



IN MEMORIAM

Walter B. Lawrence
Professor of Civil and Environmental Engineering, Emeritus
Berkeley
1921–2000

Walter B. Lawrence was born on March 19, 1921. He earned his bachelor's degree in chemical engineering (1945) and his master's degree in sanitary and chemical engineering (1951) at the University of California, Berkeley. His master of science thesis, "Causes and Prevention of Corrosion in Thermocompression Equipment when Employed for the Distillation of Sea Water," is a classic paper of doctoral quality by today's standards.

After completing his M.S. degree, Lawrence joined Brown and Caldwell Engineering, where he served as a consultant to the United States Navy on problems with boiler corrosion and on water treatment systems for military bases throughout the country. During that period he and David Caldwell produced a multi-dimensional nomograph called the "Caldwell Lawrence Diagram" (CLD) that, knowing the concentrations of certain minerals in a given water, could be used to guide adjustment of the pH and the concentrations of calcium carbonate and other minerals, so that iron or steel pipes conveying the water could be protected from corrosion by a thin layer of calcium carbonate on the interior of the pipe. Because of its importance in preventing corrosion in iron and steel pipes the CLD became utilized all over the civilized world and, although now computerized, it is still taught and used by environmental engineers involved in water conveyance. Although plastic pipes, now widely used, are not vulnerable to wall corrosion, without chemical balance guided by the CLD they can fill in with calcium carbonate concretions that interfere with and reduce their carrying capacity. The diagram and computerized CLD continue to be widely used to prevent capacity-reducing concretions. It can be said truthfully that everyone drawing full measures of water from pipes owes Walter Lawrence and his colleagues a debt of gratitude.

His mastery of water quality problems was desperately needed and sought by the Bechtel Corporation, which he joined in 1962. At Bechtel he worked for 10 years on water and waste treatment problems at more than 30 power stations and industrial plants throughout the U.S., and in India, Peru and Saudi Arabia. For the next five years, before joining our faculty, he was manager of process systems and planning in the Environmental Water Projects Department, Hydro and Community Facilities Division. He was responsible for, among other things, water treatment work for 22 fossil and nuclear power plants worldwide. He retired from Bechtel solely because his wife's declining health would not permit him to continue an extensive travel schedule. His love of engineering, science and teaching led him to accept a faculty position with us at Berkeley, where he did not need to travel and hence could remain near his wife.

Walter B. Lawrence was unanimously elected to join the Department of Civil and Environmental Engineering January 21, 1977. He was elected to share with faculty and students alike his widely recognized world-class expertise in water quality and water quality control. During his 11 year tenure with us at Berkeley, he came to be acknowledged by all as a dedicated and highly competent teacher, not only because of his comprehensive

and precisely organized lectures but also because of his enthusiasm and his willingness to spend hours with students (or faculty) needing extra help to understand the intricacies of water quality and its many modifications. His retirement July 1, 1988 was an irreplaceable loss to our department.

After this second retirement Walter moved to his leisure home near the Sierra foothill town of Paradise where he was able to enjoy nearly 10 years of boating, fishing and contemplating water in dimensions other than those of the CLD. We were unaware until after his death that he had been stricken by lymphoma, a lethal form of lymphatic leukemia. He passed away January 11, 2000, but his water- related legacy is destined to live on.

William J. Oswald