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RECEPTACULITES ABHORRENS N. SP. FROM THE UPPER
DEVONIAN OF POLAND

Abstract. — *Receptaculites abhorrens* n.sp. from the Upper Frasnian of Lower Silesia is described. The species combines in a mosaic fashion the characteristics of the *Receptaculites* Deshayes and *Ischadites* Murchison.

INTRODUCTION

The family of enigmatic Palaeozoic organisms — Receptaculitaceae, makes its appearance in the Lower Ordovician and lasts to the Upper Devonian. Individual reports of findings of these fossils in the Lower Carboniferous or Permian have not been confirmed. In this situation the Upper Devonian forms are particularly interesting since they most probably represent the last stage in the development of this group. At the close of the Middle Devonian *Ischadites* Murchison 1839 dies out, and the only remaining representative of the Receptaculitaceae in the Upper Devonian is the genus *Receptaculites* Deshayes 1828 which occurs frequently in Western Europe.

In present paper *Receptaculites abhorrens* n.sp. from the Upper Frasnian of Lower Silesia has been described. The newly described form displays interesting mosaic of features of the genera *Receptaculites* and *Ischadites*.

The abandoned quarry near Górný Mokrzeszów (depression of Świebodzice, Lower Silesia), known in older publications as Oberkuzendorf or Jezioro Daisy, is one of the earliest discovered localities of the genus *Receptaculites* in the world. The specimens found in the shales and marls have been mentioned and described in many papers written in the last century, namely Dames (1868), Gümbel (1876), Quenstedt (1878), Roemer (1880), Hinde (1884) and Rauff (1892). Some specimens from the depression of Świebodzice were described recently by Gunia (1968).

The receptaculitids from the Upper Devonian of Lower Silesia have been assigned up to now to the following species: *Receptaculites neptuni* (Defrance, 1827), *R. scyphioides* Quenstedt, 1878 or *R. crassiparies* Rauff, 1892. The present authors have arrived to opinion that there are two species: *R. crassiparies* and *R. abhorrens* n.sp. These species were often lumped as *R. neptuni*. This misunderstanding results from the rather incomplete knowledge of the morphology of *R. neptuni* in the last century.

There are two specimens of *R. abhorrens* n.sp. in authors disposal. The type specimen is housed in the Museum of the Faculty of Geology of the Wrocław University, second specimen in Doc. Dr. Gunia's collection (Wrocław). Specimens of *R. crassiparies* from Lower Silesia and *R. neptuni* from Holy Cross Mts. (Góry Świętokrzyskie) have been used by the present writers as a comparative material.

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DESCRIPTION

No consensus of opinion exists with respect to the morphological terms applied to the genus *Receptaculites*. The terminology used in the present paper is mainly that of Rauff (1892). Terms of other authors often immediately implies the systematic position of the receptaculitids, which are till now an incertae sedis group.

Remains of the genus *Receptaculites* consists of a multitude of repeatable elements named meroms. Each merom consists of a columella with the pediculum (proximal expansion) and capitulum (distal expansion). Capitulum is made up of the lamnula (polygonal plate) and brachia (Rauff's Tangential-Arme or Tangentiale). Nitecki (1969, 1971a, 1971b) named the complex of brachia of the each merom a stellate structure.

Incertae Sedis (? Algae)

Family **Receptaculitaceae** Eichwald 1860

Genus *Receptaculites* Deshayes 1828

Receptaculites abhorrens n.sp.

(Pl. IV, Figs 1—2, Pl. V, Figs. 1 a—d, Text-fig. 1)

1968. *Receptaculites neptuni* Defrance 1827; T. Gunia, Fauna, stratygrafia i warunki sedimentacji..., p. 144 (partim) Pl. 2, Fig. 4.

Derivation of name: Lat. *abhorrens* meaning different—because newly described species is dissimilar to other species.

Type locality: An abandoned pitstone Jezioro Daisy about 2 km south of Górny Mokreszów (Lower Silesia), Poland.

Type horizon: Upper Frasnian, Crickites koeneni Zone.

Type specimen: Specimen figured on Pl. IV, Fig. 1.

Material: Two specimens preserved in silty shales, the type specimen partially, and the second specimen completely as molds. The second specimen is partially filled up by ferriferrous sediment.

Diagnosis.—Large form with all columellae extraordinary thin (0.2–0.3 mm); stellate structure consists of two complexes; pediculum ribbed.

Description.—The shape of entire specimen is preserved very badly. The type specimen suggests conoid- or club-form. The complete size cannot be estimated, but height of the type specimen in all probability reached 20 cm.

Lamnulae are typically formed and are rhomboid in shape (Pl. IV, Fig. 1, Pl. V, Fig. 1a). The measurements of the preserved lamnulae are between: 3.5–4.9 mm (the longer diameter) and 2.9–4.1 mm (the shorter diameter). The longer diameter of the rhomboidal lamnulae corresponds to the longitudinal axis of the fossil.

Nitecki (1969) advanced a hypothesis that lamnulae of *Receptaculites* develop due to calcification of a greater number of radial structures. This characteristic radial structure can be traced on the examined material and is revealed by the individual lamnulae. The number of radii out of which an individual lamnula is formed in *R. abhorrens* n.sp. is about 40. Reconstruction of the radial structure is shown on Text-fig. 1. The arrangement of the radii on the type specimen is disturbed because of the simultaneous appearance of the stellate structure situated below. Probably the radial structure occurs also in *R. crassiparies* (Rauff, 1892, Taf. 2, fig. 12).

The stellate structure is unusually shaped, and is composed of two complexes: the lower (corresponding to the stellate structure of all remaining species of *Receptaculites*), and the upper (found only in *R. abhorrens* n.sp. and probably in *R. crassiparies*). The upper complex is situated between the lamnula and the lower complex (Text-fig. 1). It is composed of four brachia which point toward corners of the lamnula, and four intermediate ones situated among them (Pl. V, Fig. 1b, c). All brachia of the

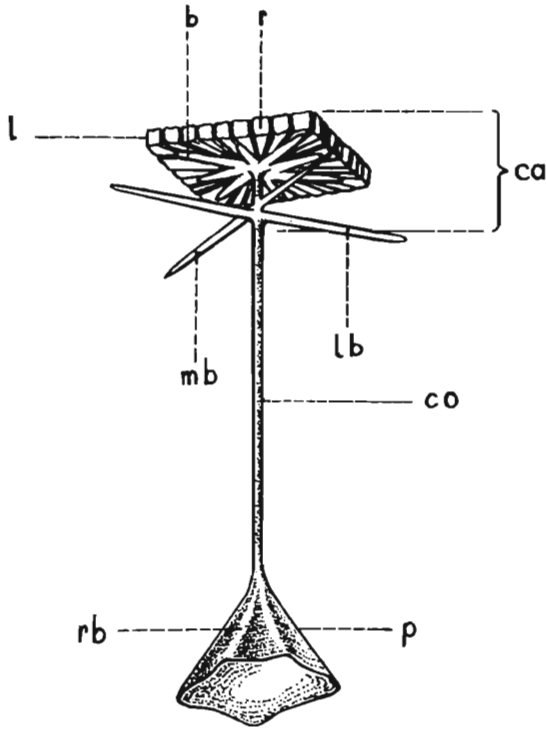


Fig. 1. — *Receptaculites abhorrens* n.sp. Reconstruction of the merom; b brachium of upper complex, ca capitulum, co columella, l lamnula, lb latitudinal brachium of lower complex, mb meridional brachium of lower complex, p pediculum r radius, rb rib. $\times 7$.

upper complex are situated more or less on the same level. They do not exceed the contour of the lamnula, and probably they form one unit with the lamnula.

The lower complex is made up of four brachia of similar length. They are nearly twice as long as the brachia of the upper complex, and they exceed the lamnula contour (Pl. IV, Fig 1, Text-fig. 1) Their shape resembles a prong with a sharp edge. The latitudinal brachia are situated at the same level, slightly below the meridional. Meridional brachia directed toward the nucleus seem to be situated at a slightly higher level than the opposite brachia. Brachia of the adjacent lower complexes contact with each other and they are situated along the latitudinal and meridional lines. This regularity is deranged locally (Pl. IV, Fig. 1).

The columellae are characterized by the unusual to the genus *Receptaculites* proportions. At the height of 10-12 mm, the width varies only slightly, and is usually around 0.2 mm or 0.3 mm. The impression of a single merom on the rock in which the type specimen is preserved has a columella with the height 22 mm and the width 0.3 mm. The shape of the all columellae is cylindrical, its diameter being constant. On one spe-

cimen (Pl. V, Fig. 1d) arched columellae were observed. A similar phenomenon pictured Gumbel (1876), Rauff (1892) and Semeniuk & Byrnes (1971) in other receptaculitids. It was observed too by authors on one specimen of *R. crassiparies* Rauff. These deformations presumably have taken place post mortem.

The shapes of the pediculum cannot be clearly determined. Impressions of pediculum were only found on one specimen (Pl. V, Fig. 1d). The contour line of the pediculum is polygonal. On the upper surface of pediculum there are distinct radial ornamentation in the form of several ribs spreading away from the columella toward the corners of the base (Text-fig. 1).

Remarks. — *R. abhorrens* n.sp. differs from other representatives of *Receptaculites* by its columellae, which are unusually thin, and by stellate structure which is composed by two complexes of brachia.

The described fossil is assigned to the genus *Receptaculites* Deshayes 1828, sensu Hinde 1884, because of the presence of pediculi but it combines in a mosaic fashion the features of *Receptaculites* and *Ischadites*. As shown by Nitecki (1969, 1971a and others) columellae of the former are distinctly shorter and more massive (Pl. IV, Fig. 3), then those of the latter. More than that, Nitecki (1971b) described in *Ischadites stellatus* (Fagerstrom) the stellate structure made up by two complexes of brachia.

To embrace this interesting species a new subgenus, or even a new genus should be perhaps erected.

Occurrence. — Poland, Górny Mokrzyszów and Górny Witoszów (Lower Silesia, depression of Świebodzice): Upper Frasnian.

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RECEPTACULITES ABHORRENS N.SP. Z GÓRNEGO DEWONU POLSKI

Streszczenie

W pracy opisano nowy gatunek *Receptaculites abhorrens* n.sp. z osadów górnego franu Dolnego Śląska (depresja Świebodzie: Górny Mokrzeszów, Górny Witoszów). Dla gatunku tego charakterystyczne są meromy o niezwykle cienkich kolumnach i struktura gwiazdzista złożona z dwóch zespołów brachii.

R. abhorrens n.sp. łączy w sposób mozaikowy niektóre cechy typowe dla *Ischadites* i *Receptaculites*.

W osadach górnego dewonu depresji Świebodzie stwierdzono dotąd występowanie dwu gatunków receptakulitów. Są to *Receptaculites crassiparies* Rauff 1892 i *R. abhorrens* n.sp., które opisywano dotychczas błędnie jako *Receptaculites neptuni* (Defrance 1827).

ГРАЖИНА МЕЖЕЕВСКА & ПІТР МЕЖЕЕВСКИ

RECEPTACULITES ABHORRENS N. SP. ИЗ ВЕРХНЕГО ДЕВОНА ПОЛЬШИ

Резюме

В работе описан новый вид *Receptaculites abhorrens* n. sp. из верхнефранского подъяруса в Нижней Силезии (Свободзицкая депрессия, местности Гурны-

Мокшешув, Гурны-Витошув). Этот вид характеризуется меромами с чрезвычайно тонкими колоннами и звездчатой структурой, состоящей из двух комплексов брахий.

R. abhorrens n. sp. мозаичным образом объединяет некоторые характерные черты *Ischadites* и *Receptaculites*.

В верхнем девоне Свободзицкой депрессии наблюдались до сих пор два вида рецептакулитов: *Receptaculites crassiparies* Rauff 1892 и *R. abhorrens* n. sp., которые ошибочно описывались в качестве *Receptaculites neptuni* (Defrance 1827).

EXPLANATION OF PLATES

Plate IV

- Fig. 1. *Receptaculites abhorrens* n.sp. Type specimen. Below visible lamnulae, in the middle and above impressions of stellate structures. Upper Frasnian, Górnny Mokrzeszów; $\times 1$.
- Fig. 2. *Receptaculites abhorrens* n.sp. Impression of merom. Upper Frasnian, Górnny Mokrzeszów; $\times 5$.
- Fig. 3. *Receptaculites crassiparies* Rauff 1892. Three meroms. Upper Frasnian, Górnny Mokrzeszów; $\times 5$.

Plate V

Receptaculites abhorrens n.sp. Upper Frasnian, Górnny Witoszów

- Fig. 1a. Impressions of lamnulae. $\times 5$.
- Fig. 1b. Impressions of the upper complexes of the stellate structure. $\times 5$.
- Fig. 1c. The same specimen in natural size.
- Fig. 1d. Impressions of columellae and pediculi. $\times 2$.

