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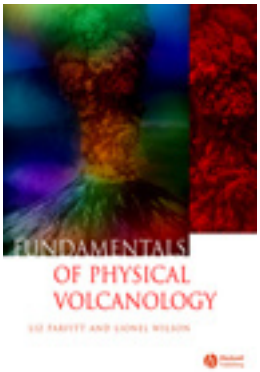

Fundamentals of Physical Volcanology, Elisabeth A. Parfitt and Lionel Wilson, 2008, Blackwell Publishing, Malden, Massachusetts, Oxford, and Carlton, Victoria, xxi + 230 p., ISBN 978-63205443-5, USD 69.95.

In the Acknowledgments section of this very interesting book, Lionel Wilson recounts how he, as a physicist interested in interpreting surface features of the Moon and planets, met with the late G.P.L. Walker to learn what was known of physical volcanology. At that meeting, some four decades ago, he learned that virtually nothing was known in any rigorous or even descriptive sense. Since then, Dr. Wilson has been a visible leader in the revolutionary growth in rigorous understanding of volcanic processes. While much remains to be done, Elisabeth Parfitt, Wilson's colleague and frequent coauthor, and Wilson himself provide an excellent but brief summary of the state of the art in this slender book.

The book combines nonquantitative explanations of the phenomena with enough equations to show how the variables interact. The level is that of an advanced undergraduate or beginning graduate student who is willing to avoid equation skipping while reading. The book will also serve as a basis for more advanced specialists, who might come from a less focused background, to understand how eruptive processes work and how to interpret certain features of the deposits. Individuals can then refer to the published literature to follow up on their own interests or needs. The book provides a list of further reading with each chapter; however, unfortunately it does not include individual citations of key ideas and observations, nor does it offer a comprehensive bibliography.

The book is organized in a way that follows the volcanic process. After a chapter on volcanic systems, it begins with several chapters concerning magma generation, migration, and storage in subcrustal magma chambers. It then deals with mechanisms and products of eruption. These first segments include results of recent investigations and simple equations that describe the situation, illustrated with observations by the authors and others on recent eruptions. The last third of the book concentrates on such broader features as scales and frequency of eruptions, hazards, volcanoes and climate, and volcanism on other planets. The book also includes a glossary of relevant terms. Each chapter includes a summary and a list of questions, with answers provided at the end the book.

Introduction to Physical Volcanology is not a comprehensive book about volcanology. It avoids aspects of geochemistry, petrology, and stratigraphic associations that are significant components of the field. The chapters about volcanic hazards and the influence of volcanoes on climate are more cursory and not marked by the wholesome combination of rigor and explanation that mark the rest of the book. The chapter about volcanism on the Moon and other planets uses arguments about the physical relationships among gravity, density distribution, magma generation rates, and planetary atmospheres to understand volcanism on those bodies. While the book would not serve as the sole text for a general volcanology course, with additional materials and fieldwork, it would be a good component of required readings so that students and instructors can approach the more rigorous and demanding original literature better, which is generally difficult for the unsophisticated to evaluate. It is also reasonably priced at USD 69.95.

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