

## A new species, genus, and family of gastropods from the Upper Oxfordian (Jurassic) of European Russia

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**ABSTRACT.** A gastropod with unusual morphology was found in the Upper Jurassic of Central European Russia. It is assigned to a new family **Berendinellidae** fam. nov., as *Berendinella rossica* gen. et sp. nov. This family is preliminarily referred to the superfamily Cerithiopsodea.

In Oxfordian (Moscow Region) and Kimmeridgian (Kostroma Region) clays, a new species of snails was found, which differs strongly from other known groups of Mesozoic gastropod mollusks. In characters of protoconch this gastropod is similar to the order Epitoniiformes. As in many nystiellids and janthinids, it has the protoconch whorls covered with a collabral sculpture. However, the morphology of its postlarval shell strongly differs from that of teleoconchs of the Epitoniiformes representatives. Our species has a paucispiral low-spired shell with gradate whorls bearing a sharp keel in the upper part. No one species of Epitoniiformes has such teleoconch. Janthinoidea have a multispiral teleoconch but possess a strongly different sculpture. Besides, our species has a siphonostomatous aperture with a well developed basal projection, whereas in Epitoniiformes the aperture is rounded in the basal part, and the aperture is holostomatous.

There is still the superfamily Cerithiopsodea in which some representatives have the protoconchs covered with collabral sculpture or with sculpture composed of spiral and collabral elements. These are families Eumetulidae and Cerithiopsidae. Besides, they, as well as our species, are characterized by a siphonostomatous aperture. However, teleoconchs of Eumetulidae and Cerithiopsidae are multispiral and their shells vary from high-spired to very high-spired, and the shell sculpture strongly differs from that in our species. Also it is necessary to note the distinction in the character of siphonostomy between the Jurassic species and comparable cerithiopsids: in the former the basal part of aperture forms a triangular flattened projection, whereas in the latter there is a short projection looking like a semiclosed channel. That is why I believe that it is

more correct to place the Jurassic species in the new genus *Berendinella*, as *B. rossica* Guzhov, sp. nov., and to create a family **Berendinellidae** Guzhov, fam. nov. This family is suggested to be temporarily placed in the superfamily Cerithiopsodea, based on the similarity in morphology of protoconchs and because of primitive character of the shell siphonostomy.

### Superfamily Cerithiopsodea

#### Family **Berendinellidae**

Guzhov, fam. nov.

**Diagnosis.** Small paucispiral shells with collabrally sculptured protoconch. Teleoconch covered by collabral and spiral sculpture. Spiral sculpture represented by ribs and rows of microscopical tubercles. Aperture siphonostomatous, having thin lips, which are weakly expanded outside in basal and basopalatal parts of aperture. Columella protruding anteriorly as small curved triangular projection.

[**Диагноз.** Малооборотные небольшие раковины с коллабрально скульптурированным протоконхом. Телеоконх покрыт коллабральной и спиральной скульптурой. Последняя представлена ребрами и рядами микроскопических бугорков. Устье сифоностомное, с тонкими губами, которые в базальной и базально-палатальной части немного отвернуты. Столбик продолжается в виде небольшого изогнутого треугольного выступа.]

**Composition.** *Berendinella* gen. nov.

Genus *Berendinella* Guzhov, gen. nov.

Type species – *B. rossica* sp. nov.

**Diagnosis.** Shell small, paucispiral, low-spired. Protoconch of several whorls with collabral sculpture. Teleoconch consists of convex gradate whorls divided by deep suture. Spiral sculpture of ribs and rows of microscopical tubercles, collabral sculpture consisting of threads. Body whorl very high. Base convex, covered with same sculpture as whorl side. Aperture oval. Outer lip in basal and basopalatal parts weakly extended outside. Aperture with a tri-

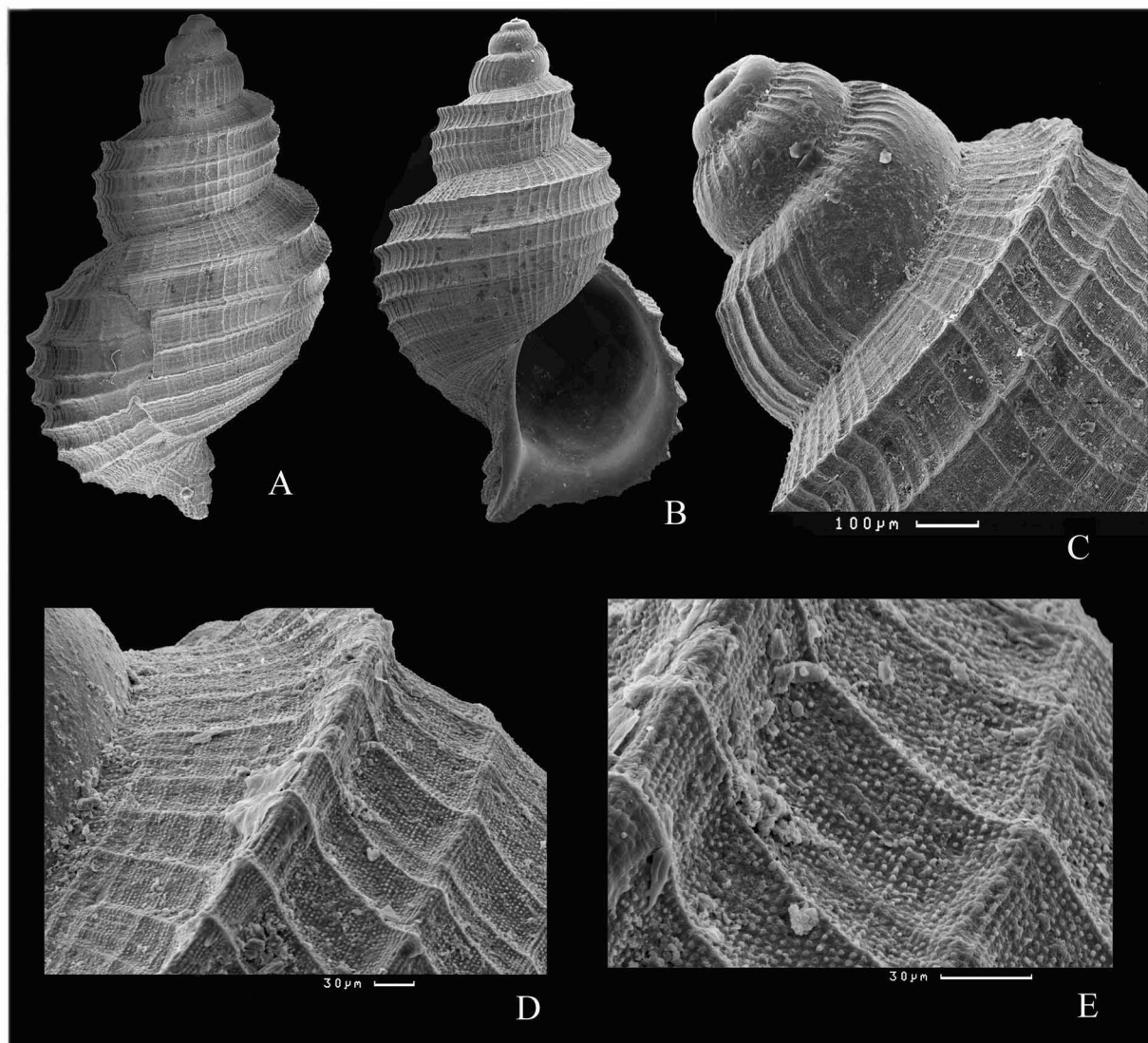


FIG. 1. *Berendinella rossica*, sp. nov., holotype, shell height 3.9 mm: A – abapertural view; B – apertural view; C – protoconch and initial teleoconch; D, E – details of teleoconch sculpture.

РИС. 1. *Berendinella rossica*, sp. nov., голотип, высота раковины 3,9 мм: А – вид со стороны, противоположной устью; В – вид с устья; С — протоконха и начало телеоконха; D, E – детали скульптуры телеоконха.

angular projection in basal part. This projection is weakly concave and turned to columella. Growth lines orthocone on whorl side and gradually turning back adapically.

**[Диагноз.** Раковина маленькая, малооборотная, низко-башенковидная. Протоконх из нескольких оборотов с коллабральной скульптурой. Телеоконх из выпуклых ступенчатых оборотов с глубоким швом. Спиральная скульптура из ребер и рядов микроскопических бугорков, коллабральная – из ребрышек. Последний оборот очень высокий. Основание выпуклое, покрыто такой же скульптурой. Устье овальное. Наружная губа в базальной и базопалатальной части немного отвернута. В базальной части устье имеет треугольный вы-

рост. Это вырост немного вогнут и направлен к столбику. Линии нарастания на боковой стороне ортоконические, ниже постепенно отклоняются назад.]

**Composition.** Type species.

**Discussion.** *Berendinella* is similar to some species of the genus *Paladmete* Gardner, 1916 (Trichotropidae) from the Upper Cretaceous of USA from which it differs in the smaller size (shell of *Paladmete* is up to 14-19 mm in height [Sohl, 1964]), domination of spiral sculpture on the teleoconch, and the shape of aperture, which in *Paladmete* is roundly quadrangular and has no extension of lips in basal part. Instead of the basal projection ledge

as in *Berendinella*, lips of *Paladmete* join simply at a right angle. Protoconch of *Berendinella* also differs from that in type species of *Paladmete*, *P. cancellaria* (Conrad, 1858). In the latter it consists of 2.5-3 whorls, of which the two first are smooth, and the third bears three thin spiral threads [Sohl, 1964]. In the protoconch of *Berendinella* smooth whorls are followed by collabrally sculptured ones.

*Berendinella* is also very similar to the genus *Paramorea* Wade, 1918 (Muricidae) from the Upper Cretaceous of the USA. *Berendinella* differs from the type species of *Paramorea*, *P. lirata* Wade, 1918, in its smaller shell, widely spaced spiral ribs on the teleoconch, and the shape of aperture. *Paramorea lirata* has a broad notch in basal part of aperture, whereas *Berendinella* has a small triangular projection at the same place. Besides *Paramorea* has a smooth protoconch, but *Berendinella* has a collabrally sculptured one. *Berendinella rossica* is more similar to the species of *Paramorea* described from the Paleocene of Ukraine [Guzhov, 2005]. It also has widely spaced ribs but differs in microsculpture and character of ribs. *B. rossica* has narrow, acute-topped ribs and its surface is covered by numerous rows of microscopical tubercles including ribs. The Paleocene *Paramorea* has broad, flat-topped and smooth ribs, and its microsculpture is present only between ribs and consists of numerous fine spiral ridges.

**Etymology.** Named after the settlement of Berendino situated near one of the sites of the species finding.

*Berendinella rossica* Guzhov, sp. nov.

(Fig. 1, A-E)

**Holotype** – Geological-Mineralogical Museum of Moscow Regional Pedagogical University, No. 12/136. Russia, Moscow Region, Voskresensk District, Egorjevskii Phosphorite Mine, quarry no. 10; Upper Jurassic, Upper Oxfordian, Serratum Zone, Serratum Subzone.

**Description.** Low-spined shell, height up to 4 mm. Protoconch of 3.5 whorls, the first whorl planispiral. Initial 1.5 protoconch whorls smooth, then thin and frequent collabral folds appear, which begin at the top of whorl, near suture. Initially they run from suture to suture, but further gradually become shorter. In the end of protoconch they remain only somewhat below suture. Protoconch whorls are roundly bent above and therefore gradate. Protoconch/teleoconch border is marked by appearance of collabral threads, reaching suture, and a keel.

Teleoconch consists of 2.75 whorls. Teleoconch angle is 59°. Suture angled and deep. Whorls of spire are convex. Sculpture consists of collabral threads, spiral ribs and numerous tubercles. Upper rib is strongest. It appears in the beginning of teleoconch and forms the keel. Next two ribs below the upper one appear at 0.3-0.4 teleoconch whorl. Further two ribs rise from under suture. Teleoconch surface densely covered by spiral rows of rounded microscopical tubercles. Body whorl rounded, convex, very high (occupying two thirds of shell height). It covered with nine ribs, four of which are on the base. Base sculpture is the same as on whorl side.

**[Описание.** Раковина низко башенковидная, ее высота до 4 мм. Протоконх из трех с половиною оборотов, из которых первый – планиспиральный. Первые полтора оборота гладкие, затем появляются тонкие и частые коллабральные валики, которые начинаются сверху оборота, от шва. Вначале они идут от шва до шва, но в дальнейшем становятся все короче. В конце протоконха они сохраняются только сверху оборота. Обороты протоконха сверху округло изогнуты и из-за этого ступенчатые. Граница протоконха и телеоконха обозначена появлением коллабральных ребрышек, достигающих до нижнего шва, и кила. Телеоконх состоит из 2,75 оборотов. Угол телеоконха 59°. Шов угловатый, глубокий. Обороты завитка выпуклые. Скульптура из коллабральных ребрышек и спиральных ребер и многочисленных бугорков. Верхнее ребро самое сильное. Оно появляется в начале телеоконха (образует киль). Второе и третье (сверху) ребра появляются в 0,3–0,4 оборота от начала телеоконха. В дальнейшем из-под шва поднимаются еще два ребра. Поверхность телеоконха густо покрыта частыми спиральными рядами округлых микроскопических бугорков. Последний оборот округлый, выпуклый и очень высокий (две трети высоты раковины). Он несет девять ребер, из которых четыре на основании. Скульптура на основании такая же, как на боковой стороне.]

**Comparison.** A similar juvenile shell was described by J. Gründel [1998: 18, pl. 5, figs. 8-9, pl. 6, figs. 1-2] from the Middle – Upper Callovian of Germany, as a protoconch of unclear systematic position. This shell undoubtedly belongs to *Berendinella*, but its specific position remains unclear.

**Material.** Upper Oxfordian, Serratum Zone, Serratum Subzone: Moscow Region, Voskresensk District, Egorjevskii Phosphorite Mine, quarry No. 7-2bis (2 km southeast from the settlement of Berendino) – one shell; quarry No.10 (near the village of Novoherkasskoje) – one shell. Lower Kimmeridgian: Kostroma Region, Makarjev District, left bank of Unzha River near the village of Mikhalenino – one shell.

**Etymology.** Named after the country where the species was found.

## References

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- Новый вид, род и семейство гастропод из верхней юры Европейской России
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- РЕЗЮМЕ.** В верхней юре центра Европейской России найдена гастропода с необычной морфологией, для которой выделено семейство **Berendinellidae** fam. nov. с новым родом и видом ***Berendinella rossica*** gen. et sp. nov. Это семейство предварительно отнесено к надсемейству Cerithiopsoida.

