J BOOK REVIEW

ıkes the Reins —*Solid Earth*

is looking forward to carrying
of excellence that William
ssociate editors have estab-
rm, which will formally begin
nd end December 2000. He
xcitement of discovery as he as-
scripts on their path toward
s I take on the reins as new
we of the excellent job done
ze and his staff, and it has be-
ear the debt so many of us
avis commented.
d his B.S. degree in 1965 and
4 from the Department of
rsity of Queensland, Australia.
2 years as a postdoctoral fel-
ute of Earth and Planetary Phys-
rsity of Alberta, Canada, he
postdoctoral research fellow
e University of Cambridge, Eng-
ostdoctoral appointment as a
hysicist at the University of Cali-
geles, led to attainment of a pro-
981. He served as chairman of
nt of Earth and Space Sciences
erving 4 years as its vice-chair.
he spent a sabbatical year at
sity as a Guggenheim Fellow.
r has been aimed at under-
hysics of the Earth using field
experiments and computer
nd through the development
has conducted field experi-
nea volcano, Mount Etna,
ns, on the San Andreas fault,
Grande, East African and Bai-
verall theme has been to eluci-
al processes that deform the
rise to earthquakes, rifts, and
became interested in geophys-
physics student he took a class
k Stacey called "Physics of the
was based on the then manu-
the now famous book of the

that *JGR* is the flagship journal

Solid Earth has a unique responsibility to safeguard the reputation of the field; to ensure that multiple working hypotheses are presented and the degree of confidence with which one is selected over others is made clear."

The most important function of an editor is to rigorously monitor the quality of the science appearing in *JGR*. He believes that the present size of the journal is adequate. Thus any increase in the number of papers submitted should be reflected in an increase in the quality of the science presented, rather than in the heft of the journal, Davis says. He welcomes a greater component of theory in *JGR* dealing with the Earth and its processes, and is less enthusiastic about extensive mapping projects, unless they present a new discovery that leads to a revision in how we view the Earth. He will support proposals for special issues, or collections of papers, covering highly significant late and breaking new fields, but does not support special issues dealing with geographic location solely, or that have the potential to contain too much in the way of review material.

He recognizes that the boundaries between geophysics, geochemistry, and geology are becoming more and more indistinct. Earth science has become interdisciplinary, and interdisciplinary papers will be sought with the proviso that a quantitative component is central to the conclusions. Indeed, he is a coauthor of a new introductory physical geology book, *Exploring Earth* (to be published by Prentice Hall later this year), which explores the many multidisciplinary aspects of the geosciences. His goals are to champion rigorous application of the scientific method, to speed time to publication, to optimize use of the World Wide Web, and to elevate *JGR—Solid Earth* even beyond its current preeminent position.

Davis is currently receiving manuscripts;

Applied Contaminant Transport Modeling—Theory and Practice

Chunmiao Zheng and Gordon D. Bennett, 1995, Van Nostrand Reinhold Publishers, New York, 440 pp. $79.95.

Contaminant transport modeling is an important academic and practical subject. While current research is directed toward describing multicomponent, multiphase, reactive transport modeling, current practice uses less complex tools. *Applied Contaminant Transport Modeling—Theory and Practice* discusses the current research issues, but it deals primarily with practical aspects of transport modeling. The book is intended to serve as a reference for self-study or as an advanced textbook for college courses. It is quite readable and well organized.

The two parts of the book, concepts and field applications, represent the natural division of the topic. The level of detail in each section is somewhat different but appropriate for the particular section. The concepts section provides a review of transport theory that is well within the grasp of readers who have some knowledge of calculus, hydraulics, and hydrology. The first two chapters of this section are tutorial and use the easy-to-understand style of Bennett's *Introduction to Ground-Water Hydraulics, A Programmed Text for Self-Instruction*, which was published in 1976. The later chapters explain in great detail the pitfalls of various numerical schemes, provide some useful analytical solutions, and describe the general idea of particle tracking. Although some detail on Eulerian methods is provided, the emphasis of the book is clearly on particle-tracking type calculations—almost to the exclusion of other techniques.

The applications section contains detailed modeling protocols for designing and using a contaminant transport model for typical field situations; they are based on existing computer codes. The protocols suggested and explained in the book are well thought out and make sense. Case studies and examples illustrate how to apply each idea to a modeling situation. All the chapters are thorough, especially those on calibration and uncertainty, and the writing style is straightforward and concepts are clearly explained. This section assumes that readers have fairly good computation and computer programming skills. These requirements may be daunting to some, but the authors make a great effort to explain the procedures in generic terms.

Of particular note is the first appendix, which provides one of the more lucid explanations of stream functions and their use in groundwater modeling. In fact, this appendix alone is worth the price of admission and will be of great value to students of groundwater modeling and chemical modelers who need to define flow tubes for rate-limited reactions. The authors have thoroughly reviewed the existing literature and have acknowledged these contributions in the typical fashion, but as one reads this book, one begins to realize that this effort is really a collective effort of all those whose works are referenced. The book's authors should be applauded for making this obvious to readers.

Applied Contaminant Transport Modeling—Theory and Practice covers a lot of material and might be difficult to use as a text in a one-semester course, but it will be an excellent reference. As a self-study book, it would be a challenging read, but worthwhile. Hydrology students and practicing hydrologists who need to model complex flow and transport situations with limited reaction terms would benefit from reading this book. Geochemists will find the appendix section on streamlines in two- and three-dimensions useful for defining flow lines for geochemical modeling and interpretation. All considered, this book will be a valuable text for many years. By compiling the particle tracking methods currently available into a single volume, the authors have filled an important need.—*Theodore G. Cleveland, Civil and Environmental Engineering, University of Houston, Tex.*