Memorial to John C. Griffiths 1912–1992

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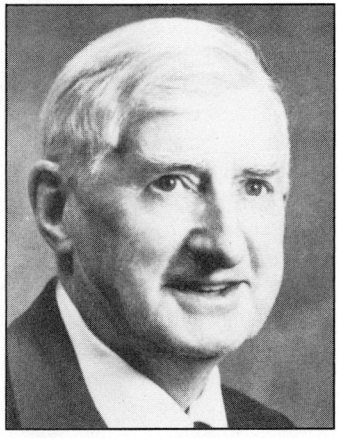

John Cedric Griffiths died suddenly on Tuesday, June 2, 1992, in State College, Pennsylvania. The Saturday before, he had been at work in his office at the Department of Geosciences, Pennsylvania State University. He is survived by his wife of over 50 years, Nancy; a daughter, Joan Vega; and many friends, colleagues, and students.

John Griffiths, who was one of the most colorful and original scientists in the field of geology in the latter part of the 20th century, had the rare gift of understanding science as an intellectual pursuit based on philosophic constructs prosecuted with tools generated from inductive as well as deductive thought processes. He is best known for his contributions in guiding the development of mathematical geology, which were in part the result of his intuitive use of statistical and mathematical methods and computers to solve scientific problems. For many years, he was the leading expert on sampling methods, analysis of variance, multivariate analysis, and frequency distributions in geology, as well as an outstanding sedimentary petrographer.

John Griffiths was born in Llanelli, County Dyfed, Wales, and held B.Sc. (1933), M.Sc. (1934), and Ph.D. (1937) degrees in petrology from the University of Wales. In 1940, he received the Diploma of the Imperial College (petrography), Royal College of Science, London, and Ph.D. in petrography, University of London.

During World War II, when new problems demanding new solutions arose daily, Griffiths became suspicious of the older deterministic basis for making predictions. He realized that traditional methods were no longer adequate and that sampling theory, experimental design, hypothesis testing, and statistical analysis techniques would be the methods of the future.

In 1947, after seven years with Trinidad Leaseholds Ltd. in the British West Indies, he joined the faculty of the Department of Mineralogy and Petrology of Pennsylvania State University, where he served until his retirement as professor emeritus in 1977. During this time, he directed more than 50 postgraduate students and, in the process, cemented his reputation as a guiding force in the field of the application of statistical methods in geology. In a cascade of productivity, Griffiths moved his students through studies of roll-front uranium deposits, petroleum reservoir characteristics, the measurement of the properties of sedimentary rocks, the application of military search theory as a basis for petroleum and mineral exploration, and seminal studies on the estimation of the unit regional value of Earth's crust.

Griffiths taught his students that, as observers, they were not independent of the systems they studied—they were part of those systems. Griffiths argued that humans left to their own devices are not objective. He believed that we must use operational rules based upon random sampling techniques and statistical analysis to reach the truth. He applied this dictum to his study of sedimentary rocks, mineral and petroleum resource assessment, exploration strategies, and the estimation of the value of the crust of Earth. One of his most controversial proposals was that the

entire country should be drilled on a grid. He argued that only with data from such an equal information network could the country rationally plan its future.

Over the years, Griffiths received many awards and honors for his contributions to the geologic sciences. For his combined contributions to mathematical geology, the International Association for Mathematical Geology honored him in 1977 with the first William C. Krumbein medal. This award was his proudest achievement—his friend and colleague, Bill Krumbein, was the father of mathematical geology, and Griffiths was its foremost advocate. In April 1992, Griffiths was honored by the Application of Computers and Operations Research in the Mineral Industry (APCOM) Council with their Distinguished Achievement Award for outstanding contribution to the application of computers and operations research in the mining industry. In addition, Griffiths was a Fellow of the Geological Society of America, a Fellow of the Geological Society of London, a Fellow of the American Association for the Advancement of Science, and a Life Fellow of the Mineralogical Society of America. He is listed in *Who's Who in America* and *American Men and Women of Science.*

Griffiths traveled widely in the United States, Europe, Africa, the Middle East including Israel, and Asia to lecture on the application of statistical principles to solving geological problems. He was a consultant on statistical data analysis for the petroleum and mining industries, the refractories industry, national laboratories (such as Lawrence Livermore National Laboratory), state geological surveys, and federal agencies (such as the Atomic Energy Commission, the U.S. Bureau of Mines, and the U.S. Geological Survey).

His extraordinary mastery of the English language made Griffiths a very capable public speaker and a powerful debater. To illustrate this, a Canadian geologist tells of a rather unusual two-day debate that he had with Griffiths. On the first day, the Canadian had taken one side of the argument and Griffiths, the other. The Canadian lost but maintained that Griffiths had the superior technical material. The following day, the Canadian proposed that he and Griffiths reverse positions. Rising to the challenge, Griffiths readily accepted. However, to the Canadian's chagrin, he again lost—but would later speak of his defeat as an honor.

John Griffiths was also a most capable administrator. He was chairman of the Departments of Mineralogy and Petrology (1955–1963) and Geochemistry and Mineralogy (1963–1966). From 1969 to 1972, he served as director of planning research for Penn State, using his organizational skills and system analysis principles to advocate improvements in the administrative structure of the university. His goal was to awaken the administration to the idea that it ought to have a long-range plan.

John Griffiths will be remembered for his enormous scientific and administrative achievements. He will be remembered by his many friends and colleagues and especially his students. We will all miss this most insightful and colorful character.

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