

solid state studies including radiation damage. He was a member of the American Physical Society.

Dr. Ungnade, an organic chemist, was 54 years old. He was born in Bodenwerder, Germany and educated at Michigan State College in East Lansing, where he received a bachelor's and master's degree and at the University of Minnesota, where he received his PhD in 1938. He held several teaching positions at the University of Missouri, New Mexico Highlands University, and Purdue University, before joining Los Alamos in 1954.

William T. Allen

William T. Allen, associate professor and chairman of the Department of Physics at the University of the South in Sewanee, Tenn., died on June 26, in Washington, D. C., following open-heart surgery. He was 38 years old.

Dr. Allen was born in Cleveland, Ohio, and attended Oberlin College, where he received his BA degree in physics in 1948. He continued his studies at Syracuse University, where he received his master's degree in 1954 and his PhD degree in physics in 1958. He served as an instructor in physics and mathematics at Robert College in Istanbul, Turkey, from 1947 to 1951. After completing work on his doctoral degree, he taught at Franklin and Marshall College in Lancaster, Pa., until 1961, when he joined the faculty at the University of the South.

Dr. Allen was involved in the establishment of the Sigma Xi Club in Sewanee and served as its first president. He directed the University's Computer Center and was chairman of the University's Combined Engineering Committee. He was a member of the American Physical Society and the American Association of Physics Teachers.

George R. Sears

George R. Sears, a senior research associate in the Physics and Mathematics Department of the Institute of Paper Chemistry in Appleton, Wis., died on April 24 of a heart attack. Dr. Sears, a specialist in the physical

and physico-chemical properties of paper and pulp, had been associated with the Institute since 1936 and had served as chairman of its Graphic Arts Research Section since 1953.

He was born in Beaver Dam, Wis., on September 12, 1904. He attended the University of Wisconsin where he received a BA degree in 1926, an MA degree in 1927, and a PhD degree in physics in 1937. He spent several years with E. I. du Pont de Nemours and Lawrence College before joining the Institute of Paper Chemistry as a research assistant in physics. He was promoted to research associate in 1941 and to his last position of senior research associate in 1956. In 1963 and 1964 he directed the Institute's annual conference on paper and chemicals.

Dr. Sears was a member of the American Physical Society, the American Association of Physics Teachers, the Electron Microscopy Society of America, and the American Association for the Advancement of Science.

Harley E. Howe

Harley E. Howe, professor emeritus of physics at Cornell University, died on August 18 in Ithaca. He was 83 years old.

Professor Howe was born in Linneus, Missouri. He received a bachelor of science degree from the University of Missouri in 1906 and an MA degree in 1909 and a PhD degree in physics in 1916 from Cornell. While pursuing graduate studies at Cornell, he served as an instructor in physics. After receiving his doctoral degree, he spent six years at Randolph-Macon College in Virginia as professor of physics.

In 1918, he returned to Cornell as an assistant professor. He was promoted to professor in 1937 and retired as emeritus professor in 1950. Professor Howe's research interests lay mainly in the areas of optics, colorimetry, and absorption by organic salts. However, he was best known for his abilities as a teacher. At Cornell, he developed basic courses in physics for nonphysics majors, and after his retirement continued to associate with colleagues and former students at the University. He was the author of a

textbook, *Introduction to Physics*, published by the McGraw-Hill Book Company.

Professor Howe was a member of the American Association of Physics Teachers, the American Physical Society, and the Optical Society of America.

Robert T. Keyes

Robert T. Keyes, vice president and research director of the Intermountain Research and Engineering Company (IRECO) in Salt Lake City, Utah, died on June 23.

Dr. Keyes was born in Ogden, Utah, on June 20, 1923. He received a bachelor's degree from the University of Utah in 1949 and a PhD in physics from Utah in 1954. The following year he became assistant technical director of the University's Institute of Metals and Explosives and was named associate research professor in 1958. He resigned from Utah last year to become research director at IRECO, of which he had been a founder six years earlier.

Dr. Keyes specialized in the field of high explosives. His research interests included detonation phenomena, high-velocity impact, high-pressure physics, ionization in flames, and shocks and detonations.

A. E. Becker

A. E. Becker, a retired physicist who had formerly served on the staff of the Standard Oil Development Company, died in Neshanic, N.J., on April 27 after a long illness.

Dr. Becker was born in Lowell, Ohio, on September 1, 1886. He was graduated from Marietta College in 1909 and pursued graduate studies at Harvard University, where he received a master's degree in 1910 and a doctorate in physics in 1917. During World War I, he served as a physicist with the National Advisory Committee for Aeronautics and the National Bureau of Standards, and after the war he worked for a time with the Aluminum Castings Company. In 1920, he joined Standard Oil, where he was engaged primarily in studies of lubrication and automotive fuels. He retired in 1951.