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land planners, journalists, educators, public information specialists, corporate scientists, and consultants rather than solely from engineering geologists.

The book is divided into three sections relating to geology, seismicity, and environmental impact. Topics presented under the heading "Geology" include: geologic responsibility, geology and legislation, geology for engineering and planning, public information and education, subsidence phenomena, mass movement phenomena, remote sensing applications, ground water geology, and special applications (such as tunneling and pipeline construction). Under the heading "Seismicity", the topics presented include faults and tectonics, earthquake probability and effects, seismic reports and seismic safety element, and seismic design criteria. The third section of the book, "Environmental Impact", discusses problems dealing with environmental impact reports, the coastal environment, resources management and development, and pollution and environmental geology.

The book should serve as a valuable and informative guide to the professions and general public concerned with future development, particularly in southern California, but also in other parts of the world. It is well written and well worth the price.

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Geothermal Energy, resources, production, stimulation. Paul Kruger and Carel Otte (Editors). Stanford Univ. Press, Stanford, Calif., 1973, 360 pp. U.S. \$17.50.

The American Nuclear Society held a special session on Geothermal Energy in Las Vegas, Nevada, in June 1972. The session was initially organized to review the progress achieved in the technology of stimulating the production of geothermal energy by explosive means. However, during the planning of the session, it was decided to take a broader view of geothermal science and technology. In total, 18 special lectures were given, and these have now been published in a volume edited by P. Kruger and C. Otte. Foreword is written by Senator Alan Bible.

The volume commences with an introductory paper by C. Otte and P. Kruger on: "The Energy Outlook", which is followed by a paper by J. B. Koenig on: "Worldwide Status of Geothermal Resources Development". A paper on: "Assessment of U.S. Geothermal Resources" is presented by R. W. Rex and D. J. Howell. The next two papers are on: "Characteristics of Geothermal Resources" by D. E. White and on: "Exploration for Geothermal Resources" by J. Combs and L. J. P. Muffler.

More technological aspects are discussed in the following three papers on: "Steam Production at The Geysers Geothermal Field" by C. F. Budd, Jr., on

"Design and Operation of The Geysers Vapor-Turbine Cycle for Geothermal Power" by Anderson. A paper on: "Water from Geothermal Development" by A. D. K. Laird which is followed by a paper on: "Geothermal Development" by R. C. Anderson.

The following six papers treat the subject of geothermal fluid production. A general review of the subject is given by A. H. Ewing. Then J. B. Koenig gives a paper on: "Recovery of Geothermal Energy by Nuclear Explosives". Moreover, H. Ewing gives a paper on: "Explosive Stimulation of Geothermal Resources". M. Smith, R. Potter, D. Brown and J. B. Koenig give a paper on: "Explosive Stimulation and Growth of Fractures in Hot Dry Rock". G. W. Leonard which is followed by a paper on: "Explosive Stimulation of Geothermal Resources" by G. M. Sarin.

The two last papers are on: "Coal and Geothermal Power Plants" by O. F. Anderson and "Geothermal Resources Research" by J. C. Denton.

As indicated by the above list of papers, this is a valuable material in this symposium. It is to realize that the papers were given at a time when the geothermal industry has changed considerably since the time the papers presented are therefore outdated and do not affect the value of the material as a whole.

The present reviewer finds that, although the resource characteristics and by methods are excellent and informative, anyone interested in these aspects should read the papers on the stimulation methods. The most novel and interesting part of the book is the stimulation methods. These techniques will be of great interest to anyone interested in the geothermal industry.

Comparing this publication with the volume published by UNESCO, Paris 1973, it is evident that the coverage of the present symposium is of a more recent nature. On the other hand, many of the papers in the UNESCO volume are found here. The reviewer is interested in geothermal energy and will add this volume to his library.

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"Design and Operation of The Geysers Power Plant" by J. P. Finney and on:
"The Vapor-Turbine Cycle for Geothermal Power Generation" by J. H.
Anderson. A paper on: "Water from Geothermal Resources" is presented by
A. D. K. Laird which is followed by a paper on: "Environmental Impact of
Geothermal Development" by R. G. Bowen.

The following six papers treat the subject of stimulation of geothermal
fluid production. A general review on: "Stimulation of Geothermal Systems"
is given by A. H. Ewing. Then J. B. Burnham and D. E. Stewart present a
paper on: "Recovery of Geothermal Energy from Hot, Dry Rock with
Nuclear Explosives". Moreover, H. J. Ramey, Jr., P. Kruger and R. Rahgavan
give a paper on: "Explosive Stimulation of Hydrothermal Reservoirs" and
M. Smith, R. Potter, D. Brown and R. L. Aamont present a paper on: "Induc-
tion and Growth of Fractures in Hot Rock". Finally, a paper on: "Chemical
Explosive Stimulation of Geothermal Wells" is given by C. F. Austin and
G. W. Leonard which is followed by a paper on: "Environmental Aspects of
Nuclear Stimulation" by G. M. Sandquist and G. A. Whan.

The two last papers are on: "Corrosion and Scaling in Nuclear-Stimulated
Geothermal Power Plants" by O. H. Krikorian and a paper on: "Geothermal
Resources Research" by J. C. Denton and D. D. Dunlop.

As indicated by the above list of papers, there is a considerable amount of
valuable material in this symposium volume. Obviously, the reader will have
to realize that the papers were given in June 1972. The global energy situa-
tion has changed considerably since, and a few of the results and statements
presented are therefore outdated by now. However, this does not seriously
affect the value of the material as a whole.

The present reviewer finds that, in particular, the papers by D. E. White on
the resource characteristics and by J. Combs and L. J. P. Muffler on exploration
methods are excellent and informative reviews which will be of great value to
anyone interested in these aspects of the geothermal sciences. Moreover, the
papers on the stimulation methods and techniques are in many ways the
most novel and interesting part of this symposium volume. This topic has not
received much attention in the literature although it is quite obvious that
these techniques will be of great importance in the future.

Comparing this publication with the recent book on: "Geothermal Energy"
published by UNESCO, Paris 1973 [see *Geoexploration*, 11(1973), p.153],
the coverage of the present symposium volume is somewhat less general in
nature. On the other hand, many specific aspects which are not discussed in
the UNESCO volume are found here. There is little doubt that everyone
interested in geothermal energy will find this symposium volume a valuable
addition to his library.

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