American Mineralogist, Volume 17, pages 1055–1057, 1986

Memorial of Peter Gay
August 6, 1927–March 2, 1985

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Peter Gay died suddenly on March 2, 1985, in his 58th year. An only child, he was educated at St. Walter & St. John's School, Battersea, London: from an early stage he displayed exceptional ability in physics and math, matched by his performance on the playing fields. In October 1945 he was admitted as an Entrance Exhibitioner to Sidney Sussex College to read natural sciences. Because of the broad structure of the Cambridge Natural Sciences Tripos he was advised to read chemistry and mineralogy (crystallography) as well as physics and math in his first year. This brought him into the Department of Mineralogy and Petrology, which was responsible for the university teaching in crystallography. In his second year he added metallurgy to his list of subjects; in this manner he acquired a sound classical foundation for the crystallographic teaching and research that was to come. In his final undergraduate year he specialized in physics at the Cavendish Laboratory headed by Sir Lawrence Bragg. At that time some advanced teaching in crystallography was carried out in the Cavendish, and Gay chose to take the optional papers in this subject. This brought him under the influence of W. H. Taylor, who had been the first to successfully investigate the detailed structures of the feldspars. After graduation in 1948, three years of research in the metal physics group at the Cavendish crystallographic laboratory followed, leading to a Ph.D. in 1951. His work at this time was on the development and application of X-ray microbeam techniques to the study of microstructures of deformed metals. Among his colleagues in the crystallographic laboratory were H. D. Megaw, P. B. Hirsch, R. W. K. Honeycombe, A. Kelly, the late J. N. Kellar, A. D. I. Nicol, and J. V. Smith.

In 1951 Gay, already with an impressive list of metallurgical publications, joined the teaching staff of the Department of Mineralogy and Petrology (now part of the Department of Earth Sciences) first as a university demonstrator and then from 1956 as a university lecturer. When appointed it was made clear to him by his new head of department, the redoubtable Professor C. E. Tilley, that he should now set aside his work on metals and concentrate his research exclusively on more relevant material, namely rock-forming minerals; this he did for the rest of his career. Tilley always kept himself closely informed about the research activities of his staff, even after his retirement, but he usually did this indirectly by asking individual members what each of the others was doing. When he asked about Gay there was always plenty to report.

But first the X-ray and high-temperature laboratories had to be modernized and greatly expanded and much new equipment ordered at a time when money was short and the equipment available far from ideal. Hence much of the new equipment, Weissenberg and focusing powder cameras, diffractometers, control equipment, and furnaces had to be rebuilt or substantially modified in the departmental workshops. Much of the design work here was laid on Gay's shoulders, and he had a difficult job first to persuade the exceedingly able but independently minded Chief Assistant Arthur Lanham, a perfectionist instrument maker, that his was the correct approach to design problems, and second to hold back Tilley, ever impatient for scientific results and particularly so when they might have some bearing on his own research. All other members of the crystallographic staff recruited from

0003–004X/86/0708–1055$02.00

the mid-1950s onward benefited from this arduous period of development work.

Peter's initial research in mineralogy was on the structures of the intermediate plagioclases and their relations to the anorthite structures. Most Cambridge crystallographic studies on the feldspars at that time involved single-crystal studies of carefully selected grains from analyzed specimens. Large quantities of photographic X-ray data had to be interpreted. With time for research a limiting factor in view of his heavy teaching responsibilities, he adopted a distinctive empirical procedure for studying variations in subsidiary reflections to derive information about the chemical compositions and thermal histories of his specimens. Here he displayed a capacity to see the main problems clearly without getting bogged down in detail, and by judicious choice of a few experiments, to produce elegant papers without the tiresome data-assimilating delays common to most similar work of the time. Subsequently he carried out a wide range of X-ray studies on other minerals including the barium feldspars, pyroxenes, olivines, rare-earth silicates, hydroxides, and sulfates, many in association with his principal colleagues M. G. Bown and J. V. Smith. He was elected a Fellow of the Mineralogical Society of America in 1957. His reputation led to his selection by NASA in 1971 as a principal investigator in the Apollo lunar program; in the same year he was awarded the Sc.D. Degree at Cambridge.

As a lecturer he developed a clear distinctive style, never wordy or obscure, and just sufficiently mathematical to match the background of his class. Many generations of Cambridge undergraduates had their introductions to crystallography, crystal physics, and crystal optics from his lectures. His notes were always written out in full, with salient phrases for writing on the projector underlined in red. Students always remarked that it was easy to take good notes from his lectures. These techniques when expanded and translated into print ensured the long-running success of his two undergraduate textbooks *Introduction to Crystal Optics* (1967) and *The Crystalline State* (1972). Although from quite an early age he appeared to give an impression of world-weariness, he had a puckish sense of humor that could enliven his lectures. He was an amusing companion at dinners with a good supply of stories. One of the best concerned the fruitless efforts of a gentle academic chairman to quell the repeated strident interruptions by a very forceful and vocal young woman, then a research assistant working on Vitamin B-12. The woman's name—she is now Margaret Thatcher, First Lord of the Treasury! In a rather different vein was his account of his own feelings at an early interview for a research fellowship, on being asked by a very persistent chaplain to explain the workings of a screw dislocation!

Gay was elected a Fellow of Downing College in 1959 and became a tutor two years later. He succeeded to the senior tutorship with responsibility for admissions in 1966 and for the next five years coped with the difficult period of national student unrest that produced its inevitable shock waves in Downing as in other Cambridge colleges. His immediate approachability, common sense, and commitment to undergraduates defused many difficult situations during this period. He became vice-master in 1982, a role for which his long experience in university and college affairs made him an ideal choice. He proved to be an excellent chairman at meetings.

A lifelong interest in sports strengthened his links with the young. As an undergraduate he had represented his college at cricket (where he had a high reputation as a wicketkeeper), badminton, and squash. He played tennis of a high standard until well into middle age and acted for some years as senior treasurer of the University Lawn Tennis Club. In later life he took up golf, which provided him with a relaxation he enjoyed to the end of his life.

Sadly he suffered a heart attack in the mid-1970s while on leave in South Africa; for a time this had its inevitable effect on his lifestyle, but he soon resumed most of his activities, though somewhat more cautiously. Over the past few years indifferent health caused him increasing problems, but he kept up his teaching and college duties as efficiently as ever. During the early months of 1985 he complained increasingly of feeling tired and looked forward to the prospect of a forthcoming break and sabbatical at his house at Budleigh Salterton in Devon where he could begin writing the replacement of *The Crystalline State* on which preparatory work was well advanced. Sadly it was not to be. We mourn his passing at a comparatively early age when he felt there was still so much to accomplish.

In 1951 he married Evelyn Southcott who survives him; she continues to live in Cambridge.

Selected bibliography of Peter Gay

During his career Peter Gay published over 60 papers; an arbitrary and personal selection of these is given below, chosen to illustrate the progression of his scientific interests, his research associates, and his more important contributions in each field.

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