Some aspects on the classification of *Salpingoporella pygmaea* (Calcareous Algae) from the Ernstbrunn Limestone (Tithonian) of Lower Austria

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with 2 figures and 1 plate

Summary

Simple statistical methods applied on a rich material from the Tithonian Ernstbrunn Limestone (Waschbergzone, Lower Austria) demonstrate, that in the case of *Salpingoporella pygmaea* natural variation will probably include also *Salpingoporella johnsoni* and *Salpingoporella etalloni*, which are both upper Jurassic species.

Zusammenfassung

Einfache statistische Untersuchungsmethoden an zahlreichen Dünnschliffen aus dem Ernstbrunner Kalk (Tithon, Waschbergzone, Niederösterreich) zeigen, daß die beiden oberjurassischen Arten *Salpingoporella johnsoni* und *Salpingoporella etalloni* wahrscheinlich in den Bereich der natürlichen Variabilität von *Salpingoporella pygmaea* fallen.

1. Introduction

For more than 200 years (HAIDINGER 1785) scientists are studying the fossiliferous Ernstbrunn Limestone. In this century two theses (BACHMAYER 1940, DÜRRMAYER 1931) dealt with macrofossils. BACHMAYER (1941) found two new species of dasyclad algae, KAMPTNER (1951) described *Cayeuxia doerflesiana* (Cyanophyceae) from the localities of Dörfles. Recent microfacial analysis (HOFMANN 1990) showed the necessity to work on some problems of dasyclad algae.

2. Geology and stratigraphy

The Tithonian Ernstbrunn Limestone (ZEISS & BACHMAYER 1989, ammonites, REHANEK 1987 calpionellids) represents together with the marly Klentnice beds the oldest overground members of the highly faulted Waschbergzone, a klippenzone, which continues in Czechoslovakia as Zdanice Unit. The Waschbergzone lies between the Molassezone in the west, where it is overthrusted and the northern part of the Vienna Basin in the east.
The working area are five quarries at Dörfles, a little village north west of Ernstbrunn (fig. 1).
The Ernstbrunn Limestone in the area around Dörfles was deposited in a shallow, tropical lagoon (HOFMANN 1990), as an inner part of a carbonate platform (ELIAS & ELIASOVA 1986).

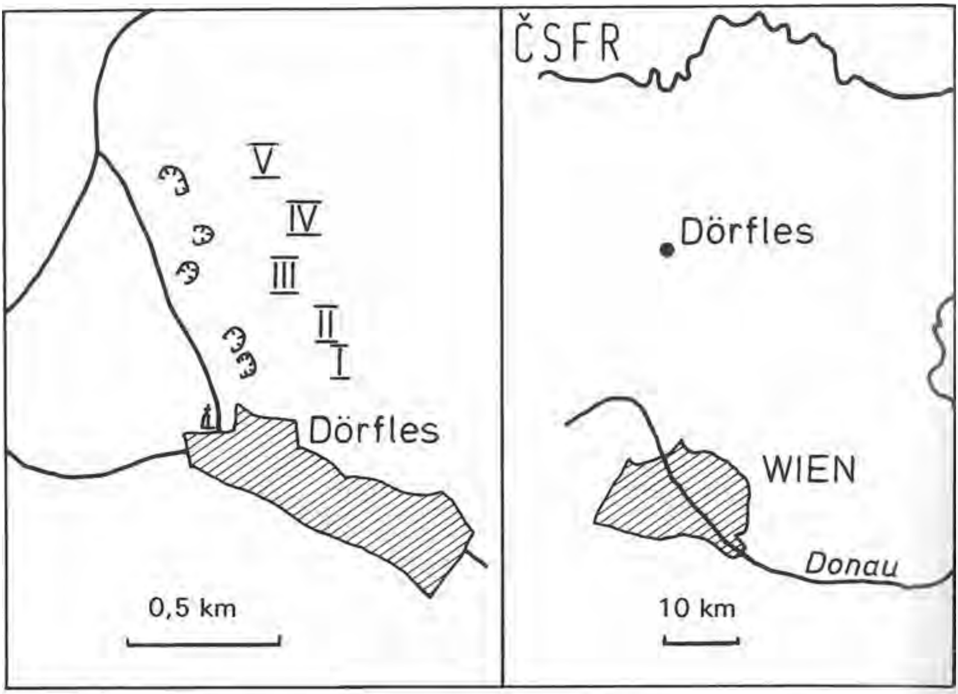

fig. 1: Location of the working area

3. Historical review

1891 GÜMBEL (in BASSOULLET et al. 1978) described *Gyroporella pygmaea* from the upper Jurassic of Bavaria.
1925 PIA redescribed this form from upper Jurassic limestones near Kehlheim as *Macroporella pygmaea*, gave exact parameters (D = 0,72 - 0,43 mm, d = 0,26 - 0,17 mm, w = 16 - 19) and defined even the morphology of the thallus (cylindrical shape) and the branches (the inner diameter is reduced (0,02 mm),..the diameter widens (0,09 mm) in the outer part).
1971 DRAGASTAN created *Pianella johnsoni*, a small species (D = 0,20 - 0,31 mm, d = 0,10 - 0,15 mm, w = 14 - 20) from the upper Jurassic from Romania.
1972 CONRAD et al. demonstrated that the genus *Pianella* shall be transferred to *Salpingoporella*. So *Pianella johnsoni* became *Salpingoporella johnsoni*.
1978 BASSOULLET et al. transferred *Macroporella pygmaea* to *Salpingoporella pygmaea*, because of characteristic morpholocical features.
1984 BERNIER described from the French Jura another two new species of *Salpingoporella*. *Salpingoporella etalloni*, a small form (D = 0,325 - 0,450 mm, d = 0,1 - 0,137 mm, w = 20) and *Salpingoporella enayi* a large form (D = 0, 867 - 0,950 mm, d = 0,325 - 0, 425 mm, w = 30).
There are even some other species, like e. g. *Salpingoporella verticillata* SOKAC & NIKLER 1973, *Macroporella incerta* SOKAC & NIKLER 1973 and *Salpingoporella bucuri* DRAGASTAN 1989, but the dimensions of these species are larger, therefore they cannot be compared in this recent

investigation. In addition to this, the first two of the above mentioned species are described from lower Cretaceous sediments, and not from upper Jurassic.

4. Methods

As *Salpingoporella* is a genus with few morhological criteria (simple cylindrical thallus, undivided, bearing whorls of phloiophorus euspodyl arranged branches only belonging to the first order), the outer diameter (D) and the innner diameter (d) were measured at 87 specimens of different samples from the Tithonian Ernstbrunn Limestone. These data and the regression line are shown at a diagram (fig. 2). The three square dots represent the measured data of the three specimens of *Macroporella pygmaea* by PIA 1925.
The homogenous distribution and the high correlation coefficient (0,82) give evidence, that all investigated sections may be attributed to the variation of only one species.

5. Discussion

This recent investigation on a great number of samples shows clearly that the relation of the outer diameter (D) versus the inner diameter (d) as it was used by BERNIER 1984 (p. 475) to distinguish *Salpingoporella etalloni* and

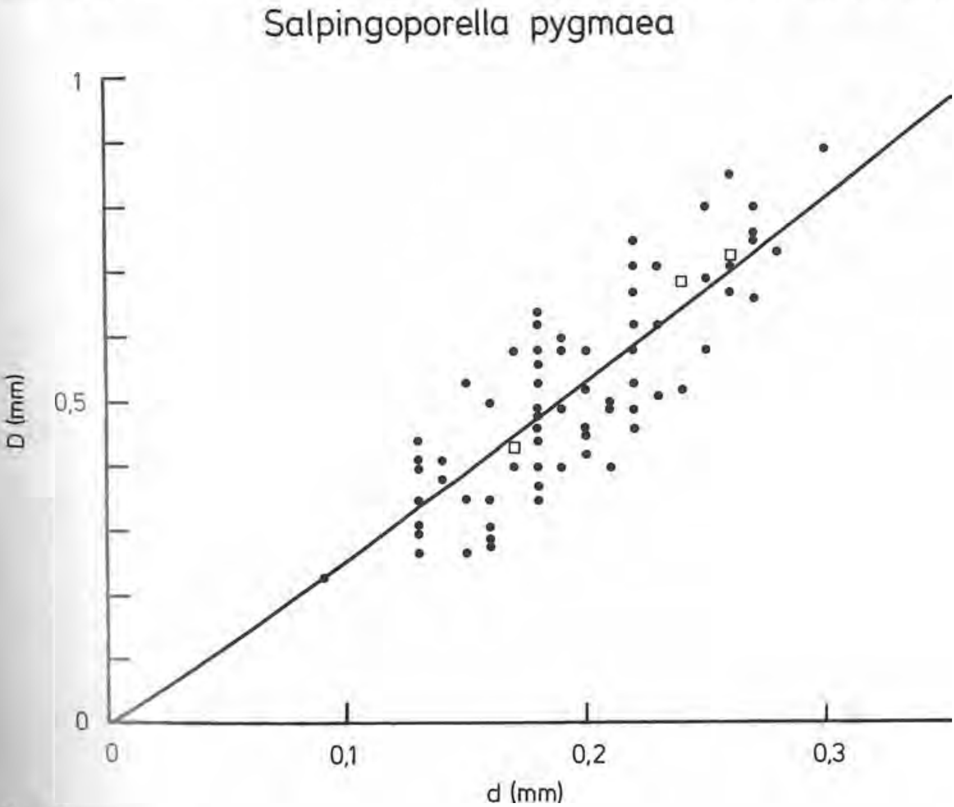

fig. 2: d/D - Diagramm (d= inner diameter, D= outer diameter), square dots represent the data of *Macroporella pygmaea* by PIA (1925)

Salpingoporella enayi from *Salpingoporella pygmaea* is not useful for classification. In this work all these specimens are called *Salpingoporella pygmaea*, according to BASSOULLETT et al. (1978) who transferred *Macroporella pygmaea* to *Salpingoporella pygmaea*, and due to the fact, that the three specimens of PIA (1925) are correlated very well with the recent investigation. Furthermore this work indicates that *Salpingoporella johnsoni* and *Salpingoporella etalloni* which are two "small" forms might be interpreted as synonyms of *Salpingoporella pygmaea*. As a reason for this, natural variation and different ontogenetic stages might be responsible for this.
For the problem of the "big" species, such as *Salpingoporella enayi* and *Salpingoporella bucuri* this investigation has not enough individuals to make any clear statement.

6. Conclusion

Based on statistical investigations on a high number of samples it is suggested that *Salpingoporella johnsoni* and *Salpingoporella etalloni* are synonymous with *Salpingoporella pygmaea*. It is demonstrated that, the d/D relation as it was used by BERNIER (1984) is not useful for creating new species.

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Plate 1

fig. 1 *Salpingoporella pygmaea* (E 152) x37

fig. 2 *Salpingoporella pygmaea* (Döl/a) x37

fig. 3 *Salpingoporella pygmaea* (DöII/22) x37

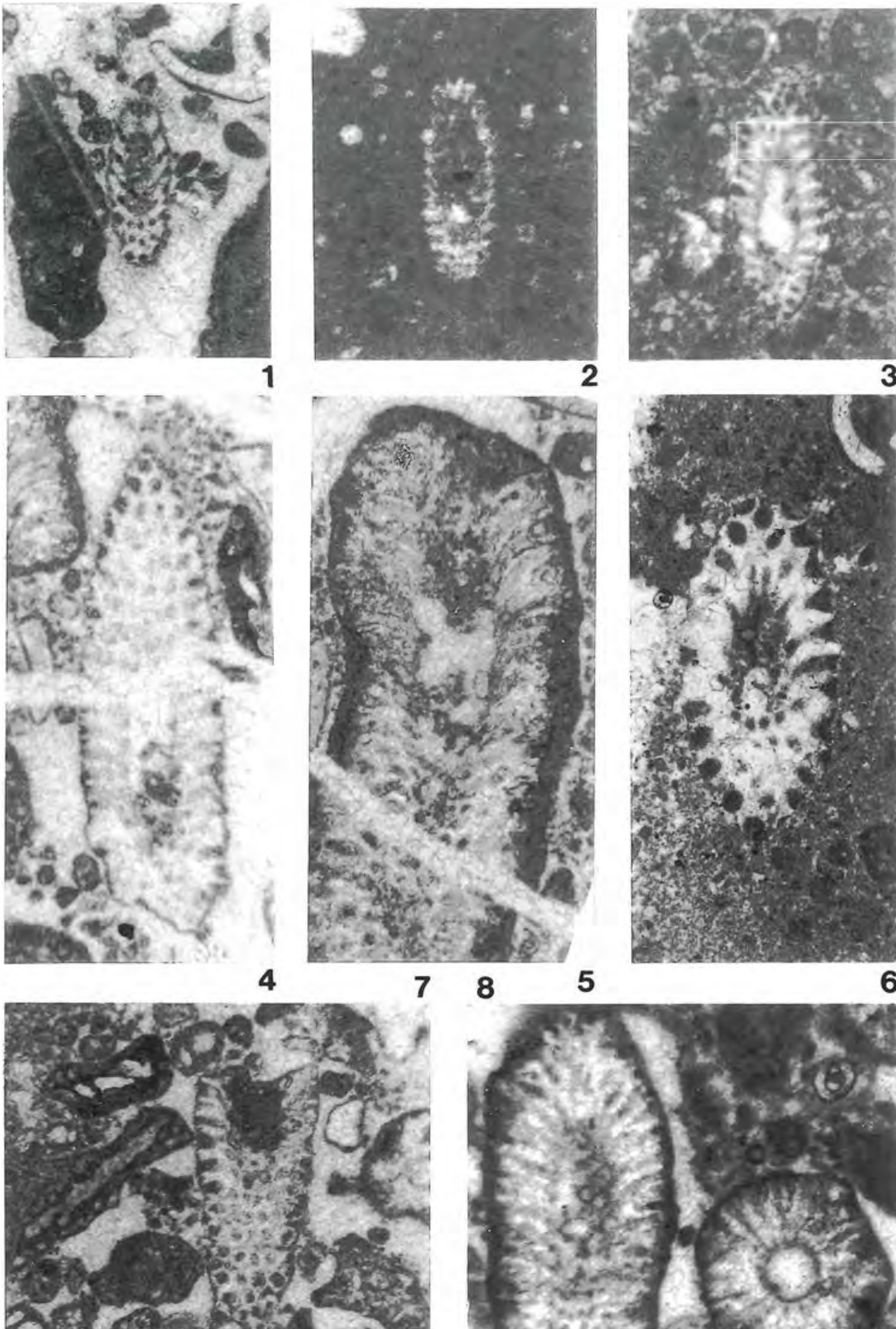
fig. 4 *Salpingoporella pygmaea* (E 153) x37

fig. 5 *Salpingoporella pygmaea* (E 153) x37

fig. 6 *Salpingoporella pygmaea* (DöIV/19) x37

fig. 7 *Salpingoporella pygmaea* (E 153) x37

fig. 8 *Salpingoporella pygmaea* (DöII/22) x 37. The left specimen contains questionable spores in the central cavity (endosporous).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