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PIOTR MIERZEJEWSKI

ESTONIOCAULIS OBUT ET RÕTSK, 1958 and *RHADINOGRAPTUS* OBUT, 1960 ARE NOT GRAPTOLITES

MIERZEJEWSKI P.: *Estoniocaulis* Obut et Rõtsk, 1958 and *Rhadinograptus* Obut, 1960 are not graptolites. Acta Palaeontologica Polonica, 36, 1, 77—81, 1991.
Estoniocaulis jaervensis Obut et Rõtsk, 1958 and *Rhadinograptus jurgensonae* Obut, 1960 from the Silurian of Estonia are redescribed. It is stated that both taxa, regarded so far as inocaulid and dithecoid graptolites respecively, have nothing in common with the Graptolithina. These forms are treated as *incertae sedis* fossils (algae?).
Key words: organic microfossils, graptolites, algae, Silurian, Estonia.
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INTRODUCTION

Phylogenetic relationships of the sessile graptolites remain obscure and their taxonomy is still unsatisfactory, especially among the non-dendroid forms. This is by no means surprising, considering the exceptionally few contributions devoted to the study of these graptolites. Hitherto, eight orders of sessile graptolites have been erected but some of them were questioned (Kozłowski 1962, Bulman 1970, Mierzejewski 1986). Moreover, unrecognized non-dendroid graptolites may be expected to occur among the taxa attributed traditionally to the Dendroidea. In fact, poorly preserved bushy and ramose organic remains are hardly distinguishable from dendroid rhabdosomes.

The aim of this paper is to redescribe and discuss the taxonomic position of two presumed graptolite genera from the Silurian of Estonia, i.e. *Estioniocaulis* Obut et Rõtsk, 1958 and *Rhadinograptus* Obut, 1960. Originally, these taxa were erected as inocaulid and dithecoid graptolites respectively. Later, Bulman (1970) regarded both genera as graptolites of an uncertain taxonomic position.

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GENERAL REMARKS

The type material of the type species of the genera *Estoniocaulis* Obut et Rõtsk, 1958 and *Rhadinograptus jurgensonae* Obut, 1960 is housed at the Geological Institute of the Estonian Academy of Sciences, Tallinn (abbreviated as GIEAS). There fossils are represented by several "rhabdosomes" preserved on limestone surfaces. Original descriptions of both forms contain no information about their microstructure and modes of a stolon budding. It is because no one of these fossils have been isolated from the matrix by Obut and Rõtsk (1958) and Obut (1960) for detailed microscope studies. For that reason the present writer has isolated tiny fragments of the fossils under discussion with the use of 10% formic acid for further studies with the use of light and infrared microscopes. It has been found that the presumed thecae and stems of the both type species have nothing in common with the graptolite morphology and microstructure. All elements of *Estoniocaulis* and *Rhadinograptus* are composed of a solid, granular or homogeneous material and do not show the slightest traces of fusellar structure, presence of thecal cavities or stolons. Therefore, there are no doubts that two genera under discussion do not represent graptolites. These results support the author's earlier opinion that the orders Dithecoidea and Inocaulida should be interpreted as proposed on the basis of superficial similarities of organic fossils representing distant systematic groups (Mierzejewski 1986).

DESCRIPTION

Incertae sedis (Algae ?)
Order ? **Melanoskleritoidea** Eisenack, 1963
Family unknown
Genus *Estoniocaulis* Obut et Rõtsk, 1958

Type species: *Estoniocaulis jaervensis* Obut et Rõtsk, 1958.

Diagnosis. — As for the type species.

Remarks. — The genus is monotypic. Obut and Rõtsk (1958) regarded this form as a graptolite close related to the genus *Inocaulis* Hall, 1851 and compared it to the genera *Diplospirograptus* Ruedemann, 1925 and *Medusaegraptus* Ruedemann, 1925. Later, Obut (1964) allocated *Estoniocaulis* and mentioned above genera in the family Inocaulidae of the order Inocaulida. The genera *Diplospirograptus, Inocaulis* and *Medusaegraptus* were discussed by Mierzejewski (1986) who interpreted them as algal and coelenterate rests. Moreover, Hewitt and Birker (1986) do not exclude the algal nature of *Diplospirograptus*. Recently, the author excludes the graptolitic nature of *Estoniocaulis*. As it is shown beneath, the "rhabdosome" of the genus is composed only of solid, roller-like elements devoided of any traces of the fusellar structure. These elements appear similar to melanosclerites which are very common in the

Silurian beds. Thus, it seems justified to suggest that *Estoniocaulis* should be best treated as a representative of the enigmatic order Melanoskleritoidea (algae?).

Occurrence. — Lower Silurian of Estonia.

Estoniocaulis jaervensis Obut et Rõtsk, 1958
(pl. 13: 1—2, pl. 14)

1958. *Estoniocaulis jaervensis* Obut et Rõtsk: 137, pl. 8: 4—6, pl. 9: 1—4, pl. 10: 1.

Material. — Seven syntypes, GIEAS Nos. 1019/3, 1019/4—1, 2, 3, 4, 1019/5—1, 2 from the locality Tommiku, Juuru stage, lower Silurian.

Emended diagnosis. — Elongate organic fossil, up to 10 mm in length, composed of slender, sometimes branched stem with terminal tufts of filamentous appendices. Stem and appendices composed of solid roller-like elements. Length of appendices 0.5—1.0 mm and diameter 0.03—0.05 mm.

Description. — For detailed gross morphology see Obut and Rõtsk (1958: 137).

Stem and appendices are formed of solid roller-like elements resembling melanosclerites (pl. 13). Distal ends of appendices are built of elements with one end rounded (pl. 14). All the elements are made of the same black organic material. In the infrared light the material is rather homogeneous and reveals no traces of a fusellar structure.

Remarks. — The species has been described for the first time by E. Rosenstein in 1940 as *Inocaulis järvensis* (cheironym) in an unpublished paper. The taxon is known only from the type locality.

The author supposes that *E. jaervensis* is close related to *Inocaulis rosensteinae* Obut et Rõtsk, 1958, which have been found at the same locality by E. Rosenstein.

Order and family unknown
Genus *Rhadinograptus* Obut, 1960

Type species: *Rhadinograptus jurgensonae* Obut, 1960.

Diagnosis. — As for the type species.

Remarks. — The genus is monotypic. Oryginally, it was described by Obut (1960) as a dithecoid graptolite of the family Chaunograptidae. However, *Rhadinograptus* reveals no traces of fusellar structure or other features of the graptolite micromorphology. There is no doubts that this fossil has nothing in common with graptolites. One may suppose that it should be regarded rather as an algal fossil.

Occurrence. — Lower Silurian of Estonia.

Rhadinograptus jurgensonae Obut, 1960
(pl. 13: 3, pl. 14)

1960. *Rhadinograptus jurgensonae* Obut: 151, pl. 4: 2, 2a—v, pl. 5: 1a.

Material. — Syntypes represented by several specimens from bore-core samples of the boring named Pärnu from a depth 133.95—137.60 m, Riakküla stage, lower Silurian (5/57).

Emended diagnosis. — Organic fossil, 25—30 mm in length, composed of a thick (up to 1 mm), irregularly annulated stem with bundle-like accumulations of numerous slender appendices (2—4 mm in length).

Redescription. — The stem, subcircular in cross secton, 25—30 mm in height, is straight or curved. It attains 1 mm in diameter at the base and decreases gradually upwards. Along the stem there are numerous bundle-like accumulations of 2—4 mm long appendices. The appendices, slightly variable in shape, are flat, solid, semi-transparent and reveal characteristic granular microstructure. In few cases, appendices are formed on short lateral offshoots of the stem. The width of appendices varies between 0.07—0.15 mm. Distal ends of appendices are usually rounded.

Remarks. — The species is known only from the type locality.

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ESTONIOCAULIS OBUT ET RÕTSK, 1958 i *RHADINOGRAPTUS* OBUT, 1960 NIE SĄ GRAPTOLITAMI

Streszczenie

Zbadano serie typowe *Estoniocaulis jaervensis* Obut et Rõtsk i *Rhadinograptus jurgaensonae* Obut, 1960 z dolnego syluru Estonii. Formy te uważane były dotąd za graptolity osiadłe reprezentujące rzędy Inocaulida (*Estoniocaulis*) i Dithecoidea (*Rhadinograptus*). Badania mikrostruktury obu form wykazały, iż nie wykazują one cech typowych dla graptolitów (brak budowy fuzellarnej, nieobecność elementów, które można interpretować jako teki i stolony). Poczynione obserwacje popierają

tezę autora (Mierzejewski 1986), iż tzw graptolity ditekoidowe i inokaulidowe w rzeczywistości nie są graptolitami.

Oba dyskutowane taksony potraktowano jako formy *incertae sedis*, najprawdopodobniej reprezentujące glony. Nie jest wykluczony związek *Estoniocaulis* z Melanoskleritoidea.

Dyskutowane formy są ilustrowane na planszach 13 i 14.

EXPLANATIONS OF PLATES 13 AND 14

Plate 13

Flattened specimens preserved on surfaces of limestones

1, 2. *Estoniocaulis jaervensis* Obut et Rõtsk, 1958, Juuru stage (Llandovery). 1 holotype, after E. Rosenstein in Obut and Rõtsk, 1958, Tommiku, ca ×2. 2 fragment of the paratype, Tommiku, slab no. 1019/4—3, ca ×20.

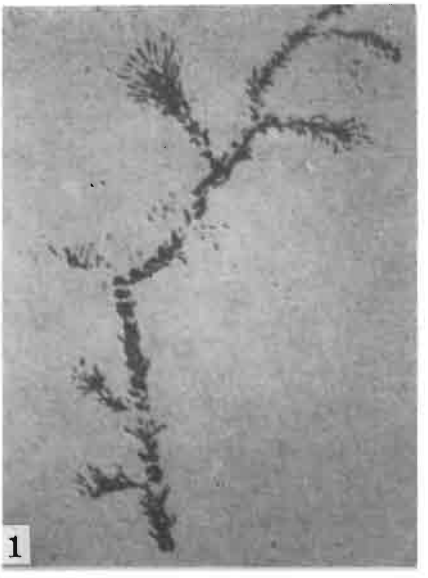
3. *Rhadinograptus jurgensonae* Obut, 1960, deep boring Pärnu (133.95—137.60 m), Riakküla Stage (Llandovery): complete specimens and fragments on the slab no. 4/57, ca ×4.

Plate 14

Chemically isolated fragments of specimens

1, 2. *Estoniocaulis jaervensis* Obut et Rõtsk, 1958, Juuru stage (Llandovery), Tommiku, specimens from the slab no. 1019/4—3. Roller-like element of an appendice with one en rounded (IR light), 1×57, 2 ×170.

3—10. *Rhadinograptus jurgensonae* Obut, 1960, deep boring Pärnu (133.95—137.60 m), Riakküla stage (Llandovery), specimens from the slab no. 4/57. 3—8 variable form appendices, 5b ×150, other specimens ×57. 9. Appendice connected with a chitinozoan (?), ×150. 10. Fragment of a stem, ×57.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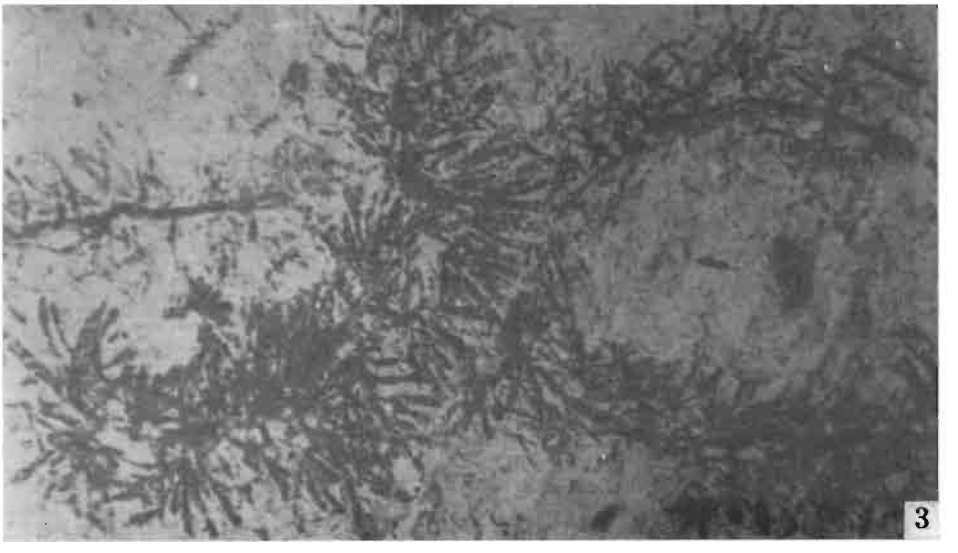
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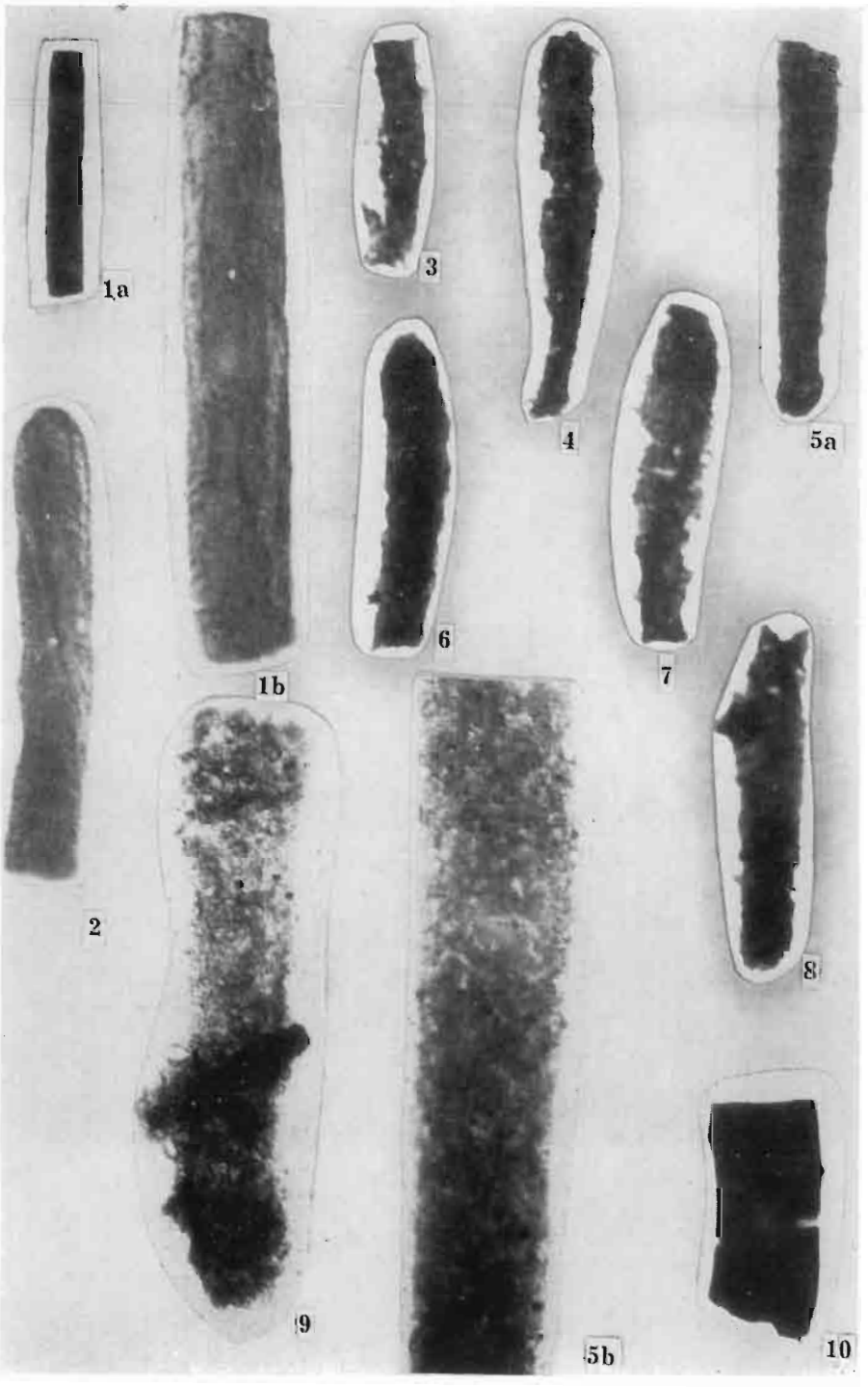
1a
1b
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5a
5b
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