

# **MEMORIAL RESOLUTION**

## **DANIEL BERSHADER**

**(1923 - 1995)**

Daniel Bershader died on May 30, 1995, from complications due to chronic peptic ulcers at his home on the Stanford Campus. He served thirty years as Professor of Aerophysics in the Department of Aeronautics and Astronautics, following a part-time faculty appointment here between 1956 and 1964 while manager of gasdynamics research at Lockheed Missile and Spacecraft Co. He was fourth Chairman of the Faculty Senate 1971-72.

Born to Joseph and Clara Bershader on March 14, 1923, Dan remained a proud citizen of Brooklyn, New York, through attendance at Thomas Jefferson High School and Brooklyn College between 1939 and 1942. His B.A. from the latter was magna cum laude, awarded at the age of nineteen. He went on to physics at Princeton University, where he earned the M.A. in 1946 and Ph.D. in 1948. While at Princeton during World War II he spent the summer of 1944 engaged in aeronautical research at Bell Aircraft. In 1944-1945 he was a petty officer with the U.S. Navy, working on underwater ordnance engineering. The Princeton Physics department appointed him Instructor in 1948-1949 and Research Associate Professor between 1952 and 1956. In the interim 1949-1952 he served on the University of Maryland faculty. Dan often reminisced about his treasured days at Princeton, with such distinguished colleagues as Eugene Wigner, John von Neumann and R. Ladenburg. Richard Feynman once graded his physics homework, and he took a course from Albert Einstein, whose autographed photo occupied a place of honor on his office wall along with many other pictures of renowned physicists.

Dan was an outstanding experimentalist, with particular skill in optical methods of gas dynamic research. Although his work was usually motivated by aerospace problems, he often explained that he liked to use the field as an "excuse for doing basic physics." He was a pioneer in applications of the shock tube for studying flow phenomena of many kinds. His over 70 publications dealt with supersonic boundary layers, turbulence, high-temperature properties of gases and numerous other examples of energetic fluid motion. In the shock-tube laboratory he was responsible for developing a carbon-dioxide laser years before its commercial introduction. He and doctoral students produced beautiful photographs of strong vortices, for which he determined that the central-core density was less than half that of the surrounding fluid. Another recent interest was in acoustics, ranging from noise created by helicopter rotors to the sounds of musical instruments. His course on the subject attracted students from all over campus, and he assisted the design of acoustic treatment for the main dining room of the Stanford Faculty Club. Over the years he edited four books, and his list of archive technical papers grows to 150 when those by over 30 doctoral students are included.

With professional interests extending far beyond the campus, Dan will be remembered especially for contributions to the American Physical Society, of which he was a Fellow. He served as Chairman, Division of Fluid Dynamics, in 1977 and was on the Executive Committee 1984-86. He led a widely respected APS study on the scientific basis of systems planned for the U.S. Strategic Defense Initiative. At various times, visiting professorships took him to Syracuse

University, Germany, Israel and Australia. He was involved with the series of International Shock Wave Symposia, having been principal organizer of one at Stanford in 1973 and another at University of California, Berkeley, in 1985. Included among his several honors were invitations to present the associated Paul Vieille Memorial Lecture at Kyoto in 1975 and Aachen in 1987.

In addition to his Stanford service on many committees and as chairman of the fourth Faculty Senate, Dan was Associate Chairman of Aeronautics and Astronautics for nearly twenty years. Prior to the department's 1970 move into the Durand Building, he assisted with its design and handled all details of office and laboratory assignments. As Director of the NASA-ASEE-Stanford Summer Faculty Fellowship Program from 1972 to 1995, he helped hundreds of U.S. professors to find exciting summer positions at Ames Research Center. The series of Thursday evening lectures he arranged in this connection was widely attended by members of the university community. Less formally he served as a pillar of Friday lunch time discussions among fluid dynamicists at the Faculty Club and was instrumental in bringing visitors to campus from around the world.

Dan's hobbies and outside interests would fill a book. A lover of athletics, he was a formidable tennis player and maintained season tickets for Stanford football and men's basketball. A devotee of classical music, he was an accomplished pianist who would play favorites for visitors to his home. It is said that, while at Brooklyn College, he had a difficult choice to make between careers in science and music. Another early affiliation that revived his interest was with Thomas Jefferson High School. He became involved with the West Coast alumni association, and on the occasion of a 50th reunion he was named the outstanding member of this "T.J." graduating class.

Dan's wife Ilse Gluckstadt introduced him to service as an usher at the San Francisco Opera. After nearly 20 years of this activity, as senior volunteer he had a choice of which performances to attend. He was also an expert in horticulture, whose garden at home was one of Stanford's finest, especially after he installed in 1993 a traditional Japanese rock garden. During the 1980's he invested for a time in almond and raisin-grape orchards in the San Joaquin valley; he often returned there for visits with the family who operated the farm.

He is survived by two sons, Brian Kenneth of Palo Alto and Lee Karlin of Fremont, by two step-sisters Alice Friedman and Elizabeth Freeman, two nieces and a nephew. Between 1951 and 1969 he was married to Phyllis Karlin Bershader, mother of Brian and Lee. A second marriage to Ilse Gluckstadt lasted from 1976 to 1986; she now lives in Israel. Two recent good friends were Anne Thornton of Palo Alto and Gladys Sessler of Berkeley.

A memorial service for Dan Bershader was held at the Faculty Club on June 9, at which he received tributes from grieving relatives, colleagues and personal friends. Contributions in his memory may be sent to the Jewish Community Federation of San Francisco or the DeYoung Museum Society, which were just two of the many charities in which he had an interest.

A gentle man about whom it was said "he never raised his voice in anger," Dan will be remembered as a friend, mentor and wise counselor by generations of students, colleagues and admirers from throughout the world.

W. Vincenti  
G. Springer  
H. Ashley, Chairman