BOOK REVIEW

MOUNT PELÉE, MARTINIQUE: A STUDY OF AN ACTIVE ISLAND-ARC VOLCANO. By A.L. Smith and M.J. Roobol. Geological Society of America, Memoir 175, Boulder, Colorado. 1991. 114 pages with three pocket plates. $32.50.

This is a thorough treatment of what is known about Mount Pelée, covering its entire activity. It represents material from an extensive bibliography and much data from the long-term efforts of the authors themselves.

Mount Pelée's notoriety is ensured as a result of its deadly 1902 eruption, which is perhaps the most dramatic example of the hazards of pyroclastic flows. We should be aware that there are scores of similar volcanoes, which could at any moment produce similarly deadly eruptions. It is only that the most recent activity at Pelée is historic that has called attention to it. The spectacular documentation of *nuées ardentes* by LaCroix (1904) and Perret (1937) were revelations to geologists, and those observations provide a special focus and foundation for the Smith and Roobol memoir. Another important reason for interest in this volume is the special considerations of volcanic hazards on islands, where much of the volcanic edifice may be under the sea and zones of intense hazard extend all the way to the densely populated coasts.

The book contains mainly three kinds of information about Mount Pelée: (1) the description and interpretation of its volcanic deposits, (2) the stratigraphic sequence and chronology of the volcano, and (3) the chemical and isotopic composition of its erupted products. One of the strengths of the book is the scope, which spans the entire history of Mount Pelée. The volcano is made up almost entirely of volcanoclastic rocks—mostly the products of an eruptive style that alternates between plinian and peléean. A large number of ^{14}C dates reported in this book help delineate the chronology of these alternations. The composition of peléean rocks range from basaltic andesite to dacite, but there is no correlation between composition and eruptive type. If we are ever to understand how volcanoes work, we clearly need to look at more volcanoes in a holistic way, as is done in this book.

Many questions are left for the reader to ponder. What is the subsurface plumbing of Mount Pelée? A two magma-chamber model is shown to be acceptable, but detailed petrologic work is not attempted here. Why does the volcano alternate in eruptive style? The role of volatiles is mentioned, but more work will be needed to verify this.

The authors should be lauded for an important new contribution to volcanology. To me, the highlight of the paper is the integration of many observations on the historic peléean eruptions with peléean deposits. Although there has been much progress in interpretation of volcanoclastic deposits, we are still on a steep learning curve. Smith and Roobol have integrated their experience well with other current literature. The price of the book is moderate, and it includes many good photographs, a colored map, and compiled stratigraphic charts. I recommend it as an essential source to volcanologists and to people interested in volcanoclastic rocks and volcanic hazards.

William I. Rose
Michigan Technological University

0003–004X/95/1112–1334$02.00