



Professor Raymond D. Mindlin (1906 – 1987)

Raymond D. Mindlin, who came to be recognized as the world's leader in the broad field of elasticity during a professional life of some 63 years, died on November 22, 1987 in Hanover, New Hampshire, at the age of 81.

Born in New York on September 17, 1906, he began his 62-year long association with Columbia University when he enrolled there as an 18-year old freshman, subsequently receiving four degrees from that institution: the B.A. in 1928, the B.S. in 1931, the professional C.E. in 1932, and the Ph.D. in 1936. His Ph.D. dissertation presaged his future exemplary work in elasticity, since it presented the solution of what became known as the "Mindlin Problem," namely that of the effect of a concentrated force in the interior of a semi-infinite solid. He had begun teaching while still a doctoral student, however, and can be credited with pioneering graduate instruction and research in mechanics in the early 1930s. This field of endeavor remained close to his heart throughout his academic career as a professor at Columbia, winning him the Great Teacher Award in 1960, and gaining for him lasting appreciation and affection from each of his 30 doctoral students.

Under his leadership the scope of the theory of elasticity grew to encompass bordering areas of electrical, thermal, optical and acoustical phenomena. His work was fundamental and applied in the best engineering tradition. His extensive research into vibrations and waves in elastic bars and crystal plates led to the development and design of delay lines and electromechanical filters which are today still in use. His collaboration with Hans Bleich on the interaction of an elastic shell with a surrounding fluid is central to the

analysis of the shock response of submarine hulls. His pioneering inquiry into pressure and friction in solid contact surfaces has been applied to the design of relay contacts and ball bearings. His microstructural theories of solids illuminated the transition between continuum and discrete descriptions of solid behavior.

Among the honors he received, one should mention the Medal of Merit in 1946 for his part in the development of the radio proximity fuse, and the National Medal of Science in 1979 for his contributions to applied mechanics and mathematics. He was a member of the National Academy of Sciences, the National Academy of Engineering, and a fellow of the American Academy of Arts and Sciences, the American Society of Mechanical Engineers, and the American Acoustical Society. His deep involvement with experimental elasticity is underscored by the fact that he was a founder and president of the Society for Experimental Stress Analysis, which bestowed on him the Frocht Medal in 1974. He was awarded an honorary doctor of science degree from Northwestern University in 1975, the Thomas Egleston Medal from Columbia in 1971, the Timoshenko Medal from ASME in 1964, and the von Kármán Medal from ASCE in 1961. He was chairman of the Applied Mechanics Division of ASME in 1955 – 1956.

Twice in his life he endured the loss of a devoted companion: his first wife, the former Elizabeth Roth, died in 1950, and his second, the former Patricia Kaveney, in 1976. In the face of personal grief and public acclaim alike, Ray Mindlin preserved the gentle good humor and steadfastness of judgment that had earned him the love and respect of students, colleagues and friends over the years. They will long remember him, and mourn his passing – and his influence on the field will long abide. Love noted the “significant fact that most great advances in Natural Philosophy have been made by men who had a first-hand acquaintance with practical needs and experimental methods”: Mindlin’s place among them is secure.

Tribute by Bruno A. Boley, Columbia University