

Memorial to Aaron C. Waters

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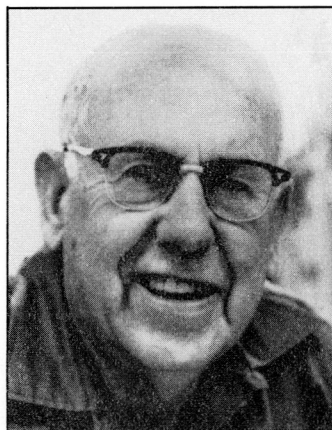
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Aaron Clement Waters died in Tacoma, Washington, on May 18, 1991, at the age of 86, bringing to a close a brilliant career as petrologist, structural geologist, and educator. Former students and friends throughout the world will long remember his deep insights into the ways of volcanoes and granite batholiths, his forthright comments on the state of geology and geological education, and above all, his uncanny knack for training students to do the very best of which they are capable.

The son of pioneer parents who had homesteaded in central Washington, Aaron was born and spent his early life in Waterville, a farming community located in the shadow of the Cascade Range on the lava flows of the Columbia River basalt. Volcanoes and plateau basalt were so much a part of his childhood that his choice of geology as a major at the University of Washington is hardly surprising—although English literature for a time was a strong competitor. He received his bachelor's degree cum laude in 1926, and a master's degree a year later. Two published papers were a product of this early work, the first of a long succession on the petrology of igneous rocks in Washington and Oregon. For a different view of igneous processes he chose for his Ph.D. work Yale, where he came under the spell of Adolph Knopf. The degree, granted in 1930, was followed by a few months as junior geologist with the U.S. Geological Survey, the first of many periods of employment with this organization.

But the academic world had a stronger attraction, and Aaron headed west and spent 21 years on the faculty of the department of geology at Stanford. There he was part of a small but distinguished group, and his twin talents for attracting able students and for departmental organization quickly became evident. Because the faculty was small, he was asked to teach structure and geomorphology as well as petrology, and frequently to handle the elementary course. His advanced courses quickly became known among graduate students as tough but rewarding for their cultivation of individual initiative rather than rote learning, and Geology I attracted an enthusiastic following of students from all parts of the university. Summers took Aaron back to the field in the Pacific Northwest, and students lucky enough to accompany him gained valuable experience from his insistence on careful observation and the development of their own hypotheses to explain them.

A Guggenheim Fellowship in 1937–1938 provided the opportunity for a look at igneous and metamorphic rocks in Europe. First came an extended visit to the Tertiary volcanic centers of the British Isles, then many months in Scandinavia. In his teaching thereafter, Mull, Skye, and Ardnachan played a prominent role, as did the petrogenetic views of Barth, Sederholm, and Eskola.



With World War II came long absences from Stanford, as Aaron devoted his time to service in the Geological Survey, exploring for minerals that were in short supply. Mercury deposits were the main focus of his work, first in Arkansas and then in many places in the western states, but before the war was over he was called on to look for other metals as well. It was a valuable experience, giving him contacts with different kinds of geology and different parts of the country and an acquaintance with many geologists in all fields. The experience served him well in several aspects of his career: when he returned to Stanford after the war and helped in reorganizing a greatly expanded department; when he spent eleven years (1952–1963) at Johns Hopkins; then as chairman of the department at the University of California at Santa Barbara (1963–1967); and finally as the organizer and builder of a new department at UC Santa Cruz (1967–1972). Along with these academic duties he found time for additional work with the Survey and other government agencies. Particularly notable was his assistance with the training of astronauts for moon landings, training for which his long experience with volcanic rocks gave him special expertise.

With formal retirement in 1972 began one of the most active and productive periods of his life. It included part-time teaching at Santa Cruz; visiting professorships at Oregon State, the University of Texas at El Paso, and California State University at Los Angeles; and research consultancies for private and governmental agencies, including the Los Alamos National Laboratory.

Aaron's interests in geology were manifold, but his special loves were igneous petrology, volcanology, and the general geology of the Pacific Northwest. His many papers on the Columbia River lavas have deepened our understanding of plateau basalts, and his studies of Cascade volcanoes have provided insight into details of explosive eruptions. Especially notable are papers on the determination of flow directions in volcanic rocks and on the interpretation of bedding in base surge deposits. In granitic rocks he looked particularly at details of structure, but took no clear position on the granitization controversy that so divided the geological community in his early life. Exposed first to the transformist views of Goodspeed at Seattle, then to the more orthodox magmatic ideas of Knopf at New Haven, he remained noncommitted—to the great annoyance of some students, who expected their teacher to give them “the real answer.”

In a lifetime of major achievements, perhaps Aaron's greatest contributions were in education, especially his role in developing outstanding programs in the earth sciences at four major universities. He took particular pride in the professional accomplishments of the graduate students he supervised, a group that includes those who have since become chief geologists or exploration managers of industrial corporations, leading geologists in the national geological surveys of the U.S. and other countries (including a former Director of the Geological Survey of Canada), more than two dozen distinguished faculty members at universities in the United States and abroad, and three geologists who were elected to the National Academy of Sciences.

Aaron was co-author (with James Gilluly and A. O. Woodford) of the textbook *Principles of Geology*, which appeared first in 1951, went through four editions, and was the major introductory text of the 1950s and 1960s. A pungently written and beautifully illustrated book, it helped to attract numerous students to the study of geology and to careers in the geological sciences.

Aaron's honors include a Guggenheim Fellowship and election to the National Academy of Sciences in 1964 and to the American Academy of Arts and Sciences in 1966. In 1982 the Geological Society of America chose him to receive its highest award, the Penrose Medal.

In 1940 Aaron married Elizabeth von Hoene, then a student at Mills College and, like him, a native of the Pacific Northwest. For the next 51 years she served as a warm hostess, camp cook, and mother confessor to generations of students and colleagues. In 1983 Aaron and Elizabeth returned to their roots by settling in Tacoma, where Aaron continued to write and to pursue his avocation as a gardener.

Those who knew and worked with Aaron remember him as forthright and vigorous, a person of enormous vitality and a pointed sense of humor, the latter often marked by a characteristic arched eyebrow. Behind what to some seemed a gruff persona, he was a kind individual, enormously supportive and helpful to students and colleagues. In turn, he expected the best from them in terms of effort and accomplishment. Woe to the individual who turned in slipshod work! Such an event could make Aaron erupt in frustration, leading some students to think that his choice of volcanology as a specialty was entirely appropriate. But students always knew that Aaron had faith in them, often more faith than they had in themselves. Generations of his students have come to recognize that both Aaron and Elizabeth were as devoted to their futures as to the classwork at hand.

In addition to Elizabeth, Aaron is survived by two daughters, Susan Hansmann of Tacoma and Sharon Catron of California, and by three grandchildren. Aaron requested that no services be held.

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