e/N_i
Holotype	–	22	8	8	7	0.35	0.35	0.32	1.14	10	18	1.80
LRs43D30	–	13.5	5	5.5	4.5	0.37	0.41	0.33	1.08	9	17	1.89

Remarks: the single specimen available represents 2/3 of a whorl originating from a small individual, well preserving the specific ornamentation; compared with the type specimen its ribbing is more powerful on the venter and the siphonal groove less evident, on its smaller diameter.

Occurrence: Late Kimmeridgian – Beckeri Zone in the "Acanthicum Beds" (D profile) from Ghilcoş – Hăşmaş Mts., Romania; Late Kimmeridgian – Beckeri Zone (Subeumela Subzone) in France, Germany, Bulgaria and Ethiopia.

Sutneria* (*Enosphictes*) *hararina (VENZO, 1959)
Pl. 4, Fig. 24

1959 *Enosphinctes hararinus* VENZO – Venzo; p. 38; pl. 4, Figs. 4 a, b.
*2009 *Sutneria* (*Enosphictes*) *hararina* (VENZO) – Grigore; p. 370; pl. I, Fig. 24; (*cum syn*.).
Material: LRs44T7.0 Grigore Collection in GIR.

Measurements:

specimen	Dmax	D	U	H	W	O/D	H/D	W/D	H/W	*Ni	*Ne	N_e/N_i
Holotype	–	36	13	13	12	0.36	0.36	0.33	1.08	10	20	2
LRs44T7.0	–	15	5.5	5.5	5	0.37	0.37	0.33	1.10	10	21	2.1

Remarks: my specimen is broken of 1/5 on the last coiling but it preserves the peristome with its long lappets. The ribbing style on the last quarter of whorl is less flexuous than in the type specimen; the other features – morphologically and morphometrically – are comparable with that of the type species.

Occurrence: Late Kimmeridgian – Beckeri Zone in the "Acanthicum Beds" (T profile) from Ghilcoş – Hăşmaş Mts., Romania; Late Kimmeridgian – Eudoxus and Beckeri zones (Pedinopleura Subzone) in Germany and Tanzania.

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PLATE 1

Fig. 1 *Calliphylloceras benacense* (CATULLO) (LRh74B15); gray sandstone, Late Kimmeridgian-Beckeri Zone;
Fig. 2 *Phylloceras isotypum* BENECKE (LRh13G7); reddish nodular limestone, Early Kimmeridgian;
Fig. 3 *Calliphylloceras benacense* (CATULLO) (LRh75A3); green nodular limestone, Early Kimmeridgian-Divisum Zone;
Fig. 4 *Phylloceras consanguineum* GEMMELLARO (Preda **14a MPN)**; gray limestone, Late Kimmeridgian;
Fig. 5 *Phylloceras saxonicum* NEUMAYR (LRh40F2); green nodular limestone, Early Kimmeridgian-Platynota Zone;
Fig. 6 *Phylloceras saxonicum* NEUMAYR (LRh41J); green nodular limestone, Early Kimmeridgian-Divisum Zone;
Fig. 7 *Calliphylloceras manfredi* (OPPEL) (LRh26W); reddish nodular limestone, Early Kimmeridgian-Strombecki Zone;
Fig. 8 *Phylloceras consanguineum* GEMMELLARO (LRh84A3); green nodular limestone, Early Kimmeridgian-Divisum Zone;
Fig. 9 *Phylloceras saxonicum* NEUMAYR (LRh83E1); green nodular limestone, Early Kimmeridgian-Platynota Zone;
Fig. 10 "*Pylloceras leptoptychum*" HERBICH (**2053 UC)**; green sandstone, Late Kimmeridgian;
Fig. 11 *Calliphylloceras kochi* (OPPEL) (LRh1K38); sandstone, Early Tithonian- Semiforme Zone;
Fig. 12 *Calliphylloceras manfredi* (OPPEL) (LRh23F6); green nodular limestone, Early Kimmeridgian- Strombecki Zone.

PLATE 2

Fig. 1 *Sowerbyceras tortisulcatum* (D'ORBIGNY) (LRh43E1); green nodular limestone, Early Kimmeridgian-Platynota Zone;
Fig. 2 *Sowerbyceras loryi pseudosilenum* SARTI (LRh32B15); gray limestone, Late Kimmeridgian-Beckeri Zone;
Fig. 3 *Sowerbyceras tortisulcatum* (D'ORBIGNY) (LRh42A10); green nodular limestone, Early Kimmeridgian-Divisum Zone;
Fig. 4 *Holcophylloceras polyolcum* (BENECKE) (LRh8E1); green nodular limestone, Early Kimmeridgian-Platynota Zone;
Fig. 5 *Sowerbyceras silenum* (FONTANNES) (LRh56F1); green nodular limestone, Early Kimmeridgian-Platynota Zone;
Fig. 6 *Holcophylloceras mediterraneum* (NEUMAYR) mf. *mediterraneum* NEUMAYR (LRh2F6); green nodular, Early Kimmeridgian-Strombecki Zone;
Fig. 7 *Sowerbyceras loryi loryi* (MUNIER CHALMAS) (LRh70T6.0); red nodular limestone, Late Kimmeridgian-Acanthicum Zone;
Fig. 8 *Sowerbyceras silenum* (FONTANNES) (Preda **16b MPN)**; red nodular limestone, Early Kimmeridgian-Platynota Zone;
Fig. 9 *Sowerbyceras loryi loryi* (MUNIER CHALMAS) (Preda **25 MPN**); red nodular limestone, Early Kimmeridgian-Platynota Zone;
Fig. 10 *Sowerbyceras silenum* (FONTANNES) (LRh69T1,0); red nodular limestone, Early Kimmeridgian-Platynota;
Fig. 11 *Holcophylloceras mediterraneum* (NEUMAYR) mf. *zignodianum* D'ORBIGNY (LRh15F3); green nodular, Early Kimmeridgian-Strombecki Zone;
Fig. 12 "*Phylloceras bekasense*" HERBICH; red nodular limestone, Early Kimmeridgian-Platynota Zone.

PLATE 3

Fig. 1 *Lytoceras montanum* (OPPEL) (LRt11A2), phragmocone; green nodular limestone, Early Kimmeridgian – Divisum Zone.
Fig. 2 *Lytoceras orsinii* GEMMELLARO (LRt1K23); green sandstone with *T. janitor*, Late Kimmeridgian – Beckeri Zone.
Fig. 3 *Lytoceras orsinii* GEMMELLARO (LRt14T7.0); gray limestone, Late Kimmeridgian – "Eudoxus" Zone.
Fig. 4 *Lytoceras montanum* (OPPEL) – Preda's specimen (18 MPN; pl. 5, fig. 1); red nodular limestone, Kimmeridgian.
Fig. 5 *Protetragonites quadrisulcatus* D'ORBIGNY (LRt19G12); green-yellowish coarse sandstone and marls, Early Tithonian.
Fig. 6 *Lytoceras strambergense* (ZITTEL) (LRt2K30), green-yellowish sandstones with chlorite, Kimmeridgian /Tithonian – Beckeri /Hybonotum interval.
Fig. 7 *Lytoceras sutile* (OPPEL) (LRt5A); green nodular limestone, Kimmeridgian.

PLATE 4

All specimens are figured x2

Fig. 1 *Sutneria* (*Sutneria*) *platynota* (REINECKE) Preda's specimen (69A MPN); green nodular limestone, Early Kimmeridgian – Platynota Zone;
Fig. 2 *Sutneria* (*Sutneria*) *platynota* (REINECKE) (LRs8W0.5); red and green nodular limestone, Early Kimmeridgian – Platynota Zone;
Fig. 3 *Sutneria* (*Sutneria*) *spinata* nov.sp. (Holotype; LRs9F1); green nodular limestone, Early Kimmeridgian – Platynota Zone;
Fig. 4 *Sutneria* (*Sutneria*) *carpathica* nov. sp. (Holotype; LRs11F1); green nodular limestone, Early Kimmeridgian – Platynota Zone;
Fig. 5 *Sutneria* (*Sutneria*) *platynota* (REINECKE) (LRs1E1); green nodular limestone, Early Kimmeridgian – Platynota Zone;
Fig. 6 *Sutneria* (*Enosphinctes*) cf. *batalleri* GEYER (LRs38G6); reddish limestone, Early Kimmeridgian – Divisum Zone;
Fig. 7 *Sutneria* (*Enosphinctes*) *pedinopleura* SEEGER (LRs16E2); green nodular limestone, Early Kimmeridgian – Hypselocyclum Zone;

Fig. 8 *Sutneria* (*Enosphinctes*) *lorioli* ZEISS (LRs31D18); green nodular limestone, Late Kimmeridgian – Beckeri Zone;
Fig. 9 *Sutneria* (*Enosphinctes*) *zeissi* nov. nom. (LRs40D2); green nodular limestone, Late Kimmeridgian – Acanthicum Zone;
Fig. 10 *Sutneria* (*Enosphinctes*) *hoelderi* ZEISS (LRs35A8); green nodular limestone, Early Kimmeridgian – Divisum Zone;
Fig. 11 *Sutneria* (*Enosphinctes*) cf. *zeissi nov.nom.* (LRs42K10); red nodular limestone, Early Kimmeridgian – Divisum Zone;
Fig. 12 *Sutneria* (*Enosphinctes*) *eumela* (D'ORBIGNY) (LRs27A7); green nodular limestone, Early Kimmeridgian – Divisum Zone;
Fig. 13 *Sutneria* (*Enosphinctes*) *cyclodorsata* (MOESCH) (LRs13D2); green nodular limestone, Late Kimmeridgian – Acanthicum Zone;
Fig. 14 *Sutneria* (*Enosphinctes*) *eumela* (D'ORBIGNY) (LRs17T3.0); green nodular limestone, Early Kimmeridgian – Divisum Zone;
Fig. 15 *Sutneria* (*Enosphinctes*) *hoelderi* ZEISS (LRs36A9); green nodular limestone, Late Kimmeridgian – Acanthicum Zone;
Fig. 16 *Sutneria* (*Enosphinctes*) *eumela* (D'ORBIGNY) (LRs29A9); green nodular limestone, Late Kimmeridgian – Acanthicum Zone;
Fig. 17 *Sutneria* (*Enosphinctes*) *lorioli* ZEISS (LRs30D14); grey limestone, Late Kimmeridgian – Eudoxus Zone;
Fig. 18 *Sutneria* (*Enosphinctes*) *cyclodorsata* (MOESCH) (LRs14D2); green nodular limestone, Late Kimmeridgian – Acanthicum Zone;
Fig. 19 *Sutneria* (*Enosphinctes*) *weidmanni* ZEISS (LRs37A7); green nodular limestone, Early Kimmeridgian – Divisum Zone;
Fig. 20 *Sutneria* (*Enosphinctes*) *eumela* (D'ORBIGNY) (LRs20D3); green nodular limestone, Late Kimmeridgian – Acanthicum Zone;
Fig. 21 *Sutneria* (*Enosphinctes*) *subeumela* SCHNEID (LRs43D30); green sandstone, Late Kimmeridgian – Beckeri Zone;
Fig. 22 *Sutneria* (*Enosphinctes*) *cf. lorioli* ZEISS (LRs33D3); green nodular limestone, Late Kimmeridgian – Acanthicum Zone;
Fig. 23 *Sutneria* (*Enosphinctes*) cf. *cyclodorsata* (MOESCH) (LRs15W4); red and green nodular limestone, Early Kimmeridgian –? Divisum Zone;
Fig. 24 *Sutneria* (*Enosphinctes*) *hararina* (VENZO) (LRs44T7.0); grey limestone, Late Kimmeridgian – Eudoxus Zone.

PLATE 1

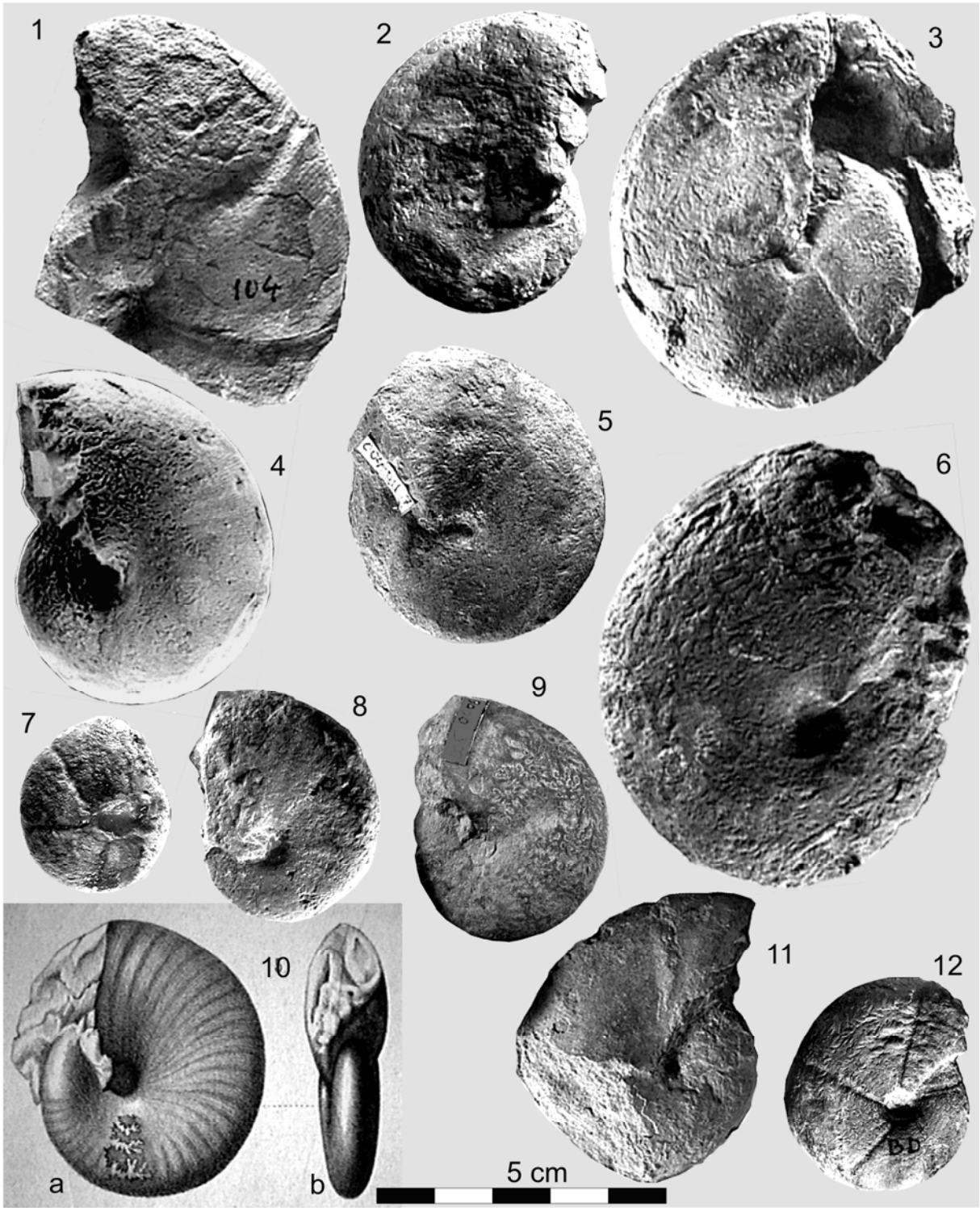

PLATE 2

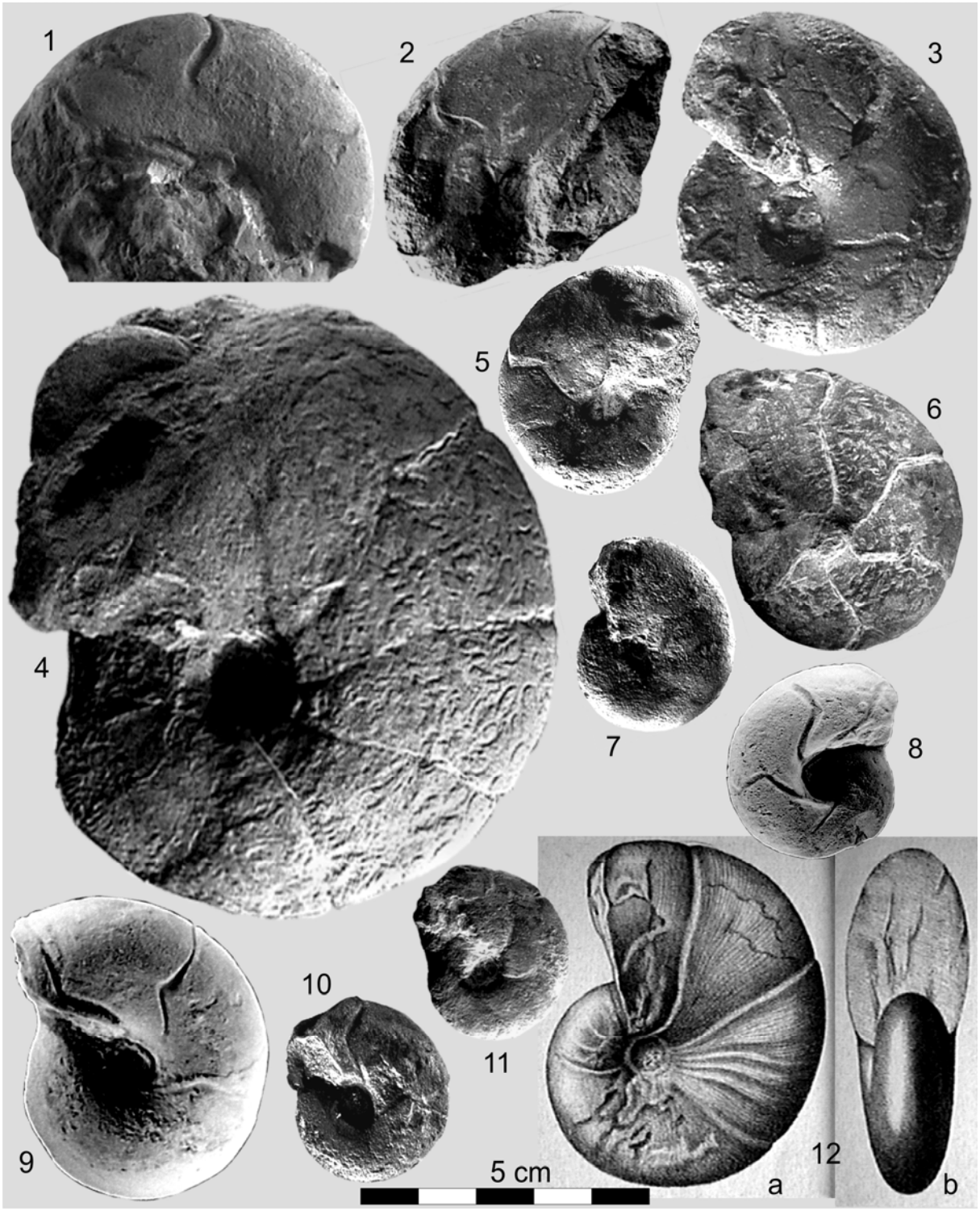

PLATE 3

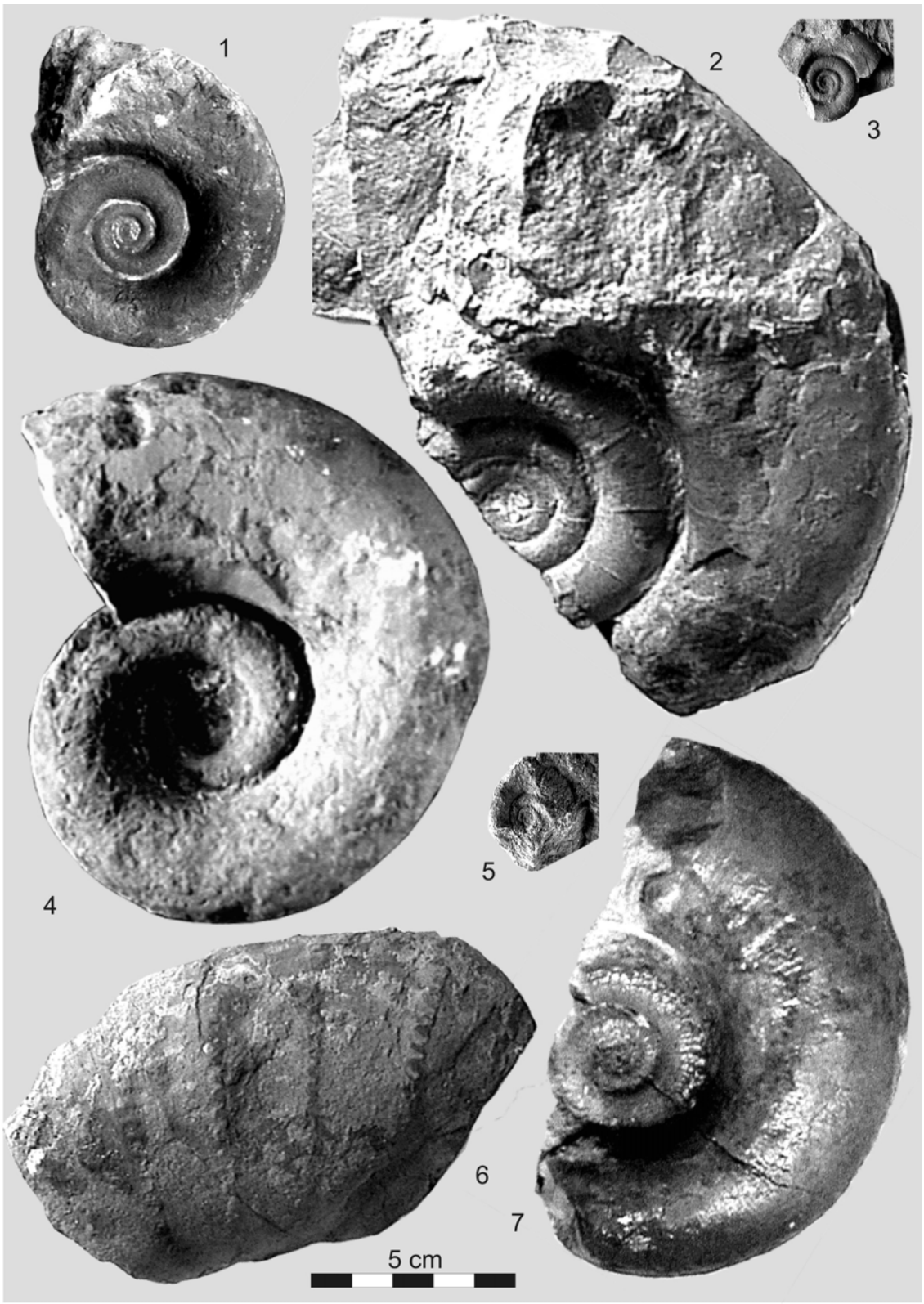

PLATE 4