

THE PLATYCERATACEAN GASTROPOD *CYCLONEMA* (*CYCLONEMA*) *HIIMUMAA* TEICHERT, 1928 FROM THE LLANDOVERY (SILURIAN) OF ESTONIA

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Abstract. A platyceratacean gastropod species *Cyclonema* (*Cyclonema*) *hiiumaa* Teichert, 1928 is redescribed. The distribution and life habits of this species are discussed.

Key words: Gastropoda, *Cyclonema*, Silurian, Estonia.

One of the few records about Silurian gastropods from Estonia is that of Teichert (1928, pp. 69—70, Pl. V, figs. 21—23). He has established a new species of the genus *Cyclonema*, describing shortly only one specimen from Hilliste (p. 69) and figuring another one from Pullapää (Pl. V, figs. 21—23). Both specimens seem to be lost.

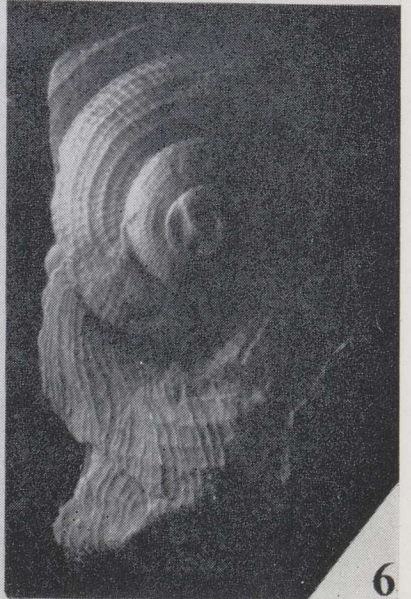
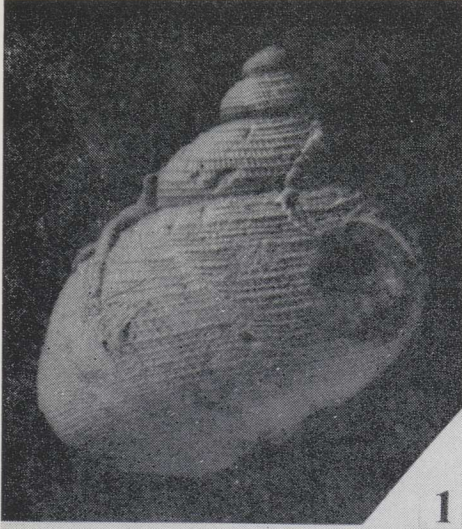
As to the specimens used by Teichert, the attempts to find them have failed. Curt Teichert, being a student at Königsberg University, presumably also preserved them there (in his paper he has not mentioned the place). An inquiry for these specimens at the Kaliningrad (previously Königsberg) University (Krasnov, 1995, written comm.), Naturmuseum Senckenberg in Frankfurt am Main (Plodowski, 1994, written comm.), as well as at the Naturkundemuseum Berlin (Schultz, 1994, oral comm.) was without success.

All specimens, except fig. 6, were coated with ammonium chloride before photographing. Figs. 1—3. *Cyclonema* (*Cyclonema*) *hiiumaa* neotype, Llandovery, Hilliste Formation, Hilliste quarry, TUG 66/110, $\times 4$. 1, lateral view showing slightly irregular growth lines; 2, apertural view showing thickened and reflexed inner lip; 3, basal view showing base and umbilical region.

Fig. 4. *C. (C.) hiiumaa* paratype, Llandovery, Hilliste Formation, Hilliste-2, TUG 66/107, view showing ornamentation, $\times 4$.

Fig. 5. *C. (C.) hiiumaa* paratype, Llandovery, Hilliste Formation, Hilliste quarry, TUG 66/117, lateral view, $\times 4$.

Fig. 6. *C. (C.) hiiumaa* compressed paratype, Llandovery, Hilliste Formation, Hilliste quarry, TUG 625/5, apical view, $\times 10$.



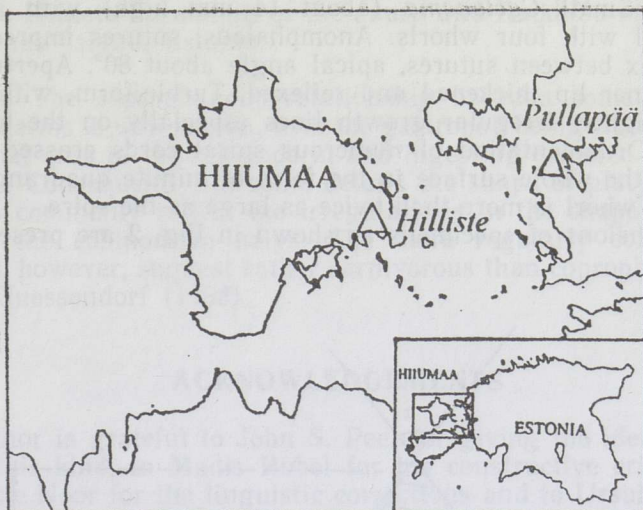


Fig. 1. Location of the Hilliste and Pullapää sections, Estonia.

Up to now a number of additional specimens of *Cyclonema* (*C.*) *hiiumaa* have been collected from the Hilliste quarry and from a temporal ditch nearby, named Hilliste-2, on Hiiu Island (Fig. 1). In both localities the boundstone of the shoal reef facies and surrounding coarse-grained skeletal grainstone crop out. Stratigraphically they belong to the Hilliste Formation which forms the topmost part of the Juuru Stage and the lowermost part of the Raikküla Stage, Llandovery (Nestor, 1993). The commonest gastropod of the Hilliste reef is small *Platyceras* (*Platyostoma*) sp., besides various other taxa of the same size including *Cyclonema* (*C.*) *hiiumaa*, *Trochonema* sp., *Megalomphala* sp., *Phanerotrema* sp., *Liospira* sp., *Gyronema*? sp. The present description of *Cyclonema* (*C.*) *hiiumaa* is mainly based on all material available, in number amounting to 16 shells of good preservation.

The material is deposited in the Geological Museum of the University of Tartu (TUG), Tartu, Estonia, under collection numbers TUG 66, 40, 625.

SYSTEMATIC PALAEOLOGY

Superfamily PLATYCERATACEA Hall, 1859

Family PLATYCERATIDAE Hall, 1859

Genus *Cyclonema* Hall, 1852

Subgenus *Cyclonema* (*Cyclonema*) Hall, 1852

Cyclonema (*Cyclonema*) *hiiumaa* Teichert, 1928

Plate, figs. 1–6

Neotype. Selected here shell TUG 66/110 from the Hilliste Formation of the Juuru and Raikküla stages, Llandovery; Hilliste quarry, Hiiu Island, Estonia. Collected by Mare Isakar, 1986.

Figured specimens. Shells TUG 625/5, 66/117 from Hilliste; TUG 66/107 from Hilliste-2.

Material. *Cyclonema* (*Cyclonema*) *hiiumaa*; Hilliste quarry—13 shells, Hilliste-2—three shells.

Description. Small *Cyclonema* (about 14 mm high) with a relatively gradate shell with four whorls. Anomphalous, sutures impressed, whorl profile convex between sutures, apical angle about 80° . Aperture broadly D-shaped, inner lip thickened and reflexed. Turbiniform, with wavy surfaces and slightly irregular growth lines especially on the base (Plate, figs. 1, 5). Ornamentation of numerous spiral cords crossed by growth lines covers the whole surface in the form of minute quadrangles (Plate, fig. 4). Base whorl is more than twice as large as the spire.

The dimensions of specimens as shown in Fig. 2 are presented in the Table.

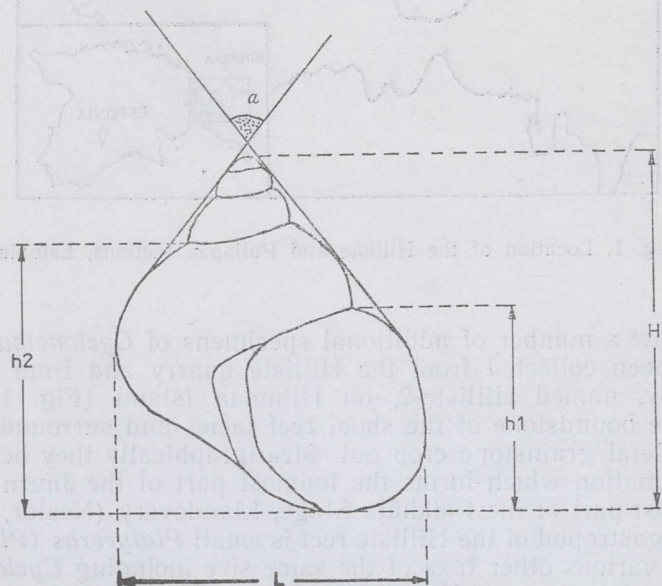


Fig. 2. Conispiral gastropod shell, showing locations of measurements (Table). H , height of the shell; $h1$, height of the aperture; $h2$, height of the last whorl; L , maximum diameter; a , apical angle.

Statistics of specimens. Measurements in mm

Number	H	$h1$	$h2$	L	a	H/L
66/110	14	7	11	12.5	78	1.12
66/113	8	4	7	8	82	1.00
66/114	14	7	13	13	80	1.08
66/117	9	4.5	8	8	78	1.13

Discussion. *Cyclonema* (*Cyclonema*) *hiiumaa* is distinguished from *Cyclonema* (*C.*) *striatum* Lindström (1884, p. 176, Pl. XVII, fig. 48; Pl. XVIII, figs. 39–42) from the Slite Beds, Gotland Island, by its completely different shape of the aperture, more convex whorls and greater base whorls. More similar is *Cyclonema* (*C.*) *canceliatum* Lindström (1884, p. 175, Pl. XVIII, figs. 25–27) from the Hemse Beds, Gotland Island, which differs in an ovate aperture and thin lips with a gently curved notch in the outer one, never seen in the aperture of the described species.

Occurrence. Hilliste Formation of the Juuru and Raikküla stages, Llandovery, Hiiumaa Island, Estonia.

Life habits. The coprophagous relationship between some platyceratids and echinoderms is well known, with the gastropod being closely associated with the anal area of the echinoderm and ingesting expelled faeces (Bowsher, 1955). Consequently, in some details the shape of platyceratid aperture would commonly reflect the irregularities in the shape of the upper surface of the echinoderm calyx. The more regularly coiled shells of *Cyclonema*, however, suggest rather carnivorous than coprophagous habits, noted by Kluessendorf (1983).

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EESTI LLANDOVERY (SILUR) GASTROPOODI CYCLONEMA (CYCLONEMA) HIIUMAA TEICHERT, 1928 KIRJELDUS

Mare ISAKAR

Artiklis on täiendatud Curt Teichert 1928. aastal esmamainitud liigi *Cyclonema* (C.) *hiiumaa* kirjeldust. Uute leidude põhjal on antud ülevaade liigi levikust ja elutingimustest.

ОПИСАНИЕ ГАСТРОПОДЫ CYCLONEMA (CYCLONEMA) HIIUMAA TEICHERT, 1928 ИЗ ЛЛАНДОВЕРИ (СИЛУРА) ЭСТОНИИ

Маре ИСАКАР

В статье уточняется описание вида *Cyclonema* (C.) *hiiumaa*, установленного Куртом Тейхертом в 1928 г. Рассматривается распространение и образ жизни этого вида на основе новых находок на о-ве Хийумаа.