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Preface

Earliest evidence of life on earth

On 20 June 2006 a symposium on the paleobiology of the early Earth was held during the 2nd International Palaeontological Congress at Beijing University. This volume is derived from presentations at that symposium.

The hunt for evidence of Archean life has a history that spans more than a century. Finding definitive evidence of such ancient microbes can be challenging, though by the onset of the Proterozoic the established record is overwhelming. In the late Archean, abundant well-preserved and diverse stromatolites, hydrocarbon biomarkers, carbon and sulfur isotope signals and, less commonly, microfossils, attest to flourishing microbial life inhabiting broad marine platforms as well as widespread greenstone-dominated settings. Until recently, however, the evidence from Archean successions older than 3 Ga has been less convincing. The oldest recognizable sedimentary rocks are ∼3.8 Ga, of which those in southwestern Greenland are best known. All such very old rocks have been strongly tectonized, and many have been metamorphosed to amphibolite grade. Despite the concerted efforts of numerous researchers, definitive evidence of life has yet to be discovered in these especially ancient terrains, though the abundance and isotopic composition of the graphitic matter preserved in some of the surviving metasediments is suggestive.

For the last 40 years the search for early life has focused on the relatively well-preserved 3.2–3.5 Ga rock successions of the Barberton Mountainland in South

and his colleagues describe new finds of Archean microfossils. Furnes et al. report microbial borings inmicrob1microb1vrmicrob1vasf7w lavas. Schopf et al. review the Archean stroma lite and microfossil records and present new data on the reported fossils of ∼3465 Ma Apex Basalt chert; and Allwood and her colleagues summarize their recent in-depth studies of the stratigraphic setting and morphology, palee Artvl6r891.1(Ar5bd)-149.ia8ct1(thraee)-83221.18ctuo fossils of units and the application of new and improved analytical techniques are yielding a wealth of new information. One thing is clear: there will be an explosion of research and new findings in the coming decade that will greatly improve our understanding of early life on Earth.

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