AMERICAN PHYSICAL SOCIETY HONORS SEVEN PHYSICISTS AT APRIL MEETING

The American Physical Society presented awards to seven physicists at its spring meeting, which was held in Baltimore, Maryland.

Raymond Davis Jr (University of Pennsylvania) received the Tom W. Bonner Prize for his "use of nuclear reactions in detecting neutrinos, particularly the elegant Cl^{37} measurement of the solar neutrino flux, his role in developing the Ga^{71} neutrino experiment, and his demonstrations that reactor antineutrinos do not induce the $Cl^{37} \rightarrow Ar^{37}$ reaction." In a classic experiment begun in the late 1960s, Davis used a large tank of perchloroethylene in the Homestake gold mine in Lead, South Dakota, to determine that the solar neutrino flux was 2.0 ± 0.3 SNU, roughly one-third the value of 7.9 ± 2.6 SNU predicted by current theory. He has continued to take data with the apparatus; recent results have indicated a significantly higher solar neutrino flux, which Davis feels is related to the solar activity cycle. In the late 1950s and early 1960s he and Don Harmer (Georgia Institute of Technology) performed experiments demonstrating that Cl^{37} does not undergo inverse beta decay (and that electron neutrinos are therefore distinct from electron antineutrinos). While at Brookhaven National Laboratory, Davis was involved in the design and development of the new gallium neutrino detectors. He and his colleagues at the University of Pennsylvania are collaborating on the Soviet 60-ton gallium experiment being built in an underground laboratory in Baksan Valley near Mount Elbrus in the USSR.

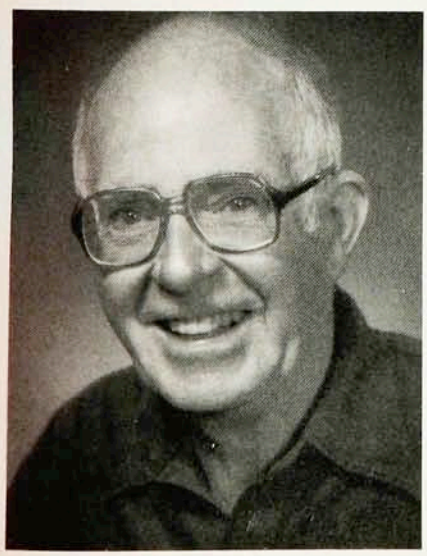
Davis received his BS (1937) and MS (1940) from the University of Maryland and his PhD in physical chemistry (1942) from Yale University. He was a research chemist at Monsanto Chemical (St. Louis, Missouri) from 1946 to 1948. He was a scientist at Brookhaven National Laboratory from 1948 until his retirement in 1984. He is continuing his work at the University of Pennsylvania as a research professor in the astronomy department.

John L. Hall (Joint Institute for Laboratory Astrophysics, University of Colorado, National Bureau of Standards in Boulder, Colorado) received the Davisson–Germer Prize for his "pioneering studies in optical physics and his achievements in elevating laser spectroscopy to new heights of precision." Throughout his career, Hall has worked to develop methods of stabilizing the frequencies of helium–neon lasers, continuous-wave dye lasers and two-mode lasers, and to identify reference optical laser frequencies. He has used lasers to study hyperfine structure in molecules and atoms, to measure the speed of light, and to stop and cool atoms. In addition he has studied Rydberg levels, squeezed states, optical phase locking, spectroscopic methods such as molecular photodetachment and saturated absorption, and the theory of saturation absorption line shape.

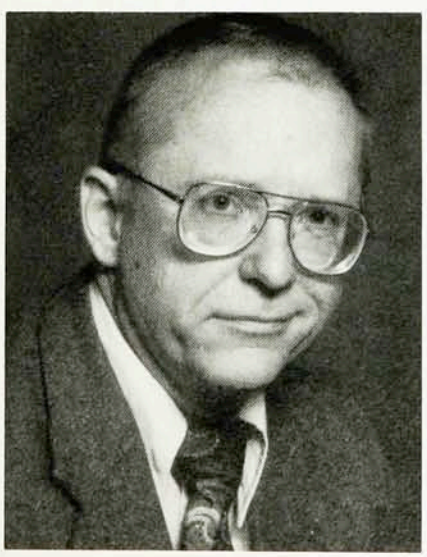
Hall received his BS (1956), MS (1958) and PhD (1961) from the Carnegie Institute of Technology. In 1961 he was a National Academy of Sciences–National Research Council postdoctoral research associate in physics at NBS in Washington. He has been a physicist at JILA, NBS and the University of Colorado, Boulder, since 1962.

Charles Y. Prescott (SLAC) was honored with the W. K. H. Panofsky Prize for "his leading role in the direct demonstration of interference between the weak and electromagnet-

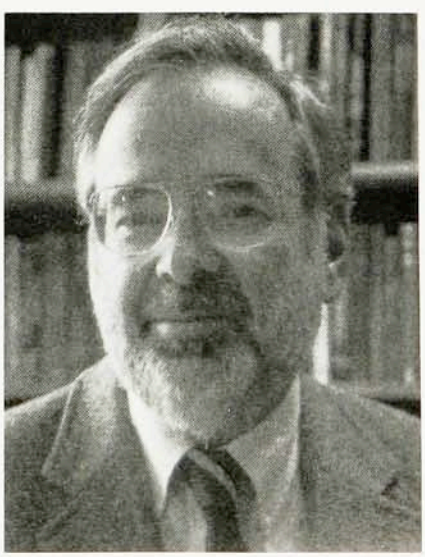
Raymond Davis Jr

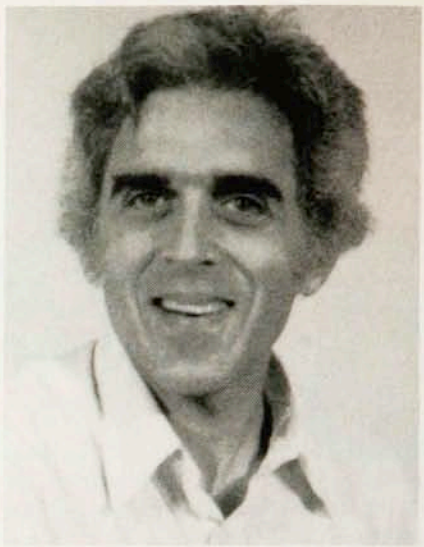


John L. Hall



Charles Y. Prescott



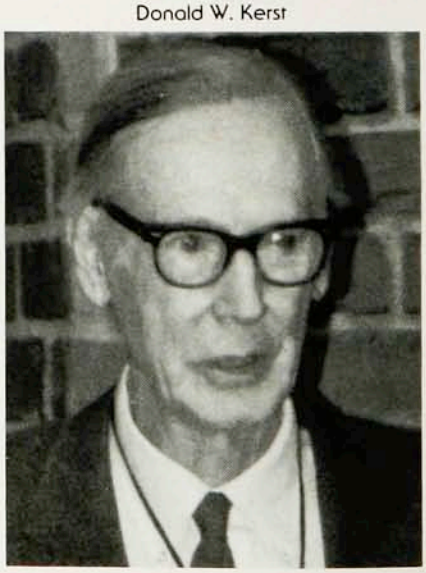


Stephen L. Adler

ic interactions by the observation of a small parity violation in inelastic scattering of polarized electrons on deuterons." Between 1976 and 1980 Prescott and his collaborators performed a series of experiments at SLAC to measure an asymmetry in the inelastic scattering of energetic polarized electrons from hydrogen and deuterium. Their work confirmed several predictions of the now standard electroweak theory, including the predicted weak–electromagnetic interference.

Prescott received his BA in physics from Rice University (1961) and his PhD from Caltech (1966). He remained at Caltech as a research associate until 1970. He was an assistant professor of physics at the University of California, Santa Cruz, in 1970–71 before becoming a research associate at SLAC. In 1984 he was named a full professor there. Prescott has been SLAC's associate director of research since 1986.

Donald W. Kerst



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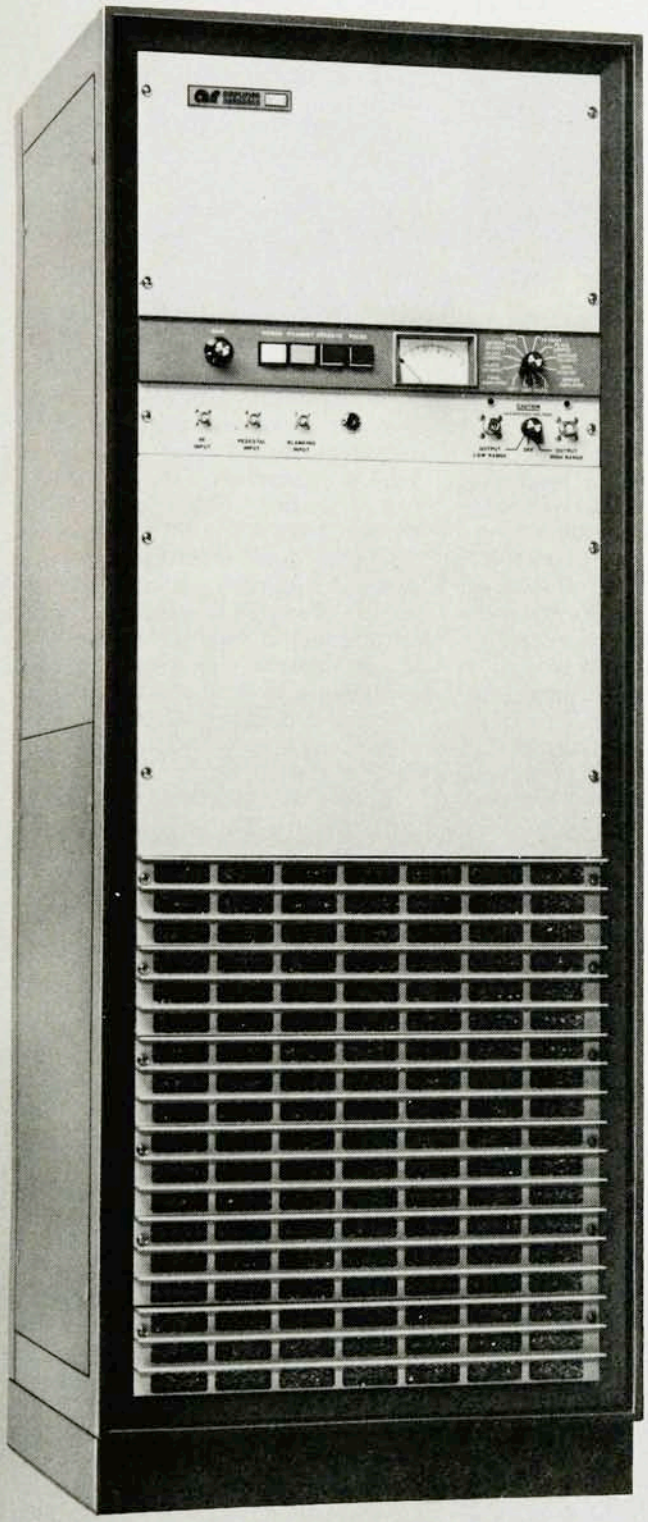

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Bonny L. Schumaker

Stephen L. Adler (Institute for Advanced Study) won the J. J. Sakurai Prize for "his work in elucidating the consequences of chiral symmetry through sum rules and low-energy theorems." Adler has done extensive work in current algebra, beginning with the development of low-energy theorems for pion–nucleon and pion–pion scattering. In the mid-1960s he and William Weisberger developed, independently and simultaneously, a sum rule for the axial vector coupling renormalization that can be interpreted as a low-energy theorem. Adler also developed a sum rule for high-energy neutrino interactions, one of the first such applications of current algebra, and he subsequently developed a low-energy theorem for π^0 decay, which provided one of the first pieces of empirical evidence for colored quarks. He and Roger F. Dashen (University of California, La Jolla) wrote *Current Algebras* (Benjamin, New York) in 1968.

Adler received his AB from Harvard University (1961) and his PhD from Princeton University (1964). He was a junior fellow in Harvard's Society of Fellows from 1964 until 1966, when he became a member of the Institute for Advanced Study. In 1969 he was named a professor of theoretical physics there, and in 1979 he was named New Jersey Albert Einstein Professor.

Donald W. Kerst (University of Wisconsin) was awarded the Robert R. Wilson Prize for "his many contributions to accelerator physics." Kerst received his BA (1934) and PhD (1937) from the University of Wisconsin, Madison. In 1938 he joined the faculty of the University of Illinois, where he built the first betatron in 1940. Throughout the 1940s he designed and built a series of increasingly powerful betatrons at Illinois, culminating in a 300-MeV machine. In 1941 he and Robert Serber wrote a seminal paper on electronic orbits in induction accelerators (*Phys. Rev.* **60**, 53, 1941). As a technical director at the Midwestern Universities Research Association (1953–57), Kerst collaborated in the development of several important accelerator concepts, including beam stacking for storing colliding beams. He went to General Atomic in 1957, and in 1962 he became a professor of physics at Wisconsin.

Bonny L. Schumaker (Jet Propulsion Laboratory, Caltech) received the Maria Goeppert-Mayer Award for her "frontier contributions to the theory of quantum optics, particularly for showing that multifrequency pumping of nonlinear materials can produce 'ultrasqueezed light.'" Working with Stephen H. Perlmutter, Robert M. Shelby and Marc Levenson of the IBM Research Laboratory in San Jose, she demonstrated the existence of ultrasqueezed light in optical fibers, a phenomenon she had hypothesized earlier. (See PHYSICS TODAY, March 1987, page 20.) Schumaker has also done theoretical work in general relativity and the quantum theory of measurement. At JPL she is developing optical techniques to track laser-carrying planetary spacecraft; these techniques also have applications to astrophysics and astrometry, gravity-wave detection and tests of general relativity.

Schumaker received her MS (1981, in place of a BS) and PhD (1985) in physics from Caltech. She remained there as a research fellow until 1986, when she became a member of the technical staff at the Jet Propulsion Lab.

APS presented its 1988 Award for Research at an Undergraduate Institution to R. Bruce Partridge (Haverford College); the 1987 award went to Roger Bland (San Francisco State University). Both of these awards will be described in a subsequent issue.

IN BRIEF

Arnim Henglein, a professor at the Technical University of Berlin and the Hahn–Meitner Institute, has received the 1988 Golden Heyrovsky Medal of the Czechoslovak Academy of Sciences for his work on the physics and chemistry of extremely small particles of metals and semiconductors in the colloidal state.

Sheldon Datz, head of the atomic physics section in the physics division