and those who were associated with him in it were rewarded through ever increasing appreciation of his persuasive leadership, his integrity and his good humor.

It is not inappropriate here to recall Williams' great good humor, even in the midst of his ceaseless activity. On 1 April 1965, the day he officially became director of the American Institute of Physics, he was in Dallas at a meeting of the board of directors of the Optical Society. Having in mind what day it was he sent himself a telegram, addressed to the institute, which read, "Congratulations to the institute and myself from myself on starting my association with AIP."

Williams' appointment as director of AIP enhanced rather than diminished his attention to Optical Society programs. His intense interest in education, and his particular interest in aiding and strengthening smaller colleges as potential sources of graduate students and professional physicists to avoid a predicted shortage, will stand out in recollection and will encourage many in their work.

Williams was a member of Phi Beta Kappa, Sigma Xi, the Coblentz Society (of which he was a founder), the Society for Applied Spectroscopy (and a past president of its New York Section), the American Chemical Society, and all original member societies of the American Institute of Physics.

—R. Bowling Barnes
—Richard Perkin
—John A. Sanderson
—Mary E. Warga

Other comments on Van Zandt Williams appear on pages 9 and 136.

John Harry Williams

With the death of John Harry Williams on 18 April, science lost one of its outstanding colleagues and an unusual and valuable friend.

Born in Asbestos Mines, Quebec, on 7 July 1908, John Williams was the son of an American-born Canadian mining engineer. He grew up in Canada and attended the University of British Columbia where he received his bachelor's degree in physics in 1928, the same year that he married Vera Martin of Vancouver.

To pursue as a graduate student the scientific studies he had begun in Canada, Williams went to the University of California at Berkeley where he received his master's degree in 1930 and his PhD in physics in 1931. His major interest was the study of x rays, and this interest led him into nuclear research.

After working from 1931 to 1933 at the University of Chicago as a National Research Council Fellow, Williams moved to the University of Minnesota where he began a long but often-interrupted career as a teacher of physics. It began with his appointment as an

JOHN HARRY WILLIAMS

assistant professor in 1933. By 1937 he had advanced to the position of associate professor—a remarkable accomplishment for a man who was only 29 years of age. While he enjoyed teaching and took great pride in being a good teacher—he claimed he was a "professor at heart"—he was also dedicated to the nuclear research that was to play a growing role in his life and in the world's future.

John Williams was a thoughtful man and very helpful to young scientists. I shall never forget my initial encounter with him. It was during the summer of 1940, when I visited him at the University of Minnesota to have a first-hand look at his research program in nuclear physics. He was already well known for his work and I had some doubts whether he might have any desire to spend time with me. But he served as a gracious and thoughtful host to a then relatively unknown nuclear chemist, giving generously of his time to describe his experiments. I think this was typical of his helpfulness toward others.

In 1942 Williams became a US citizen, and late in 1943 he left Minnesota and his university teaching and research to serve his country on a full-time basis in the secret work of the Manhattan Project. He had already been at work at Minnesota on nuclear work involving analytical methods and the calibration of neutron sources—work that was to contribute to the success of the Manhattan Project.

At Los Alamos, where he served as deputy to test director Kenneth Bainbridge, he played an important role in the nuclear-physics program, which was basic to the design and construction of the first nuclear weapons. Among the important contributions of his group was the experimental demonstration that plutonium emits neutrons when it undergoes fission induced by neutrons. This emission, of course, was basic to the successful operation of a nuclear weapon charged with plutonium, and the Williams group was able to measure by different methods the number of neutrons emitted in the fission process. I had a degree of personal involvement in this experiment since it utilized a precious 200-microgram loaned sample of plutonium which had been prepared by our group at Chicago and which was needed so urgently by our group that I brought it back to Chicago myself after a visit to Santa Fe.

In 1946 Williams returned to the University of Minnesota where he was awarded a full professorship and where his continued career in teaching and nuclear research brought him and the university a growing renown in science. Some of this renown was due to his efforts in obtaining for his physics department in 1949 AEC authorization for a 50-MeV linear proton accelerator and for support of a continuing research program in nuclear physics to be made possible by this new apparatus—the most powerful accelerator of its type at the time. With this linac fully operational and reaching an energy level of 68 MeV in the mid-1950's, Williams and his associates were able to perform much new and significant nuclear research.

Asked to serve his government once again, Williams in 1958 took on the position of director of AEC's Division of Research. In 1959 he was appointed

Commissioner to serve out an unexpired two-year term. Due to ill health he left the AEC in 1960 to return to Minnesota but he was soon back in his laboratory and with his students. His continuing interest in nuclear research led to his spearheading the university's effort to obtain a new tandem Van de Graaff accelerator, which is housed in the new John H. Williams Laboratory of Nuclear Physics, dedicated in his name on 3 May 1966.

In returning to university life he did not sever his connection with, nor lose interest in, the government's role in science and particularly the work of the Atomic Energy Commission, on whose General Advisory Committee he was serving at the time of his death. Perhaps his contributions to physics were best recognized by his colleagues through the honor they bestowed upon him in electing him president of the American Physical Society in 1963, a position that he filled with distinction.

John Williams was a teacher, a physicist, an advisor and public servant who responded whenever the nation required his services. His service at the Los Alamos Scientific Laboratory during the period of development of the atomic bomb and his important contributions in the field of low-energy physics at the University of Minnesota are well known.

During his tenure as director of AEC's Division of Research and as Commissioner, considerable expansion of the Commission's efforts in the basic physical sciences was initiated. Authorization for a major construction project in the field of high-energy physics—the Stanford linear accelerator—was sought. His interest in and support of all the Commission's research programs are a matter of record.

In recent years Williams' efforts on behalf of the Midwest scientific community claimed much of his time and met with considerable success. Last year he was appointed president of the Argonne Universities Association, Inc., a body that represents 26 midwestern universities and that will share in the management of Argonne National Laboratory. Activities such as this, plus continuation of his research program on the university's proton linear accelerator project, service on the commission's general advisory committee and service as president of the American Physical Society, were all accomplished while he struggled against almost overwhelming odds in his battle with ill health. His courage, fortitude and perseverance under these adverse and trying circumstances have inspired us all. His death came while he was still engaged on all fronts. He leaves his wife, a son, Lloyd and two daughters, Susan and Ann, for whom —in spite of his very active life—he always found the time to be a devoted husband and father.

John Williams served the cause of man wherever and whenever he felt he could serve best. When he left the university for the second time to take on government work at AEC, he explained his feeling of having a duty to serve his country as follows: "Every so often you have to put some chips back in the pot. I put some in during World War II and for the past 10 years I have been taking them out. Now I guess the time has come to put more back in."

If we could total the contributions of John Williams during his lifetime—to science, to his government, to his students, to his family and friends—I am sure we would discover that he put far more "in the pot" than he could have ever hoped to get back—except perhaps for those intangible rewards that accomplishment brings to a good teacher, scientist, friend and father. For what he has left to science and to his fellow man we should all be very grateful. And we should all be honored to have worked and walked with a man of the stature of John Harry Williams.

—GLENN T. SEABORG

Julian Mack

Wisconsin physicist Julian Mack died in a Madison hospital on 14 April at the age of 62. A specialist in various types of spectroscopy and related matters, he served with the Manhattan Project throughout US participation in World War II.

Mack was born in La Porte, Ind., and educated at the University of Michigan, receiving his doctorate there in 1928. After serving as an instructor at Michigan from 1925-28, and as a National Research Council