

Memorial of Eugene Edward Foord, 1946–1998

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The mineralogical community lost a valued colleague and friend with the death of Eugene E. Foord. Gene, a Life Fellow of the Mineralogical Society of America, died at his home on January 8, 1998 at the age of 51 after a three-year battle with lymphoma. Gene was a career scientist at the U.S. Geological Survey where he worked from 1976 until his death in 1998. Gene was an outstanding mineralogist and he will be remembered for his significant contributions to the mineralogy and paragenesis of pegmatites from San Diego County, California. He will also be remembered for his boundless enthusiasm for mineralogy, his dedication to thorough and accurate mineral identifications and descriptions, and his willingness to work with both professional scientists and amateur collectors. Foordite, a tin-niobium oxide was named after Gene (Černý et al. 1988) in honor of his many contributions to the study of niobium-tantalum-tin minerals in pegmatites.

Gene enjoyed practical jokes, having learned from the master himself, Richard H. Jahns. In fact, Gene was the “mystery” person responsible for “relocating” the bust of Theodore Hoover from the third floor of the Stanford geology building. Gene was an enthusiastic and animated storyteller and he loved to entertain his friends and colleagues with his outrageously funny stories of his escapades including backyard bouts with birds, avoiding landmines along the Pakistan-Afghanistan border, finding stashes of frozen hummingbirds in a Stanford professor’s freezer, nearly “starving” to death in Labrador, graphic descriptions of the Russian cuisine, toying with guards while in house arrest in China, and many more.

Gene was born at Children’s Hospital in Oakland, California, November 20, 1946. Gene, a RH-factor baby, had the distinction of being one of the first survivors of a complete exchange transfusion. However, as a result of the RH incompatibility, Gene was born severely hearing impaired. He moved in 1947 with his parents, Elizabeth and Delbert Foord, and his older brother William, to West Hempstead, New York. When his parents realized that Gene was hearing impaired, they took him to the Manhattan Eye and Ear Infirmary. They were told that their only education option was to enroll Gene in a special school for the deaf. However, his parents were determined to provide Gene with a normal education in their own hometown. Consequently, they joined together with other parents of hearing impaired children in Long Island and formed the Long Island Hearing and Speech Society. This was one of the first



(Clockwise from top left) 1. Gene with a gem-quality rubellite specimen from the Pala district, spring 1991. 2. Gene Foord with his friend George Ashley at Hiriart Mountain, San Diego County, California, 1986. 3. Gene in Jackson, Wyoming, August 1996, on his way back to Denver after his bone marrow transplant in Seattle, Washington. 4. Gene with an ore bucket at the San Diego Tourmaline Mine, San Diego County, California in 1974. 5. Boris Schmakin, Skip Simmons and Gene Foord at the Altai no. 3 Pegmatite, northwestern China, at the IMA pre-meeting field trip, 1990 (taken after house arrest was lifted). 6. Gene at the Little Three Mine, Ramona, California in 1989.

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centers established in the U.S. to teach hearing-impaired children to lip read and learn to speak by observation (i.e., watching an instructor and feeling an instructor's larynx vibrations). Gene attended normal school sessions during the day and then after school he worked with his mother on language skills as well as attending language programs at the Long Island Hearing and Speech Society. As a result of this strong family commitment and Gene's own determination, he always attended regular classes, and never learned to sign. As Gene got older, modern, more sophisticated hearing aids provided him with partial hearing. To further Gene's educational opportunities, the family moved to Garden City, New York, where Gene began junior high school and he graduated from Garden City High School in 1964.

Gene's interest in minerals and field geology can be traced back to his grandfather, William George, who immigrated to the United States from England when he was 18. Together with W.P. Chrysler and G.H. Dern, the three found a rich silver mine in Nevada. Gene's grandfather used his earnings from the mining ventures to purchase a smelter in Utah where he was an industrial blacksmith. Gene's father, an inventor for the American Can Company, was himself an amateur gemologist and enjoyed cutting and polishing stones. With the encouragement of both his father and brother Will, Gene developed an interest in minerals and collecting at an early age. Some of Gene's fondest memories were the summers he spent as a young boy with his family on the shores of Lake Keoka in Maine. The family would take trips to collect at the pegmatites in Maine and visit Perham's Rock Shop at Trap Corner, where according to brother Will, Gene's eyes would practically "fall out on the floor." During these summers Gene developed his love for minerals, pegmatites, and field geology. Gene followed his brother's lead and chose geology as a major in college. He attended Franklin and Marshall College, where he was a dedicated weight lifter and outstanding pole vaulter, and obtained an undergraduate degree in geology in 1968. Gene continued his education and obtained a M.S. degree in 1969 from Rensselaer Polytechnic Institute. His thesis topic on compositional and selected trace-element variations in minerals of the lower zone of the Precambrian Kiglapait layered complex, involved fieldwork in Labrador. A favorite story of Gene's involved how the field party ran out of supplies (particularly and most importantly food) when the weather turned bad and prevented supply planes from reaching them for over a week.

Gene went to Stanford University to pursue his Ph.D. At Stanford, he fortunately met Richard H. Jahns, who became an important mentor to Gene and served as his dissertation advisor. Jahns introduced Gene to the gem-bearing pegmatites of San Diego County, California, which resulted in Gene's dissertation on the "Mineralogy and petrogenesis of layered pegmatite-aplite dikes in the Mesa Grande district, San Diego County, California." In the course of his dissertation work, Gene assisted the owner and operator, Eugene B. Rynerson, in the underground mining of the San Diego Tourmaline Mine. They developed a friendship that lasted throughout Gene's career, and he named a new Nb-Ta oxide found at the San Diego tourmaline mine, rynersonite, in Rynerson's honor. Gene was awarded a Ph.D. in Mineralogy in 1976. The gem-bearing San

Diego County pegmatites, with their abundance of beautiful tourmaline crystals, remained one of Gene's special loves until his death.

Gene began his career with the U.S. Geological Survey first as a field and laboratory assistant (1970–1974) and then after his graduation from Stanford as a geologist-mineralogist from 1976 until his death in 1998. During his career at the U.S. Geological Survey, Gene was involved in a wide variety of projects including pegmatite studies from numerous worldwide locations, work on sulfide mineral deposits, rhyolite-related mineralization, stratigraphic studies, and the shock effects at the K-T boundary. Gene's work on pegmatites included studies in California (Fisher et al. 1998; Foord 1976, 1977; Foord and Mrose 1978; Foord et al. 1986, 1989, 1991; Stern et al. 1986; Taylor et al. 1979; Webber et al. 1997, 1999), Colorado (Blasi et al. 1984; Foord and Martin 1979; Foord et al. 1984, 1995; Kile and Foord 1998), Alabama (Foord and Cook 1989), Maine, New Hampshire, Brazil, Pakistan, Ghana, and Russia. Other areas of research were the Golden Sunlight mine and the Stillwater complex, Montana; Round Mountain, Nevada (Shawe et al. 1984; Foord et al. 1988); Owyhee River, Nevada-Idaho (Foord et al. 1987); McDermitt, Nevada; the Mescalero Apache Reservation and the Black Range tin district, New Mexico (Foord et al. 1985, 1991; Maxwell et al. 1986; Moore et al. 1988); Hansonburg lead-zinc district (Taggart et al. 1988, 1989); the Wah Wah mountains and Thomas Range, Utah (Foord et al. 1985, Shigley and Foord 1984); and the Pikes Peak batholith, Colorado.

Of all the projects that Gene was involved with, the ones he enjoyed most were his studies of gems and odd and unusual mineral assemblages. He was meticulous in his examinations, using every tool at his disposal. His identifications were only tentative until he had confirmed them by at least optical methods, XRD, and microprobe analyses. His work was so highly regarded that he routinely received samples from a network of colleagues and amateur collectors from around the world. No matter where they came from, they all received the same thorough attention. These efforts resulted in Gene coauthoring papers on 25 new mineral species, with a few still in progress, and the redefinition of several other mineral species. The new minerals that Gene worked on include corderoite (Foord et al. 1974); rynersonite (Foord and Mrose 1978); hashemite (Hauff et al. 1983); minasgeraisite (Foord et al. 1986); planerite redefined and aheylite (Foord and Taggart 1986); zimbabweite (Foord et al. 1986); chestermanite (Erd and Foord 1988); scrutinyite (Taggart et al. 1988); grandreefite, pseudograndreefite, laurelite, and aravaipaite (Kampf et al. 1989); boromuscovite (Foord et al. 1991); maxwellite and squawcreekite (Foord et al. 1991); ferrisurite (Kampf et al. 1992); parafransoletite (Kampf et al. 1992); kosnarite (Brownfield et al. 1993); hogtuvaite (Grauch et al. 1994); mccrillisite (Foord et al. 1994); selwynite (Birch et al. 1995); artroelite (Kampf and Foord 1995); calcioaravaipaite (Kampf and Foord 1996); and meurigite (Birch et al. 1996). Gene's research also included the re-examination of minerals such as the turquoise group; silver-bearing galena and the lead-silver-bismuth-silver sulfosalts (Foord et al. 1988; Foord and Shawe 1989); tantalum-niobium oxides and rare-earth minerals; micas and clay minerals; amazonite, topaz, red beryl, and

emerald, as well as other studies on titanite, bixbyite, jeremejevite, durangite, volkonskoite, iimorite, crichtonite, sugilite, thortveitite, clinobisvanite, eulytite, namibite, and many other mineral species.

Gene was a popular lecturer at both professional and amateur mineralogical meetings. He gave numerous talks at mineralogical meetings in Tucson, Rochester, Denver, and elsewhere. Gene was a prolific writer and his career bibliography includes almost 200 published articles, abstracts and maps. Gene was particularly pleased that two of the books that he had worked on so diligently over the last few years were published before his death. These were *Minerals of Colorado* (Eckel 1997) and *Dana's New Mineralogy*, 8th Edition (Gaines et al. 1997). In addition, Gene had numerous ongoing projects, several of which have been published since his death (Fisher et al. 1998; Kile and Foord 1998; Webber et al. 1999) and several more are nearing completion by various colleagues.

Gene was an active participant in many mineralogical organizations and societies. He was a Life Fellow of the Mineralogical Society of America, a Fellow of the Geological Society of America, and a member of the Mineralogical Association of Canada, Mineralogical Society of Great Britain, Microbeam Analysis Society, Society of Sigma Xi, Friends of Mineralogy, and Fluorescent Mineral Society. He was an associate editor of *The Canadian Mineralogist* for many years, a Consulting Editor to *Rocks and Minerals* magazine, and a Research Associate of the Denver Museum of Natural History.

Gene traveled to Pakistan, China, and Russia to visit pegmatites and other mineral deposits. He especially loved Russia and made several visits there. He taught himself to read and speak Russian and to the surprise of many, he was able to communicate and bargain for mineral specimens with ease on his visits there. He visited the Kola Peninsula, the Transbaikalia region of Siberia, and the Primorye region.

The U.S. Geological Survey in Denver has named its Mineral Resource Surveys Team X-ray diffraction laboratory the "Gene Foord Mineralogical Laboratory," and the Geologic Division lecture room has been designated the "Eugene Foord Lecture Hall." Gene is survived by his wife Suzann, their children Laura and Robert, and his brother William. A trust fund for the children has been established at the Credit Union of Denver. Gene had great focus and perseverance and fought a valiant fight against lymphoma. It was incredible that he was able to accomplish so much during the last three years of his life while he struggled through several courses of chemotherapy, numerous transfusions, a bone marrow transplant, and a temporary reduction in force from his job at the Survey. He worked almost every day of this period on the many projects he was involved with and astounded all of us that knew him with his strength and determination. He is a tremendous source of inspiration for us all. He will be sorely missed by his family, his many friends, and his colleagues from around the world—it seems like almost every mineral enthusiast in the world knew Gene and considered him a friend. In April of 1998, as Gene had requested, his ashes were scattered on the dumps of the San Diego Tourmaline Mine in San Diego County, California, the site he loved so much, and the place where his pegmatite studies first began.

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