

OBITUARIES

James Franck

James Franck, Nobel laureate in physics and professor emeritus at the University of Chicago, died in Germany on May 21 at the age of 81. Professor Franck succumbed to a heart ailment while visiting in Göttingen, where he had served four decades earlier as professor of physics and director of the University's Physics Institute.

Born in Hamburg, he studied chemistry at the University of Heidelberg and physics at the University of Berlin. He received his PhD in Berlin in 1906 and remained there until 1918 as a member of the physics faculty, having achieved the rank of associate professor. It was in Berlin in 1913 that he and Gustav Hertz designed an experiment on ionization in mercury vapor which gave strong support to the new model of the atom postulated earlier in the same year by Niels Bohr. Electrons were accelerated to a grid in mercury vapor and then passed through a smaller retarding voltage to a collector. Franck and Hertz found a sharp drop in current to the collector when the accelerating voltage reached 4.9 volts, which was interpreted to mean that inelastic collisions occurred when the electron energy was sufficient to cause a transition in mercury atoms from the ground state to the first excited state, leaving the electrons with too little energy to reach the collector. In later experiments, they also found energy losses corresponding to transitions to higher excited states. The experiment thus demonstrated the existence of discrete energy levels and the correctness of Bohr's frequency condition. It was primarily for this and related work that Professors Franck and Hertz were named to share the 1925 Nobel Prize in physics.

In 1918, Professor Franck was appointed head of the Physics Department of the Kaiser Wilhelm Institute of Physical Chemistry at Berlin-Dahlem, and in 1920 he became professor of experimental physics and director of the Physics Institute at the

University of Göttingen. He remained at Göttingen until 1933, when he resigned as a personal protest on the day that Adolf Hitler assumed power as chancellor of Germany. Six months later, he and his family moved to Copenhagen, where he had been invited to serve as a guest professor. Although the export of gold from Germany was prohibited, Franck was determined not to leave his Nobel Prize medal behind. He dissolved the medal in an acid solution and took it to Copenhagen. The gold powder was later precipitated out of the solution and was returned to the Nobel Foundation in Stockholm. A new medal was struck from the same gold and in 1952 it was presented to Professor Franck in Chicago by Gosta Oldenburg, then consul general of Sweden.

In 1935, Professor Franck came to the United States as professor of physics at Johns Hopkins University. He left Johns Hopkins in 1938 to accept a professorship in physical chemistry at the University of Chicago. In 1947, at the age of 65, he was named professor emeritus, but he continued to work at the University as head of the Photosynthesis Research Institute until 1956.

During his career, Professor Franck made many contributions to the theory of molecular structure and spectroscopy. In 1925, he proposed a mechanism to explain his observations of the photochemical dissociation of iodine molecules. Electronic transitions from a normal to a higher vibrational state occur so rapidly, he suggested, that the position and momenta of the nuclei undergo no appreciable change in the process. This proposed mechanism was later extended by E. U. Condon to a theory permitting the prediction of most-favored vibrational transitions in a band system, and the concept has since been known as the Franck-Condon principle.

During World War II, Professor Franck served as director of the



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Chemistry Division of the Metallurgical Laboratory at the University of Chicago, which was the center of the Manhattan District's Plutonium Project. In 1945, he joined a group of atomic scientists in preparing the so-called "Franck Report" to the War Department, urging an open demonstration of the atomic bomb in some uninhabited locality as an alternative to the military decision to use the weapon without warning in the war against Japan.

In addition to the Nobel Prize, Professor Franck received the 1951 Max Planck Medal of the German Physical Society, and he was honored in 1953 by the university town of Göttingen, which named him an honorary citizen. In 1955, he received the Rumford Medal of the American Academy of Arts and Sciences for his work on photosynthesis, a subject with which he had become increasingly preoccupied in his later years. A fellow of the American Physical Society, he also belonged to many scientific organizations, national academies, and other learned societies in the United States and abroad.

Richard A. Laubenstein

Richard A. Laubenstein, principal research scientist at the Marquardt Corporation in Van Nuys, California, died of cancer on March 2, 1964, at the age of 38, following a long illness.

A native of Green Bay, Wisconsin, he was educated at the University of Wisconsin, where he earned a BS in electrical engineering in 1946, an

MS in physics in 1947, and a PhD in physics in 1951. At Wisconsin he did experimental work on electrostatic generators and on the energy levels of light nuclei.

For the next several years he was employed by North American Aviation, first as a research engineer in the Atomic Energy Research Department and later as an experimental physics group leader. In 1958, he joined North American's Atomics International Division as a nuclear specialist. His work included studies on the detailed technical and economic comparison of different reactor types and on future American and world energy requirements, with specific reference to known resources of fossil and nuclear fuels, and he was responsible for critical experiments, exponential experiments, and related reactor physics studies. He also served on an Atomic Industrial Forum subcommittee that was concerned with a standard form for reactor evaluation. For several years he was an instructor in the Engineering Extension Division of the University of California at Los Angeles. He joined the Marquardt Corporation in 1961 as manager of the power conversion research program which emphasized work in thermionics and magnetohydrodynamics.

Dr. Laubenstein was a member of a number of scientific organizations, including the American Physical Society.

Charles B. Sawyer

Charles B. Sawyer, a physicist, metallurgist, and businessman who played a pioneering role in the founding and development of the beryllium industry, died at his home in Cleveland, Ohio, on March 25. He was 69 years old.

A native of Cleveland, he graduated from Yale University in 1915 and received his PhD from the Massachusetts Institute of Technology in 1921. In the latter year he became an associate of Charles F. Brush, Jr., in the Brush Labs Company and he subsequently served as president of the firm. It was followed in the early thirties by the Brush Beryllium Company, of which Dr. Sawyer was president, and the Brush Development

Company, in which he served as vice president and director. In 1952, the Clevite Corporation was formed with Dr. Sawyer as a director, a position he held until his death. He was also president of Sawyer Research Products, Inc., which he founded in 1956.

Dr. Sawyer was a member of a number of scientific and professional organizations, including the American Physical Society and the American Society for Metals.

Lynn H. Rumbaugh

Lynn H. Rumbaugh, research director of Research Analysis Corporation, died on March 11 at his home in Bethesda, Md.

Dr. Rumbaugh was born in Ira, Iowa, 60 years ago. He graduated from Miami University in Oxford, Ohio, in 1928, and continued his studies at the California Institute of Technology, where he received his PhD in physics in 1932. He then went to the Bartol Research Foundation, first as a National Research Council fellow and later as a Bartol research fellow. From 1937 until 1946, Dr. Rumbaugh was associated with the Department of Physics at the University of Minnesota progressing from assistant professor to professor.

In 1940, he became involved in defense work at the Naval Ordnance Laboratory, where he headed the Measurements Section and served as principal physicist in NOL's Mine Countermeasures Unit. In 1941-42, he was in charge of the Navy's Underwater Defense Group in Pearl Harbor, and for a time was assigned to the Allied Naval Forces in the Southwest Pacific as a scientific adviser for harbor defenses and undersea warfare. He headed NOL's Research and Torpedo Engineering Division from 1942 to 1945, led the Research Department from 1945 to 1950, and in the period 1948-50 served as deputy technical director of the Laboratory.

Dr. Rumbaugh joined the Johns Hopkins University Operations Research Office in 1950, and four years later became its associate director. He served as acting director in 1961 when the office was in the process of reorganizing itself into Research Analysis Corporation, and was subsequent-

ly named director of research. He was a fellow of the American Physical Society and a member of the American Geophysical Union and the Washington Academy of Sciences.

Charles J. Gallagher, Jr.

Charles J. Gallagher, Jr., assistant professor of physics at Columbia University, was shot and killed by an unknown assailant in New York City's Central Park on April 14.

Dr. Gallagher, who was 31, was born in Norwalk, Conn. He received his BA degree in 1954 from the University of Connecticut and his PhD in physics from the University of California in 1957. He spent the next two years at the California Institute of Technology as a research fellow, and, in 1959, went to the Bohr Institute for Theoretical Physics in Copenhagen under a National Science Foundation fellowship. He joined the faculty of Columbia as a research associate in 1961, and was promoted to assistant professor last year.

Dr. Gallagher was a member of the American Physical Society.

Henry J. Hrostowski

Henry J. Hrostowski, associate professor of physics at the University of Oregon, died in Eugene, Ore., on March 15. He was 39 years old.

Dr. Hrostowski was born in Hartford, Conn., and studied at Wesleyan University, where he received his bachelor's degree in 1947. Oregon State College awarded him his MS degree in 1949, and he received his PhD degree from the University of California at Berkeley in 1953.

From 1952 to 1960, he was a member of the staff of Bell Telephone Laboratories, where he worked on the optical and galvanomagnetic properties of semiconductors. He was among the first investigators to study the "three-five" compound semiconductors.

He joined the Physics Department faculty at Oregon in 1961, after having spent one year as a member of the laboratory staff of Atomics International in Canoga Park, Calif.

Dr. Hrostowski was a member of the American Physical Society.