Memorial to Thomas Brennan Nolan 1901–1992

LUNA B. LEOPOLD
Berkeley, California 94720

ARTHUR A. BAKER
Bethesda, Maryland 20816

It was in 1950 that I (Leopold) was ushered into the office of the assistant director of the U.S. Geological Survey to meet the top operating official in the organization. He was known as a very prominent scientist and a competent administrator who knew nearly all the people in the Survey, who wanted nothing less than the best from each, and who appreciated scientific ability, honest work, and individual contribution to the whole. I had just joined the Survey and was about to take leave to go to graduate school to finish my degree. This impressive man was soft-spoken, asked penetrating questions, and when something slightly irregular came up, the bushy eyebrows went up and the faint smile came over his face. One was impressed with both his depth of understanding and his basic warmth in dealing with people.

I did not have much contact with him for a few years, as I was merely a worker in a large organization, but as my manuscripts went up to his office for review, I learned that he followed in some detail the career of each person even as low as I. His talented surrogate for the review of manuscripts was Hugh Miser, a contemporary of Director Nolan, and who had some of the same characteristics—honest evaluation and demand for competence. Miser reflected the principal attributes of Director Nolan.

In 1944 Nolan was advanced from his technical position as specialist in mineral deposits to the newly established post of assistant director of this distinguished scientific organization. In that position he soon became the real power in making it function, though the post did not carry the recognition or the prestige of the top job. He was always loyal, always self-effacing, and working for the good of science and the Survey. In 1956, the director retired and the National Academy of Sciences urged the administration to choose Nolan as the new director of the Survey. Immediately things began to happen. Nolan made important changes and set a new standard for scientific production, recognition of ability, and expansion of the role of pure research in the organization.

Nolan chose me to be in a partly administrative post in the organization, and this gave me the opportunity to have a closer association with the director. As a result it was possible to learn more about his background and to see his technical and administrative talents at work.

Thomas B. Nolan was born in Greenfield, Massachusetts, in 1901, but early in his life his family moved to New Haven, Connecticut. He attended Yale University, where he obtained his first degree, in metallurgy. He received his Ph.D. degree in geology in 1924. Upon completion of the scholastic work, he qualified under the Civil Service to begin a long career with the U.S. Geological Survey. His professional and research work was concentrated in the study of mineral deposits, beginning with the Mother Lode in California and then in the metal mining districts in the Basin and Range, especially Tonopah, Gold Hill, and Eureka. He became the national specialist on tungsten ores.

Even when he was carrying a heavy administrative load as director of the Survey, he found time to carry on his research in the field, primarily geological studies in the mineral districts of Nevada. Frequent long-distance telephone discussions with his associates in Washington enabled him to keep close track of the functioning of the organization.

I had the pleasure of visiting him in Eureka, at which time he showed me the highly complicated geology that was laboriously being recorded and interpreted on his geologic map of the district. The mineral deposits were not his only interest, though; we looked at and discussed many features of the geomorphology of the area. His knowledge of paleontology was obvious as he showed me the small trilobites he had discovered in one of the formations in his region.

As director, Nolan made changes in the U.S. Geological Survey that greatly enhanced its utility to society. Under his guidance the work of the Survey in the field of water was changed from a data-collection effort to one in which basic research was an important element. During his term the Survey became one of the most prominent water-research agencies in the world and its publications the most widely read scientific literature in the field of water. Under his guidance the Survey expanded its study of natural hazards, particularly earthquakes and volcanoes; trained astronauts in geology and undertook photogeologic mapping of the moon; adapted geochemical techniques to study natural distributions of chemical elements that might affect human health; began a program in marine studies to evaluate potential offshore mineral resources; and furthered the use of radiometric techniques for dating geologic materials, now elaborated upon to produce the accepted ages of the geologic column from the Precambrian to the Holocene.

Nolan retired from the position of director in 1965 but continued his personal research in the years that followed, until his death in 1992. It was after his retirement that the final map of the Eureka District was published by the Survey.

Nolan was an active and expert ornithologist and for some three decades participated in the Christmas bird count sponsored by the Audubon Society. The original group of birders with which he was associated included E. T. McKnight, W. W. Rubey, and A. A. Baker. Their interest and leadership gradually raised participation to some fifteen members, mainly from the U.S. Geological Survey. It was the common interest in birds that drew the group together, not merely professional association. This participation in the Christmas count continues today. Nolan was also an avid and skillful bridge player.

Thomas B. Nolan was widely known in the field of geology, recognized both in the United States and abroad. There is a mountain in Antarctica that carries his name. He was awarded the LL.D. *honoris causa* by the University of St. Andrews, Scotland, and was an Honorary Fellow of the Royal Society of Edinburgh. He was elected a member of the National Academy of Sciences of the United States and was a Fellow of the American Academy of Arts and Sciences and the American Philosophical Society. He received the Spendiarov medal of the 16th Geological Congress and the K.C.LI Gold Medal from Columbia University for his work on strategic metals during World War II. Nolan received the Rockefeller Public Service Award, the Distinguished Service Award of the Department of Interior, and the Wilbur Lucius Cross Medal at Yale University. He was president of the Society of Economic Geologists, president of the Geological Society of America, and vice-president of the International Union of Geological Sciences.

Tom Nolan was married to Mabel "Pete" Orleman, who died in 1983. A member of the Cosmos Club of Washington, he and Pete were legendary for their hospitality. He will be long remembered by generations of geologists for his gentle manner and modest ways.

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