Richard William Bayley, a member of the U.S. Geological Survey for twenty-four years, died in November 1974 at the relatively young age of 55, the victim of a rare and insidious viral disease.

Dick was born January 21, 1919, in Edgewood, Pennsylvania, the third of five children born to Richard and Estelle Bayley. Like so many who grew up in the depression-ridden twenties and thirties, Dick's educational background was irregular. He attended grade and high schools in Elyria, Ohio, but in 1936, within six months of high school graduation, he was forced to drop out because of straitened family circumstances. The search for a paying job was unsuccessful, and on January 25, 1937, Dick enlisted in the U.S. Army and was stationed for the next three years at Ft. McClellan, Alabama. He was discharged January 30, 1940, and was enrolled in the Army Reserve.

Dick's tenure as a civilian was relatively brief; on February 27, 1941, he was called up to serve as an instructor of recruits who were drafted under newly enacted conscription legislation. For the next five years he served in various units, first as staff sergeant and then as warrant officer, and he spent the final year of World War II in Europe with the 1001st Engineer Forestry Battalion. He was finally discharged April 13, 1946.

At the time of Dick's return to the United States, his wife Margaret, whom he had met in 1940 during his interlude as a civilian and married in 1942, was enrolled at Ohio State University. Dick promptly set out to remedy the formal deficiencies in his high school record by enrolling in summer school, and in the fall of 1946 he was admitted to the University as a full-time student. He graduated with distinction three years later and received the master's degree in 1950 and the Ph.D. in 1955—signal achievements by any standard, but all the more so for one who had been entirely out of the academic environment for ten years.

Dick's professional career began in 1950 with his appointment to the U.S. Geological Survey. He was assigned to the Michigan iron project, a major restudy of the classic Precambrian of northern Michigan, which involved many geologists, including C. E. Dutton, F. J. Pettijohn, L. D. Clark, H. L. James, C. A. Lamey, W. P. Pratt, J. E. Gair, K. L. Wier, and W. C. Prinz. For the next several years, Dick's survey work in Michigan was interspersed with graduate study at Ohio State, and his first independent mapping assignment, the Lake Mary quadrangle, developed into a doctoral dissertation that was accepted by the University in 1955. The Lake Mary study resulted in two outstanding contributions: recognition and analysis of the West Kiernan Sill, an initially horizontal and differentiated sheet of gabbroic rock about a mile thick, now standing vertical and completely metamorphosed in the greenschist facies, and a fascinating reconstruction of the dynamics of emplacement of the Lake Mary igneous complex at the heart of the Peavey node of regional metamorphism. These early studies revealed
two distinguishing characteristics that were to be hallmarks of Dick's work throughout his career: fast, accurate, and perceptive mapping and creative interpretation. Dick's Michigan assignment culminated in preparation of U.S. Geological Survey Professional Paper 513, a restudy of the famous Menominee iron district. As senior author, he was chiefly responsible for a fine synthesis of work done by many people over a long period of years.

In 1958, the Bayleys left northern Michigan for California, where Dick took up headquarters in the Survey's newly established regional center at Menlo Park, and he began work on the bedded Precambrian iron deposits of Wyoming. The first product was a detailed map of the Atlantic City district in the Wind River Range. It proved of great value in the exploration and economic development of the complexly folded and faulted iron formation as a major taconite operation by U.S. Steel Corporation. Dick's later mapping of the surrounding region—four 7½-minute quadrangles—was to be incorporated with that of others to form the basis for the geological analysis of the southeastern Wind River Range contained in U.S. Geological Survey Professional Paper 793. The Precambrian iron formation of the Seminoe Mountains of south-central Wyoming was mapped next (Bradley Peak quadrangle), and during this same period Dick joined forces with William Muehlberger of the University of Texas to produce the monumental Basement Rock Map of the United States, published in 1968.

In 1966 Dick transferred his attention to the Black Hills of South Dakota, the most easterly of the northern Rocky Mountain uplifts. During the several years following, he mapped a substantial part of the Precambrian rocks of the northern Black Hills at a scale of 1:24,000. Among other things, he recognized and mapped several previously unknown carbonate and silicate iron formations. Recognition of these units is particularly significant in view of the fact that the Homestake Formation, the host rock for the great gold ore bodies of the Homestake mine, is itself an iron formation of this type. During the course of Dick's field work, a number of iron-formation units were sampled in structurally favorable locations, and several were shown to have a significant gold content. These discoveries have yet to be followed up with more extensive testing. It is evident from J. J. Norton's excellent 1974 appraisal of the outlook for new discoveries of gold in the Black Hills that Dick's contributions to stratigraphy and structure will play a key role in exploration, particularly in the Rochford area. Most of Dick's mapping in the region has been published, but it is a matter of profound regret that his synthesis of the geology and geological history of the region will never appear.

Late in 1970 Dick interrupted his Black Hills work to accept a four-month assignment to the Geological Survey project in Saudi Arabia. There he mapped a 1:100,000-scale quadrangle, located in a rather remote area with about 5,000 feet of topographic relief. Dick was given full field support including helicopter service for the job, but the single-handed mapping of almost a thousand square miles of complex Precambrian rock in such a brief period still must be counted a considerable feat.

Dick Bayley, quite evidently from the record, must be ranked among the outstanding field geologists of the U.S. Geological Survey. Yet, in the purely technical or physical sense, Dick did not possess any special qualifications beyond those shared with many of his colleagues. What then was the wellspring of his talent? I believe that it derived from a profound intuitive ability, almost mystic in character, that enabled him to see each field observation as part of a whole and to mentally recreate and to visualize the totality of the processes involved. The ultimate product became, in the purest sense, a work of art, satisfying in its precision and in the beauty and perfection of its construct.

Dick worked most effectively alone, although he was by no means antisocial. He enjoyed a friendly game of poker or a day's fishing with a companion, and he partici-
pated happily in more than one of the Menlo Park Pick-and-Hammer shows. But he was a quiet man, diffident in speech and manner, and one had to know him well to sense the deep underlying confidence. It was there, of course, as it had to be; without this final and essential attribute he could never have established such a record of accomplishment.

The Bayleys lived quietly near the ocean at Half Moon Bay, where Dick could indulge in his favorite hobbies: reading, walking the beach, surf fishing, and—above all—painting. It was relatively late in life that Dick discovered his aptitude with brush and canvas, but once discovered it became a passion that absorbed most of his leisure hours.

Dick was struck down as he approached the peak of his career as a geologist, and one can fairly assume that some of his greatest contributions were yet to come. He will be sorely missed as a scientist, but also as a friend, as a husband, and as a father. He is survived by his wife Margaret (Morse) Bayley and by one son, Stephen.

SELECTED BIBLIOGRAPHY OF R. W. BAYLEY


