

Computers and Geology, 25 Years of Progress

*International Association of Mathematical Geology Studies in Mathematical Geology No. 5, edited by **John C. Davis, Ute C. Herzfeld**, published by Oxford University Press, Inc., in 1993, ISBN 0-19-508593-0, 298 pages.*

Review by Christopher G. Kendall

This book contains 25 papers which cover enormous variety of topics related to quantitative applications to earth sciences. It is intended to illustrate how the field of mathematical geology has advanced in the past 25 years. The book commemorates the 25 years since the founding of the International Association of Mathematical Geology and is dedicated to Daniel F. Merriam who has been a leading light of the IAMG since its inception in Prague.

The papers in this book cover a variety of topics. In the introduction, Vaclav Nemeč records how he finally met with Daniel Merriam in Prague after Merriam had had a series of misadventures with the Czechoslovakian authorities. The book ends with a short satirical spoof on Rudolf Eigen (sometimes alias Merriam), as an Austrian mathematician who wrote some of the first mathematical geological papers. This biographical sketch of Eigen records an early career as a professor in Göttingen, his dismissal for moral turpitude, his second career as a mountaineer and mountain guide, his involvement in chess in Paris and the Eigen opening. The paper records a reference to him by Louis Carol's Alice as the white rabbit, a metro station named after him (which has conveniently ceased to exist after Allied bombing), his purported death with a fall down a crevasse and his mysterious reappearance as a missionary with the wild Chepookha tribes in remote Siberia. These two papers set the style of the rest of the volume and express the joy that the various authors have had with their science.

I have the distinct impression that the articles written for this volume are intended to enthuse the reader with the same intense interest that the individual authors have for their subject and convey the flavor of the mathematical geology to the novice and old timers. No one could not call this book a solemn volume though it has a serious intent. Most of the papers represent academic compilation on specific topics related to mathematical geology, but the book would be equally at home on your bed side table as an item of entertainment before you go to sleep. The topics touched on are of interest to most geologists. For instance, Dr. Schwarzacher shows how autocyclicity in carbonates cannot be explained by subsidence alone. He explains that there must be other factors involved beyond subsidence or depth of water, which turn on and off the carbonate production. Other topics of the book range from the mathematics of source and trap, risk analysis of petroleum prospects, prospecting with factorial cokriging, expert systems, amplitude and phase in map and image enhancements, fractals in geosciences, uncertainty in geology, multi-variant sampling to thematic maps, and so on.

Each of these short papers is well written and often well illustrated. None of them pretends to be an extensive or exclusive scientific work on the topic at hand but to do set the stage for flavor of the subject matter that the paper deals with. The text is well referenced and for those of you who have a need for further information, these references will help you go further in the topic involved. The intended audience of the book include mathematical and historical geologists, undergraduate and graduate students who need to extend their understanding of mathematical geology, and general geologists seeking general information on mathematical geology. This book should be on your shelves if you have interest in mathematical geology and it certainly should be purchased as a reference for your local

library. I enjoyed the light hearted feel of the book and am pleased to have it on my shelves. It conveyed the enthusiasm that the authors had for their subject matter and it is unabashed in its positive attitude towards this field of geological science. The book is professionally put together and Oxford University Press should be congratulated for this great little volume.