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1908-1991

By Theodore Y. Wu

MILTON SPINOZA PLESSET, professor emeritus of engineering science at the California Institute of Technology and a world authority in the physics of fluids and nuclear energy, died on February 19, 1991, at the age of eighty-three.

Elected to the National Academy of Engineering in 1979, Milton was recognized as a leader in the fields of engineering science, nuclear engineering, and fluid mechanics. His milestone contributions to bubble dynamics, multiphase flow, theoretical physics, and nuclear reactor safeguards set new directions for research, which led to advances in these fields and promoted international cooperation.

Born on February 7, 1908, in Pittsburgh, Pennsylvania, Plesset graduated from the University of Pittsburgh in 1929 and earned his Ph.D. degree in physics at Yale University in 1932. He won a National Research Council fellowship and for its tenure was attracted to Caltech, where research on cosmic rays was making exciting advances under the leadership of Robert Millikan, and the positron was just in the process of being discovered by Carl Anderson. The great success of finding the positron was followed by a theoretical study by Milton Plesset and Robert Oppenheimer employing the Dirac equation in quantum electrodynamics to show how electron-positron pairs were produced.

These scientific activities led Plesset to spend a period of time at the Niels Bohr Institute for Theoretical Physics, 1933-1934.

Interacting with the world's leading physicists at the Bohr Institute, Plesset worked at the frontiers of fundamental physical theory and made contributions of great significance. Of particular merit were the interesting papers he wrote with Christian Moller on electron-electron interaction theory, with John Archibald Wheeler on the theory of scattering quanta, and with E. J. Williams on cosmic ray theory. These papers have greatly benefited scientists decades later because of their fundamental value.

Following this period, he was awarded a C. B. R. Traveling Fellowship, which enabled him to visit eminent leading scientists of the time in many parts of Europe, traveling with his bride Isabel and gaining valuable experience that was later passed on, through teaching and joint studies, to his peers and students.

After teaching at the University of Rochester for five years, Plesset returned to Caltech in 1940 and then left in 1942 to head the Analytical Group of the Douglas Aircraft Company where he devoted his talents to airplane design and the development of new technology. Following a round of visits to the post-war European theater as a scientific representative of the U.S. Air Force, Plesset returned to Caltech permanently as associate professor in 1948, was made a full professor in 1951, was appointed in 1963 as professor in engineering science, and became professor emeritus in 1978. He was also adjunct professor of nuclear engineering at the University of California, Los Angeles, from 1977 to 1988.

In research, Plesset made significant contributions along the frontier where science and engineering meet, leaving the profession with more than one hundred publications of lasting value. The Rayleigh-Plesset equation continues to play a basic role in bubble dynamics, whether used in cavitating flows or in the sack model for atomic nuclei theory. His inspiring teaching, marked with clarity and elegance in treating basic principles, was much appreciated by his students.

An authority on multiphase fluid dynamics and nuclear physics, Plesset served on the U.S. Nuclear Regulatory Commission's Advisory Committee for Reactor Safeguards, first as a consultant, then as a member from 1975 to 1982, and as chairman of the

panel in 1980. In these capacities Milton provided assistance and guidance to the development of effective numerical codes to simulate day-to-day operations of a nuclear reactor and to monitor any emergency situation. He played a leading role in spearheading international cooperation with Japan and Germany on joint programs for model tests of the operation of nuclear reactors and establishing the overall rules for their safeguards.

Throughout his career, Plesset served as a consultant to the RAND Corporation, various industrial companies, and the government. He was active in several professional societies. He was a fellow of the American Physical Society; a fellow of the American Society of Mechanical Engineers (ASME); and chairman of the Executive Committee, Fluid Engineering Division of ASME, 1971-1972. He received many awards and honors, including the 1968 ASME Outstanding Research Paper Award and the 1980 ASME Thurston Lectureship.

Milton Plesset is survived by his wife, Janet Jenks; four children, Jean, Michael, Marjorie, and Judith from his previous marriage to Isabel Rosanoff (a writer, who died in 1985); and five grandchildren.