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THOMAS JOHN YPSILANTIS

tum-selected particles in a secondary beam using time-of-flight and Čerenkov counter techniques. Wiegand and Ypsilantis were key participants in this experiment, but, unfortunately, they were not chosen to share the 1959 Nobel Prize in Physics, which was awarded to Chamberlain and Segrè for this discovery.

In the mid-1960s, Tom married Beverly Allen, and seemed well on the way to a conventional future as a Berkeley physics professor. But as his friends and colleagues well know, Tom was never conventional, so perhaps it should not have come as a surprise when he decided to resign his tenured position and move first to Brookhaven National Laboratory and then to Europe. For the next 32 years, he worked mostly at CERN in Geneva, but also in France, Italy, and Greece.

A dominant theme in Tom's research activities was to advance the frontiers of detector technology in order to explore fundamental issues in particle physics. In the 1970s and 1980s, a key challenge was to make reliable particle identification in large-volume detectors over as much of the available phase space as possible. To this end, he and one of us (Seguinot) developed the RICH technique. In a series of innovative experiments, they succeeded in finding gases with low ionization thresholds, designing clever optical configurations, and continually refining the method until high-quality ring images were produced. Over the years, they continued to improve the RICH technique so that it has now been adopted as an essential feature of major experiments such as Delphi and Omega at CERN; E605 and BTeV at the Fermi National Accelerator Laboratory; and SLD at SLAC.

Tom's dedication to physics is well demonstrated by the fact that, after his contract at CERN had expired, he continued to do physics there even though he was no longer receiving any salary. Fortunately, the French National Center for Scientific Research (CNRS) and the Lepton Asymmetry Analyzer (LAA) Project at CERN, together with the National Institute of Nuclear Physics (INFN) in Rome, supported him and his activities for more than a decade. Tom assumed major responsibilities for the R&D work of the LAA group led by Antonino Zichichi. Tom enjoyed the stimulating intellectual atmosphere of this group, and the fruitful collaboration that ensued contributed greatly to the success of his new ideas and imaginative projects. This collaboration continued after his retirement, and he continued to work at CERN with undiminished vigor as a University of Bologna and INFN research professor.

For Tom, detector development was the means to the end of doing interesting physics. Together with Seguinot, Zichichi, and their colleagues, he embarked on a number of ambitious experimental proposals to study neutrino interactions. One of these, called HELLAZ, was a time-projection chamber containing 20 tons of helium gas at a pressure of 20 bars (2 MPa), operated at liquid nitrogen temperatures and shielded by blocks of solid carbon dioxide to detect solar neutrinos. Another was a 27-kiloton liquid water target and radiator with a RICH photon counter to search for oscillations in the CERN–Gran Sasso neutrino beam. More recently, in 1996, he proposed AQUA-RICH, a 125-meter diameter spherical detector containing 1 megaton of water for the observation of atmospheric neutrinos. He was passionate about these projects. He knew only too well that these grandiose ideas were technically difficult, but believed they were indispensable for progress.

From 1995 until his death, Tom served as an editor of the journal *Nuclear Instruments and Methods.* He was a quiet, unassuming person who did not seek personal glory. Nevertheless, his scientific accomplishments were recognized by a number of honors: Doctor Honoris Causa from the University of Uppsala in Sweden, member of the Scientific Academy of Greece, and in 1999, together with Seguinot, the French Physical Society's Special Prize for the development of RICH.

As a scientist, Tom was creative, tenacious, and an eternal optimist. On a personal level, he was a man of character—sincere, open, warm, and charming. He leaves a large void in the physics community, not only because of his extraordinary scientific contributions, but because of his personal qualities as a friend and colleague.

JACQUES SEGUINOT
CERN
Geneva, Switzerland
HERBERT STEINER
University of California, Berkeley
ANTONINO ZICHICHI
University of Bologna
Italy

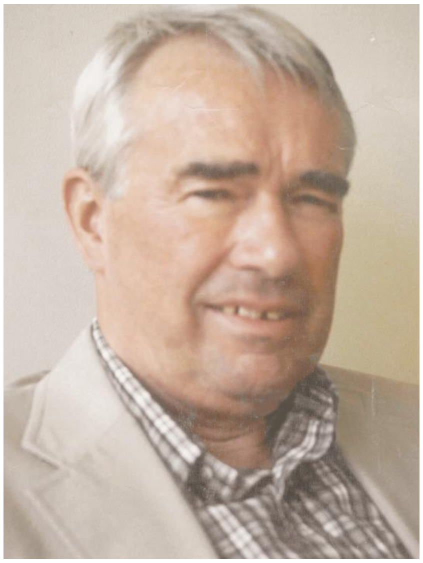
George Wilse Robinson

George Wilse Robinson, Robert A. Welch Professor of Chemistry and Joint Professor of Physics at Texas Tech University, died from a stroke on 7 September 2000 in Lubbock, Texas. Through innovative experiments and insightful theory, Wilse and his coworkers brought fundamental understanding to some of the most important problems in molecular structure, electronic energy relaxation in molecules, crystal spectroscopy, reaction dynamics in liquids, and, more recently, the structure and properties of liquid water.

Born in Kansas City, Missouri, on 27 July 1924, Wilse attended schools in Kansas City and Clearwater, Florida. After serving in the US Navy during World War II, he enrolled at the Georgia Institute of Technology, where he earned a BS in 1947 and an MS in 1949, both in chemistry. He received his PhD in physical chemistry at the University of Iowa in 1952.

In 1954, after two years as a research fellow at the University of Rochester, Wilse received his first faculty appointment—an assistant professor of chemistry at the Johns Hopkins University. At Hopkins, he was the first to successfully develop techniques for detecting electronic spectra of isolated molecules and free radicals trapped in crystalline inert gases at liquid helium temperature.

Wilse joined Caltech as an associate professor of chemistry in 1959. Two years later, he was promoted to professor. The Caltech years were highlighted by landmark theoretical and experimental work on radiationless loss of excited-state electronic energy in molecular aggregates. The 1962 and 1963 *Journal of Chemical Physics* articles by Wilse and Peter Frosch are considered to be key papers in radiationless transition theory. This work, for which Wilse is widely known, continues to have a



GEORGE WILSE ROBINSON

profound impact not only in photochemistry and photobiology, but in other fields as well.

Wilse and his group at Caltech developed experimental and conceptual techniques to examine triplet states, excitation energy transfer and photosynthesis, and exciton phenomena in organic crystals and biological systems. Wilse used molecular dynamics (MD) simulations to study the structure and dynamics of argon clusters. The two papers from this work are still heavily cited in the field of vapor-phase homogeneous nucleation. Wilse also was one of the first chemists at Caltech to use lasers in his research.

Wilse left Caltech in 1975 to become chairman of the physical chemistry department at the University of Melbourne in Australia. His group there was one of the first university groups to publish papers in the emerging field of picosecond spectroscopy.

In 1976, Wilse took the position of Robert A. Welch Professor at Texas Tech University, where he continued the use of picosecond spectroscopy to study liquid-state problems, including the hydrated proton and electron. He began to rely heavily on MD simulations to solve a variety of problems, including salt solutions, isomerization reactions, and liquids in high-electric fields, and in confined geometries, such as between parallel plates. In addition to MD simulations, Wilse and his research group developed analytical models to understand chemical reactions such as isomerization in liquids. In a *Physical Review Letters* article in 1992, the group demonstrated that the rate of activated barrier crossing obeys certain scaling laws.

For nearly two decades, Wilse endeavored to understand the most important liquid known to humankind: water. To quote Caltech's eminent inorganic chemist, Harry Gray, "When the dust settles, and someday it surely will, Wilse Robinson will be recognized as the scientist whose work led to a fundamental understanding of the properties of this amazing substance." Wilse's most important contribution to the study of water was a two-state model that explains its anomalous properties, including the famous density maximum at 4°C. Using this model, Wilse and his group showed that this anomaly, as well as other properties of water, arises from outer-neighbor structural transformations.

In a 1996 *Physical Review Letters* article, he showed that a simple one-dimensional analytical model could reproduce the density maximum. No other current model is able to reproduce the density and other properties of water over a wide range of temperatures and pressures. In a 1999 *Biophysical Journal* article, Wilse showed that the curvature in the total free-energy function for protein unfolding can be attributed to the steep change with temperature of the proportions of ice-Ih–type and ice-II–type bonding in the liquid. This behavior, which leads to cold and heat denaturation, had never before been explained.

Although he was diagnosed with cancer in the spring of 2000, Wilse continued to lead his research group until he entered the hospital. He also gave an oral presentation at the Gordon Research Conference on Water in New Hampshire. After the meeting, he said that it was the best presentation on water that he ever gave. Sadly, it was also his last.

Wilse loved doing science and passionately tackled each problem. He held high scientific standards: In most of his scientific advances, he strove first to obtain a physical understanding of the problem. He also trained numerous students and postdoctoral coworkers, many of whom have become outstanding researchers in physical chemistry and chemical physics. He was not afraid to propose ideas that differed from the mainstream thought. However, more often than not, he was ahead of the rest in terms of understanding a problem. With his death, the scientific community has lost a great member.

EDWARD L. QUITEVIS
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William George Fastie

William George Fastie, a preeminent optical physicist and spectroscopist who helped start the Johns Hopkins University space program in the late 1950s, died of pneumonia on 14 July 2000 in Baltimore.

Born in Baltimore on 6 December 1916, Fastie grew up during the Depression. After graduating from high school with what he called an "undistinguished scholastic record," he worked at a grocery store to help support his family. From the time he was a teenager, he displayed a flair for physics. He attended the Johns Hopkins University from 1934 through 1941, first as a student in the evening college and later as a graduate student in physics, working under the supervision of A. Herman Pfund, Robert W. Wood, and Gerhardt H. Dieke. Remarkably, he did not complete the requirements for either an undergraduate or graduate degree.

During World War II, he worked as a research assistant in the department of physics and developed infrared detectors. In 1945, he left Hopkins to become a research physicist at Leeds and Northrup Co; however, in 1951, professor of physics John Strong lured Fastie back to academe at Hopkins.

Fastie's scientific work at Hopkins was extremely inventive. In his first publications, he described a new type of spectrometer that today bears his name. Because of the subsequent widespread adoption of this type of instrumentation, he became well known among spectroscopists. With the advent of Sputnik, Fastie recognized the promise of spectroscopy from spaceborne platforms, so he began a program of rocket research that has continued at Hopkins. At first, the rocket program emphasized the spectroscopic study of the constituents of Earth's upper atmosphere. But from the mid-1960s, it quickly evolved into an astronomy program, with accurately pointed telescopes carried on space vehicles.

Fastie was a coinvestigator in the Mariner 5 flyby of Venus in 1967 and the Mariner 6 and 7 flybys of Mars in 1969, and was also the principal investigator for the ultraviolet spectrometer experiment on Apollo 17 in 1972. All the missions except for the first flyby carried ultraviolet spectrometers based on the design discovered by Fastie in 1952. Known today as the Ebert–Fastie spectrometer, it is