scopic methods, and especially for experiments using these methods to measure dynamical processes in condensed phase systems."

In Brief

Last month, **Jochen R. Schneider** joined the board of directors of the German Electron-Synchrotron (DESY) in an expansion of the board from five to six members. The new directorship oversees research with synchrotron radiation. **Robert Klanner** is the new DESY research director, in charge of elementary particle physics. He succeeds **Albrecht Wagner**, who became director general of DESY last July.

In a ceremony at Rockefeller University last November, **Steven Weinberg** received the university's 1999 Lewis Thomas Prize, which honors scientists for their artistic achievement. He was cited for "his extraordinary achievements in conveying, with passionate clarity, the ideas, history, explanatory power and aesthetic dimensions of fundamental physics." Weinberg holds the Josey Regental Chair in Science at the University of Texas at Austin and is a member of both the physics and astronomy departments.

Robert J. Birgeneau, the dean of the school of science at MIT for the last eight years, has been tapped to be the next president of the University of Toronto. He wil assume his new position on 1 July.

Last September, **Paul S. Peercy** became the new dean of the University of Wisconsin—Madison's College of Engineering. Since 1995, Peercy had been president of SEMI/SEMATECH, a nonprofit consortium of semiconductor industry suppliers, based in Austin, Texas.

After 21 years as editor of *Reviews of Scientific Instruments*, **Thomas H. Braid** retired from the journal at the end of last year. His successor is **Albert T. Macrander** of Argonne National Laboratory.

Gordon Thomas retired from Lucent Technologies, Bell Laboratories last December and has moved to MIT, where he is a visiting professor of physics in the Harrison Spectroscopy Laboratory.

In October, Fusion Power Associates presented its 1999 Distinguished Career Awards to **Thomas H. Stix**, a professor emeritus of astrophysical sciences at Princeton University and a former associate director for academic affairs at the Princeton Plasma Physics Laboratory; **J. Bryan Taylor**, a professor at Culham Science Centre in Oxfordshire, England; and **Masaji Yoshikawa**, a former president of the Japan Atomic Energy Research Institute. FPA also presented its 1999 Excellence in Fusion Engineering Awards to **Per Peterson** and to **Michael D. Williams** in October. Peterson is a professor of nuclear energy at the University of California, Berkeley and chair of the university's Energy and Resources Group. Williams is head of the engineering and technical infrastructure department at the Princeton Plasma Physics Laboratory.

Alan Chodos, a senior research physicist and lecturer in physics at Yale University, is the new assistant executive officer of the American Physical Society. He succeeds **Barrett Ripin**, whose five-year term ended last month.

Benoit Mandelbrot, who coined the term "fractal" in the 1970s, has been appointed the Sterling Professor of Mathematical Sciences at Yale University. He is also an IBM fellow emeritus at the T. J. Watson Research Center in Yorktown Heights, New York.

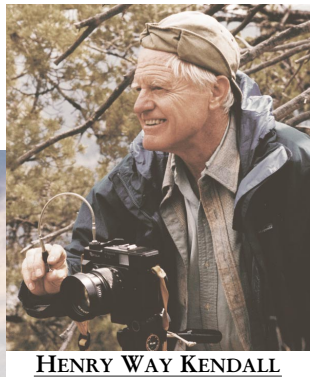
Dimitrios Cokinos and **C. Ruth Kempf**, both researchers at the U.S. Department of Energy's Brookhaven National Laboratory, were honored in November by the American Nuclear Society for their contributions to nuclear safety and nonproliferation. Cokinos garnered the 1999 Standards Service Award for "his years of leadership and dedication to setting standards for the safe and efficient design and operation of nuclear reactors." Kempf received the 1999 Women's Achievement Award.

Obituaries

Henry Way Kendall

Henry Way Kendall, who, with Jerome I. Friedman and Richard E. Taylor, won the 1990 Nobel Prize in Physics for establishing experimentally that quarks exist, died on 15 February 1999 while fresh-water diving in Florida. The range of his accomplishments, commitments, and avocations is reminiscent of prodigiously energetic and versatile Victorian scientists. He was a key figure in a groundbreaking development in fundamental physics, a world-class mountaineer in his younger years, a photographer and diver at the professional level, and an outstanding leader in bringing the concerns of scientists about the societal impact of technology to public attention.

HENRY WAY KENDALL



HENRY WAY KENDALL

Henry was born in Boston on 9 December 1926. In his own words, from his Nobel autobiography: "I developed, or had been born with, an active curiosity and interest in things mechanical, chemical and electrical, and do not remember when I was not fascinated with them and devoted to their exploration." After obtaining an undergraduate degree in mathematics at Amherst College in 1950, he earned his doctorate at MIT in 1954 with a difficult experiment on the spectrum of positronium, which had recently been discovered by his research adviser Martin Deutsch.

In 1956, following a postdoctoral fellowship at what later became Brookhaven National Laboratory, Henry joined Stanford University's physics department. There he met Friedman and Taylor, who were to become his

long-term scientific collaborators.

Although Henry and Friedman joined the MIT faculty in 1960–61, they maintained a connection to experimental work at Stanford, whose pioneering linear accelerator (SLAC) was completed in 1966. Producing 20 GeV electrons, the accelerator made it possible to examine the internal structure of the proton with unprecedented resolution. It was far from obvious, however, that this approach would yield anything of interest. At that time, it was the widely held view that the substructure of the proton was smooth and diffuse—even though Murray Gell-Mann and George Zweig had each already proposed, independently, the quark model. Most physicists, however, viewed the model as an intriguing but abstract mnemonic, and were loath to ascribe physical reality, let alone a point-like structure, to quarks.

As adventurous in physics as in his other passions, Henry was undeterred by this received wisdom. In partnership with Friedman, Taylor, and physicists from Caltech, he led what had become the MIT–SLAC collaboration in building a major spectrometer complex, and played a key role in the design and construction of its detectors and electronics. The MIT–SLAC team systematically explored highly inelastic electron–proton scattering, which most particle physicists expected would yield abysmally low data rates and nothing of interest. What the team found, however, was a surprisingly large cross section—one consistent with a picture of the proton as a composite of pointlike constituents. Furthermore, the results agreed with scaling laws previously invented by James Bjorken, and the application of the Callan–Gross relation indicated that these constituents had spin-$\frac{1}{2}$. The proton results, when combined with subsequent neutron data, also showed that the charges of the constituents were consistent with the fractional charges of the quark model, provided that the quarks carry about half the proton's momentum (the other half being carried by gluons). Later neutrino scattering results from CERN demonstrated unequivocally that the quarks carry only half the nucleon's momentum. The findings of the MIT–SLAC experiment have, therefore, been compared to Ernest Rutherford's realization that the amazingly large number of backward scattered alphas resulting from alpha particle bombardment of gold implied a very small nucleus

within the atom.

The MIT–SLAC experiment was a watershed. In combination with the neutrino experiments at CERN, it gave an experimental confirmation of the quark model, which is a major cornerstone of the Standard Model. In addition, it established the experimental foundations of asymptotic freedom, a basic feature of quantum chromodynamics, in that the observed scaling implied a weakening of the strong force at short distances. In 1990, Henry and his two colleagues Friedman and Taylor were awarded the Nobel Prize for this achievement. Subsequently, Henry participated in experiments at Fermilab and most recently was a member of the SLD collaboration at SLAC.

Henry was as impressed as anyone with the benefits of science, but came to harbor concerns about the risks that technological innovations can create and a growing commitment to address those risks. As with many physicists of his generation, he first focused on nuclear weapons. In the 1960s, troubled by the massive buildup of the superpowers' nuclear arsenals, he joined the Jason panel, a group of academic scientists that advised the US Defense Department. He eventually withdrew from this classified work and joined close colleagues who had founded the Union of Concerned Scientists (UCS). On 4 March 1969, UCS mounted a nationwide protest by scientists against government policies that, in the view of UCS, presented a major threat to the existence of mankind.

UCS, which at that time had no staff or office, would have been a one-day wonder but for the leadership that Henry then assumed. His critique of nuclear power plant safety brought UCS into high-profile conflict with the Atomic Energy Commission, and contributed to the establishment of the Nuclear Regulatory Commission. In the 1980s, UCS was a major player in the national controversy over the government's Strategic Defense Initiative ("Star Wars").

During the last decade, Henry's efforts were guided by his belief that "human beings and the natural world are on a collision course," as he put it in the opening words in his 1992 declaration "World Scientists' Warning to Humanity." That statement, signed by some 1700 leading scientists from 70 countries, including over 100 Nobel laureates, was a synoptic assessment of the factors pointing toward this collision and what must be done to stave it off. In addition to ceaselessly seeking support for this endeavor, Henry devoted his own attention to the global availability of food and water resources, then to climate change, and, most recently, to species extinction.

In recent years, Henry served on a number of prestigious government panels, and, just four days before he died, he signed off on the report of the Congressional Commission on Maintaining United States Nuclear Weapons Expertise. When printed, the report carried a prologue that included the following dedication:

> Henry Kendall was a brilliant scientist who worked unceasingly on public causes, including this Commission where his contributions dot every page. In signing this report, Henry accomplished the last official act of his life and it thus is only fitting that the report be dedicated to his memory. As Rilke wrote shortly before you were born, "Silent friend of many distances, feel how your breath is still expanding space."

Henry had never been on a rope when he went to Stanford in 1956, but within two years he became a topflight climber in Yosemite National Park, and a member of expeditions to the Andes. Perhaps his greatest climb was that of the notorious Walker Spur on the Grandes Jorasses (a 4208-meter-high peak in the Mont Blanc massif) with Gary Hemming in 1962, the first such ascent by Americans and the swiftest by far up to that time. For 50 years he was a serious diver—summer and winter off the New England coast, and as far afield as the Falkland Islands and South Georgia.

Henry will be remembered as a man who always strove to scale the greatest and most formidable heights, whether in science, in the mountains, or in the pursuit of human welfare, with a warm smile for his companions and indomitable courage.

KURT GOTTFRIED
Cornell University
Ithaca, New York
JEROME FRIEDMAN
Massachusetts Institute of Technology
Cambridge, Massachusetts

Stanley Geschwind

Stanley Geschwind, long associated with Bell Labs and recently a physics professor at Clark University, died on 8 February 1999.

STANLEY GESCHWIND

Born in Brooklyn, New York, on 22 November 1921, Stan earned a BS in physics at the City College of New York in 1943. After service in the US Army, for which he installed radar stations in the Pacific theater, he earned an MS at the University of Illinois in 1947. He continued his graduate studies at Columbia University, where, under the guidance of Charles Townes, he earned a PhD in 1951.

In 1952, Stan began a stay at Bell Labs, where he remained until his retirement in 1991. Throughout this period, he was actively doing experimental work, despite his responsibilities as head of the quantum and solid-state physics department (1965–82) and his extensive involvement in outside committees and editorial affairs.

After he left Bell Labs, his energy sparked a new career at Clark as a true academic—creating courses, guiding graduate students, setting up a laboratory, and writing grant proposals—all with resounding success.

Stan's research contributions were numerous and considerable.

Stan worked with Townes on several applications of wartime microwave techniques. On one of these, the precision measurement of atomic masses, he wrote the first of his substantial review articles. In his early years at Bell Labs, when ferrites and rare earth iron garnets were rejuvenating the field of magnetism, Stan, after contributing to ferromagnetic resonance, turned to electron paramagnetic resonsance (EPR). In this field, Stan made extensive studies of magnetic ions in crystal environments. In 1959 (with Jacques Brossel, Arthur Schawlow, and Bob Collins), he used optical detection