NAS to Grant Awards

At a ceremony in Washington, DC, on 1 May, the National Academy of Sciences will honor 14 individuals for their contributions to science. The laureates include four who are pursuing physics-related research.

The academy's highest honor, the Public Welfare Medal, will be presented to **Gilbert F. White**, the Gustavson Distinguished Professor Emeritus of Geography at the University of Colorado at Boulder. He is being cited for "sixty-five years of educating colleagues, students, and governments—through research, institution-building, and policy analyses—on how to change the ways we manage water resources, mitigate hazards, and assess the environment, enabling people to aspire to a more humane existence with the natural world."

Donald Lynden-Bell, a professor of astrophysics at the University of Cambridge, UK, will receive the John J. Carty Award for the Advancement of Science. He is being honored "for his outstanding work in theoretical astrophysics, and especially for the originality of his contributions to our understanding of the collective dynamic effects within stellar systems." The award consists of a medal and prize of $25 000 and is presented every three years in a different field.

The Award for Initiatives in Research will go to **Kenneth A. Farley**, a professor of geochemistry at Caltech, for "his insightful use of isotope geochemistry to address the origin of Earth's atmosphere, the infall of cosmic dust, and the uplift rates of mountains." The $15 000 prize is awarded annually in a different field.

George W. Wetherill will garner the J. Lawrence Smith Medal, which is accompanied by $20 000 and is awarded every three years for investigations of meteoric bodies. A staff member of the Carnegie Institution of Washington, Wetherill was chosen for "his unique contributions to the cosmochronology of the planets and meteorites and to the orbital dynamics and formation of solar system bodies."

AAAS Honors Scientific Leadership

The American Association for the Advancement of Science presented its 1999 awards at its annual meeting in Washington, DC, in February. Among the recipients was **Neal F. Lane**, President Clinton's science adviser. He received the Philip Hauge Abelson prize for—in the words of the citation—"his performance as an exceptional public servant, a distinguished scientist and educator, and for his unstinting service to the scientific community."

Gunter E. Weller garnered the International Scientific Cooperation Award "for his dedication to understanding global change and its regional consequences, and for successfully promoting global change as an international priority." Weller is a professor of geophysics, emeritus at the University of Alaska Fairbanks.

The Newcomb Cleveland Prize was presented to **Norman Murray** of the Canadian Institute for Theoretical Astrophysics and **Matthew Holman** of the Harvard–Smithsonian Center for Astrophysics for their report, "The Origin of Chaos in the Outer Solar System," *Science*, volume 283, page 1877, 1999.

Lawrence M. Krauss was honored with the Public Understanding of Science and Technology Award for "his global impact as a scientific communicator, especially his ability to maintain an active scientific career while at the same time writing several accessible books about physics for the general public." He is chairman of the physics department, a professor of astronomy, and the Ambrose Swasey Professor of Physics at Case Western Reserve University.

Obituaries

Robert Rathbun Wilson

Robert Rathbun Wilson, the driving force behind the creation of two world-class high-energy physics laboratories—Cornell University's Laboratory of Nuclear Studies and Fermilab—died on 16 January in Ithaca, New York. Three years earlier he suffered a stroke from which he never recovered.

Born in Frontier, Wyoming, on 4 March 1914, Wilson began his university education in 1932 at the Berkeley campus of the University of California, where he earned an AB in 1936. Staying at Berkeley, he studied physics under Ernest O. Lawrence and earned a PhD in 1940. That same year, he was appointed instructor at Princeton University and was promoted to assistant professor the following year.

In 1943, Wilson joined the new laboratory being set up in Los Alamos, New Mexico, for the development of the atomic bomb. A year later, he was made head of the physics research division, which was responsible for experimental nuclear physics research and, later, for nuclear measurements made during the test of the first atomic bomb. Appalled by the destructive power of the bomb, Wilson worked effectively toward the end of World War II for civilian control of atomic energy. He was a leader in the formation of the Federation of Atomic Scientists, becoming its chairman in 1946.

After spending two years as an associate professor at Harvard University, Wilson moved in 1947 to Cornell University, where he spent the next 20 years as the director of the university's Laboratory of Nuclear Studies. At Cornell, he oversaw the construction of four successively more energetic electron synchrotrons. The second of those accelerators—a 1.2 GeV strong focusing synchrotron—was the first operating accelerator of this type. Cornell has endured as an important center of experimental high-energy research in this age of giant national or international laboratories because it always had an accelerator with some unique physics capability built at a modest cost. During his tenure as director, Wilson insisted on this combination, which has been maintained by the two subsequent directors, Boyce McDaniel and Karl Berkelman.

During his 20 years at Cornell, Wilson remained deeply embedded in the physics program, as both mentor and experimentalist. He did extensive measurements of kaon and pion photoproduction in which he made the first observation of a new state of the nucleon, N(1440). And in a series of elastic electron–nucleon scattering, he extended the work of Robert Hofstadter to larger momentum transfer and separated F_1 and F_2, the nucleon's electromagnetic form factors.

In 1967, after completing the 10 GeV Cornell Synchrotron, Wilson left Ithaca to assume the directorship of Fermilab. Starting on a virgin site with no staff, he began the job of building the most ambitious accelerator project ever undertaken at that time. In addition to the challenge of building a cascade of large accelerators in less than five years, Wilson promised to double the 200 GeV energy of the originally proposed accelerator, a promise that he fulfilled, making it the highest-energy facility in the world. He accomplished that feat primarily by designing magnets that had a smaller aperture and higher magnetic fields, thereby increasing the energy of the protons circulating in the same-sized tunnel. The achievement of higher energy at the same cost was a hallmark of Wilson's career.

In 1980, the accelerator's capability was more than doubled again to reach 1000 GeV by the installation of a superconducting magnet ring in the same tunnel. (With characteristic foresight, Wilson had the original tunnel built with space to spare.) Called the Tevatron, the accelerator was activated in 1980 and continues today to be the world's most energetic proton accelerator.

The Tevatron undertaking was vintage Wilson. To guide its circulating beams, the accelerator required about 1000 very accurate and reliable superconducting magnets, which, in turn, required making an enormous leap forward in superconducting technology. Wilson provided the project's vision and leadership and was devotedly and personally involved in the difficult R&D required to establish the mass production technology for bringing the project to a successful and low-cost conclusion. Without the technology, the capital and operating costs required for multi-TeV accelerators such as the Tevatron would be prohibitive.

Wilson built accelerators because they were the best instruments for doing the physics he wanted to do. He had very clear ideas of what the important physics problems were, and his influence was important to the Fermilab physics program. So far, the two most important physics results at Fermilab have been the discovery of the bottom quark (in 1977) and top quark (in 1995). It was Wilson's insistence on operating the main ring at the highest energy that made the discovery of the bottom quark possible. For Wilson, energy was the key to discovery. Of course, this was just as true in the case of the much heavier top quark, for which the Tevatron's full energy was required.

Fermilab was an architectural, as well as scientific, triumph. With Wilson's involvement, the campus was designed with a grace and beauty rare in such facilities. The striking and memorable main building revealed another side of Wilson: the artist who believed that art and science should blend to form a harmonious whole. Wilson eloquently expressed this philosophy to Senator John Pastore on 16 April 1969 in testimony before the Joint Committee on Atomic Energy of the US Congress:

Senator John Pastore: Is there anything connected in the hopes of

ROBERT RATHBUN WILSON

this accelerator that in any way involves the security of the country?

Wilson: No sir, I don't believe so.

Pastore: Nothing at all?

Wilson: Nothing at all.

Pastore: It has no value in that respect?

Wilson: It has only to do with the respect with which we regard one another, the dignity of men, our love of culture. It has to do with those things. It has nothing to do with the military, I am sorry.

Pastore: Don't be sorry for it.

Wilson: I am not, but I cannot in honesty say that it has any such application.

Pastore: Is there anything here that projects us in a position of being competitive with the Russians, with regard to this race?

Wilson: Only from a long-range point of view, of a developing technology. Otherwise, it has to do with: Are we good painters, good sculptors, great poets? I mean all the things we really venerate and honor in our country and are patriotic about. In that sense, it has nothing to do directly with defending our country, except to make it work defending.

In 1946, noting that protons deposit most of their energy near the end of their path, Wilson proposed using proton beams for cancer therapy. By controlling its energy, most of the beam's energy could be deposited in a cancerous tumor inside the body with little damage to healthy cells. At his suggestion, the Harvard cyclotron was used for cancer therapy—the first successful demonstration of the technique. In recent years, the use of proton therapy has grown rapidly in many different cancer treatment centers around the world.

Wilson was awarded the National Medal of Science in 1973 and the Enrico Fermi Award in 1984. He was elected to the National Academy of Sciences and presided over the American Physical Society in 1985.

Wilson's effervescent personality came through in everything he did. He was a man filled with exciting ideas, inventions, and an array of interests in art, humanities, nature, and moral principles. These interests resulted in the restoration of the grasses of the Great Plains and the buffalo herds to the Fermilab site; his artistic stamp on the architecture at Fermilab; his personal sculptures at the laboratory, at other institutions, and in his own home; his civil rights efforts at Fermilab; his commitment to the Federation of Atomic Scientists (now the Federation of American Scientists) and APS; and his long-time work toward proton therapy. Wilson was a man who truly enjoyed living life to the fullest.

BOYCE MCDANIEL
ALBERT SILVERMAN
Cornell University
Ithaca, New York

Richard Latter

Richard Latter, a long-time consultant to various US defense organizations, died of lung cancer on 2 December 1999 at the Hospice of Northern Virginia in Arlington.

Born in Chicago on 20 February 1923, Latter earned a BS in 1942 and a PhD in theoretical physics in 1949—both from Caltech. He served in the US Navy during World War II.

After graduate school, Latter joined the nuclear energy department of the RAND Corp in Santa Monica, California. Under the leadership of Ernie Plesset, Latter worked with his only brother Albert Latter, Herman Kahn, Sam Cohen, Bob LeLevier, Hal Brode, and consultants Edward Teller and John von Neumann, among others. In 1956, Latter became the head of RAND's physics department, but after being replaced four years later by his brother Albert, he moved to the RAND Research Council.

In the early 1950s, when what is now known as Lawrence Livermore National Laboratory was being formed, Latter and several other members of RAND's physics department supported the lab's theoretical work. From 1952 to 1953, Latter temporarily headed Livermore's theoretical physics division.

In 1971, after he had worked for