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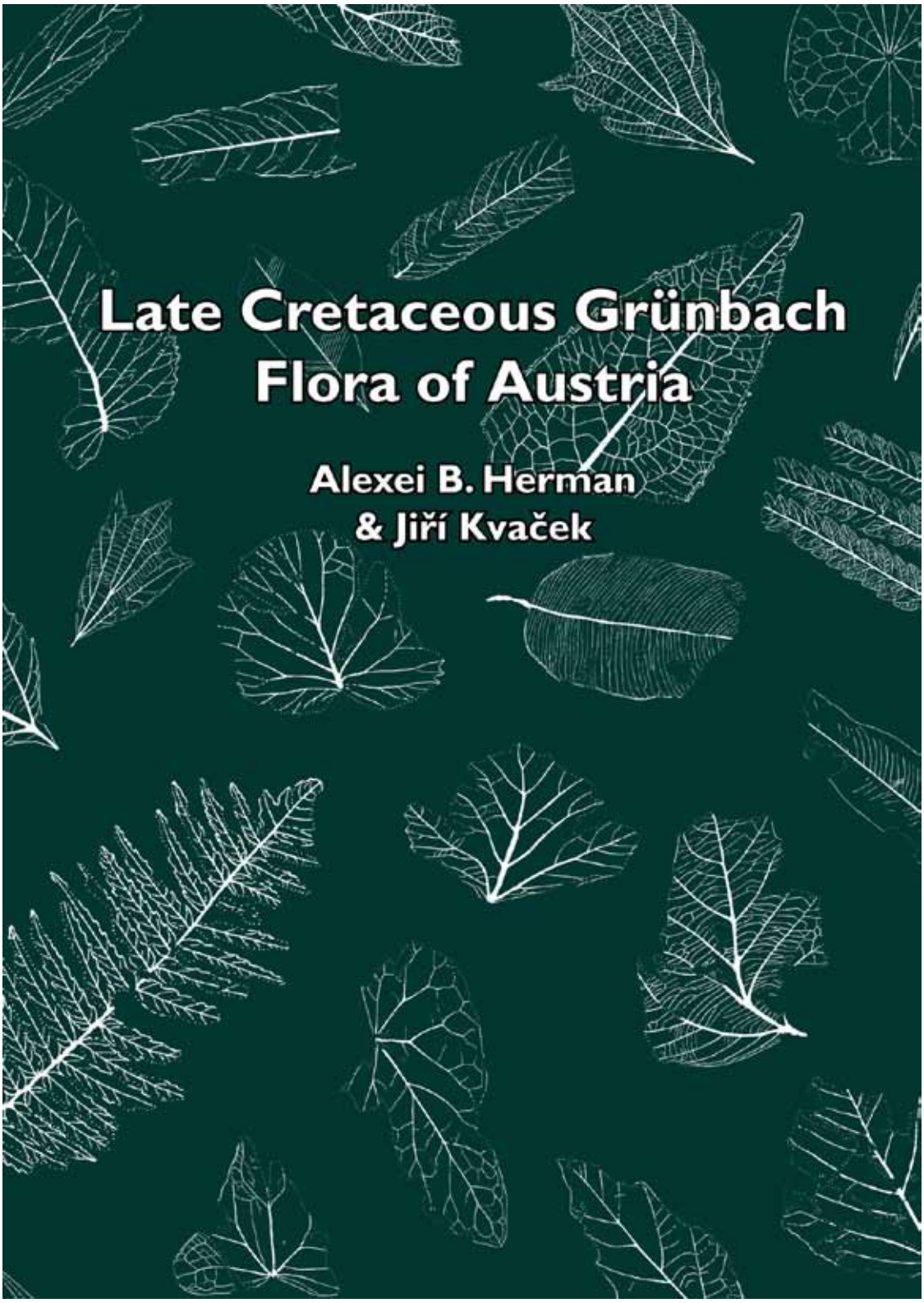

BOOK REVIEW
LATE CRETACEOUS GRÜNBACH FLORA OF AUSTRIA

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The Grünbach Flora is one of the most important Upper Cretaceous floras of Europe and one of the few antracophilous (mire) floras in the Northern Hemisphere for this time period. The plant fossils (over 1000 specimens) are derived from the lower Campanian Grünbach Formation in the Neue Welt Basin (near Vienna, Austria) and is nowadays stored in several collections in Austria (e.g., Natural History Museum und Austrian Geological Survey in Vienna) and Czech Republic (e.g., Narodni Muzeum, Prag). The plant remains are represented by leaf impressions, compression, fructifications and fossil wood belonging to 53 species mostly of angiosperms and ferns. Although collected since the 19th century, the flora has been poorly studied and described and it is almost unknown within the palaeobotanical community.

This monograph gives, for the first time, an extensive and detailed description of the flora. The historical overview provides a good insight on the previous studies, done e.g. by Unger, Ettingshausen and Krasser. The geological setting is briefly explained; the attribution of the flora to the lower Campanian is based on foraminifers and palynomorphs. The sporomorphs are enlisted and briefly discussed. The microflora is characterized by the "Normapollen" group, typical of the ancient angiosperms, although even several reworked Triassic genera have been found.

The description of the flora is extensive and detailed. Almost for each of the species also drawings are provided in order to show the venation pattern and other details of the leaves that are hard to see in the macrofossils. Additionally several pictures, arranged in 36 plates, complete the detailed description and discussion for each taxon. Within the flora four new genera (Gosauopteris, Gruenbachia, Theiaiphyllum and Compositiphyllum) are introduced as well as 27 new species.

The flora is used also for palaeofloristic and phytogeographic considerations. The Grünbach flora is a typical flora of the Euro-Sinian palaeophytogeographic region. The authors suggest that during the formation of the Grünbach flora the area was a large island, temporarily connected to the continent. The flora reflects a highly diversified ecology, from shallow fresh water tables, to swampy lowland, juglandaceous forests and mesophytic coniferous forests. According to the palaeoclimatic analysis using nearest living relative (NRL), leaf margin analysis (LMA) and Climate Leaf Analysis Multivariate Program (CLAMP) the flora grew in a humid subtropical frost-free climate, with hot summers and short dry seasons.

Palaeoecological interpretations of the flora reveal that the plants were thriving in different biotopes ranging from aquatic and mire communities to wetland and mesophytic forests.

In short, this monograph contains a comprehensive description of an important Late Cretaceous flora that was poorly discussed and studied so far. It is, however, not restricted only to the description of the plant fossils themselves but gives also important contributions on the palaeoclimate and palaeophytogeography during the Upper Cretaceous in Central Europe. Written by two experts in Cretaceous fossil floras and covering every possible angle of interpretation (ecology, geography, climate, geology, biostratigraphy) this book will be very value not only to palaeobotanists but also to specialists working on palaeoclimate. This volume is especially important since it gives a detailed overview of one of the most important floras of the Upper Cretaceous of Europe, a time that is very important for the evolution of the angiosperms.

Late Cretaceous Grünbach Flora of Austria. Herman, A.B., Kvaček, J., 2010. Verlag Naturhistorisches Museum Wien, 224 pp. ISBN: 978-3-902421-43-2.

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