

MEMORIAL RESOLUTION

DAVID GILBARG

(1918 - 2001)

David Gilbarg, Professor Emeritus in the Stanford Mathematics Department, died unexpectedly at his home on Friday April 20, 2001, at the age of 82. He had served as Chair of the Stanford Mathematics Department for the period 1959-70, during which time he helped establish Stanford Mathematics as one of the leading departments in the nation. He is survived by his son Daniel, who is Professor in the Sociology Department at Bristol Community College in Massachusetts, and two grandchildren.

A native of Brooklyn, David Gilbarg graduated from City College in New York in 1937. He completed his PhD in 1941 at Indiana University under the supervision of Emil Artin, at that time one of the preeminent algebraic number theorists in the world. After serving during World War II at the Bureau of Standards and at the Naval Ordnance Laboratory, where he became head of the fluid dynamics and theoretical mechanics section, he returned to a faculty position in the Mathematics Department at Indiana University. His war work had motivated a shift in his research interests from algebra (his Indiana thesis had been in the field of algebraic number theory) to the fields of fluid dynamics and nonlinear partial differential equations, and those fields remained his main research focus for the rest of his career. Indeed only his first paper ("The structure of the group of p-adic 1-units" in a 1942 issue of the Duke Mathematical Journal) was in algebra, and all his remaining publications were in fluid dynamics and elliptic partial differential equations.

After several summer visits to Stanford, and one full-year visit in the 1954-55 Academic Year, there was a firmly established mutual regard between Gilbarg and the Stanford Mathematics faculty – at that time including such outstanding figures as George Pólya, Gabor Szegő, Charles Loewner, Stefan Bergman and Max Schiffer – and in 1957 he accepted an invitation to take up an appointment as Professor of Mathematics, a position which he held until becoming Professor Emeritus of Mathematics in 1989.

His ten year period 1959-1970 as Chair of Mathematics (or, as it was then called, Executive Head) was crucial in the development of the Department, coming at a time of rapid development of many fields of mathematical research, particularly fields related to geometry, topology and partial differential equations. During his tenure as Executive Head, appointments to the Department included such luminaries as Paul Cohen, Lars Hörmander, Kunichiro Kodaira, Donald Ornstein, Ralph Phillips, Hans Samelson, and Donald Spencer, appointments which ensured Stanford's place as a leading center of research in Partial Differential Equations, Geometry, Topology, Classical Analysis and related areas. Gilbarg also supervised a series of moves for the department from Sequoia Hall (then the "Applied Mathematics and Statistics Lab") to the Quad and eventually into its present location in Building 380, in quarters remodeled under a grant from the Sloan Foundation in 1964.

His work in fluid dynamics, particularly his papers on compressible subsonic flow, established him as a leader in that field of research, but his interests were broad and he was one of the very early researchers to appreciate the mathematical development of non-linear

elliptic theory in the late 1950's by such mathematicians as De Giorgi, Nash, Morrey and the Russian school led by Ladyzhenskaya and Ural'tseva. These developments would later play a central role in the rapid development of the field of geometric analysis. Gilbarg was considerably ahead of his time in seeing this trend very early on, and his enthusiasm in this direction provided important impetus in the development of the geometric analysis area in the Mathematics Department.

During the latter part of his career, including the Emeritus period 1989-2001, he continued to play an active role in the life of the department, and was frequently called upon for his mathematical knowledge and insight and for his sage advice on a wide variety of matters. He served as Acting Chair in 1986-87 and Vice-Chair in the 1987-88 academic year. Aside from his fluid dynamics work, undoubtedly his best-known contribution to the mathematical literature is the monograph "Elliptic Partial Differential Equations of Second Order," co-authored with his former Stanford PhD student Neil S. Trudinger. Since 1977 when it first appeared, this book has seen several reprintings, and is one of the most frequently cited graduate-level texts ever published in the mathematical literature. At the recent commemorative conference in the Stanford Mathematics Department, James Serrin described the Gilbarg-Trudinger text as being "on the bookshelf of everyone working in partial differential equations, a monumental work which is one of the great lasting achievements of analysis."

Apart from his central role in the development and support of the Mathematics Department at Stanford, David Gilbarg was much admired by friends and colleagues for his personal qualities, including his selfless dedication to the well-being of the department, his love of mathematics generally and his warm support of the work of his colleagues. These qualities were a recurring theme in the many tributes from family, friends and colleagues who attended a recent commemorative event hosted by the Mathematics Department. Particularly warm tributes were paid by former PhD students, citing Gilbarg's ability to convey a love of mathematics, his unstinting support, his encouragement in development of not only their general mathematical skills but also the ability to recognize and use the important key ideas within a field, and his insistence on exactness and clarity in their writing.

Leon Simon, Chair
Richard Schoen
Brian White