

a useful contribution to engineering geology, civil as well as military.
It comprises two volumes: I, Main Report and Appendices; II, Definitive
Criteria, Photographs and Practical Data.

B. AISENSTEIN (Jerusalem)

Limit Analysis and Soil Plasticity. W. F. Chen. Elsevier, Amsterdam, 1975,
638 pp., Dfl. 240.00.

In theoretical soil and rock mechanics limit analyses play an important role.
Since many recent papers on soil plasticity are not readily accessible, the first
comprehensive book on this subject is therefore timely.

The book begins with a critical review of the assumption and theorems used
in limit analysis. Modern techniques using upper-bound and lower-bound
methods are illustrated by many examples. The chapters on the bearing
capacity and progressive failure of footings, active and passive earth pressures
and stability of slopes are particularly noteworthy. The interesting comparisons
between various solutions for homogeneous, non-homogeneous and
anisotropic soils and the many useful tables and charts of bearing capacity
and stability factors and earth pressure coefficients facilitate comparisons
and ready solutions of many problems of practical interest.

The last part of the book treats recent advances in the bearing capacity of
concrete blocks or rock, the double punch test for tensile strength of such
materials, including the Author's original investigations, and a chapter on
modern developments in soil plasticity. This clearly written and well
illustrated book can be warmly recommended to students, research workers
and practising engineers in soil and rock mechanics.

G. G. MEYERHOF (Halifax, N.S.)

Geothermal Energy. Energy Technology Review No. 4. Edward R. Berman.
Noyes Data Corporation, Park Ridge, N.J./London, 1975, 336 pp.,
U.S. \$24.00.

The greatly enhanced interest in geothermal energy during the past two
decades has prompted the writing and publication of a very considerable
number of papers, reports and reviews on this subject by both government
and private institutions. The flood of literature has been particularly
voluminous in the United States. It is needless to stress that these publications
span a very wide quality range.

Geothermal Energy by E. R. Berman has obviously been written in order
to provide a review of some of the present literature on the subject with a
heavy emphasis on material published by various federal institutions in the
United States. The work is not an original contribution to the field.

The first chapter of the book is on: Geothermal Energy as an Alternative
Resource. A brief description is given of the concept of geothermal energy,

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availability of resources, energy estimates, size limitations, environmental impact and exploration techniques. This is followed by a list and description of research and development work now being carried out by various federal institutions in the U.S. The chapter is concluded by a survey of major geothermal installations in the world.

The second chapter on: Soviet Geothermal Research and Development, gives a useful review of activities in the Soviet Union. The third chapter on: Dry Geothermal Reservoirs, discusses the technology envisioned and proposed for the extraction of terrestrial heat from dry rock at high temperatures by deep drilling and forced circulation of water through artificial openings in the rock. The work of the Los Alamos Scientific Laboratory group in Los Alamos, New Mexico, is described in some detail. The fourth chapter describes the Plowshare Concept where nuclear explosives are to be used for the fracturing of hot dry rock. The fifth chapter on: Three Experimental Studies, discusses a number of physical and chemical problems such as heat transfer and scale formation in formations and equipment.

The geothermal resources of California are described in the sixth chapter which is followed by a chapter on: Methods of Energy Recovery from Hot Brine Deposits. The very considerable problems involved in the extraction of geothermal energy from the reservoirs in the Imperial Valley, California, are discussed in some detail in this chapter. The seventh chapter on: Feasibility Studies for Three Areas of the United States, discusses the development of geopressured reservoirs in Texas and of some selected areas in California and Idaho. The final chapter of the book describes proposed research projects in the field of resource exploration and assessment, reservoir development, utilization technology, environmental effects and institutional aspects of geothermal energy projects.

Obviously, the book touches on a wide variety of topics of interest with regard to the development and utilization of geothermal resources. The presentation, however, suffers from important defects. Leaning very heavily on the background material, the work gives neither a critical nor a constructive review of the subject. Much more emphasis is placed on technology than on geology, resource physics and geophysical exploration. This publication will be useful mainly as a handbook on geothermal energy research projects now in progress under the auspices of various federal institutions in the U.S.

GUNNAR BODVARSSON (Corvallis, Oreg.)

Production and Transportation of Oil and Gas. A. P. Szilas. Elsevier, Amsterdam, 1975, 630 pp., Dfl. 175.00.

There has been a need for a book on oil and gas production, gathering, and transportation facilities from an economic and technical viewpoint. This book presents much information on (1) the flow of fluids through pipelines, (2) various considerations for mechanically lifting oil to the surface, (3) facilities for the separation of oil, gas and water, (4) storage of gas and oil, and (5) the