J.micropalaeontol., **3**(2): 7-10, September 1984

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

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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 syneclise* 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 syneclise (Tolbukhino borehole). The deposits of the Ladoga suite are included, on the basis of conodonts, in the triblobite zones of *Leptoplastus* 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 $\frac{1}{4}$ 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* Deunff emend. Rasul, 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 syneclise 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 syneclise, the Ladoga suite Leningrad province; Tremodocian Leatsky horizon, Moscow syneclise 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.

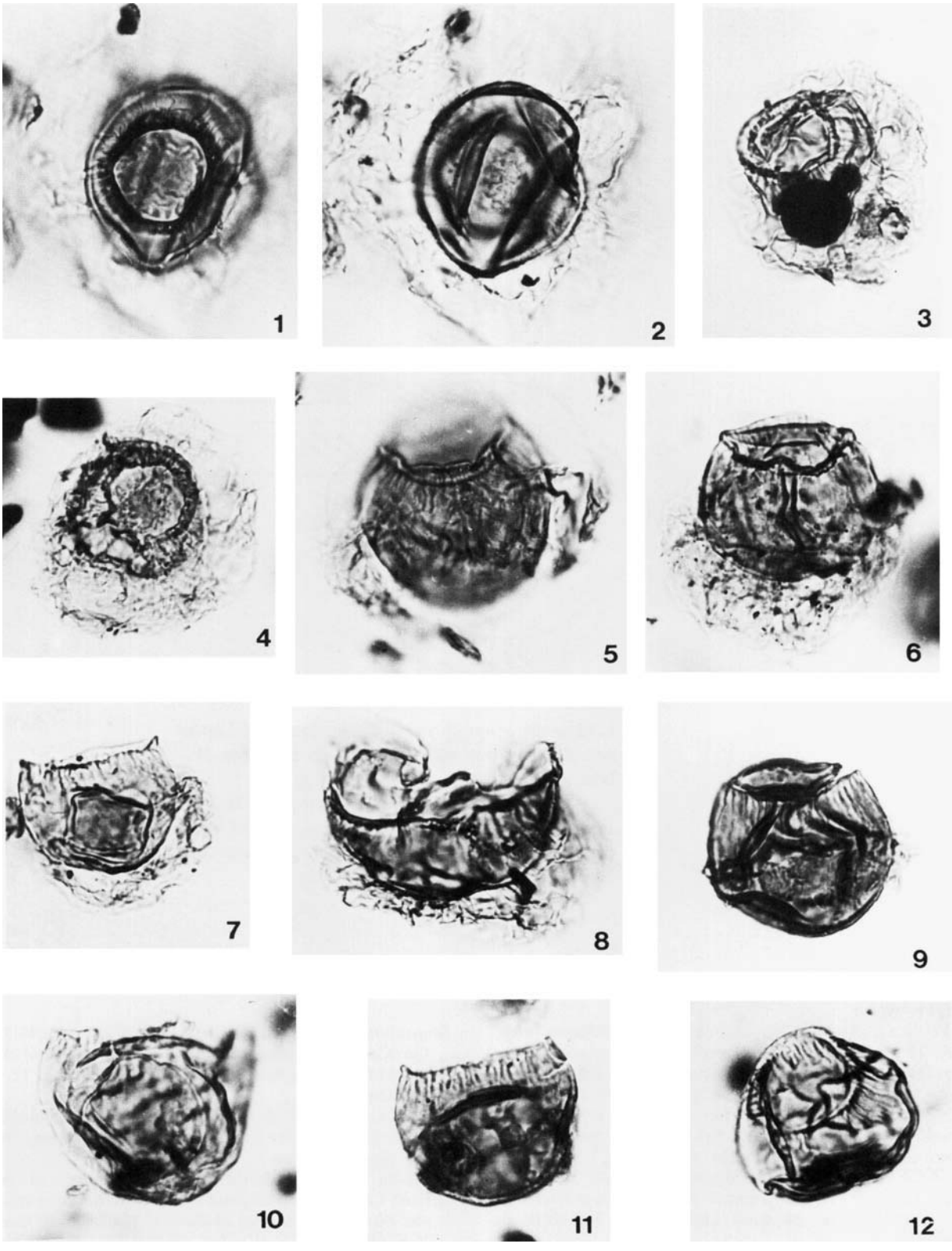
Fig. 9. Slide GIN 2865–3. Central body without outer layer.

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 syneclise (Tolbukhino borehole, depth 2080.2–2088.2 m).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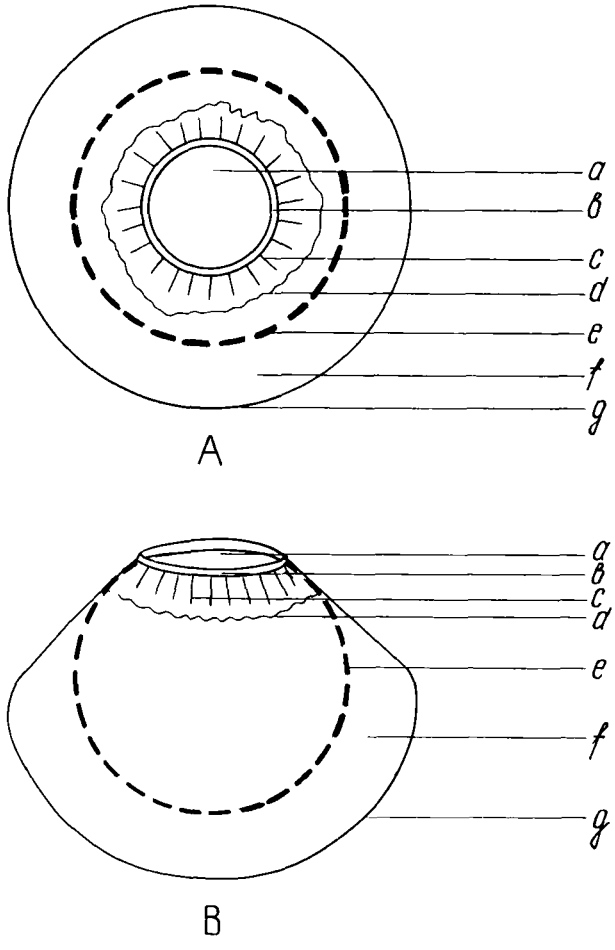

Fig. 1. Line drawings showing the structure of *Elenia armillata* (about × 1500): A – polar view, B – lateral, view.

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.

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