



## IN MEMORIAM

Raymond Marsh Keefer  
Professor Emeritus of Chemistry  
UC Davis  
1913 – 2009

Raymond Marsh Keefer, professor emeritus of chemistry at the University of California, Davis, died of heart failure in Davis, California, on February 6, 2009, at age 95. Professor Keefer was a distinguished scientist who influenced the growth of the Davis campus as a pioneering graduate student, faculty leader, and professor for over four decades.

Professor Keefer was born in Twin Falls, Idaho, on April 29, 1913, the son of William Raymond Keefer and Mary Catherine Marsh. He moved as an infant with his family to California, and he grew up in Fresno County. After graduation from Tranquillity High School, he attended Fresno State College (now CSU Fresno) for two years (receiving the A.A. degree), and then the University of California, Berkeley, for two years, where he received the B. S. degree in chemistry in 1934.

In 1936, Ray enrolled as a graduate student in chemistry at the University of California. Through a cooperative arrangement with the College of Chemistry at UC Berkeley, he completed course work at both Davis and Berkeley, and while technically receiving his degree from Berkeley, he did all of his research at Davis under the direction of Davis faculty members (Professors Charles Bisson and Harold Reiber). He received the Ph.D. degree in chemistry in 1940, the first of many graduate students to complete their graduate research in Chemistry at Davis. He was then appointed to the faculty at UC Davis as an associate in chemistry, followed by promotion to Instructor in 1941.

In 1942, after the United States entered World War II, he joined the United States Navy. Upon completion of Officer Candidate School and Radar School, he was first assigned to the battleship U.S.S. New York and then he was assigned to the battle cruiser U.S.S. Alaska as the radar officer. The Alaska saw extensive action providing anti-aircraft protection for aircraft carrier task forces in the Western Pacific. During the war he married Hilda O. Zimmerman on January 6, 1943. In later years Dr. Keefer continued to serve his country as a member of the U.S. Naval Reserve, retiring after thirty years of service with the rank of Captain.

After World War II ended in 1945, Dr. Keefer rejoined the UC Davis faculty as an assistant professor of chemistry and assistant chemist in the Agricultural Experiment Station. He reached the associate rank in 1950, and in 1956 he was promoted to professor of chemistry and chemist in the Experiment Station. He retired in 1983.

Professor Keefer had an outstanding career in research. He was the author or coauthor of 105 papers published in American Chemical Society journals. Beginning in 1948, he collaborated closely in research with Professor Lawrence J. Andrews. In addition to their separate studies, they coauthored an extensive series of papers, published mainly in the Journal of the American Chemical Society, on the hitherto poorly

understood interactions of the halogens and metallic ions with aromatic hydrocarbons in solution, in particular the rates, mechanisms, and equilibria of the various reactions. This work led to their book, *Molecular Complexes in Organic Chemistry* (Holden Day, San Francisco, 1964). They also studied the participation by ortho substituents in reactions at aromatic side chains, and medium effects on nucleophilic solvolytic displacement reactions. Their research was supported at first by grants from the Research Corporation, and later by grants from the National Science Foundation. In the 1964 - 65 academic year they were jointly named as faculty research lecturers for the Davis campus, the first time in the University's history that this honor had been shared by two faculty members. On February 10, 1994, Ray Keefer and Larry Andrews recorded a 57 minute conversation about their University careers as part of the UC Davis video history project.

In his teaching, Professor Keefer regularly taught the large introductory course in general chemistry for freshmen, as well as the upper division course in physical chemistry, even when he was the department chair. He enjoyed working with students, and was well liked by them. Over the years he had thousands of students in his classes. He and his colleague Thomas L. Allen wrote a general chemistry textbook, *Chemistry: Experiment and Theory* (Harper & Row, 1974; second edition 1982). Major adoptions included Harvard University and the Universities of Michigan, Minnesota, and UC Davis. They also wrote a laboratory book for Chemistry 1A and 1B which went through several editions.

In the area of University service, Professor Keefer played an important role in organizing the new College of Letters and Science in 1951. Chemistry was one of the first departments in the College to offer an undergraduate major to students, and Professor Keefer was involved in setting the breadth requirements for the College's students. He became chairperson of the Department of Chemistry in 1962, a post he held for twelve years. During that period the department experienced its greatest period of growth. It moved from Young Hall to larger quarters in the new Chemistry Building in 1965 and the new Chemistry Annex in 1971; the number of faculty members in the department increased from 13 to 35; and the number of chemistry graduate students increased from 20 to 70. As department chair he ran the department by consensus, with most departmental matters being decided during daily faculty coffee breaks. Because he was so well respected by everyone for his honesty and straightforwardness, both as a scientist and administrator, the department ran smoothly with a minimum of time being wasted in meetings.

At the campus level Professor Keefer was a member for several years and then chairperson of the campus's Committee on Budget and Interdepartmental Relations (now called the Committee on Academic Personnel). During 1964 - 65 he was vice chair, and in 1965 - 66 he was chair, of the Davis Division of the Academic Senate. A major activity during this period was planning for the campus to change from semesters to quarters. He was a member of the American Chemical Society for seventy years, and he was also a member of the Sigma Xi scientific research society.

Ray was a warm, quiet man who was devoted to his family. He was an avid hiker and skier. In 1963 the Keefer's purchased a cabin at a beautiful location in the Sierras near Big Bend, where they enjoyed exploring the many trails in the area, and especially identifying and cultivating the numerous wildflowers that grow there. He loved playing golf with his buddies, and he was a member of the Yolo Fliers Club in the 1950s. In 1963 he became a charter member of the El Macero Country Club. He loved music and in his younger years played the cello and the piano. Ray and Hilda traveled extensively for many years, visiting most parts of the world.

He is survived by his wife of 66 years, Hilda O. Keefer, their daughter Katherine J. Keefer currently residing in India, son James O. Keefer and wife Kathie of Grass Valley, five grandchildren, and four great grandchildren. Another son, Raymond Marsh Keefer, Jr., preceded him in death. Dr. Keefer was also predeceased by his brother John Alfred Keefer.

Thomas L. Allen, Chair  
Edwin C. Friedrich  
James H. Swinehart