Memorial to Gordon Andrew Macdonald, 1911-1978

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Gordon A. Macdonald was a gentleman, and carried the part with joy and dignity. As a neighbor in the community, or as a casual acquaintance, he upheld his share of a conversation with serious comments or delightful anecdotes. In professional discourses, or even arguments, Mac made his points without resort to table-pounding, or shouting, or barbed remarks. I know that I express a consensus when I say «Thank you, Mac, for all that you have done to improve our knowledge of volcanoes, of earthquakes, of tsunami, of the hazards to mankind of all three, and perhaps best of all a little bit about how to ameliorate the hazards».

OF HIS LIFE AND WORKS

Gordon Andrew Macdonald was born in Boston. His Scots father was an immigrant from the Skye-Mull area; his mother was a descendant of a long-time Lexington family.

In 1926, his widowed mother moved to California with her son and daughter. Gordon entered the University of California at Los Angeles in 1928. He majored in history and music, but took one course in geology to fulfill the science requirement. He was so impressed by this «earth history» that he changed his major to geology. For graduate work, he transferred to Berkeley, and there came under the spell of Howell Williams, who had come to Berkeley on a British Commonwealth Fellowship. Mac won a teaching assistantship and a wonderful wife; a student in one of his classes, Ruth Binkley, and Mac were married as soon as Mac was awarded his doctorate in 1938.

He was lucky to get work with Shell Oil in Taft, but he also took the U.S. Civil Service Examination to get on the register for employment with the U.S. Geological Survey. This soon paid dividends, and the Macdonalds moved, in the summer of 1939, to the Territory of Hawaii for Mac to join the U.S.G.S. in a project mapping the geology and studying the groundwater resources of the Islands. Harold T. Stearns was the project leader, and Mac helped with the mapping of some of the islands. In addition, Mac made detailed studies of the composition and physical characteristics of all of the lavas that form the bulk of the islands, and published a wealth of excellent descriptions. While headquartered in Honolulu he became acquainted with Dr. Thomas A. Jaggar, who had accepted appointment as Emeritus Professor at the University of Hawaii when age forced his retirement from the Civil Service position at the Volcano Observatory.

Mac had opportunity to study the activity of a major volcano during the summit eruption of Mauna Loa in 1940, and again in 1942 at the flank eruption from the northeast rift of Mauna Loa that turned toward Hilo for a few miles before it stopped.

In 1946, a tsunami from an Aleutian Islands earthquake tragically drowned several primary school children at Laupahoehoe on the northeast coast of Hawaii and caused considerable property damage elsewhere. Mac joined with two others, Francis Shepard, on sabbatical leave from Scripps Institution, and Doak Cox, geologist for the Hawaiian Sugar Planters' Association, in a detailed study of the impact of the tsunami on the island's
welfare and economy. From Shepard, Mac learned of a teaching position at University of Southern California; he applied for it and was accepted. He and his family moved to Los Angeles in the summer of 1947.

At the Hawaiian Volcano Observatory, Ruy Finch was in charge, but his assistant was being transferred to the Denver subheadquarters of the U.S. Geological Survey, Ruy's health was not good, and Mauna Loa appeared to be restless. Mac accepted an urgent request to come to the Volcano Observatory and assist Finch. He obtained his release from the faculty position at U.S.C. and returned with his family to Hawaii in the fall of 1948. On January 6, 1949, Mauna Loa erupted in the summit caldera, beginning a six-year period of serious activity of both Mauna Loa and Kilauea. Finch retired and Mac was placed in charge of the Volcano Observatory in January 1951. Mac's staff was strengthened in 1953 by seismologist Jerry Eaton, who had earned his Ph.D. from U.C. under Perry Beyerly.

During the 1955 eruptions from Kilauea's east rift zone amidst fields of sugar cane and homes of growers and workers, Mac was constantly alert to every change of movement of the source fountains and the ensuing flows of lava. With complete cooperation from the sugar plantation staffs, the local police forces, and Civil Defense officials, Mac tried many courses of action that might impede the progress and divert the course of movement of the lava flows, or even stop their advance.

Sandwiched in with this strenuous field activity and the publishing of detailed accounts of all activities, Mac found time to broaden his experience. In the summer of 1953 he attended the meetings of the Pacific Science Congress in Manila as Section leader invited speaker. The following winter, at the request of the Philippine Government, he returned to evaluate with Arturo Alcaraz the hazards of imminent eruptions from Hibokhibok.

At home in Hawaii he expanded contacts with local authorities and civic groups who were, or could be, interested in means of protecting communities against volcanic activity. He became a strong advocate of Jaggar's previous planning to construct diversion barriers to protect Hilo from east rift flows of Mauna Loa. The last previous threat was the flow in 1942.

The increase in volcanic activity and the volume of excellent publications by Mac and his associates were catching the attention of the «government bureaucrats» in Washington, in Denver, and in Menlo Park. This increased interest resulted in more appropriations. The Hawaiian Volcano Observatory needed specialists in geochemistry and geophysics as well as in seismology. Jack Murata, a geochemist from Menlo Park, was assigned to Hawaiian Volcano Observatory. About the same time, Mac was transferred to headquarters in Denver for a chance to become acquainted personally with the Survey's people and facilities, and functions. Mac and his family moved to Denver, and as his major field project he chose to study the volcanics of the Cascade Range in the vicinity of Mount Lassen. He liked the field project, but he wanted above all else to live in Hawaii, so in 1957 he left the Geological Survey and returned to accept appointment to the University of Hawaii.

He offered a course on geology, petrology and volcanology at the University, and devoted half of his time and responsibility to the Hawaii Institute of Geophysics, which was established in 1957 as a research arm of the University of Hawaii. His classes were extremely popular, and his open interest in individuals and his wise counseling made him one of the most popular professors. His research in many areas of volcanism as well as the Cascades Range of North America and the Hawaiian Islands soon led to worldwide recognition. His bibliography suggests that he was much sought-after for special investigations and to give advice on coping with hazards to human life and property from tsunamis, earthquakes, and volcanic activity.

Mac was a Fellow of the Geological Society of America, the American Mineralogical Society, the American Association for the Advancement of Science, and the