Elenia, a new genus of acritarchs from the Cambrian-Ordovician deposits of the Russian platform

N. A. VOLKOA
Geological Institute of the U.S.S.R. Academy of Sciences,
Pyzhevsky per. 7, 109017 Moscow, U.S.S.R.

ABSTRACT—This work describes a new monotypic genus of acritarchs, Elenia, found in the Upper Cambrian and Tremadocian in the northwestern part of the Russian platform.

INTRODUCTION

For the first time, representatives of the new genus Elenia are described from the Leatsky horizon of the Tremadocian of the Estonia and Moscow syncline* under the name Latoporata armillata Vanderflit, 1971 (Umnova & Vanderflit, 1971; Umnova, 1975). At present, this species has been found by the author in the upper part of the Upper Cambrian: in the Ladoga suite of the Leningrad province and in the upper part of the Pestovsk suite of the Moscow syncline (Tolbukhino borehole). The deposits of the Ladoga suite are included, on the basis of conodonts, in the trilobite zones of Leptoplaster and Peltura (Borovka et al., 1980), the Pestovsk suite — into the upper part of the Upper Cambrian (Shestakova et al., 1976).

The materials of this paper were taken from the Ladoga and Pestovsk suites.

SYSTEMATIC DESCRIPTIONS

Group Acritarcha Evitt, 1963
Subgroup Disphaeromorphitae Downie, Evitt & Sarjeant, 1963
Genus Elenia Volkova gen. nov.

Derivation of name. In honour of the palynologist Elena K. Vanderflit.

Type species. Latoporata armillata Vanderflit, 1971 = Elenia armillata (Vanderflit) comb. nov.

Diagnosis. Shell (vesicle) in polar position has rounded or rounded-oval outline and a large polar opening with operculum. The opening is rounded and can have a collar. The operculum is smooth or weakly ornamented. It is frequently lost, more rarely remains fixed or fallen inside the shell. The wall of the shell is double-layered, free of processes, its outer layer is thin, smooth or shagreen, tightly fixed to the internal layer in the area of the polar opening. The internal layer (central body) is thicker, its surface is smooth, shagreen or with weak ornamentation by small costae or grana. Both layers are separated below the polar opening by a distance of about 1/4 of the central body diameter. There is a large chamber between the layers in the equatorial area and in the polar area opposite the opening.

Remarks. Identification of the new genus is based on Latoporata armillata Vanderflit, 1971 (Umnova & Vanderflit, 1971). In the above mentioned work the genus Latoporata was not described and a reference was made to the manuscript by S. N. Naumova: genus Latoporata Naumova, 1960 MS. Beside L. armillata, two more species were included in the genus. The description of the genus Latoporata was legally promulgated by N. I. Umnova in 1975 (Umnova, 1975) under the names of two authors: genus Latoporata Naumova & Umnova, with Archaealetes serratus Naumova, 1950 nominated at the type species. In this case the genus Latoporata becomes a junior synonym of the genus Priscogalea Deunff, 1961 emend. Rasul, 1974. The differences from Priscogalea, mentioned by N. I. Umnova, are not essential and cannot be adopted. However, Latoporata armillata differs considerably from Priscogalea and it should be referred to a new genus. Compared with Priscogalea, the new genus is free of processes and has a double-layered wall with chamber. The same features distinguish it from the genus Stelliferidium Deunff, Gorka & Rauscher. In contrast to the genus Cymatiogalea, mentioned by N. I. Umnova, the genus Elenia has no ornamentation which forms polygonal areas. It has a distinct double-layered wall of the shell. Both layers are separated by a chamber at the pole opposite the opening and in the equatorial area. Elenia is free of any processes inside the chamber. The double-layered walls are probably present in some species of Cymatiogalea (Rasul, 1974), but both layers are always closely adpressed and do not form chambers.

*Editorial comment: The term syncline is used mainly in the Soviet Union for large areas (hundreds of kms) of downwarp on cratonic blocks.
**Elenia armillata** (Vanderflit, 1971) comb. nov.

Pl. 1, figs. 1–12; Fig. 1)

1971 *Latoporata armillata* Umnova & Vanderflit, pl. 2, figs. 29,30.

1975 *Latoporata armillata* Umnova, pl. 15, figs. 18, 19, pl. 20, figs. 7–9.

**Description.** Outline of the outer layer of the shell and central body in polar position is rounded, rounded-oval, in lateral position is irregularly semi-rounded. The wall is double-layered, both layers are fixed in the area of the polar opening and on the opposite pole are separated by the large chamber. The outer layer is thin, smooth and with numerous small folds, which form an uneven wavy relief. The wall of the central body is thicker and the surface is smooth and shagreen. Only in the area adjacent to the polar opening are there observed small costae perpendicular to the margin of the opening. The operculum is usually smooth; well preserved specimens have a worm-like ornamentation. The opening is rounded, its diameter is equal or larger than the radius of the central body; the edge of the opening of some specimens has a collar. The outer layer of the shell is not preserved in all specimens. Frequently, the central body is completely or partially free of the outer layer.

**Dimensions.** Diameter of outer layer 30–50 μm, diameter of central body 20–40 μm, diameter of opening 10–35 μm.

**Distribution.** Upper part of the Upper Cambrian: the Pestovsk suite Moscow syncline, the Ladoga suite Leningrad province; Tremadocian Leatsky horizon, Moscow syncline and Estonia (Umnova & Vanderflit, 1971; Umnova, 1975).

---

**Explanation of Plate 1**

Figs. 1–12, *Elenia armillata* (Vanderflit, 1971) comb. nov. All figures are ×1000.

Fig. 1. Slide GIN 3940/3510–1. In focus – polar opening with operculum.

Fig. 2. The same specimen, in focus – opposite part of the shell.

Fig. 3. Slide GIN 2865–3. Polar position.

Fig. 4. Slide GIN 3940/2865–2. Polar position.

Fig. 5. Slide GIN 3940/3510–1. Lateral position.

Fig. 6. Slide GIN 3203–1. Lateral position.

Fig. 7. Slide GIN 2865–2. Lateral position.

Fig. 8. Slide GIN 2865–1. Lateral position.

Fig. 9. Slide GIN 2865–3. Central body without outer layer.

Fig. 10. Slide GIN 3940/3498–1. Central body without outer layer.

Fig. 11. Slide GIN 3203–1. Central body without outer layer.

Fig. 12. Slide GIN 2865–2. Central body without outer layer.

Slides GIN 3940/3498–1 and GIN 3940/3510–1 are from the Ladoga suite of Leningrad province; slides GIN 2865–1, 2, 3 and GIN 3203–1 are from the Pestovsk suite of the Moscow syncline (Tolbukhino borehole, depth 2080.2–2088.2 m).
Cambrian-Ordovician acritarch from the Russian platform
Fig. 1. Line drawings showing the structure of *Elenia armillata* (about × 1500): A – polar view, B – lateral view.

Key: a – opening, b – collar, c – rib, d – line of separation of the outer layer, e – central body (internal thick layer), f – chamber, g – outer thin layer.

REFERENCES

Borovko, N. G., Popov, L. E., Sergeeva, S. P. & Khazanovich, K. K. 1980. New complex of palynological remains from lower part of the Obolus sandstone along Izhora river. *Doklady Acad. Nauk SSSR*, **254**, 5, 1192–1194. In Russian.

Deunff, J., Gorka, H. & Rauscher, R. 1974. Observations nouvelles et précisions sur les acritarches à large ouverture polaire du Paléozoïque inférieur. *Geobios*, **7**, 1, 5–18.

Naumova, S. N. 1950. Lower Silurian spores. In Sukachev, V. N. (Ed.), *Trudy Konferentsii po Sperovo-pylytsevomu analizu 1948 goda*. Moscow Univ. Press, 165–190. In Russian.

Rasul, S. M. 1974. The Lower Palaeozoic acritarchs *Priscogalea* and *Cymatiogalea*. *Palaeontology*, **17**, 1, 41–63.

Sheshtakova, M. D., Klevtsova, A. A. & Suvorova, N. P. 1976. On Cambrian stratigraphy on the territory of Moscow syncline. *Izvestia Acad. Nauk. SSSR. Ser. geol.*, **12**, 58–66. In Russian.

Umnova, N. I. 1975. *Acritarchs of the Ordovician and Silurian of Moscow syncline and Baltic province*. Moscow, "Nedra", 167 pp. In Russian.

Umnova, N. I. & Vanderflit, E. K. 1971. Complex of acritarchs from Cambrian and Lower Ordovician deposits in western and north-western part of Russian platform. In Golubzov, V. K. (Ed.), *Palinolog. issled. v Belorussii i drugikh raiohnakh SSSR*. Minsk, "Nauka i tekhnika", 45–73. In Russian.