

The Pu‘u ‘Ō‘ō-Kūpaianaha Eruption of Kīlauea Volcano, Hawai‘i: The First 20 Years

Edited by Christina Heliker, Donald A. Swanson, and Taeko Jane Takahashi

The ongoing Pu‘u ‘Ō‘ō-Kūpaianaha eruption, which began in January 1983, is the longest and largest rift-zone eruption of Kīlauea Volcano in more than 600 years.

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Preface

The Pu‘u ‘Ō‘ō-Kūpaianaha eruption started on January 3, 1983. The ensuing 20-year period of nearly continuous eruption is the longest at Kīlauea Volcano since the famous lava-lake activity of the 19th century. No rift-zone eruption in more than 600 years even comes close to matching the duration and volume of activity of these past two decades.

Fortunately, such a landmark event came during a period of remarkable technological advancements in volcano monitoring. When the eruption began, the Global Positioning System (GPS) and the Geographic Information System (GIS) were but glimmers on the horizon, broadband seismology was in its infancy, and the correlation spectrometer (COSPEC), used to measure SO₂ flux, was still very young. Now, all of these techniques are employed on a daily basis to track the ongoing eruption and construct models about its behavior.

The 12 chapters in this volume, written by present or past Hawaiian Volcano Observatory staff members and close collaborators, celebrate the growth of understanding that has resulted from research during the past 20 years of Kīlauea’s eruption. The chapters range widely in emphasis, subject matter, and scope, but all present new concepts or important modifications of previous ideas—in some cases, ideas long held and cherished.

This volume complements Professional Paper 1463, which includes a discussion of the first 1½ years of the eruption, and the first chapter includes a bibliography that augments the material presented in both professional papers.

Readers will note that many Hawaiian words are spelled differently in the two Professional Papers. Improved technology now allows the full complement of diacritical marks to be used, both to satisfy the new standards of the Board on Geographic Names and to honor the Hawaiian language after more than a century of neglect. Our principal sources are *The Hawaiian Dictionary* (by M.K. Pukui and S.H. Elbert, ©1986) and *Place Names of Hawaii* (by M.K. Pukui, S.H. Elbert, and E.H. Mookini, 2nd edition, ©1974), published by the University of Hawai‘i Press. We depart from both the Board of Geographic Names and the *Place Names* dictionary in using the spelling “Halemaumau” for the largest pit crater in Kīlauea’s caldera, because local Hawaiian groups use two pronunciations. This spelling, without diacritical marks, permits both pronunciations.

Many persons have contributed to this work. We would like to acknowledge those whose contributions have not been noted elsewhere but without whose assistance and support this volume would have taken much longer to complete:

Jenda Johnson worked through the ins and outs of text, tables, and figures to seamlessly lay out each paper with a discerning eye.

Ed Bonsey, Lee Ann Chattey, Susan Dieterich, and especially Deb Sheppard, HVO library volunteers, researched all the references in these papers to produce accurate citations, including the many variations on the spelling of “Pu‘u ‘Ō‘ō.”

The librarians at the U.S. Geological Survey library at Menlo Park, Calif., provided reference and citation support. Without their assistance, we could not have properly edited the References Cited sections. Finally, Peter Stauffer, George Havach, and Susan Mayfield of the Western Publications Group in Menlo Park put up with our contretemps and numerous queries and guided the volume to completion.

The ongoing Kīlauea eruption has long since evolved from a scientific curiosity into a part of daily life in Hawai‘i. Though terribly destructive during its first eight years, it has also provided economic opportunities, visceral excitement, and artistic inspiration for the local community. In this light, we thought it appropriate to introduce the volume with a new poem, a tale about how Pu‘u ‘Ō‘ō acquired its name.

The editors

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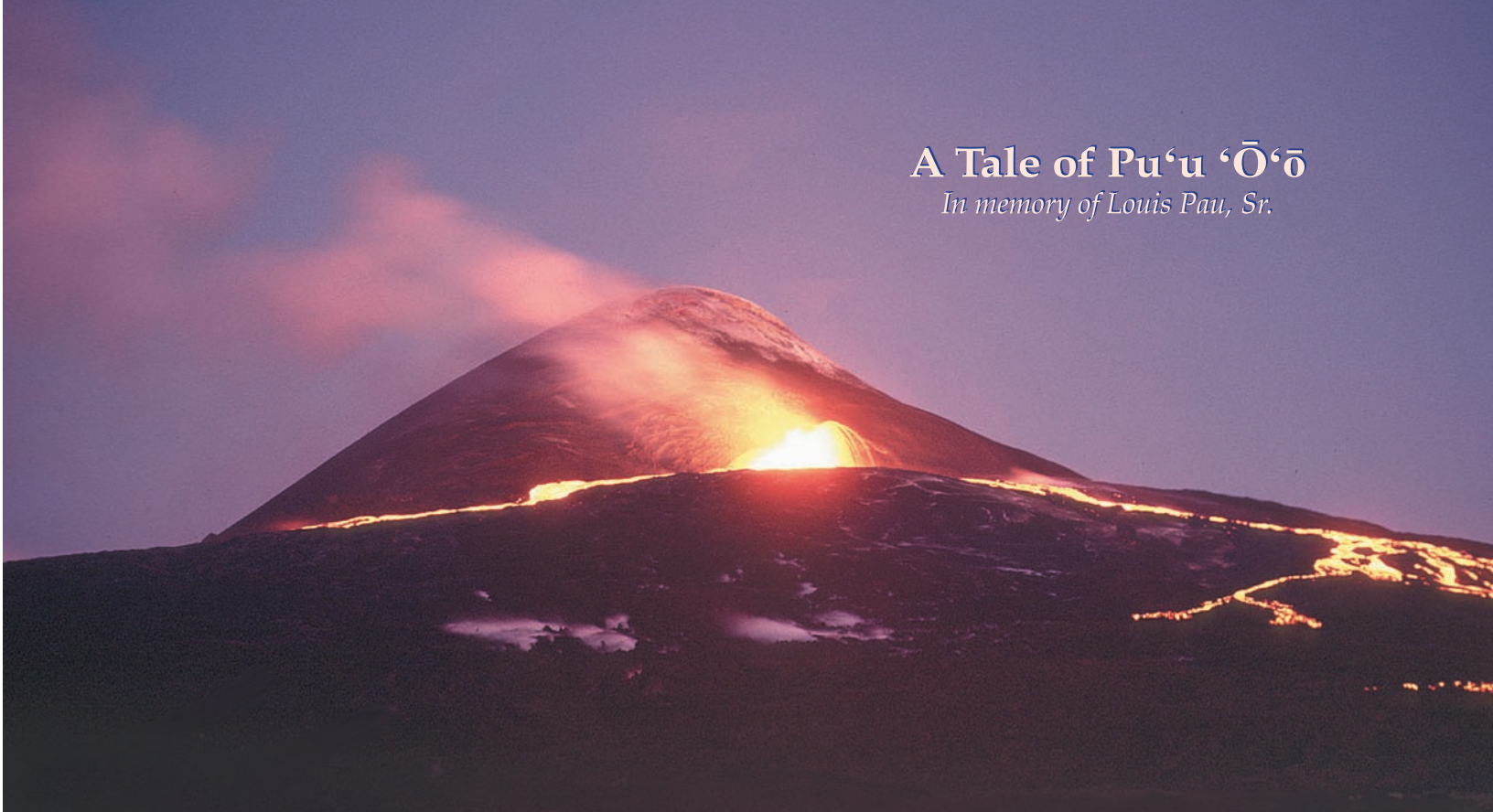
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Low fountains erupt from Pu'u 'Ō'ō, an hour after the start of eruptive episode 47.
View southwestward; photograph taken by G.E. Ulrich at 0522 H.s.t., on June 26, 1986.

A Tale of Pu‘u ‘Ō‘ō

In memory of Louis Pau, Sr.



It started right on cue, fuming and spattering from vents uprift and down before merging into one, shooting molten rock high into the night. The puka formed neatly on “o” on the map’s “Flow of 1965,” so we called it “Pu‘u O.” It teased us, intrigued us, enduring beyond reason; it assumed a Hawaiian meaning. Pele the goddess pierced and thrust, spilling lava into Royal Gardens subdivision.

To take on the mana of naming the new cone, we deferred to the elders of Kalapana to make it their own. Their stories grew long — as long as the night. “Oh-oh, it’s getting late — we’d better stop talking and give it a name,” Louis Pau said. Thus it went from ‘Ō to ‘Ō‘ō, the stick for piercing to the one for digging. Transcending nomenclature, Pele, creator and destroyer, dug silently and unseen. . . .

A new mystery, Kūpaianaha, was revealed. Its flows blanketed the land and (under cover) slid down to the sea. Who could have known so much lava would flow so far, so long? “She’s winding down,” the scientist said. But Pele, indifferent to theory, ate up the land. Inland she turned at Hākuma, covering the history of Kalapana, and poured her heart out into the bay. The ocean boiled, and birds feasted on steamed seafood washed upon a dark new shore.

A black cat crossed a molten sea, burned its paws and earned the name “Raku.” The Star of the Sea Church — moved at dawn, the storied landmarks — gone. Queen’s Bath, Kaimū, Kamoamoā and the heiau Waha‘ula (whose red mouth Pele filled), Louis’ homestead and Louis, too, are pau. “You can talk to the stones,” he said, “but watch out if they start talking back to you.” They do, Louis: we call it “geology.” Pele, glowing, moved on.