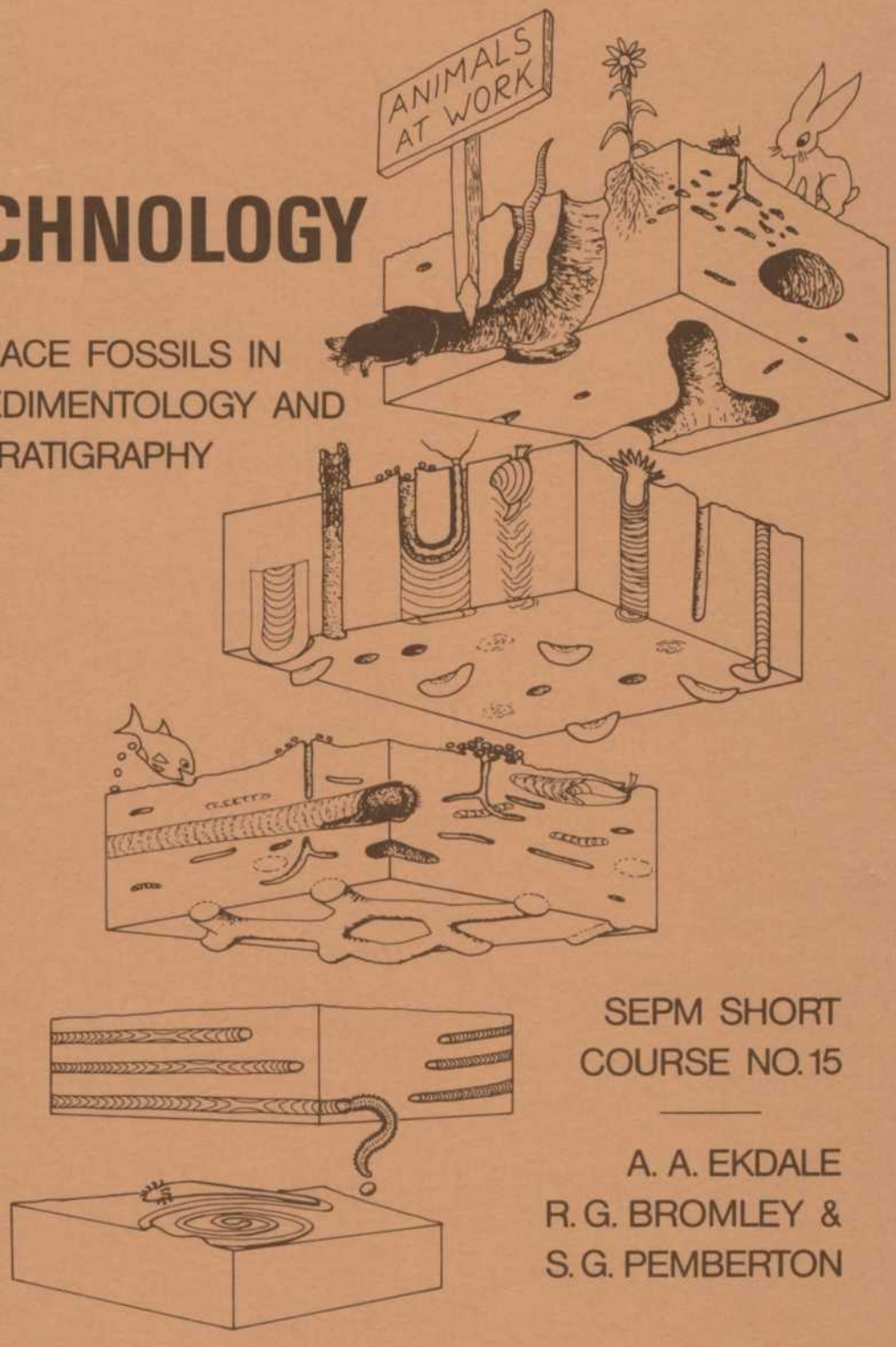
ICHNOLOGY

TRACE FOSSILS IN SEDIMENTOLOGY AND STRATIGRAPHY



SEPM SHORT COURSE NO. 15

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Society of Economic Paleontologists and Mineralogists

ICHNOLOGY

The Use of Trace Fossils in Sedimentology and Stratigraphy

by

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Society of Economic Paleontologists and Mineralogists
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ICHNOLOGY: THE USE OF TRACE FOSSILS IN SEDIMENTOLOGY AND STRATIGRAPHY

PREFACE

Ichnology is a fascinating field of endeavor. As with science in general, it is a process of solving mysteries — in this case, mysteries of fossil behavior. In a very real sense the ichnologist is Sam Spade or Sherlock Holmes — following footprints, searching for traces of dastardly deeds, studying artifacts, attempting to reconstruct a sequence of events from subtle clues, pursuing the identity of someone (or something) long dead. Who was the culprit? What was he/she doing? Where was he/she living, working or going?

Not only intellectually intriguing, ichnology also has practical application and economic importance. In today's frenzied quest for energy and mineral resources, exploration geologists value every tool that aids their search. Ichnologic observations and analyses can help the sedimentologist reconstruct ancient depositional environments, help the stratigrapher correlate sedimentary strata, help the paleontologist determine the nature of fossil communities, and help the geochemist determine the effect of organisms on sediment composition.

This publication was written specifically to accompany the SEPM short course on the use of trace fossils in sedimentology and stratigraphy; however, this book is designed to stand on its own. We hope it will serve as a comprehensive and intelligible introduction to ichnology for anyone with even rudimentary geologic training, whether or not that person enrolls in a formal course on the subject. The book emphasizes sedimentologic, stratigraphic and paleoecologic aspects of ichnology; paleoethologic and taxonomic aspects are treated slightly more superficially. This reflects both the primary objectives of the SEPM course and the major research interests of the authors.

Successful execution of this textbook would not have been possible without the talented expertise and cheerful cooperation of Suzanne Zink. We also greatly appreciate the encouragement and assistance of the SEPM Continuing Education Committee and staff, especially Jeanne Couch and Robin Dixon. We sincerely acknowledge the inspiration and scientific leadership that has been provided to the field of ichnology and to us personally by Adolf Seilacher. And to Sue Ekdale, Ulla Asgaard and Teresa Pemberton, we say many thanks for support in numerous ways.

Tony Ekdale

Richard Bromley

George Pemberton