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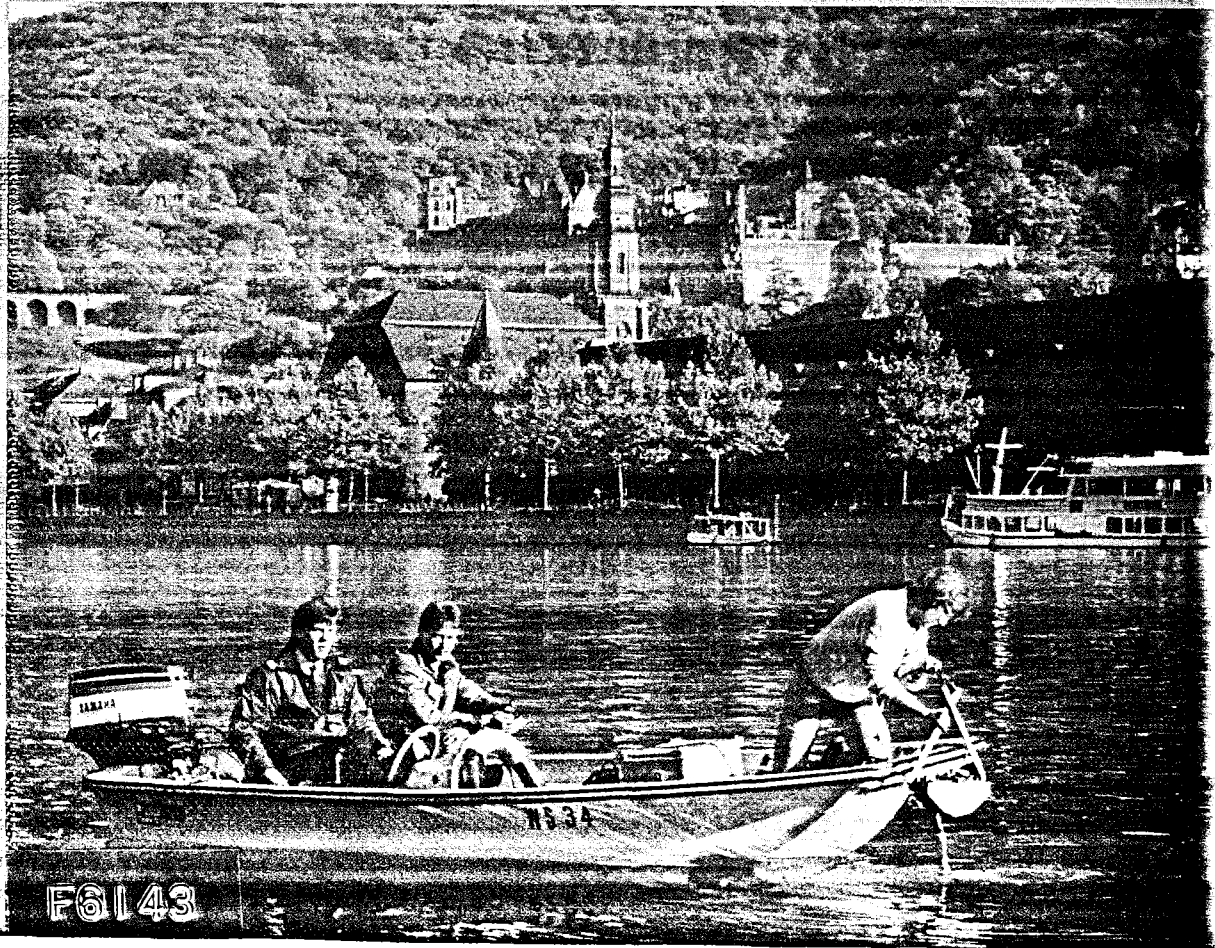
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# Sediments and Environmental Geochemistry

Selected Aspects and Case Histories

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Sediments and Environmental Geochemistry is dedicated to Professor German Müller on the occasion of his 60th birthday. The individual articles, written by outstanding scientists, cover a wide range of subjects indicating the broad spectrum of his interests. The main topics are: Carbonate and Evaporite Petrology, Petroleum Formation and Exploration, Environmental Geochemistry, Coal Petrography, Data Bases in Geosciences, and Volcanology.

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## Preface

This volume is dedicated to German Müller on the occasion of his 60th birthday. The date coincides with the 25<sup>th</sup> anniversary of the Institut für Sedimentforschung of the University of Heidelberg. This jubilee motivates us to look back on German Müller's past working period as well as to look forward to future prospects for Sedimentary Petrography and Environmental Geochemistry.

The volume includes contributions from German Müller's colleagues, friends and scholars. The subjects range widely from classical sedimentary petrography (analytical methods, carbonate petrology and facies analysis), to petrology of coal, and environmental geochemistry. The diversity of fields reflects the broad scope of interests of the person celebrating his jubilee – and made it difficult to find a title for the volume. *Sediments and Environmental Geochemistry – Aspects and Case Histories* covers the contents of the volume only somewhat incompletely, and certainly reflects just a fraction of the subjects of German Müller's concern during his past period of professional activities. Much more would have to be included in order to complete the list, for instance celestite studies, black shale petrography, diagenesis of argillaceous sediments, or advanced analytical methods, to mention but a few of his many interests.

Thus, the volume is more a collection of selected subjects, rather than an exhaustive summary of Müller's work, nor should it, by its title, indicate the intention to cover all the different special fields of Sedimentary Petrology or Environmental Geochemistry. Therefore, the restricting subtitle "Aspects and Case Histories" was added.

Now for some facts about German Müller's professional life. His doctoral thesis on "The occurrence of carbonates, particularly of ferruginous carbonates, in the coal seams of the Ruhr area" was presented in Bonn in 1952 (at the age of 23!). (For comparison: Today's average age of leaving PhD candidates is 30.) German Müller was Assistant Professor at the Department of Geology at Cologne University for a short time, and subsequently he went to Ankara to work with the Turkish Institute for Economic Geology. After that position he joined Mobil Oil of Germany as a geologist. Three years later he took the opportunity to go to Ethiopia for Texas Africa Exploration Co. Eventually, he completed his time abroad and returned to Germany to become Assistant Professor at the Department of Mineralogy at the University of Tübingen.

With this decision, he started his career as university teacher. Soon after his habilitation with Prof. W. v. Engelhardt in Tübingen he was called to Heidelberg and appointed to establish the "Laboratory for Research of Sediments". This happened in 1964, exactly 25 years ago. After the Laboratory was merged into the "Institut für Sedimentforschung", German Müller became Director of this Institute, a position he holds to this date. He has given definition to the Institute through his work and personality.

Much has changed in geology in the past quarter of a century: Above all, the regrettable but unavoidable diversification of our science into more and more highly specialized fields, which cannot be mastered completely with full competence by any single scientist.

German Müller recognized early which new scientific fields were potentially capable of development. As early as the 1950's, during his time with the oil industry, he understood intuitively the possibilities offered by sedimentary petrography for both oil exploration (stratigraphic traps) and exploitation (greater recovery due to producing strategies adjusted to the geology of reservoir rocks). German Müller contributed by introducing new methods, an interest which resulted later in his first book *Methods of Sedimentary Petrology*.

Similarly, during his time at Tübingen, he started the study of Lake Constance, taking the lake as a natural laboratory for investigations of both recent sediments and sedimentation processes. These studies, initially aimed purely to increase our knowledge of sedimentary petrology, soon revealed (in combination with geochemical data) that recent sediments are clearly indicative of the chemistry of the water above of them. Initially, this was a concept of merely scientific interest. Later on, when the water quality of Lake Constance began to gain public interest due to the increasing danger to the drinking water supply, the relationship between water and sediment contamination became the basis of many investigations of the reasons for "eutrophication".

Subsequently, the knowledge of the correspondence of water chemistry and recent lacustrine sediment composition was further extended, and general relations between adsorption, suspended matter, and discharge in fluvial environments were derived.

By this work German Müller has contributed vitally to opening the door to the field of applied environmental geochemistry – a field which he did not subsequently leave – not the least because of its practical relevance and the desire to secure the very basis of our existence. The direct application of scientific results to socially useful initiatives was the main motive for his active work and it often formed a criterion of both its value and satisfaction. Although these goals may not always conform to the classic principles of conservative science, there is wide appreciation of their contribution in changing our views on how to coexist with nature. As a practical consequence, such environmental studies helped built sewage plants all around Lake Constance, thus reducing the contamination load, in particular of the phosphates, to a tolerable level.

German Müller, moreover, made numerous contributions to various fields of sedimentary petrology; for instance, he joined the Deep Sea Drilling Project on Leg 56 and 57; he worked on the mineralogy of the recent sediments of the Black Sea; he did research on dolomitization of biocalcarenites from Fuerteventura, Canary Islands, and many more. Limited space for this Preface does not allow to mention all the activities in which German Müller has participated during his career to date.

Most recently, he has been concerned intensely with sewage decontamination. The subject of research of another working group is soil contamination, which is of pressing importance in the Rhine-Neckar area. The interests of all these subjects are rooted in the attraction exerted by what is found to be of practical usefulness in general social terms.

The character of practical applicability, which is a common factor in all the research at Müller's Institute, has a favourable influence on the training of diploma and PhD candidates, since those graduating have better chances in finding a position if they have been prepared for working in useful, applied fields. Furthermore, the connections with external research laboratories or government institutions, developed during their research on critical problems of common interest, typically helps in starting a career relating to the subjects of their theses.

The vita of German Müller, briefly outlined above, confirms the idea that the so-called dispassionate science cannot be separated from the personality of the scientist: Science is made by individuals, and the individuals are molded by their engagement with science.

The results of German Müller's scientific career to date fill an imposing list: He is the author of two monographs, coauthor of two more books, and editor or coeditor of four other books. His publications to date include 215 titles of original contributions, and he is the editor or coeditor of a number of journals.

In recognition of his many achievements, the Bedford University in Arizona awarded him a "Doctor of Philosophy Honoris Causa". In 1986 he received the Philip Morris Research Award for the field of "Man and Environment", and in 1989 he became an Honorary Member of the Society of Economic Paleontologists and Mineralogists.

The volume presented here is accompanied by the best wishes from the contributing authors and the many friends of German Müller, wishing that many years of successful work, satisfaction, and stable health may lie ahead of him. May his inexhaustible optimism help overcome all unavoidable difficulties.

THE EDITORS

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