obituaries

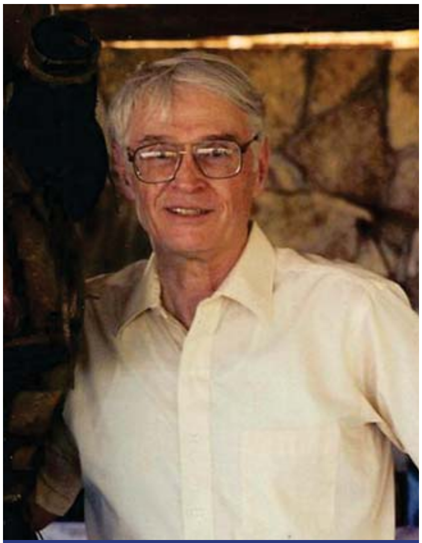
To notify the community about a colleague's death, subscribers can visit http://www.physicstoday.org/obits, where they can submit obituaries (up to 750 words), comments, and reminiscences. Each month recently posted material will be summarized here, in print. Select online obituaries will later appear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

Albert Rich Erwin Jr

Albert Rich Erwin Jr, professor of physics emeritus at the University of Wisconsin–Madison, passed away on 5 April 2011 in Madison.

Albert was born on 1 May 1931 in Charlotte, North Carolina, to two educators: His father was a school principal, and his mother a school teacher. He graduated from Duke University in 1953 with a BS in physics. He earned a doctorate in 1959 from Harvard University. His thesis, titled "Σ^+–K^+ production in 990 MeV π^+–p collisions," was done under the guidance of Anatole Shapiro. Albert joined the faculty at the University of Wisconsin in 1959 and became a full professor in 1965.

An experimental high-energy particle physicist, Albert carried out experiments at Argonne, Brookhaven, and Fermi National Laboratories over his 50-year career. He was an early adopter and innovator of useful new technologies. Some of his early experiments used the bubble chamber technique, in which photographs of particle reactions were analyzed by computer-interfaced film-scanning and measuring machines, which he built at Wisconsin. His most famous result in that early period was the discovery, with William Walker, of the rho meson in 1961.



Albert Rich Erwin Jr

By the early 1970s Albert's research at Fermilab had moved into electronic detection methods, by which he was able to collect and analyze higher event rates than was possible with bubble chambers. Albert worked on early parton scattering experiments developed at Fermilab with several coworkers and with collaborators from Argonne, Lehigh University, the University of Pennsylvania, and Rice University. At that time the existence of jets of hadrons and their connection to the underlying scattering in which quarks were knocked out of the proton were far from universally accepted. The Fermilab experiments were the first to use calorimeters to trigger on and observe jet production in hadron collisions. To reconstruct the jets, Albert and his collaborators invented techniques that anticipated the cone-type algorithms commonly used by collider experiments nowadays.

When the Fermilab collider came on line in 1987, Albert, Fermilab coworkers, and collaborators from Duke, Iowa State University, and Purdue University mounted a search for the formation of a new state of matter, a quark–gluon plasma, in the highest-energy (1.8-TeV) hadron collisions available. Initially, the idea of a quark–gluon plasma was met with some ambivalence, as the experimental signatures were not well defined. After some years of theoretical and experimental progress, it has become more widely accepted, mostly among the heavy-ion-physics community.

In those pioneering experiments, Albert and his colleagues probed at the frontier of strong-interaction physics, a topic that occupied much of Albert's career. He built much of the critical experimental apparatus used in the research. In later years he made numerous contributions to flavor physics, such as participating in the first observation of the cascade beta decay at KTeV (Kaons at the Tevatron) and implementing the detector control system for MINOS (Main Injector Neutrino Oscillation Search).

Although he retired in 2005, Albert continued to work on high-energy physics experiments. As his health began to decline, he was working to complete a comprehensive review of multiparticle production at the Fermilab Tevatron and was pursuing ideas for a laboratory-scale gravitational-wave detection experiment.

In addition to being an exceptional experimental physicist, Albert was an effective teacher who conveyed the excitement of physics in a straightforward manner that could be appreciated by nearly every student. With an enthusiastic and inquiring style, he taught courses from undergraduate introductory physics for nonmajors to the core graduate courses.

In his lab Albert trained 14 PhD students and countless undergraduates, many of whom remember him as more than a mentor—he was a major influence in their lives. Albert truly enjoyed physics and his work, which occupied nearly all his time. Nevertheless, he felt it important to intersperse work with some recreational diversion; he would go on canoeing, hiking, or biking day trips, which he often organized for his research group and friends.

At the age of 13, Albert built and operated his first ham radio, which began a lifetime passion. Athletically gifted, he was a runner most of his life, cocaptain of his high school football team, and an intramural football player in college. He also played the trombone in his high school band. In his later years, he and his wife, Denise, enjoyed flying in her airplane. Like many physicists, he had a dry sense of humor and loved a clever story or cartoon.

Albert was a man of honesty, integrity, and humility. He avoided the spotlight and always followed his curiosity and instincts. He was a credit to his profession and to the University of

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

Bernadine P. Healy
2 August 1944 – 6 August 2011
Jonathan B. Tucker
2 August 1954 – 31 July 2011
Douglas McCune
1 January 1956 – 16 July 2011
John S. Toll
25 October 1923 – 15 July 2011
Andrew Brinkman
25 August 1950 – 7 July 2011
Herbert Eisner
23 June 1921 – 28 June 2011
Derek Bryce-Smith
29 April 1926 – 24 June 2011
David F. Griffing
23 February 1926 – 12 June 2011
Boris W. Batterman
24 August 1930 – 14 December 2010

Wisconsin; above all, he was true to himself. His grace, knowledge, and insight will be greatly missed.

Casey Durandet
Maricopa County Colleges
Phoenix, Arizona
Kenneth S. Nelson
Johns Hopkins University
Applied Physics Laboratory
Laurel, Maryland

Maurice Goldhaber

Maurice Goldhaber, a seminal contributor to nuclear and particle physics and director of Brookhaven National Laboratory (BNL) from 1961 to 1973, died at the age of 100 on 11 May 2011 after a short illness.

Maurice was born in Lemberg, Austria, on 18 April 1911. He received his gymnasium education in Saxony before going to the University of Berlin, where Lise Meitner taught his first course in nuclear physics. In 1933, with recommendations from Erwin Schrödinger and Max von Laue, he was accepted by Ernest Rutherford as a student at the Cavendish Laboratory.

He quickly made his first major contribution when he suggested to James Chadwick, who had discovered the neutron a year earlier, that the deuteron could be disintegrated by high-energy photons. The backstory, which Maurice often told, illustrates the special way he operated throughout his career. In the spring of 1933, while still a student in Berlin, he read that Gilbert Lewis had made a gram of heavy water. Maurice, who kept dated notebooks of his ideas, jotted down "What can you do with heavy water?" One of his ideas was that gamma rays could disintegrate the deuteron. He knew it was a good idea, told no one, but did not stop thinking about it.

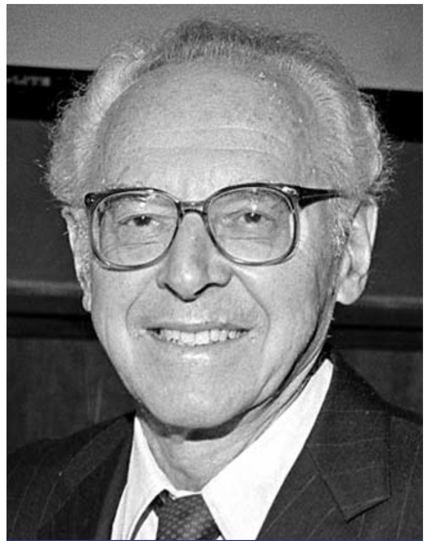
Less than a year later, when he went to Chadwick to seek information about lithium reactions, he suggested his photodisintegration idea. Chadwick was uninterested but "caught fire" when Maurice told him, "You get the neutron mass out of it." Six weeks later, when Maurice sought Chadwick's approval of his first publishable paper, "Spontaneous emission of neutrons by artificially produced radioactive bodies," Chadwick asked whether he was the man who suggested the photodisintegration. On getting a yes, Chadwick said, "It worked last night. Would you like to work with me on it?" A year later Chadwick and Maurice published the first accurate measurement of the mass of the neutron. (Most of the quotations here are from Maurice's oral history interview with the American Institute of Physics, http://www.aip.org/history/ohilist/4632.html.)

Maurice earned his PhD in physics at Cambridge University in 1936, at a time when jobs for physicists were scarce. He was still on a fellowship when he visited the US in 1938. Friends who preceded him there recommended he accept a faculty position at the University of Illinois. While at the university, he built a strong reputation for creative experiments that covered a wide range of nuclear problems; they were conducted at many laboratories, including BNL, where he worked for several summers. He joined BNL in 1950, in part because of its bountiful nuclear facilities and in part because it had a position for his wife, Gertrude Scharff Goldhaber, a creative nuclear physicist in her own right who could not get a paid position at Illinois because of nepotism rules.

Maurice was a vital contributor to the growth and development of many areas of research at BNL. He was valued for his far-ranging interests, encyclopedic knowledge of nuclear and particle physics, willingness to listen, and openness to share with others his carefully thought-through ideas for experimental or theoretical exposition. Maurice focused on forefront issues, especially if they involved neutral particles, which he said "are very clean." Gamma rays, neutrons, and neutrinos "come in and they don't ionize until something happens."

From his earliest experiments, Maurice always considered the spin aspects. They had given him important insights in his work at Cavendish and were essential to his successful classification of nuclear isomers using the shell model. Those recurring themes came together in 1958 when Maurice, Andrew Sunyar, and one of us (Grodzins) used a small tabletop apparatus and a gamma-ray signature to determine the helicity of the neutrino. Maurice's vital contribution was his insight that the unique combination of spins involved in the europium-to-samarium decay process, together with the simple kinematics, enabled an unambiguous determination of the neutrino helicity.

Maurice's exceptionally productive career, from his first publication in 1933 to his final one written with his son Al-



BROOKHAVEN NATIONAL LABORATORY

Maurice Goldhaber

fred for the May 2011 issue of PHYSICS TODAY (page 40), earned him numerous awards. They included the Tom W. Bonner Prize in Nuclear Physics in 1971, the J. Robert Oppenheimer Memorial Prize in 1982, the National Medal of Science in 1983, the Wolf Prize in Physics in 1991, and the Enrico Fermi Award in 1999. Maurice served as president of the American Physical Society in 1982. On retiring in 1985, BNL named him a Distinguished Scientist Emeritus for his contributions to physics and to the lab.

A memorable trait of Maurice's was his love for aphorisms and puns. He often said, "Physics teaches old things to new people." In talking about the Irvine-Michigan-Brookhaven experimental search for proton decay, he pointed out that you could get an estimate of the proton's lifetime because if it were too short, "you could feel it in your bones."

Maurice was a superb laboratory director. With style, charm, and wit he initiated and presided over an extraordinary period of scientific productivity at BNL. Research during his tenure resulted in major discoveries in physics, three of which eventually garnered Nobel Prizes. Perhaps as valued as his other contributions was Maurice's immersion in science discussions, which he was willing to do anywhere and with anyone; he would ask the telling question, give new insights into the issues, and always be helpful and very much to the point. His immense impact at the laboratory is a lasting legacy.

Peter D. Bond
Brookhaven National Laboratory
Upton, New York
Lee Grodzins
American Science & Engineering
Billerica, Massachusetts