

# *Chinianella* (?) *Scheympflugi*, a new Dasyclad Alga (Green Algae) from the Tithonian Ernstbrunn Limestone in Lower Austria

*Chinianella* (?) *Scheympflugi*, eine neue Dasycladacee (Grünalge)  
aus dem Ernstbrunner Kalk (Tithon) in Niederösterreich

by

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## Abstract

*Chinianella* (?) *Scheympflugi*, a new dasyclad alga (Green algae) with funnelshaped fertile branches is described and discussed from shallow water sediments of the Tithonian Ernstbrunn Limestone. The morphology of fertile branches allows also weakly calcified specimens to attribute to the new species.

## Zusammenfassung

*Chinianella* (?) *Scheympflugi*, eine neue Grünalge aus der Gruppe der Dasycladaceen wird aus den Flachwasserseimenten des Ernstbrunner Kalks beschrieben und diskutiert. Die trichterförmige Gestalt der fertilen Äste erlaubt es auch schwach verkalkte Exemplare zu der neuen Art zu stellen.

## 1. Introduction

Fossil algae from the Ernstbrunn Limestone are reported since the early forties of this century. This is due to the fact, that the Ernstbrunn Limestone is part of a shallow water area fringing the eastern part of the Bohemian Massif. *Chinianella* (?) *Scheympflugi*, a new species of dasyclad algae, is described.

During the last fifty years the fossiliferous outcrops around the classic area of Ernstbrunn Limestone, in Dörflès were intensively investigated by palaeontologists; up to now three new species of algae were found. In 1941 BACHMAYER described *Griphoporella ehrenbergi* and *Petrascula piat*, KAMPTNER (1951) created the species *Cayeuxia doerflesiana*. In addition to this, HOFMANN (1990, 1992, 1993) referred to a rich algal association, out of wich *Chinianella* (?) *Scheympflugi* nov. sp. is now described.

## 2. Geology and stratigraphy

The Ernstbrunn Limestone is represented in large rootless thrustsheets within the highly tectonized Waschberg Zone which continues to Czechia as Zdanice Unit. This tectonical Klippen Belt strikes from the southwest to the northeast, and separates the Molasse Zone in the west from the Vienna Basin in the east. On the basis of ammonites the age of the white limestone is middle Tithonian to lower upper Tithonian (ZEISS & BACHMAYER, 1989).

The working area (Fig. 1) is the region northwest of the

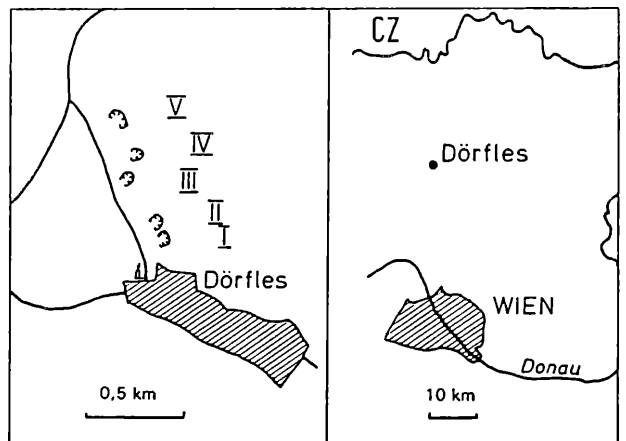


Figure 1: Location of the working area.

little village Dörflès near Ernstbrunn in the central part of the Waschberg Zone.

Studying the microfacies of five abandoned quarries HOFMANN (1990) found sediments of a shallow open lagoon with normal marine environment indicated by a rich algal association, larger foraminifera, thick incrustations, and echinoid remains.

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### 3. Systematic description

*Chinianella* (?) *Scheympflugi* nov. sp.  
(Pl. 1, Figs. 1–4)

v *Heteroporella* sp. 1 – HOFMANN, 1990, Taf. 5, Figs. 3–4;  
Taf. 6, Fig. 1–7

v *Heteroporella* sp. – HOFMANN, 1993, Pl. 1., Fig. 3

**Origin of name:** The name comes from Peter Scheympflug, the recent director of the “Kalkgewerkschaft Ernstbrunn”

**Holotype:** Specimen in a longitudinal section figured in Plate 1, Fig. 1 (Thin section Dö V/1j).

**Isotypes:** Specimen in the samples Dö V/26a, Dö V/26d figured in Plate 1, Figs. 2–4; and some other samples.

**Depository:** The material is kept in the thin section collection (“Diplom Hofmann”) of the Institute of Palaeontology at the University of Vienna (Austria).

**Type locality:** The abandoned quarry Dörfles V (HOFMANN, 1993), which is at the border of the Ernstbrunn woods, situated at the map ÖK 24 MISTELBACH (1:50 000). In a few samples of the quarry Dörfles IV there were also some remains of the new alga.

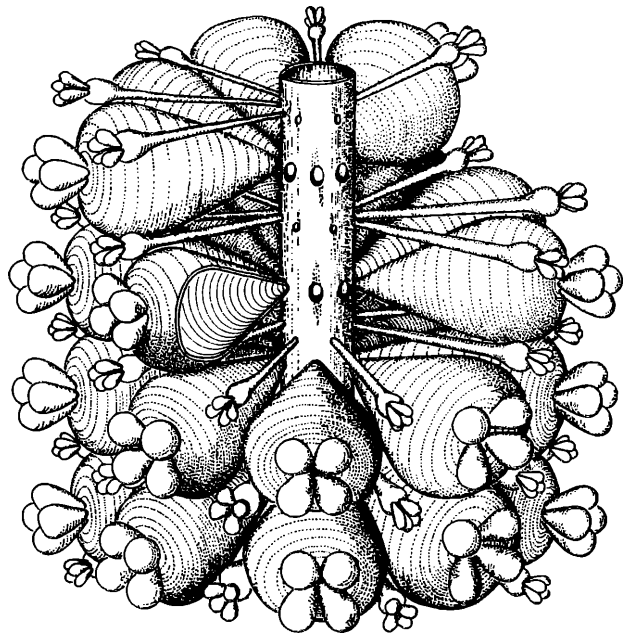
**Type level:** The samples yielding the alga were collected in the northwestern part of the quarry just below a tectonic fault, about five meters from the base of the quarry.

The microfacies, a grainstone or biosparite, reveals a rich fossil association, dominated by algae (blue–green algae, *Arabicodium* sp., *Salpingoporella annulata* CAROZZI, *S. pygmaea* (GÜMBEL), *Macroporella praturloni* (DRAGASTAN), *Clypeina solkani* (CONRAD & RADOICIC), and foraminifera (*Nautiloculina oolithica* MOHLER), *Conicospirilina basiliensis* MOHLER, *Pseudocyclamina lituus* YOKOHAMA, *Lenticulina* sp., trocholinids, miliolids). Encrusting organisms like *Lithocodium* sp., *Bacinella irregularis* RADOICIC and *Tubiphytes* sp., occur together with remains of echinoderms, gastropods, corals, bryozoans, and sponges (*Barroisia* sp.). In addition to this the sediment is generally characterized by intensive micritization and yields a large amount of algal lumps and pellets.

**Diagnosis:** Cylindrical thallus with two different kinds of branches (fertile and sterile), arranged in whorls, standing perpendicular to the main axis. Each whorl consists of only one kind of branches, either fertile or sterile. The whorls have the same number of branches and are arranged alternately staggered at the main axis.

The fertile branches are funnelshaped and are sharp bent at their distal part, so they become narrow again. At the distal end they have four small secondary ramifications (Plate 1, Fig. 2). The sterile branches have the shape of a drum stick and show also three to four secondary ramifications.

**Discussion:** Due to some taxonomic considerations by GRANIER et al. (1993) the genus is designated to *Chinianella* OTT ex GRANIER & DELOFFRE 1993. This genus is characterized by: “cylindrical main axis



**Figure 2:** Reconstruction of *Chinianella* (?) *Scheympflugi* nov. sp. (not to scale), showing position and morphology of fertile and sterile branches.

bearing alternating fertile and sterile whorls; number of branches comparable in the two kinds of whorls; calcified fertile branches consisting of inflated primary ramifications bearing small secondaries ending by open pores; calcified sterile branches rather thin with at least one order of ramification”

The preservation of secondary ramifications is a rare phenomenon occurring only in strongly calcified algal remains. Usually secondaries cannot be observed, sometimes calcification does not even reach the distal end of the primary branches, so fertile primaries are open.

Having sections without any preserved secondary branches, these sections could therefore be assigned to *Otternstella* (GRANIER et al., 1993). This genus is defined: “cylindrical main axis bearing alternating fertile and sterile whorls; number of branches comparable in the two kinds of whorls; fertile branches consisting of a single order of ramification, inflated, and closed in their distal part; calcified sterile branches rather thin with at least one order of ramifications.”

The question mark after *Chinianella* indicates, that there might be some difficulties with the genus, but not with the species, because the funnelshaped fertile branches are unique and so typical for the new species *Scheympflugi*. Due to the characteristic funnelshaped morphology of fertile branches with the distal crack it is possible to attribute even weakly calcified specimens, which show great similarities to *Otternstella*, to the genus *Chinianella*, and even to the species *Chinianella* (?) *Scheympflugi*.

Figure 2 displays a reconstruction as the living alga could have looked like. Sometimes small micritic particles can be observed in fertile branches, they may be interpreted as

spores (Plate 1, Fig. 1). The preservation of secondary ramifications, the fertile as well as the sterile ones, is visible only in cases of strong calcification.

Dimensions (following BASSOULLET et al., 1978):

L:	6.5 mm	
D:	0.60 – 0.89	(0.72)
d:	0.09 – 0.19	(0.14)
d/D:	0.14 – 0.25	(0.19)
w:	10 – 12	
w':	3 – 4	
l:	0.27 – 0.34	(0.30)
p:	0.12 – 0.15	(0.136)

The values in the brackets show the mean value (n = 38).

**Comparison with other species** Following the work of GRANIER et al. (1993) there are seven species attributed to the genus *Chinianella*, all of them show significant differences which will be discussed below. *Chinianella* (?) *Scheympflugi* has funnelshaped fertile branches which are unique for this new species, in addition to this it is the smallest one of all described species.

*Chinianella carpatica* BYSTRICKY 1968, nov. comb. GRANIER et al. (1993): This alga from the Upper Triassic is much larger (D = 1.3–2.6 mm), fertile branches are round, and show 5–7 secondary ramifications. According to DI STEFANO & SENOWBARI-DARYAN (1985) this species is synonymous with *Chinianella zankli* OTT 1968, nov. comb. GRANIER et al. (1993).

*Chinianella crosi* OTT 1968, nov. comb. GRANIER et al. (1993) (D = 1.7–2.1) and

*Chinianella zankli* OTT 1968, nov. comb. GRANIER et al. (1993) (D = 1.4–2.1): Both are Upper Triassic algae with fertile branches, having at their base a globular swelling (“sporangium”) and four secondaries. Fertile branches have also four secondaries. According to DI STEFANO & SENOWBARI-DARYAN (1985) this species is synonymous with *Chinianella crosi* OTT 1968, nov. comb. GRANIER et al. (1993).

*Chinianella micropora* DI STEFANO & SENOWBARI-DARYAN, 1985, nov. comb. GRANIER et al. (1993) and

*Chinianella macropora* DI STEFANO & SENOWBARI-DARYAN, 1985, nov. comb. GRANIER et al. (1993), both have an egg shaped thallus, are described from the Upper Triassic of Palermo Mountains. The outer diameter is in both forms much larger than in the form from the Ernstbrunn Limestone.

Generally these four Upper Triassic species can be compared with each other (see DI STEFANO & SENOWBARI-DARYAN, 1985:195).

*Chinianella graeca* CONRAD, PAVLOPOULOS & SENOWBARI-DARYAN, 1981, nov. comb. GRANIER et al. (1993) of Barremian age from Greece. Concerning the dimensions, this alga is also a bit larger than the new species.

*Chinianella ellenbergeri* LÉBOUCHÉ & LEMOINE in GRANIER & DELOFFRE, 1993 from the French Lias-

ic is designated as type-species of the genus. This alga has also a large diameter and more or less round fertile branches.

#### 4. Conclusion

This new finding of *Chinianella* (?) *Scheympflugi* with its outstanding funnelshaped fertile branches in the Tithonian sediments of Lower Austria closes a stratigraphic gap in the genus *Chinianella*. Up to now there were known a group of Upper Triassic (*Ch. carpatica*, *Ch. crosi*, *Ch. zankli*, *Ch. micropora*, *Ch. macropora*), one Liassic (*Ch. ellenbergeri*) species and a Cretaceous (*Ch. graeca*) species.

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## PLATE 1

### *Chinianella* (?) *Scheympflugi* nov. sp.

Fig. 1. Holotype. Longitudinal section of the cylindrical thallus with alternating whorls of funnelshaped fertile and sterile branches. The arrow shows some micritic particles which might be interpreted as spores (Dö V/1j; x 44).

Fig. 2. Isotype. Oblique section through a well calcified specimen with secondary ramifications of fertile branches. The arrow above marks a micritic four-leaved trefoil structure which is interpreted as an oblique section through secondary ramifications of a fertile branch. The arrow below shows a sterile drumstick-shaped branch with two tiny micritic pores (secondary ramifications. (Dö V/26d; x 44).

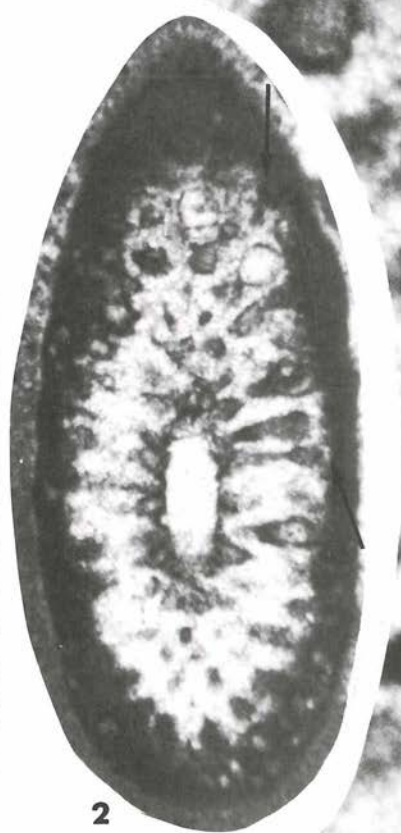
Fig. 3. Isotype. Magnification of a detail of Figure 2. The white arrow marks the presence of secondary ramifications of a fertile branch. Below there is a drum stick shaped sterile branch with two secondary ramifications. (Dö V/26d x 150).

Fig. 4. Isotype. Oblique section with funnelshaped fertile branches (Dö V/26a; x 44).

PLATE 1



1



2



3



4