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To the Revision of Jurassic Gastropods from Central Russia: 3. Genera *Teutonica* Schröder, 1995, *Longaevicerithium* gen. nov., and *Novoselkella* gen. nov.

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Abstract—The study of Jurassic gastropods from Central Russia revealed three genera met for the first time in the region under discussion, i.e., *Teutonica* Schröder, 1995, *Longaevicerithium* gen. nov., and *Novoselkella* gen. nov. The structure of embryonic and postembryonic whorls of these gastropods suggests that the genus *Teutonica* belongs to the family Protorculidae, the genus *Longaevicerithium* belongs to the family Eumetulidae, and the genus *Novoselkella* belongs to the family Cerithiopsidae. The composition of the family Protorculidae is discussed. Three species are described within the genera, two are new, *Teutonica tatianae* sp. nov., and *Novoselkella novoselkensis* sp. nov. *Procerithium* (*Plicacerithium*) *bitzae* Geras. is considered to be the type species of the new genus *Longaevicerithium*.

Key words: Gastropods, Eumetulidae, Jurassic, Central Russia.

INTRODUCTION

The present publication is based on a collection of finely preserved shells of rather rare representatives of the superfamily Cerithiopsoidea. The material collected from the Oxfordian and Volgian strata of Moscow, and Moscow and Ryazan regions was kindly given to me by the amateur paleontologist K.M. Shapovalov. The embryonic and postembryonic structure of the shells of these gastropods is studied.

The species *Procerithium* (*Plicacerithium*) *bitzae* Gerasimov, 1992 is assigned to the family Eumetulidae. The new genus *Longaevicerithium* was established to contain this species. This genus differs from *Plicacerithium* in the protoconch ornamentation and the thin and sharp plicae and rough spiral ornamentation of the teleoconch (Guzhov, 2002a). From the genus *Procerithium*, it is distinguished by the long ornamented protoconch and strongly ornamented convex (nongradate) teleoconch whorls. *Longaevicerithium* is placed in the family Eumetulidae on the basis of its high conical siphonostomatous shell ornamented by strong plicae and ribs and the high protoconch covered by plicae. This structural type of the protoconch and teleoconch is especially similar to that of the subfamily Eumetulinae (Gründel, 1980; Nützel, 1998).

A single Jurassic species from the family Cerithiopsidae, which is similar to eumetulids, was assigned by Gründel (1977; 1980) to the genus *Cerithiopsidella* Bartsch, 1911. Later, Nützel transferred this species to the family Eumetulidae. However, I suppose this concept is erroneous, since in the protoconch and teleoconch morphology, this species is very similar to the genus *Cerithiopsis*, i.e., the type genus of the family Cerithiopsidae. The genus *Longaevicerithium* is easily distinguished from *Cerithiopsidella* by the protoconch with widely spaced strong plicae, rows of nodes and the absence of spiral ribs in the middle and the lower part of the whorl, and by the convex teleoconch whorls lacking large nodes.

Another new species from the studied collection was assigned to the genus *Teutonica* of the family Protorculidae. The family was established by Bandel (1991) for the genera *Protorcula* Kittl, 1894 and *Ampezzopleura* Bandel, 1991. Later, the genera *Atorcula* Nützel and *Acanthostrophia* Conti et Fischer were added to this family (Nützel, 1998). The type species of the genus *Protorcula* is *P. subpunctata* (Münster, 1841). It is characterized by a high conical shell with concave whorls, ornamented by the growth lines and by a row of nodes along the upper and lower sutures. Its protoconch was originally studied by Zardini (1985) and later redescribed by Bandel (1991, p. 255, text-fig. 33) and Nützel (1998, p. 165, text.-fig. 25). Nützel (1998, pl. 27, figs. A–E) provided several good photos of the teleoconch and protoconches of this species. The protoconch is multispiral, highly conical, and composed of one or two smooth whorls and several convex whorls with densely spaced thin plicae. Nützel assigned the new species *P. marshalli* to this genus. This species has a similar teleoconch morphology but strikingly differs in the structure of the protoconch. Its whorls bear a pair of strong carina-like ribs in the lower part and a

fine dense plication along the upper suture. The species shows convergence with *P. subpunctata*; however, its protoconch structure suggests that it should be placed in a different family, probably, in Cerithiopsidae. Since such very similar species do exist, the conformity of *P. subpunctata* sensu Zardini, Bandel, and Nützel and *P. subpunctata* sensu Münster and its systematic position are questionable.

On the basis of the similarity in the teleoconch and protoconch, I propose to place the genus *Teutonica* Schröder into the family Protorculidae. In previous works, it was placed in the Cerithiopsidae (Schröder, 1995) or Polygyrinidae Bandel, 1991 (Gründel, 1999). *Teutonica* differs from *Polygyrina* by a protoconch with the collabral ornament and the teleoconch bearing high plicae, which are sometimes replaced by a row of nodes in the middle of the whorl. On the contrary, *Teutonica* is similar to *Protorcula* in collabral ornamentation and large prominent nodes. The morphology of the new species *T. tatianae* sp. nov. is especially similar to *Protorcula*. However, it shows significant differences in protoconch structure; in *Teutonica*, it is shorter (four or five whorls as opposed to six and half) and has convex whorls.

The genus *Atorcula* established by Nützel is very similar to *Protorcula* in protoconch structure. It differs from the latter by having flat and smooth teleoconch whorls. Other members of the family Protorculidae either cannot be retained in this family because of their morphological differences or because their position is questionable. The genus *Ampezzopleura* has a highly conical protoconch with the collabral ornament, the teleoconch whorls are covered by plicae. I suppose that it is more closely related to the early Epitoniidae, such as *Plicacerithium*, than to protorculids (Guzhov, 2002b). The genus *Acanthostrophia* is only tentatively assigned to this family. Obviously, it is similar to *Protorcula* and *Teutonica* in the morphology of the multispiral teleoconch with nodes in the lower part of the whorls; however, the embryonic development of its type and single species is still unknown, despite the statement of the researchers who established this genus (Conti and Fischer, 1982). Although they provide the protoconch reconstruction and a description (highly conical and composed of four ribbed whorls), the photos display only poorly preserved fragmentary teleoconchs with broken off apices.

The new genus and new species, *Novoselkella novoselkensis* sp. nov., from the new material, is assigned to the family Cerithiopside, which have been discussed in a previous publication (Guzhov, 2002b). *Novoselkella* has a multispiral highly conical protoconch ornamented by strong plicae, and, in the lower two-thirds of the whorl, by fine threads as well. It is similar in protoconch morphology to such members of the genus *Cosmocerithium* as *C. contiae* Guzhov, 2002 and *C. pumilum* (Geras.) and to the genus *Prisciphora*. These taxa also have a plicate multispiral protoconch with spiral threads on the last whorls. *Novoselkella* differs from both genera in the appearance of the shell base and the teleoconch structure. *Cosmocerithium* and *Prisciphora* have a more or less flattened base; therefore, the last whorl gets an angular appearance in the basal palatal area. The ornament of the lateral surface is sharp, composed of high ribs and prominent but thin plicae. *Novoselkella* has a high and convex base, rounded periphery, and a smooth ornamentation composed of rounded plicae and ribs.

The terminology used in the morphological description was discussed in an earlier publication (Guzhov, 2002a).

The material studied in this paper is housed at the Geological Mineralogical Museum of the Krupskaya Moscow Pedagogic University (GMM MPU, collection no. 12), and the State Geological Museum of the Russian Academy of Science (GGM, collection no. VI-222).

SYSTEMATIC PALEONTOLOGY

Family Eumetulidae Golikov et Starobogatov, 1975

Genus *Longaevicerithium* Guzhov, gen. nov.

Etymology. From the Latin *longaevus* (long-lived) and the generic name *Cerithium*.

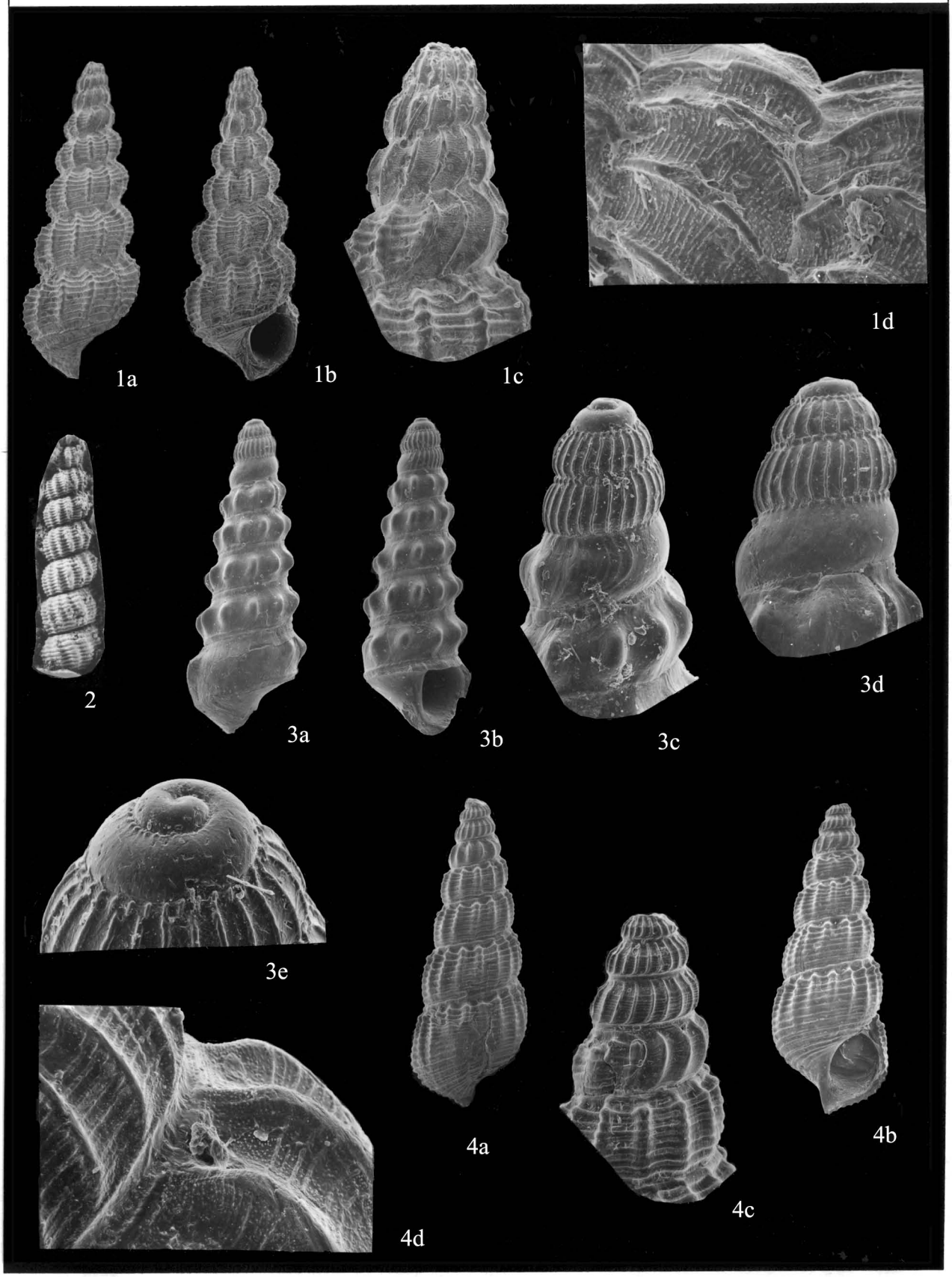
Type species. *Procerithium* (*Plicacerithium*) *bitzae* Gerasimov, 1992; Upper Jurassic, Volgian Stage, *Subditus* Zone; Russia, Moscow Region.

Diagnosis. Shell medium-sized, multispiral, and highly conical. Protoconch composed of several whorls ornamented by plicae and spiral threads. Boundary between protoconch and teleoconch sharp, emphasized by changes in ornamentation. Teleoconch whorls gradually expanding, convex and nongradate. Ornamentation composed of several ribs and densely spaced plicae, forming nodes at intersections. Last whorl low. Base high, convex, widely conical, and covered by numerous ribs. Aperture rounded, with basal angularity. Growth lines opisthocyrt on lateral surface, and prosocyrt on base.

Composition. Type species.

Comparison. The new genus is similar to *Eumethula* Thiele, 1912, *Ataxocerithium* Tate, 1893, *Cerithiopsilla* Thiele, 1912, and *Laiocochlis* Dunker et Metzger, 1874 (especially to the first two genera). *Longaevicerithium* differs from *Eumethula* in the protoconch with widely spaced and strong plicae, rows of nodes, and the absence of one or two ribs, which are usually present in *Eumethula*. In addition, it lacks large nodes on the teleoconch, which are typical of *Eumethula*. From *Ataxocerithium*, the new genus is distinguished by the protoconch with widely spaced strong plicae and rows of nodes; from *Cerithiopsilla*, it is distinguished by the high protoconch with widely spaced strong plicae and rows of nodes, and by the teleoconch with prominent plicae and thinner ribs; it differs from *Laiocochlis* by a high protoconch with widely

Plate 6



Explanation of Plate 6

Figs. 1 and 2. *Longaevicerithium bitzae* (Gerasimov); (1) specimen GMM MPU, no. 12/33: (1a) dorsal view, ×14; (1b) apertural view, ×14; (1c) protoconch, ×49; (1d) fragment of protoconch ornamentation, ×145; Moscow, Kuntsevo District, Suvorovskii Park; Upper Jurassic, Middle Volgian, *Nikitini* Zone; (2) holotype GGM, no. VI-222/39, cast, ×2; Moscow Region, Leninskii District, Bittsa River near the village of Sapronovo; Upper Jurassic, Volgian Stage, *Subditus* Zone.

Fig. 3. *Teutonica tatianae* sp. nov.; holotype GMM MPU, no. 12/32: (3a) dorsal view, ×19; (3b) apertural view, ×19; (3c) protoconch, view from the end, ×55; (3d) protoconch from the opposite side, ×63; (3e) apical part of the protoconch, ×145; Moscow Region, Voskresenskii District, Egor'evsk Phosphorite Mine, Quarry no. 7-2bis; Upper Jurassic, Upper Oxfordian, *Serratum* Zone.

Fig. 4. *Novoselkella novoselkensis* sp. nov.; holotype GMM MPU, no. 12/31: (4a) dorsal view, ×16; (4b) apertural view, ×16; (4c) protoconch, ×41; (4d) fragment of protoconch ornamentation, ×210; Ryazan Region, Rybnovskii District, Oka River near the village of Novoselki; Upper Jurassic, Middle Oxfordian.

spaced strong plicae, rows of nodes, and an absence of spiral ribs and threads, and by prominent plicae and thinner ribs on the teleoconch.

***Longaevicerithium bitzae* (Gerasimov, 1992)**

Plate 6, figs. 1 and 2

Procerithium (*Plicacerithium*) *bitzae*: Gerasimov, 1992, p. 79, pl. 26, fig. 1.

Holotype. GGM, no. VI-222/39, cast; Moscow Region, Leninskii District, Bittsa River near the village of Sapronovo; Upper Jurassic, Volgian Stage, *Subditus* Zone.

Description. The shell is over 19 mm in height. The protoconch is incomplete, highly conical, composed of four whorls. The whorls are convex with densely spaced thin opisthocyrt plicae. The last two or two and a half whorls bears spiral threads. The teleoconch (incomplete) is composed of seven and a half whorls, the tangent angle is 21° (one measurement). The whorls are strongly convex, their embracement is 30%. The maximum width of the whorls is in the middle between the plicae or slightly higher along the plicae. The suture is angular, rather deep. The upper part of the whorl adjoining the suture forms a ring-like rim around the preceding whorl. The ornamentation consists of nine ribs (shell diameter is 1.8 mm), the holotype bears ten ribs (shell diameter is 5.0 mm). The ribs are strongly prominent, high, and rather equal in size. The plicae are widely spaced, thick and high, and slightly opisthocyrt; in the last whorls, they become opisthocyrt. The holotype displays 14 plicae per whorl (shell diameter is 2.0–5.0 mm). The base of the shell bears three to eight ribs (shell diameter is 1.8 mm) and the lower ends of the plicae in its upper part.

Occurrence. Upper Jurassic, Volgian Stage, *nikitini–subditus* zones of Central Russia.

Material. Middle Volgian, *Nikitini* Zone, Moscow, Kuntsevo District, Suvorovskii Park (three specimens); Upper Volgian, *Subditus* Zone, Moscow Region, Leninskii District, village of Sapronovo (two specimens).

Family Protorculidae Bandel, 1991

Diagnosis. Shell small, multispiral, conical or highly conical, siphonostomatous, and nongaping. Protoconch conical and composed of convex whorls covered by densely spaced plicae. Boundary between protoconch and teleoconch distinct, emphasized by ornamentation change. Teleoconch whorls ranging from concave to convex, lacking spiral ornamentation, smooth or covered by rows of nodes. Aperture oval or rhomboidal, with basal angularity. Growth lines opisthocyrt on lateral surface of whorl, and prosocline on base.

Composition. Three genera: *Protorcula* Bandel, 1991, *Atorcula* Nützel, 1998, and *Teutonica* Schröder, 1995.

Occurrence. Middle Triassic, Ladinian–Upper Jurassic, Oxfordian of Europe.

Genus *Teutonica* Schröder, 1995

Teutonica: Schröder, 1995, p. 17; Nützel, 1998, p. 148; Gründel, 1999, p. 40.

Type species. *T. grammani* Schröder, 1995, Middle Jurassic, Upper Bajocian; Germany.

Diagnosis. Shell highly conical. Protoconch composed of several convex whorls; early whorls smooth; later whorls ornamented by numerous plicae, which usually terminated short of upper suture. Row of small nodes usually observed along suture. Teleoconch whorls convex with inflated plicae. Whorls usually covered by microscopic tubercles. Last whorl low. Base convex widely conical, and smooth. Aperture rounded, with basal angularity. Growth lines opisthocyrt on lateral surface of whorls and prosocline on base of shell.

Composition. Five species: *T. calloviana* Gründel, 2001 from the Upper Callovian, *Athleta* Zone of Germany; *T. grammani* Schröder, 1995 from the Upper Bajocian of Germany; *T. verrucosa* Gründel, 1999 (=*T. procera* Gründel, 1999, Upper Bathonian of Germany) from the Upper Bajocian–Bathonian of Poland and Germany; *T. rectecostata* Gründel, 1999 from the Upper Bathonian, *aspidoides* Zone of Germany; and *T. tatianae* sp. nov. from the Upper Oxfordian, *Serratum* Zone of Central Russia.

Comparison. The genus differs from *Protorcula* and *Atorcula* by the short subcylindrical protoconch with blunt apex and by the convex teleoconch whorls covered by plicae.

***Teutonica tatianae* Guzhov, sp. nov.**

Plate 6, fig. 3

Etymology. In honor of my mother, Tatiana P. Guzhova, who prepared all photographs for my studies.

Holotype. GMM MPU, no. 12/32, shell; Moscow Region, Voskresenskii District, Egor'evsk Phosphorite Mine, Quarry no. 7-2bis; Upper Oxfordian, *Serratum* Zone, *Serratum* Subzone.

Description. The shell is 3.5 mm high. The protoconch is composed of four and a half convex whorls. The first whorl is almost planospiral, smooth, and round; later, a row of small nodes appears along the upper suture. The protoconch bears orthocline plicae beginning with the third whorl. On the last half of the last whorl, the plicae smoothed out, so this part of the protoconch is smooth; only several opisthocyrt growth lines are observed at the end. The teleoconch is composed of five whorls, its angle is 18°. The whorls are convex; its maximum width is in the middle. The suture is shallow and angular. The ornamentation is composed of plicae, which gradually smoothed out toward the upper and lower ends; thereby, they become a row of elongated nodes running along the periphery of the whorl. The nodes are large and semicircular. The next to the last whorl bears 12 nodes. Large whorls have weak spiral expansion along the lower suture. The last whorl is 31% of the shell height. The shell base is smooth; in the upper part, it is limited by a curvature with a spiral expansion.

Comparison. The new species differs from other members of the genus by the continuous orthocline plicae on the protoconch and the teleoconch plicae reduced to the nodes.

Material. In addition to the holotype, one specimen from the type locality.

Family Cerithiopsidae H. Adams et A. Adams, 1854

Genus *Novoselkella* Guzhov, gen. nov.

Etymology. From the village of Novoselki.

Type species. *N. novoselkensis* sp. nov.

Diagnosis. Shell small, highly conical, and multispiral. Protoconch composed of several convex whorls covered by opisthocyrt plicae and spiral threads. Boundary between protoconch and teleoconch distinct, emphasized by change of ornamentation. Teleoconch whorls flattened and nongradate. Suture shallow, angular. Ornamentation composed of several ribs and rounded plicae. Base of shell convex widely conical, with numerous ribs. Aperture oval with basal angularity. Growth lines slightly opisthocline on lateral surface of whorl, becoming prosocyrtal base.

Composition. Type species.

***Novoselkella novoselkensis* Guzhov, sp. nov.**

Plate 6, fig. 4

Etymology. From the village of Novoselki.

Holotype. GMM MPU, no. 12/31, shell; Ryazan Region, Rybnovskii District, Oka River near the village of Novoselki; Upper Jurassic, Middle Oxfordian.

Description. The shell is 4 mm high. The protoconch is incomplete, composed of three convex whorls ornamented by narrow dense and prominent opisthocyrt plicae and spiral threads between them. At the boundary of the protoconch and teleoconch, the threads are replaced by ribs. The teleoconch is composed of four whorls (incomplete), its angle is 18.5°. The maximum width of the whorl is in the middle, its embracement is 42%. Each whorl is ornamented by nine ribs and 19 plicae (shell diameter is 1.5 mm). The upper rib is slightly wider than the others and has small nodes. The other ribs lack nodes or have only bulges. There are five primary ribs. The plicae are orthocline, smoothed downwards, and terminate short of reaching the lower suture on the last whorl. The last whorl comprises 37% of the shell height. The shell base has seven ribs. The aperture is oval.

Material. Holotype.

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