



The late Silurian to Early Devonian period represents one of the most critical times in earth history, when vascular plants invaded the land and formed the first complex terrestrial ecosystems. The origins of the major lineages of vascular plants and their subsequent diversification at this time are vitally important events that have had a profound impact on all subsequent terrestrial floras and their ecosystems. The questions of how these plants originated and evolved, and how and when their fertile and vegetative organs appeared and diversified might have constituted a profound subject of scientific researches. Our ability to address these questions has been possible only by the efforts of paleobotanists who have collected and studied fossil plants from many parts of the world.

This book is a monographic summary of current knowledge of the Early Devonian Posongchong flora from Yunnan, southwestern China, which is emerging as one of the most important sources of information on early vascular plants. The many species recovered from the Posongchong Formation, including some endemic plants with unusual combinations of fertile and vegetative organs, are described in detail, and an updated classification system is presented. The paleoenvironments in which plants lived have been reconstructed by a study of sedimentological facies and taphonomy. The Posongchong flora is compared to other coeval floras from throughout the world. The

phylogenetic relationships of the Posongchong plants have been assessed by cladistic analyses, including the parsimony method and Bayesian inference. The evolution and early diversification of early vascular plants have then been discussed in terms of analyses of morphological and anatomical characters as well as diversity dynamics. The evidence from the Posongchong flora supports the hypothesis that the explosion of major lineages of vascular plants occurred during the Early Devonian (Pragian) age. As suggested by Charles B. Beck in the foreword, "it is clear that this flora provides an unusually important contribution to our knowledge of plant life in the Devonian, and a wealth of information for biologists and geologists who seek to understand the myriad pathways of plant evolution".

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