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Book Reviews

Physical Volcanology. L. Civetta, P. Gasparini, G. Luongo and A. Rapolla (Eds.). 186 illustrations, 22 tables, 333 pages. Developments in Solid Earth Geophysics, 6. ISBN 0-444-41141-0) DM 89.50. Amsterdam-Oxford-New York: Elsevier 1974

The book contains a collection of 14 different articles. It would be too lengthy to give an individual review of each chapter, so only some general impressions of the book are given. The reader who is familiar with volcanological literature will in a first turning over the pages recognize a good few figures which are certainly well-known to him. If he has read the preface before, he possibly will be somewhat disappointed, for he was promised a "collection of fourteen original papers". But the reader was also told in the preface that the book is "certainly not a text book", and now he may begin to wonder for whom the book was written? But notwithstanding this criticism it must be added that for the earth scientist not primarily working in volcanology it might be difficult to get hold of the original publications or it will save him much searching through the journals. So the book may be regarded as a reference book. The following subjects are treated by the authors:

Minakami, T.: Seismology of volcanoes in Japan.
Kubotera, A.: Volcanic tremors at Aso volcano.
Dibble, R.R.: Volcanic seismology and accompanying activity of Ruapehu volcano, New Zealand.
Kinoshita, W.T., Swanson, D.A., Jackson, D.B.: The measurement of crustal deformation related to volcanic activity at Kilauea volcano, Hawaii.
Cassinis, R., Lechi, G.M.: The use of infrared radiometry in geothermal areas.
Keller, G.V., Rapolla, A.: Electrical prospecting methods in volcanic and geothermal environments.
Yokoyama, I.: Geomagnetic and gravity anomalies in volcanic areas.
Clark, H.C.: Remanent magnetism of volcanic rocks.
Sigvaldason, G.E.: Chemical composition of volcanic gases.
Ishikawa, H.: Distribution of rare earths in volcanic rocks.
Machado, F.: The search for magmatic reservoirs.
Gorshkov, G.S.: Island arcs and oceanic ridges: volcanism and geophysical fields.
Ollier, C.D.: Phreatic eruptions and maars.
Minakami, T.: Prediction of volcanic eruptions.

Unfortunately no more than ten pages are devoted to geodynamical models of the origin of volcanism. On the other hand, two chapters deal with chemical composition of volcanic gases and distribution of rare earths in volcanic rocks. Certainly, volcanism can only be studied in a combined effort of all geosciences. But for a book with the title "Physical Volcanology" a comprehensive treatment of the physical aspects of volcanology should be preferred before accepting articles from related fields.

These criticism do not, however, detract from the value which this book has. It is well produced and most of the articles contain up-to-date information. Thus, again referring to the book's perface, one can readily join the editor's opinion "that this book finds its justification in its attempt to fill, at least in part, the lack of books devoted to the geophysical aspects of volcanology".

R. Schick, Stuttgart

Earthquake Prediction and Rock Mechanics. Max Wyss (Ed.). In: Contributions to Current Research in Geophysics. (CCRG), Vol. 1; Special issue of "Pure and Applied Geophysics" (Pageoph), Vol. 113, No. 1/2, 330 pages. Basel-Stuttgart: Birkhäuser 1975

With a volume on "Earthquake Prediction and Rock Mechanics" Birkhäuser Publishing Company starts a new series titled "Contributions to Current Research in Geophysics". To select this topic for the first volume of the series both Pageoph co-editor Max Wyss as well as the publisher were certainly encouraged by the publicity and the rapid development of earthquake research in the U.S., the Soviet Union, Japan and China and the output of the 1974 Penrose Conference on Fracture Mechanics and Earthquake Source Mechanisms, which had the purpose to bring together scientists from rock mechanics and seismology for maximum communication on the present state of art and future trends in both fields. Accordingly most of the original papers presented at this conference by American, Russian and Japanese experts are included in this volume. The 28 papers are written by researchers working in different disciplines in geophysics, and cover (a) laboratory observations related to premonitory earthquake phenomena (dilatancy related changes in elastic wave velocity, magnetisation and electrical resistivity) and frictional sliding characteristics (acoustic emission studies, stable sliding – stick slip transition), (b) theoretical modeling of dilatancy and fracture processes in the earth and fracture mechanics of brittle rock, and (c) in-situ investigations of aseismic fault behaviour, earthquake precursors (tilt, temporal velocity changes, premonitory strain, resistivity changes, deep borehole observations) and in-situ measurements of the crustal stress field by hydraulic fracturing.

Regarding this wide range of topics a formal division of the book into several chapters, introductory review articles to each chapter and an editorial summary would have been of great help for readers not directly acquainted with the field of earthquake research. Nevertheless the collection of papers presents a clear picture on the state of art in this field: Despite a great number of exciting and promising discoveries during the last decade earthquake prediction and the related problems of understanding the earthquake mechanisms or even earthquake control are not yet solved.

F. Rummel, Bochum