



Maastrichtian chalk of Rügen: Not all fossils tell the same story

Reich, M. and Frenzel, P. 2002. Die Fauna und Flora der Rügener Schreibkreide (Maastrichtium, Ostsee). *Archiv für Geschichtskunde* 3 (2/4): 74–284, 55 pls., 9 figs., 2 tables, Hamburg. ISSN 0936-2967.

The Isle of Rügen, Germany, ranks amongst the classic Upper Cretaceous localities in Europe. The spectacular white chalk cliffs and quarries have yielded numerous fossils of Early Maastrichtian age, from calcareous nannoplankton to mosasaur teeth. These fossil faunas and floras were extensively studied by German palaeontologists, including Friedrich von Hagenow, Ehrhard Voigt, Dora Wolansky, Arno Hermann Müller, Gerhard Steinich and Helmut Nestler. However, personal knowledge of the sections and fossils of the island is rather poor amongst workers abroad, probably due to the difficult access to the outcrops during the Iron Curtain times, when Rügen belonged to the German Democratic Republic.

The recently published monograph by Mike Reich and Peter Frenzel will surely fill this gap. It starts with an introduction to the geology and stratigraphy of the Maastrichtian strata exposed on Rügen and is followed by a comprehensive overview of all fossil groups that occur there, accompanied by numerous photographs of typical species and specimens collected recently.

Reich and Frenzel's work is impressive in listing all fossil taxa ever reported from Rügen, totalling approximately 1,400 species, most of which are microfossils. However, it is worthy of note that not all taxonomic assignments quoted by Reich and Frenzel are correct. This may be exemplified by ammonites. The authors list 16 ammonite species from Rügen, but some of these are certainly mis-

identified or based on specimens from older deposits, e.g., the Late Campanian *Trachyscaphites* cf. *pulcherrimus*. In addition, a transversally ribbed specimen illustrated in Pl. 24: 2 should possibly be placed in *Diplomoceras cylindraceum* rather than in *Baculites* as mentioned in the figure caption. Nevertheless, the ammonite chapter forms a valuable source of information for ammonite workers as data on these cephalopods from Rügen are scattered in the old literature.

The most intriguing point of general interest raised by Reich and Frenzel is the significant conflict between dating of the white chalk succession on Rügen using belemnites vs. calcareous nannofossils (Fig. 7). In terms of the conventional European belemnite zonation, the Rügen succession is confined exclusively to the Lower Maastrichtian *Belemnella obtusa* to *B. fastigata* zones. However, the presence of the coccoliths *Lithraphidites quadratus*, *Nephrolithus frequens*, and *Micula murus* suggests that the upper part of the succession belongs to the Upper Maastrichtian, probably even the upper Upper Maastrichtian (zones UC 20 and UC 20b *sensu* Burnett). Thus, on the basis of the fossil record of the Isle of Rügen the chronostratigraphic value of either the belemnite or calcareous nannoplankton zonations, as currently used in Europe, may be questioned. Possibly, the current correlation scheme for the Lower/Upper Maastrichtian boundary interval should be modified, and the succession of Rügen may play a crucial role in this respect.

The monograph is supplemented by a vast bibliography (over 30 pages). In summary, it is an excellent source of data for both professional geologists and private collectors dealing with various aspects of Cretaceous palaeontology and geology.

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