Memorial of John C. Griffiths*
1912–1992

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John Cedric Griffiths died suddenly on June 2, 1992, in State College, Pennsylvania. He is survived by his wife of more than 50 years, Nancy, his 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 to be an intellectual pursuit based on philosophic constructs and prosecuted with tools generated from inductive, as well as deductive, thought. 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. He was an outstanding sedimentary petrographer, and for many years, he was the leading expert on sampling methods, the analysis of variance, multivariate analysis, and frequency distributions in geology.

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) from the Royal College of Science, London, and a Ph.D. degree in petrography from the 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 the Pennsylvania State University, where he served until his retirement as professor emeritus in 1977. During that time, he directed more than 50 postgraduate students and in the process cemented his reputation as a guiding force in the application of statistical methods in geology. In a cascade of productivity, Griffiths propelled his students through studies of roll-front U deposits and petroleum reservoir characteristics, the measurement of the properties of sedimentary rocks, the application of military search theory as a basis for petroleum and mineral ex-

ploration, and seminal studies on the estimation of the unit regional value of the Earth's crust.

Griffiths taught his students that, as observers, they are not independent of the systems they studied—they are 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 the Earth. One of Griffiths's most controversial proposals was that the entire U.S. should be drilled on a grid. He argued that only with data from such an objectively thorough 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 Griffiths in 1977 with the first William C. Krumbein medal. This award was Griffiths's proudest achieve-

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ment—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 Council with its Distinguished Achievement Award for outstanding contribution to the application of computers and operations research in the mining industry. In addition, Griffiths was a Life Fellow of the Mineralogical Society of America, a Fellow of the Geological Society of America, a Fellow of the Geological Society of London, and a Fellow of the American Association for the Advancement of Science. He is listed in *Who's Who in America* and *American Men of Science.*

Griffiths traveled widely in the U.S., Europe, Africa, the Near East, including Israel, and Asia to lecture on the application of statistical principles to solving geologic 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).

Griffiths's extraordinary mastery of the English language made him a very capable public speaker and a powerful debater. 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 by his students. We will all miss this most insightful and colorful scientist.

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