

# Ammonites of Tethyan Origin in the Ryazanian Stage of the Russian Platform: Genus *Mazenoticer* and Other Neocomitidae

V. V. Mitta

Paleontological Institute, Russian Academy of Sciences, Profsoyuznaya 123, Moscow, 117997 Russia

e-mail: mitta@paleo.ru

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**Abstract**—Ammonites from the *Riasanites riasanensis* Zone (Ryazanian Stage of the Russian Platform) of the family Neocomitidae are considered. The new species *Mazenoticer robustum* sp. nov. and *M. ceccai* sp. nov. are described. Other members of this genus and of the genera *Malbosicer* and *Pomeliceras* are identified in open nomenclature.

**Keywords:** ammonites, Neocomitidae, *Mazenoticer*, *Pomeliceras*, *Malbosicer*, Ryazanian Stage, Berriasian Stage, Russian platform.

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## INTRODUCTION

Some time ago I (Mitta, 2008) began a series of papers on results of taxonomic studies of taxonomic diversity of ammonites of “Tethyan” origin in the Ryazanian Stage (Central Russian equivalent of the Berriasian Stage (Lower Cretaceous, Standard scale)). In this paper I consider ammonites of the family Neocomitidae belonging to the genera *Malbosicer* Grigorieva, 1938, *Pomeliceras* Grigorieva, 1938, and *Mazenoticer* Nikolov, 1966.

## MATERIAL

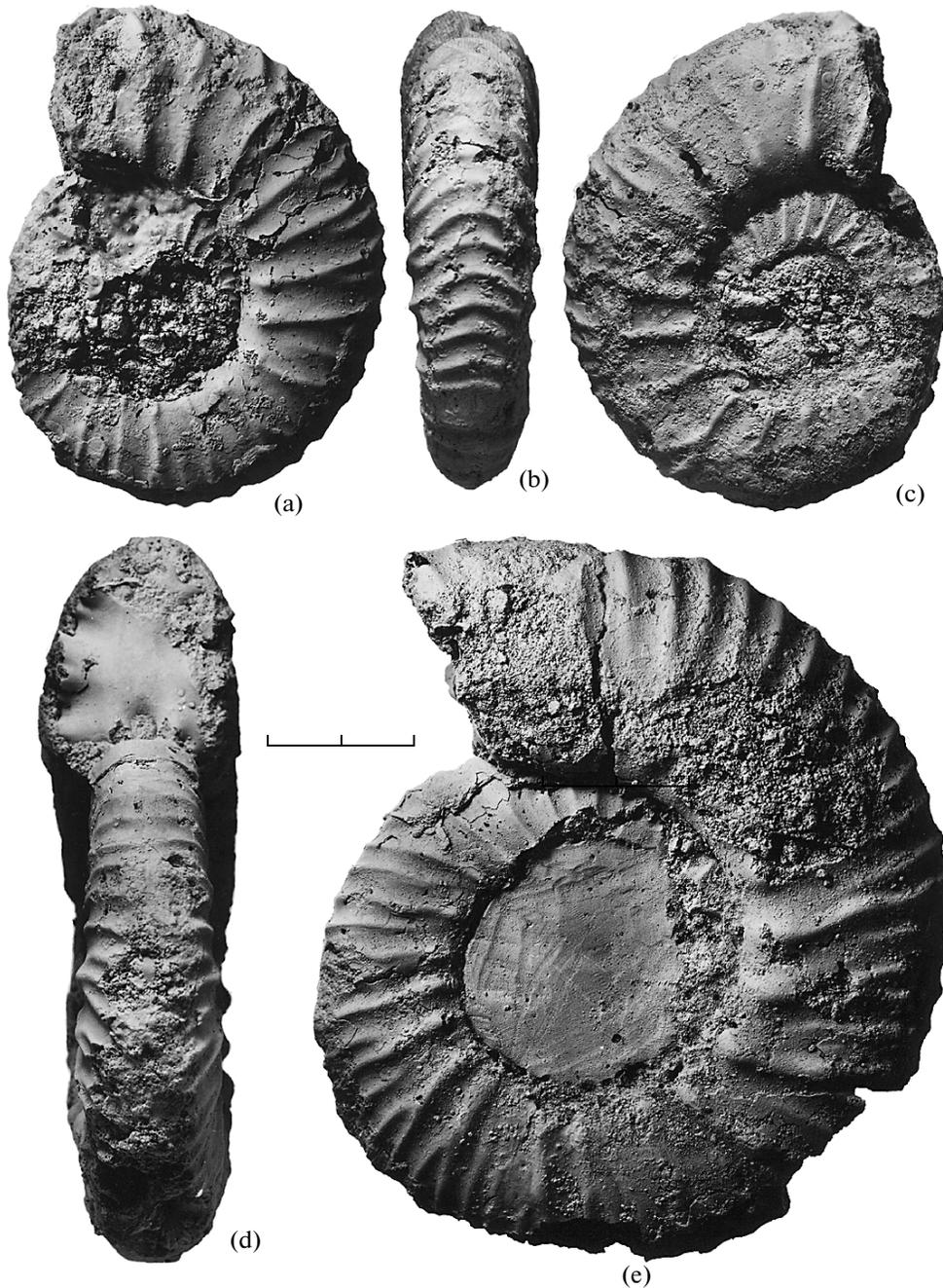
The paper is mainly based on material collected in the quarries of the Lopatinskii Phosphorite Mine (Voskresensk District, Moscow Region). Smaller collections come from outcrops on the right bank of the Oka River, between the villages of Nikitino and Staraya Ryazan (Spassky District, Ryazan Region). In addition, several specimens from the same localities were collected by amateur paleontologists. Neocomitid occurrences are so rare on the Russian Platform that there are few illustrations in the 19th–20th century Russian literature. Although my material is often inadequate for comprehensive description, there is little prospect of obtaining significant new material from the impoverished localities concerned, and thus it is necessary to describe taxa based on what I have at my disposal.

## RESULTS AND DISCUSSION

The systematics of the family Neocomitidae has not yet stabilized. According to the new edition of *Treatise...*

(Wright et al., 1996), it includes, apart from the nominotypical subfamily, the subfamilies Berriasellinae Spath, 1922 and Endemoceratinae Schindewolf, 1966. However, the absence of a substantiated phylogeny, which would take into account shell morphogenesis and ornamentation, sutural ontogeny, stratigraphic distribution and biogeography makes the delineation between Neocomitinae and Berriasellinae unclear. The origin of the family is not established; it is known from the Upper Jurassic (Tithonian) and Lower Cretaceous (Berriasian). It presumably evolved from the family Ataxioceratidae, derivatives of Perisphinctidae (Donovan et al., 1981). It is also possible that the family is polyphyletic, some species evolving from the morphologically similar Himalayitidae (also derivatives of Perisphinctidae), which is supported by their stratigraphic and geographical distribution. The strongly expressed homeomorphy of descendants of perisphinctids at the Jurassic–Cretaceous boundary makes the delineation of taxa of all ranks even more difficult.

I previously described representatives of Neocomitidae from Central Russia (genus *Subalpinites* Mazonot) (Mitta, 2009). This genus was assigned to the subfamily Neocomitinae by Wright et al. (1996). The genus *Malbosicer* (and also its subjective synonyms *Pomeliceras* and *Mazenoticer*) were assigned to the subfamily Berriasellinae in the above paper (and earlier by Tavera, 1985). Some species of *Subalpinites* with extremely strongly developed umbilical and lateral nodes (*S. remanei* Le Hégarat, *S. remaneiformis* Mitta) strongly resemble in a number of characters the ammonites described below as *Mazenoticer*. In addi-



**Fig. 1.** *Malbosiceras* sp.: (a–c) specimen no. 3990/371, phragmocone, (a, c) lateral view, (b) ventral view; (d, e) specimen no. 3990/369, phragmocone, (d) apertural view, (e) lateral view. Moscow Region, Lopatinskii Phosphorite Mine, quarry no. 12-2; Ryazanian, lower part of the *Riasanites rjasanensis* Zone; coll. by V.V. Mitta. Scale bar 1 cm.

tion, large individuals of *Subalpinites* and *Mazenoticerias* have singular and widely spaced strongly raised ribs-folds on the body chamber (characters also observed in some other neocomitids). Therefore I assigned all neocomitids from Central Russia to this family without assigning to subfamilies. Other Central Russian ammonites of Tethyan origin (*Riasanites*, *Riasanella*, *Transcaspiites*) are smaller in size, and have a less strongly dissected suture, and possibly belong to a different family (Himalayitidae).

The genera *Malbosiceras*, *Pomeliceras*, and *Mazenoticerias* should be considered as separate genera until a revision of topotypical material.

The genus *Malbosiceras* was established by Grigorieva (1938), initially as a subgenus of the genus *Protacanthodiscus* Spath, with the type species *Ammonites malbosi* Pictet (the lectotype is figured by Pictet, 1867, pl. 14, fig. 1; the photograph of the mold and the lectotype designation by Mazenot, 1939, pl. 13, fig. 8)

from the Berriasian of France; the lectotype was incorrectly listed as the holotype (Le Hégarat, 1973; Wright et al., 1996) (Pictet in his first description figured two specimens). The type species has large shell (the diameter of the phragmocone is over 100 mm), high elliptical cross-section, wide umbilicus, and singular, intercalating ribs, densely spaced on the phragmocone, with a high bifurcation point. At the end of the phragmocone and on the living chamber are widely spaced tripartite ribs, with lateral inflations and less developed umbilical inflations.

In the collections studied are several phragmocones with similar shell morphology. They also show the predominance of simple and intercalating ribs at small diameter, while the ventral lowering of the ribs is weakly pronounced. As the shell grows the number of bifurcating (narrowly forked) ribs increases, and a small lateral umbilical and lateral inflation begin to develop (Figs. 1a–1e). Differences from the type species are observed in the more widely spaced ribs and in the lower number of tripartite ribs. The preservation of the material and the level of knowledge on *Malbosiceras* prevent a comprehensive comparison of the Central Russian species. However it is possible to assign these forms to *Malbosiceras* s.str.

Unlike in *Malbosiceras*, in *Pomeliceras* and *Mazenoticerases* the umbilical and especially lateral rows of inflations are much more strongly developed even in the earlier whorls. The Central Russian representatives of these genera also show another character not observed in other Ryazanian ammonites; hollow spines forming a mainly lateral row of nodes. Figures 2a and 2b show a section of such a spine, similar to that of the Jurassic Aspidoceratidae (also derivatives of Perisphinctidae). Layers of shell form septa within a spine. The number of septa depend on the length of the spine and on the whorl diameter. As a result the length of spines preserved in fossil shells; long acute spines, short and rounded spines, or just nodes instead of spines, depends entirely on the state of the shell's preservation. This complicates the identification, especially of specimens from dissimilar facies (terrigenous versus carbonate), as the inner and outer molds of such ammonites would strongly differ from specimens with a different state of preservation of the shell.

The spines are the best developed in some specimens which possibly belong to *Pomeliceras* s. str. This genus was also proposed by Grigorieva (1938) originally as a subgenus of the genus *Protacanthodiscus*, with the type species *Ammonites breveti* Pomel (holotype by monotypy: Pomel, 1889, pl. 9, figs. 1–5) from the Berriasian of Algeria. At the same time Grigorieva established a new subgenus *Blanfordiceras* (*Boehmiceras*), with the type species *Hoplites (Blanfordia) boehmi* Uhlig (holotype by monotypy: Uhlig, 1910, pl. 34, fig. 1) from the Spiti Formation in the Himalayas. It is also described *Blanfordiceras (Boehmiceras) caucasicum* Grigorieva from the basin of the Belaya

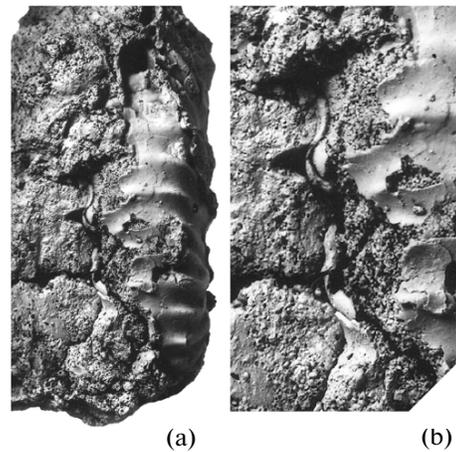
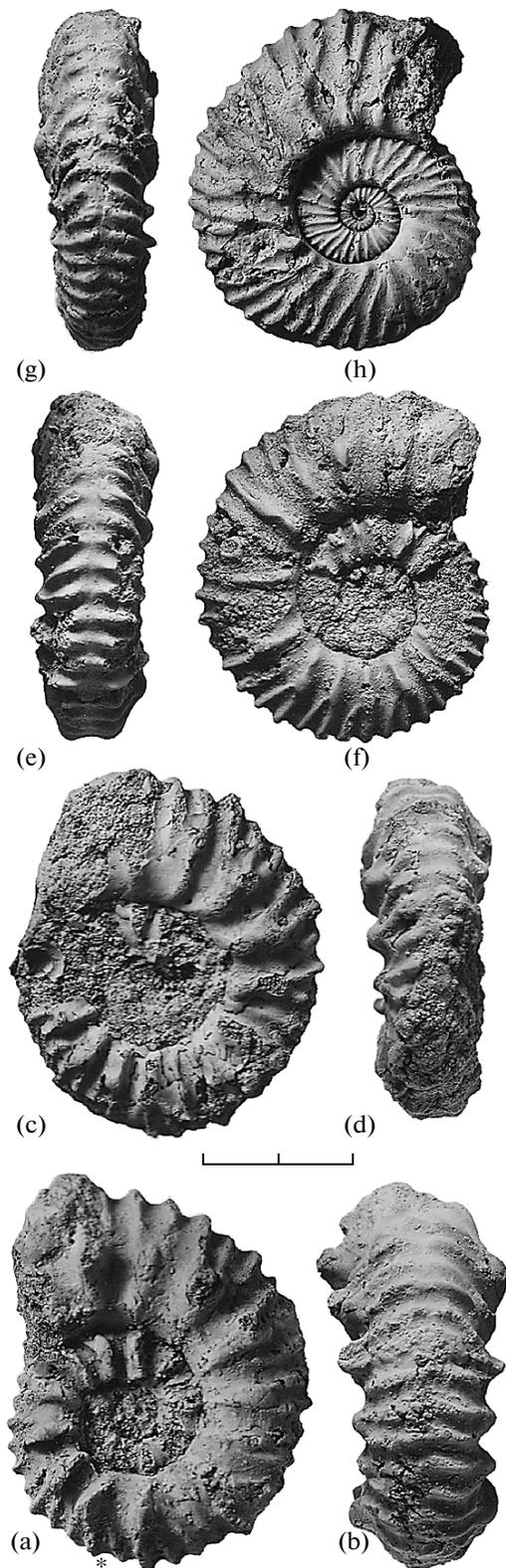


Fig. 2. *Mazenoticerases ceccai* sp. nov., specimen no. 3990/390: (a) ventral view,  $\times 1$ , (b) the same specimen, fragment,  $\times 2$ , Moscow Region, Lopatinskii Phosphorite Mine, quarry no. 12-2; Ryazanian, lower part of the *Riasanites rjasanensis* Zone; coll. by V.V. Mitta.

River in the Northern Caucasus. (lectotype: Grigorieva, 1938, pl. 2, fig. 1), which should be assigned to *Pomeliceras*. Species of the genus *Blanfordiceras* and in particular *B. (Boehmiceras)* have less inflated whorls, with less pronounced ornamentation, lacking developed spines, which is well illustrated in the classical work by Uhlig (1910) and in the new monograph by Enay (2009) on ammonites from the Spiti-Shales.

The Central Russian representatives of *Pomeliceras* s. str. are found extremely rarely. Only three specimens are known from the Moscow Region (coll. of A.V. Stupachenko). They are represented by shells from 35 to 60 mm; one of these ammonites is shown in Figs. 3a and 3b. Their morphology suggests that they belong to this genus, but precise comparison with described species is difficult because of size difference; the shells figured in the literature are of large individuals, e.g., the lectotype of *P. caucasicum* (Grigorieva) reaches 160 mm in diameter. Our specimens have a low, kidney-shaped whorl cross-section, and possess prominent tripartite and bipartite ribs, which become coarser with age. Strongly pronounced lateral spines are often fused with the umbilical nodes due to the crestlike raised primary rib. Apparently these specimens belong to a new species, which should be described in the future (based on better material). A small fragment of a whorl of *P. cf. caucasicum* (Grigorieva), which is very similar to the lectotype, including in size, was found on the bank of the Oka River, near the village of Nikitino, in talus from the *spasskensis* Subzone of the *rjasanensis* Zone (Mitta, 2007, p. 89). The same outcrop contained *Transcaspiites transfigurabilis* (Bogoslowsky), specimen (ibid., pl. 3, fig. 1), very similar to the specimen figured from the Belaya River (Grigorieva, 1938, pl. 4, fig. 1). Hence, it can be suggested that the corresponding beds are synchronous and that my identification of the fragment of *Pomeliceras* is correct.



←  
**Fig. 3.** *Pomeliceras* and *Mazenoticerias*: (a, b) *Pomeliceras* sp., specimen no. ABC/1236, with a body chamber: (a) lateral view, (b) ventral view; (c, d) *Mazenoticerias robustum* sp. nov., specimen no. 3990/375, phragmocone: (c) lateral view, (d) ventral view; (e–f) *M. ceccai* sp. nov., specimen no. 3990/376, phragmocone: (e) ventral view, (f) lateral view; (g, h) *Mazenoticerias* sp., specimen no. 3990/392, phragmocone with lifetime injury in the first third of the external whorl: (g) ventral view, (h) lateral view. Moscow Region, Lopatinskii Phosphorite Mine, quarry no. 12-2; Ryazanian, lower part of the *Riasanites rjasanensis* Zone; coll. by V.V. Mitta and A.V. Stupachenko. Scale bar 1 cm. The asterisk marks the beginning of the body chamber.

*riasella broussei* Mazenot (holotype Mazenot, 1939, pl. 12, fig. 5) from the Berriasian of France. Later the author of the genus preferred to treat it as a subgenus within *Pomeliceras* (Nikolov, 1979, 1982). However, typical representatives of *Pomeliceras* possess strongly inflated whorls at all morphogenetic stages, unlike the more strongly flattened *Mazenoticerias*. Ornamentation of the body chamber of these ammonites also differs strongly. Adult *Pomeliceras* retain branching ribs with well developed spines, whereas in *Mazenoticerias* ornamentation is modified to form singular ribs-folds. These differences are not related to the sexual dimorphism; each genus has its own dimorphs. Representatives of these two genera are found in the Russian Platform within the entire interval of the *rjasanensis* Zone, at various stratigraphic levels. Therefore I consider it appropriate to use both generic names. At the same time the close relationships of these taxa should be acknowledged and possibly *Mazenoticerias* evolved from *Pomeliceras* following its radiation; Fig. 3 shows a possible phylogenetic succession (from bottom to top).

The supposed first members of the Central Russian *Mazenoticerias* (*M. robustum* sp. nov.) have ornamentation very similar to that of *Pomeliceras* at least at early stages (Figs. 3c, 3d). At the same time the whorls are higher and more strongly flattened. Even weaker ornamentation is typical of the next species, *M. ceccai* sp. nov. (Figs. 3e, 3f). These two new species described below are the most widespread representatives of the genus in the beds with *Riasanites swistowianus* (Nikitin) (Quarry no. 12-2 in the Lopatinskii Mine). The same locality contained a few ammonites, apparently belonging to another species; ribs at early stages in these ammonites are more densely spaced and lack nodes. The nodes appear at Dm about 40 mm (Figs. 3g, 3h). Such shells are found stratigraphically higher, in association with *R. rjasanensis* (Nikitin), in other quarries in the mine, but are also rare. It is most likely that adult members of this species had a more flattened shell with relatively widely spaced ribs. In my collection, there are such specimens represented by phragmocones of over 100 mm in diameter, but poorly preserved. Most these specimens, identified here as

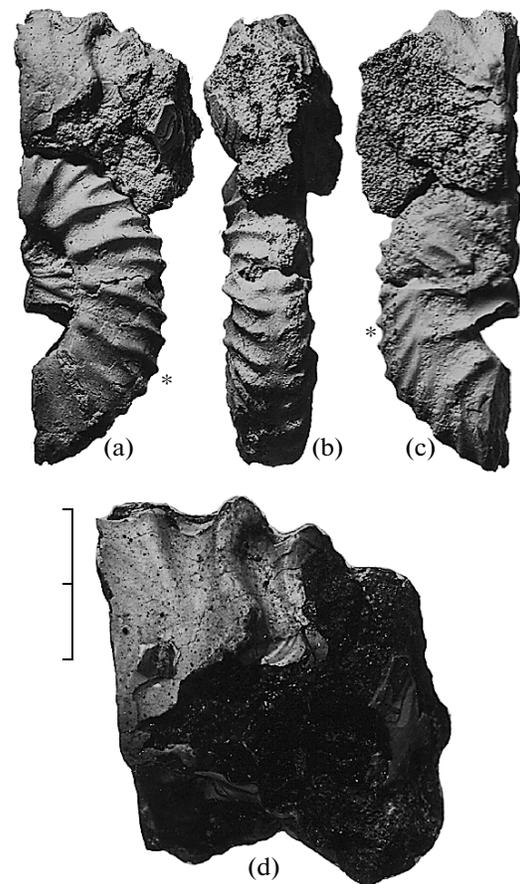
The following neocomitids, most frequently found in the *rjasanensis* Zone of the Moscow Region, are herein assigned to the genus *Mazenoticerias*. This genus was established by Nikolov (1966), with the type species *Ber-*

*Mazenoticer* sp., show lifetime injuries of the shell, which can partly account for the existing differences.

Lifetime injuries, especially those not currently observed (in parts of the shell that were not preserved), complicate the taxonomic identifications of ammonites. The only microconch of *Mazenoticer* in my collection with the lateral auricle preserved is represented by an incomplete small shell. One of the flanks of this specimen (Figs. 4a, 4d), shows morphogenesis of ornamentation apparently typical for this taxon. The opposite flank (Fig. 4c) clearly shows an irregular curvature of ribbing due to lifetime injury. Probably despite the healed injury, the mollusk died before reaching the average size. As a result it is difficult to determine the specific affinity of the specimen. The specimen has lifetime injury on the venter of the first third of the external whorl, and so does the shell figured in Figs. 3g and 3h.

In several papers Mitta (2004, 2005, 2007) I figured some other neocomitids, e.g., *Malbosicer* *nikolovi* Le Hégarat, *M. cf. macphersoni* (Kilian), *Dalmasiceras crassicoatum* Djanelidze, and *D. ex gr. djanelidzei* Mazenot. The identifications were made based on only a few specimens, but no new data have been obtained on those taxa. The specimen with lifetime injury shown as *Malbosicer* aff. *boisetti* (Nikolov) (Mitta, 2005, pl. 2, fig. 1), is assigned after revision to *Mazenoticer* sp. The specimen figured as *M. cf. urukhense* Kalacheva et Sey (Mitta, 2006, text-fig. 2; 2007, pl. 2, fig. 4) is now assigned to *Mazenoticer* *ceccai* sp. nov. The specimen figured as “*Euthymicer* *euthymi* (Pictet)” (Mitta, 2002, pl. 3, fig. 4) is also considered as a synonym of *Mazenoticer* *ceccai*. Another specimen figured under the same name (ibid., pl. 3, fig. 5) has more widely spaced ribs and is identified as *Mazenoticer* sp.

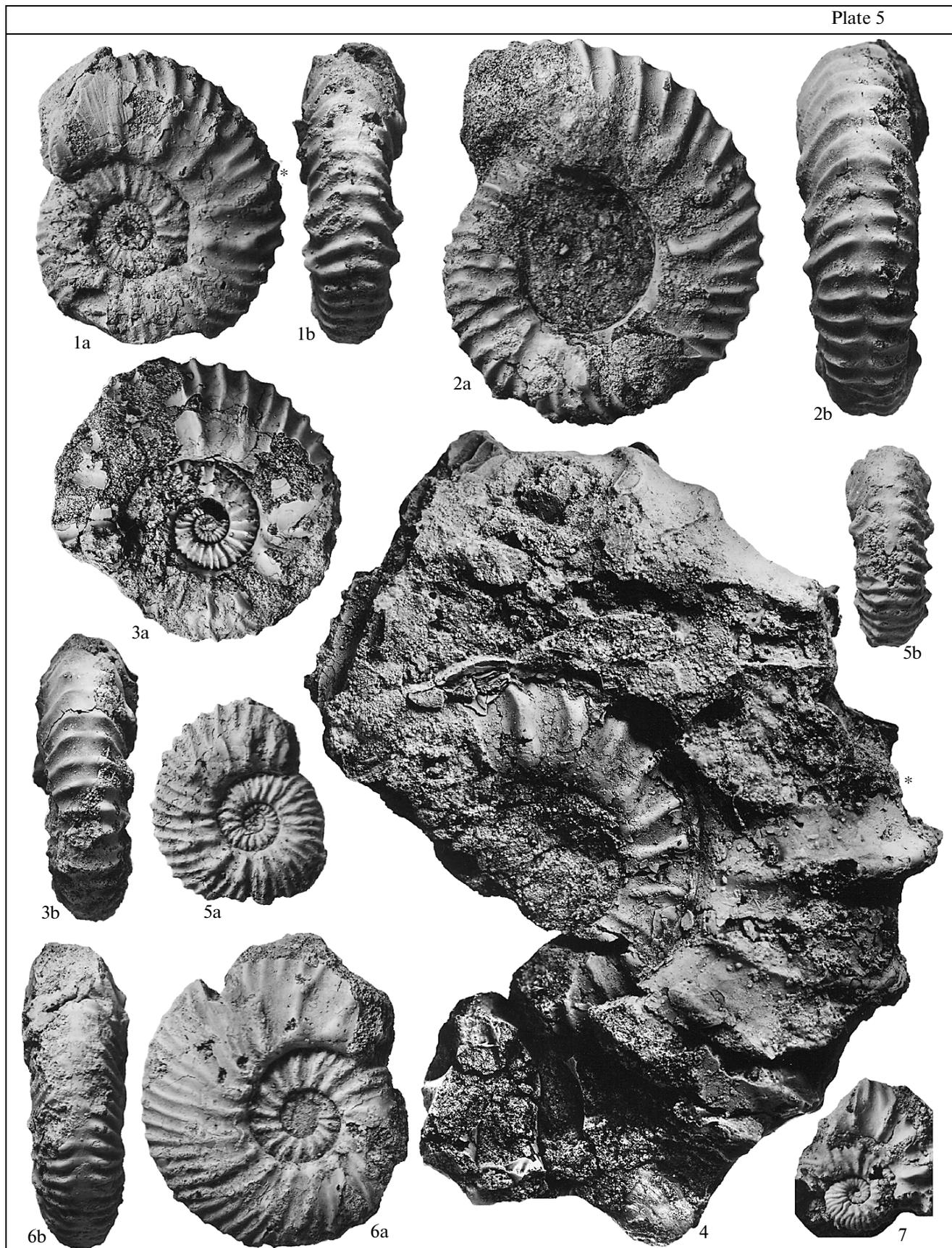
The genus *Euthymicer* Grigorieva, 1938 deserves a separate discussion. The genus was also established as a subgenus of the genus *Proracanthodiscus*, with the type species *Ammonites euthymi* Pictet (holotype by monotypy: Pictet, 1867, pl. 13, fig. 3) from the Berriasian of France. Because the holotype had been lost, Le Hégarat (1965, pl. 1, fig. 1; text-fig. 1.2) designated a neotype. Both the drawing of the holotype and the photograph of the neotype clearly show three rows of nodes: apart from the lateral and umbilical nodes (spines) typical of neocomitids *Euthymicer* shows well-developed ventrolateral nodes/spines. In *Mazenoticer* and related genera, the ventrolateral row of nodes is not developed; ribs in this part of the shell are sometimes crestlike, but never form nodes or spines. Presence of the ventrolateral row of spines is characteristic of another genus *Neocosmoceras* Blanchet, 1922, with the type species *Hoplites sayni* Simionescu (lectotype: Simionescu, 1899, pl. 1, fig. 7). Many scientists, including myself, consider *Euthymicer* as a junior synonym of *Neocosmoceras* (Tavera, 1985; Wright



**Fig. 4.** *Mazenoticer* sp., specimen no. 3990/387; (a, c) lateral view and (b) apertural view,  $\times 1$ ; (d) apertural area with an auricle (photographed without coating,  $\times 2$ ); Moscow Region, Lopatinskii Phosphorite Mine, quarry no. 12-2; Ryazanian, lower part of the *Riasanites rjasanensis* Zone; coll. by V.V. Mitta. The asterisk marks the beginning of the body chamber.

et al., 1996). Incompletely preserved shells from the Ryazan region identified as *Euthymicer* sp. indet. (Mesezhnikov et al., 1979, pl. 1, fig. 1.2), I reidentified (Mitta, 2008) as *Riasanites swistowianus* (Nikitin).

Table 1 shows the distribution of Neocomitidae (including *Subalpinites*) in the *Riasanites rjasanensis* Zone; these and other ammonites of Tethyan origin have not been found on the Russian Platform above or below this level. Neocomitids are particularly diverse in the faunal horizon containing numerous *Riasanites swistowianus* established only in quarry 12-2 of the Lopatinskii Mine. Lithologically, this interval is represented here by bright-yellow and brown, phosphatized, clayey sandstone 0.2–0.4 m thick, with ammonoids concentrated at its base. In other quarries of the mine located further north (nos. 7–2-bis, 8, 9-bis, 10, 11), this sandstone contained mainly *R. rjasanensis* (Nikitin) and occasional neocomitids. In the Ryazan Region, the *rjasanensis* faunal horizon is represented



**Table 1.** Distribution of Neocomitidae in the *Riasanites rjasanensis* Zone of the Russian Platform. The dashed line shows uncommon and poorly studied species, and the stroke shows occasional occurrences

Taxa	<i>Riasanites rjasanensis</i> Zone		
	<i>R. rjasanensis</i> Subzone		<i>S. spasskensis</i> Subzone
	<i>R. swistowianus</i>	<i>R. rjasanensis</i>	
<i>Subalpinites gruendeli</i>			
<i>Subalpinites faurieformis</i>			
<i>Subalpinites remaneiformis</i>			
<i>Subalpinites krischtafowitschi</i>	-----		
<i>Subalpinites</i> aff. <i>krischtafowitschi</i>			---
<i>Malbosiceras</i> sp.			
<i>Malbosiceras nikolovi</i>		---	
<i>Malbosiceras</i> cf. <i>macphersoni</i>			---
<i>Pomeliceras</i> sp.	-----		
<i>Pomeliceras</i> cf. <i>caucasicum</i>			---
<i>Mazenoticerias robustum</i>			
<i>Mazenoticerias ceccai</i>			
<i>Mazenoticerias</i> sp.	-----	-----	
<i>Dalmasiceras crassicostatum</i>		---	
<i>Dalmasiceras</i> ex gr. <i>djanelidzei</i>		---	

by greenish-gray glauconitic sands up to 1.5 m thick. The overlying *Surites spasskensis* Subzone in the Moscow Region (dark-colored sandy clay occasionally becoming clayey sand, up to 0.4 m thick), ammonites of Tethyan origin are not found. However, to the east, in the basin of the Oka River, this Subzone represented by greenish-brown glauconitic sandstone up to 0.5 m thick, contained occasional neocomitids and other ammonites of Tethyan origin. Judging from the taxonomic composition of the ammonoid assemblages, the *Riasanites rjasanensis* Zone of the Russian Platform, apparently corresponds to the Berriasian *Tirnovella occitanica* Zone of the Western European standard scale. The substantiation of this correlation, which takes into account data on himalayitids and craspeditids, will be considered in a subsequent publication.

## SYSTEMATIC PALEONTOLOGY

### Family Neocomitidae Salfeld, 1923

#### Genus *Mazenoticerias* Nikolov, 1966

*Mazenoticerias*: Nikolov, 1966, p. 641; Le Hégarat, 1973, p. 114; Kalacheva, Sey in Kolpenskaya et al., 2002, p. 75.

*Pomeliceras* (*Mazenoticerias*): Nikolov, 1982, p. 154; Klein, 2005, p. 213.

Type species. *Berriasella broussei* Mazenot, 1939, Berriasian of France.

Diagnosis. Shell medium-sized and large, with flattened whorls suboval in cross-section. Umbilicus wide. Ornamentation represented by tripartite, intercalating and singular ribs lowering in mid-venter. Lateral row of nodes or spine-like outgrowths present in mid-flank. Umbilical row of nod-like inflation less developed. Body chamber of macroconchs possessing



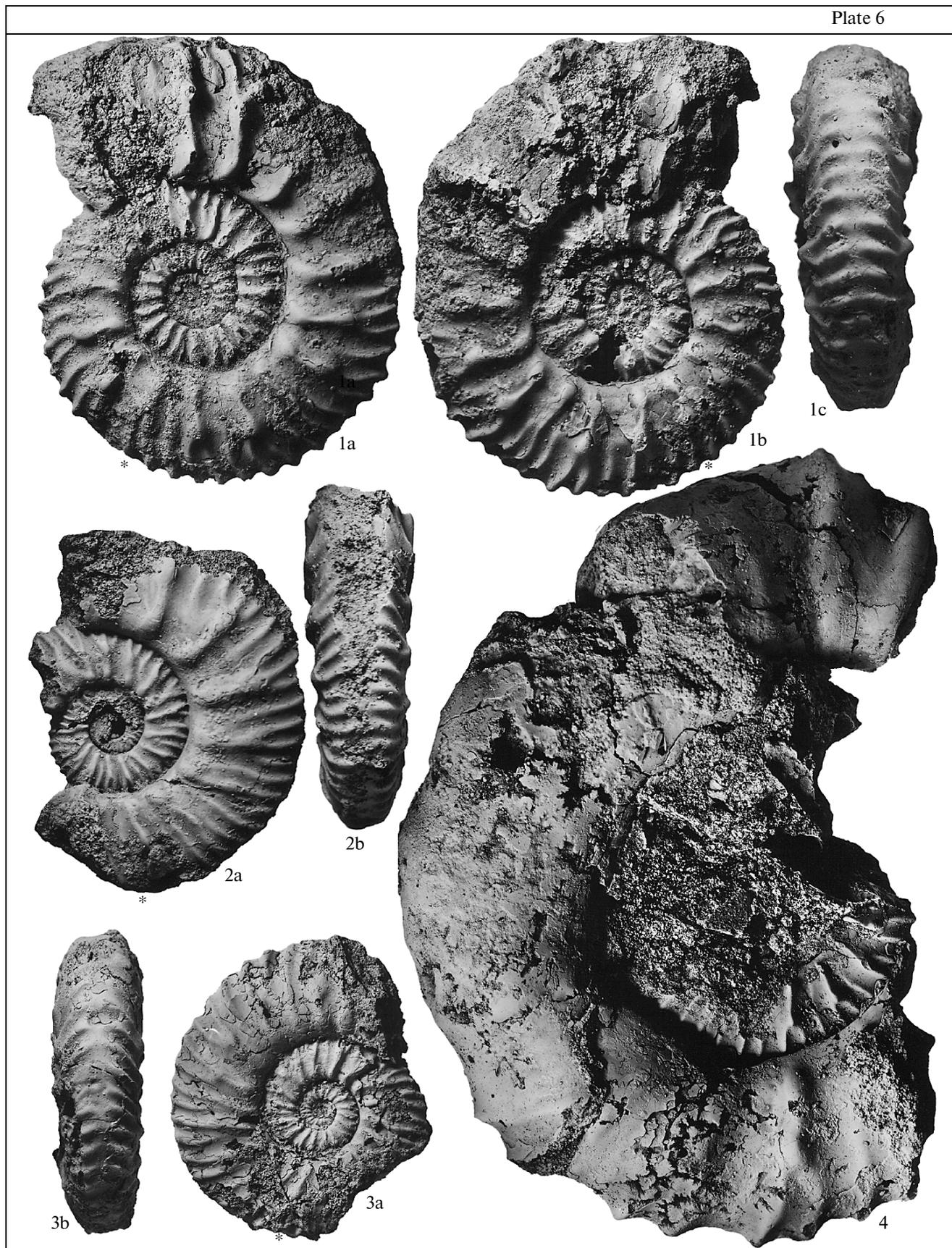
### Explanation of Plate 5

All sizes are natural. Asterisks mark the beginning of the body chamber.

**Figs. 1–4.** *Mazenoticerias robustum* sp. nov.: (1) specimen no. 3990/384, microconch: (1a) lateral view, (1b) ventral view; (2) specimen no. 3990/374, macroconch: (2a) lateral view, (2b) ventral view; (3) specimen no. 3990/383, macroconch: (3a) lateral view, (3b) ventral view; (4) holotype no. 3990/373, lateral view.

**Figs. 5–7.** *Mazenoticerias ceccai* sp. nov.: (5) specimen no. 3990/405, juvenile specimen: (5a) lateral view, (5b) ventral view; (6) specimen no. 3990/389, phragmocone of a macroconch: (6a) lateral view, (6b) ventral view; (7) specimen no. 3990/404, inner whorls of an adult individual, lateral view.

Moscow Region, Lopatinskii Phosphorite Mine, quarry no. 12-2; Ryazanian, lower part of the *Riasanites rjasanensis* Zone. Coll. by V.V. Mitta and A.V. Stupachenko.



singular rib-folds. Microconchs having shell of half the size of that of macroconchs and aperture with lateral auricles.

**Species composition.** Apart from the type species, *M. curelense* (Kilian) and *M. hegarati* (Nikolov) from the Berriasian of Western Europe, *M. malbosiforme* Le Hégarat from the Berriasian of Western and Central Europe and North Africa, *M. urukhense* Kalacheva et Sey from the Berriasian of the Northern Caucasus and two new species from the Ryazanian of Central Russia.

**Comparison.** This genus is distinguished from the similar genus *Pomeliceras* by the flattened adult whorls with simple ribs. This genus differs from *Malbosiceras* in the smaller number of simple ribs on the phragmocone, ribs lowering in the mid-venter, well-developed lateral row of nodelike inflation or spines. The absence of the ventrolateral row of spines distinguishes *Mazenoticerias* from *Neocosmoceras*.

**Remarks.** Klein (2005), following Enay and Le Hégarat (*Révision...*, 1994), included *Reineckeia gigondasensis* Steinmann in *Mazenoticerias*. This species from the Berriasian of France (d'Orbigny, 1851, pl. 224, figs. 1, 2) should probably be assigned to *Pomeliceras* because of the strongly developed lateral spines and weakly developed ventral lowering of the ribs. However, Klein considers *Mazenoticerias* as a subgenus of the genus *Pomeliceras*.

*Mazenoticerias robustum* Mitta, sp. nov.

Plate 5, figs. 1–4, Plate 6, fig. 4

? *Hoplites* aff. *Arnoldi*: Bogoslovsky, 1896, p. 112, pl. 6, fig. 7.

**Etymology.** From the Latin *robustus* (robust).

**Holotype.** PIN, no. 3990/373; Moscow Region, Lopatinskii Phosphorite Mine, quarry no. 12-2; Ryazanian, lower part of the *Riasanites rjasanensis* Zone.

**Description.** Phragmocone of macroconchs reaches 130 mm in diameter. Young whorls (Dm up to 80 mm) are of medium width, with a height usually slightly exceeding the width and becoming flattened and suboval with age. The umbilicus is wide, the umbilical shoulder is rounded. The body chamber length and specimens with an aperture preserved are not yet known.

The ornamentation is mainly composed of prorsiradiate, bipartite and intercalating ribs, whereas singu-

lar and tripartite ribs are more rarely observed. On the mid-flank, at the bifurcation point, nodelike inflations or spine-like outgrowths are present. The umbilical row of nodes is well developed, but these nodes are not modified into spines. Primary ribs are often cristate, and the umbilical node is fused with the lateral. In the mid-venter, the ribs are usually lower. At the end of the phragmocone and on the body chamber of adult specimens simple, strongly raised ribs-folds are present, rounded on the mold (Pl. 6, fig. 4) and acute on the shell (Pl. 5, fig. 4).

**Dimensions in mm and ratios:**

Specimen no.	Dm	WH	WW	UW	WH/Dm	WW/Dm	UW/Dm
3990/372	~127	40	33	54	0.31	0.26	0.42
3990/374	67	23	~22	28	0.34	0.33	0.42
	53	17	18	22	0.32	0.34	0.41
3990/383	50	17	16	20	0.34	0.32	0.4
3990/384	45	16	15	18	0.35	0.33	0.4
3990/375	45	16	14	19	0.35	0.31	0.42

**Variability.** Variability is observed in the degree of development of nodes or spines.

**Comparison.** This species is distinguished from most other species by coarser ribs. This species differs from *M. malbosiforme* and *M. hegarati* in the smaller size and earlier appearance of singular ribs at the beginning of the body chamber.

**Remarks.** The juvenile specimen figured by Bogoslovsky (1896) as *Hoplites* aff. *Arnoldi* (see the list of synonyms) from the "horizon with *Olcostephanus lgowensis*, *hoplitoides* etc." (Valanginian in the modern understanding), most likely belong to this species. Weak umbilical and pronounced lateral nodes (at small diameters) distinguish this species from the basin of the Oka River from the Valanginian *Neohoplites arnoldi* (Pictet et Campiche). The illustrated specimen of Bogoslovsky is present in the collection of the TsNIGR Museum (St. Petersburg). It is composed of dark glauconitic sandstone typical of the *rjasanensis* Zone, but is its enclosed within gray compact sandstone of the *Nikitinoceras hoplitoides* zone, which indicates redeposition (Mitta, 2007, p. 82).

**Material.** Eight specimens from the type locality.

← Explanation of Plate 6

All sizes are natural. Asterisks mark the beginning of the body chamber.

**Figs. 1–3.** *Mazenoticerias ceccai* sp. nov.: (1) holotype no. 3990/386, microconch: (1a, 1b) lateral view, (1c) ventral view; (2) specimen no. 3990/382, microconch: (2a) lateral view, (2b) ventral view; (3) specimen no. 3990/385, microconch with lifetime injury of the venter: (3a) lateral view, (3b) ventral view.

**Fig. 4.** *Mazenoticerias robustum* sp. nov., specimen no. 3990/372, phragmocone of a macroconch, lateral view.

Moscow Region, Lopatinskii Phosphorite Mine, quarry no. 12-2; Ryazanian, lower part of the *Riasanites rjasanensis*. Coll. by V.V. Mitta and A.V. Stupachenko.

*Mazenoticerias ceccai* Mitta, sp. nov.

Plate 5, figs. 5–7, Plate 6, figs. 1–3

*Mazenoticerias* cf. *urukhense*: Mitta, 2006, text-fig. 2; 2007, pl. 2, fig. 4.*Euthymicerias euthymi*: Mitta, 2002, pl. 3, fig. 4.**E t y m o l o g y.** In honor of Prof. Dr. Fabrizio Cecca, expert in Jurassic ammonite and biostratigraphy.**H o l o t y p e.** PIN no. 3990/386; Moscow Region, Lopatinskii Phosphorite Mine, quarry no. 12-2; Ryazanian, lower part of the *Riasanites rjasanensis* Zone.**D e s c r i p t i o n.** The phragmocone of the macroconch reaches 100 mm in diameter, of microconch, about 60 mm. Early whorls (Dm less than 30 mm) are weakly inflated, at later stages medium-wide or laterally compressed, oval in cross-section. The umbilicus is wide; the umbilical wall is steep; the umbilical shoulder is rounded.

The ornamentation on the largest part of the phragmocone is composed of curved, mainly bifurcating ribs, between which are located one, less commonly two intercalating ribs. Simple and tripartite ribs are uncommon. The bifurcation point occurs in the mid-flank, where nodes or spines are formed. The umbilical row of nodes, which are not modified into spines, is expressed more weakly than the lateral. Sometimes ribs are observed, which dichotomize from the umbilical nodes. In this case, one of the ribs can again bifurcate in the mid-flank, without forming a lateral inflation, or there is a node or spine without bifurcation. Sometimes primary ribs are cristate (in the region from the umbilical node to the lateral node and in the ventrolateral region). In the mid-venter, the ribs become lower. As the shell grows, the number of simple ribs increases, and the body chamber of the macroconch possesses mainly singular ribs.

**D i m e n s i o n s i n m m a n d r a t i o s:**

Specimen no.	Dm	WH	WW	UW	WH/Dm	WW/Dm	UW/Dm
3990/265	93	31	27	40	0.33	0.29	0.43
Holotype 3990/386	77	25	20	33	0.32	0.26	0.43
	60	20	17	26	0.33	0.28	0.43
3990/385	55	18	16	23	0.33	0.29	0.42
3990/389	52	20	17	18	0.38	0.33	0.35
3990/376	46	14	15	19	0.3	0.33	0.41
	34	11	12	14	0.32	0.35	0.41
3990/405	36	13	14	14	0.36	0.39	0.39
3990/382	37	13	12	14	0.35	0.32	0.38

**V a r i a b i l i t y.** The degree of shell compression, rib curvature, and node prominence may vary. In typical representatives of the species (Pl. 6, figs. 1, 2) the branches of the ribs are crescent-like, in others (Pl. 5, fig. 6; pl. 6, fig. 3) directed forward without a noticeable curvature.

**C o m p a r i s o n.** This species is distinguished from the most similar species *M. curelense* by the more

densely spaced ribs and earlier appearance of simple ribs. This species differs from the very similar *M. urukhense* in the better developed and longer remaining rows of nodes and more strongly curved or oblique ribs. It is distinguished from *M. robustum* by the more flattened phragmocone and less coarse ribs; and from the type species in the smaller number of intercalating ribs on the body chamber.

**M a t e r i a l.** Twenty-five specimens, including seven specimens from A.V. Stupachenko's collection; all from the type locality.

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