To notify the community about a colleague's death, subscribers can visit http://www.physicstoday.org/obituaries, where they can submit obituaries (up to 750 words), comments, and reminiscences. Each month recently posted material will be summarized here, in print. Select online obituaries will later appear in print.

Harold Melvin Agnew

Harold Melvin Agnew, a member of the Manhattan Project who was the third director of Los Alamos National Laboratory and a presidential science adviser, succumbed to chronic lymphocytic leukemia on 29 September 2013 at his home in Solana Beach, California.

Agnew was born on 28 March 1921 in Denver, Colorado. He won a scholarship to the University of Denver, where he studied chemistry, was a lifeguard, and met his future wife, Beverly, who later served as a secretary to J. Robert Oppenheimer.

After receiving his undergraduate degree in chemistry in mid 1942, Agnew was recruited for the Manhattan Project. In his new role, he helped build the world's first nuclear reactor at the University of Chicago under the direction of his mentor, Enrico Fermi. On 2 December 1942, Agnew was a witness to the first self-sustaining nuclear chain reaction.

Soon after, both Agnew and Fermi joined the staff at Los Alamos. Among other contributions, Agnew helped design the diagnostic canisters that would be used to measure the yield of the atomic strikes against Japan. He witnessed the attack on Hiroshima and, on his own initiative, filmed the detonation. Later in his life, Agnew regularly gave lectures and interviews and never had any regrets about the use of the atomic bombs. He felt that the use of nuclear weapons was imperative to end the war as soon as possible and to stop the carnage that was taking place.

LOS ALAMOS NATIONAL LABORATORY ARCHIVES

Harold Melvin Agnew

After World War II ended, Agnew went back to the University of Chicago to complete his MS and PhD in physics under Fermi. He finished his thesis, "The beta spectra of Cs137, Y91, Chlorine147, Ru106, Sm151, P32, Tm170," in 1949 and upon graduating returned to Los Alamos, where he performed nuclear-physics research. He quickly concluded that he could contribute more to the nuclear weapons program in the areas of design and development.

Agnew made significant contributions to the physics understanding of the first thermonuclear device, which was successfully tested in November 1952 at Enewetak Atoll. He went on to become a leader of major tests of next-generation devices that were fired in Operation Castle in 1954.

By the early 1960s, his talents were well known in the defense community. He was invited to be the scientific adviser to two successive commanders of NATO.

After returning to Los Alamos in 1964, Agnew increased substantially the laboratory's interactions with the Department of Defense. In addition, he successfully developed a wide range of contacts from among the diplomatic and military rosters of the NATO allies.

During his time as a NATO adviser, Agnew recognized the need for enhanced nuclear weapons security. Ultimately, he led the Los Alamos effort to develop the permissive action link. A joint project with Sandia National Laboratories, PAL technology ensures that nuclear weapons cannot be detonated without proper authorization. For decades, PALs have been a standard feature on US nuclear weapons.

By the time Norris Bradbury, the second director of Los Alamos, stepped down in 1970, Agnew was clearly a leading nuclear weapons authority in the free world. As long as Los Alamos held a major role in nuclear weapons, he was the obvious choice to lead the laboratory into the future.

Agnew served as director of Los Alamos for almost a decade and brought into fruition optimum weapons for the deterrent posture that had developed during the 1960s. He also introduced technical diversity to the lab. Until Agnew became director, virtually every program was tied, directly or indirectly, to weapons work. The multidisciplinary laboratory of today was created by Agnew in the 1970s.

After retiring as Los Alamos director in 1979, Agnew became president and CEO of General Atomics. In that position, which he held until 1985, he pushed for the development of safe reactor technologies and was a vocal advocate for nuclear power. Throughout the 1980s he also was a presidential science adviser to Ronald Reagan.

Agnew liked to say that the US nuclear deterrent was his legacy. That is an assessment in which we wholeheartedly concur. No other individual held so much responsibility over so many decades for the creation of the stockpile. Through his contributions as a nuclear scientist and adviser, Agnew charted a path that has ultimately contributed to a more stable and sustainable world.

John C. Hopkins
Alan B. Carr
Los Alamos National Laboratory
Los Alamos, New Mexico

Recently posted notices at http://www.physicstoday.org/obituaries:

Fred Kavli
20 August 1927 – 21 November 2013
William C. Davidon
18 March 1927 – 8 November 2013
Abolghassem Ghaffari
15 June 1907 – 5 November 2013
Clifford I. Nass
3 April 1958 – 2 November 2013
Marilyn E. Jacox
26 April 1929 – 30 October 2013
Hui-Chun Liu
26 March 1960 – 23 October 2013
William Robert Stratton
15 May 1922 – 3 October 2013
Avraham Schiller
19 February 1963 – 22 June 2013

John Richard Clem

Condensed-matter physicist John Richard Clem, renowned for his work on superconductor phenomenology, passed away on 2 August

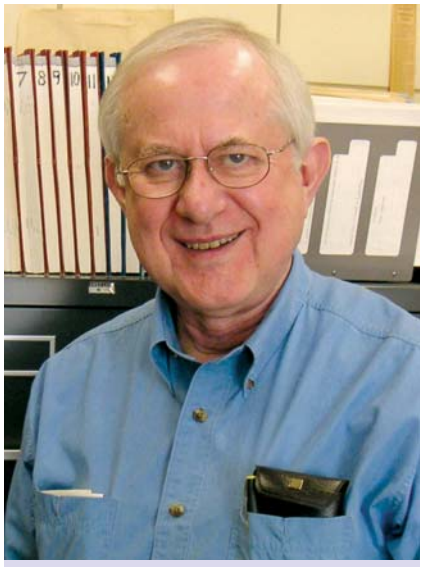
2013 in Ames, Iowa, after a four-year battle with mesothelioma.

John was born on 24 April 1938 in Waukegan, Illinois, into a family of schoolteachers. He received scholarships to the University of Illinois at Urbana-Champaign, where he completed his BS in 1960 and his MS in 1962, both in engineering physics. Although he would later choose theoretical physics, he was most fascinated by the theories and models that lead to measurable and, better yet, practical results.

John earned his PhD under John Bardeen in 1965. The topic of his thesis, "Effects of anisotropy of the superconducting energy gap," was suggested by Leo Kadanoff. John recalled the working atmosphere in Illinois as stimulating and exciting because of the "stellar" quality of Bardeen's group. Bardeen was at the time a very busy man—among his other responsibilities was advising the federal government—so John was used to thinking independently and choosing problems to his liking. And his liking was mostly in what we now call the "phenomenology of superconductors," in particular, their behavior in electromagnetic fields. That broad field became John's lifelong passion and resulted in several seminal achievements.

After postdoctoral appointments at the University of Maryland and the Technical University of Munich, John joined the Iowa State University department of physics and astronomy and the Ames Laboratory in 1967. There he enjoyed 46 years of collaboration with colleagues. For the community of people dealing with a broad field of type II superconductivity, John's name will always be associated with "pancake vortices," the term he coined to describe Abrikosov vortices in layered high-T_c cuprate superconductors.

One of us (Huebener) met John for the first time in 1968 at the 11th International Conference on Low Temperature Physics in St. Andrews, Scotland; the encounter resulted in their long, intensive collaboration on the intermediate state in type I superconductors and other aspects of superconductivity. During one of Huebener's visits to see John in Ames, they worked out a detailed exposition of low-temperature scanning electron microscopy applied to superconductors. John introduced the thermal skin effect, which was subsequently confirmed experimentally. The pinning and the motion of magnetic flux in superconductors remained his central subjects; his theoretical



John Richard Clem

guidelines helped in our understanding of many experimental results.

John's belief that scientific information must be freely available to all resulted in his establishing the tremendously popular and useful *High-T_c Update*, for which he was the editor from 1987 to 2000; he received hundreds of preprints and selected a few worth noting in each issue's "Nota Bene" section. When one of us (Prozorov) was an undergraduate student in Chernogolovka, outside of Moscow, in 1989–93, before the internet or email, those two-page printed leaflets were the most anticipated mail each month. To be mentioned in John's "Nota Bene" was considered by the superconductivity community as prestigious as having a paper published in a journal of good standing.

Among John's many other contributions to superconducting phenomenology were his work on AC losses, edge pinning, flux cutting, and critical currents in superconducting thin-film strips of various shapes—currently a hot topic in superconducting electronics. He spent long hours analyzing data related to the intermediate state in type I superconductors, despite the fact that he was already retired and struggling with cancer. John ultimately produced an elegant solution to the problem of patterns in type I superconductors. That work became the last that he submitted for publication; it was published after his death in *Physics Review B* (volume 88, page 104504, with coauthors Prozorov and Rinke Wijngaarden). In 2012 John received the IEEE Council on Superconductivity Award for Continuing and Sustained Contributions in the Field of Applied Superconductivity.

Besides physics, John was interested in people, culture, and languages, and he spoke fluent German. He was also an avid vocalist. As in everything else, in music he set high standards for himself. He took lessons to keep his voice in the best shape. He enjoyed singing baritone in churches, at concerts of Musica Antiqua—an early music ensemble at Iowa State—and at conference banquets. That part of John's life was in harmony with his love for theoretical physics—both aspire to beauty.

John's incredible willpower showed when it turned out his mesothelioma was not curable. In fact, the intensity of his work in physics increased, despite his undergoing chemotherapy and taking care of his wife, Judy, who a few years earlier had become paralyzed after having a brain tumor removed. It was heartbreaking to watch, but John's shining and stoic behavior will always be a moral standard for those who knew him.

Vladimir Kogan
Ruslan Prozorov
Ames Laboratory
Iowa State University
Ames
Rudolf Huebener
University of Tübingen
Tübingen, Germany ■