J. G. Hamilton, Medical Physicist and Physician

Joseph Gilbert Hamilton, professor of medical physics and director of the William H. Crocker Radiation Laboratory, University of California, Berkeley, and professor of experimental medicine and radiology at the University of California School of Medicine, San Francisco, succumbed to leukemia on 18 February at the age of 49. Few persons have contributed more to the development of current concepts in the field of radionuclide metabolism in experimental animals and in man.

Hamilton obtained his elementary education in the public schools of Santa Barbara, California, and did his undergraduate and premedical work at the University of California at Berkeley. He obtained his M.D. degree in 1936. His interest in the medical aspects of radioactivity began while he was still a house-officer at the University of California School of Medicine. It was during this period that cyclotron-produced radioisotopes from the Radiation Laboratory were becoming available in amounts sufficient for clinical investigation.

In early 1936, Hamilton made a first study of the therapeutic and metabolic properties of radiosodium in man. Publications on the diagnostic and therapeutic uses of radioiodine in the study of thyroid disorders in human beings were followed by studies of the comparative metabolism, in experimental animals, of radioiodine and the newly discovered radioelement, astatine. The observation that astatine, like iodine, is selectively accumulated by the thyroid gland was made by Hamilton during the same week that the chemical and physical identification of astatine as a halogen was being established by Corson, MacKenzie, and Segrè. Hamilton's lifelong interest in the metabolism of radionuclides appears to have been firmly established during this period, and he became more actively associated with the medical research program of the Radiation Laboratory.

In 1942 Hamilton was made assistant professor of medicine and radiology and supervisor of the Crocker Laboratory 60-inch cyclotron. During World War II, he directed, as part of the medical and health program of the Plutonium Project, an extensive investigation of the metabolism, in experimental animals, of the principal fission products and fissionable elements. He supervised not only the biological part of this program, including the development of new techniques of radioautography, but also the production and isolation of a large number of radioelements in the carrier-free form and the operation and maintenance of the 60-inch cyclotron for a number of chemistry and physics programs related to the Plutonium Project. His broad range of scientific interests, his enthusiasm, and his energetic approach to experimental problems contributed greatly to the successful continuation of these studies.

Research on radionuclide metabolism by the Crocker Laboratory group continued under Hamilton's direction during the postwar years as part of the Radiation Laboratory program supported by the U.S. Atomic Energy Commission. In 1947 he was appointed associate professor and, in 1948, was named director of the Crocker Radiation Laboratory. Full professorship followed in 1950. During his 25-year tenure he was co-author of more than 50 papers on biological and medical aspects of radioactivity. Indicative of his contributions in this field is the fact that the recent report of the International Commission on Radiological Protection shows that more than half of the estimated values of permissible dose for internal radiations are based on studies carried out at the Crocker Laboratory.

Hamilton was keenly aware of his responsibilities in the scientific community. He gladly devoted a large part of his time to his students, both undergraduate and graduate, and he made great effort to encourage initiative and independent thought.

He showed a strong sense of continuing loyalty to his students and associates. Although active in the organizational activities of the university and the scientific societies, he also served on numerous committees of the National Research Council, the U.S. Public Health Service, and the Atomic Energy Commission. He had been a medical consultant to the Division of Biology and Medicine of the Atomic Energy Commission since 1946.

During the past year, although aware of the serious nature of his illness, he attempted to retain an active interest in the work of the laboratory, and he was sustained in this effort by the quiet courage of his wife, Leah. Hamilton's contributions to radiation research will continue to be of great importance in the study of radiation-induced diseases and will be a memorial to him and a reminder to those who knew him.

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