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

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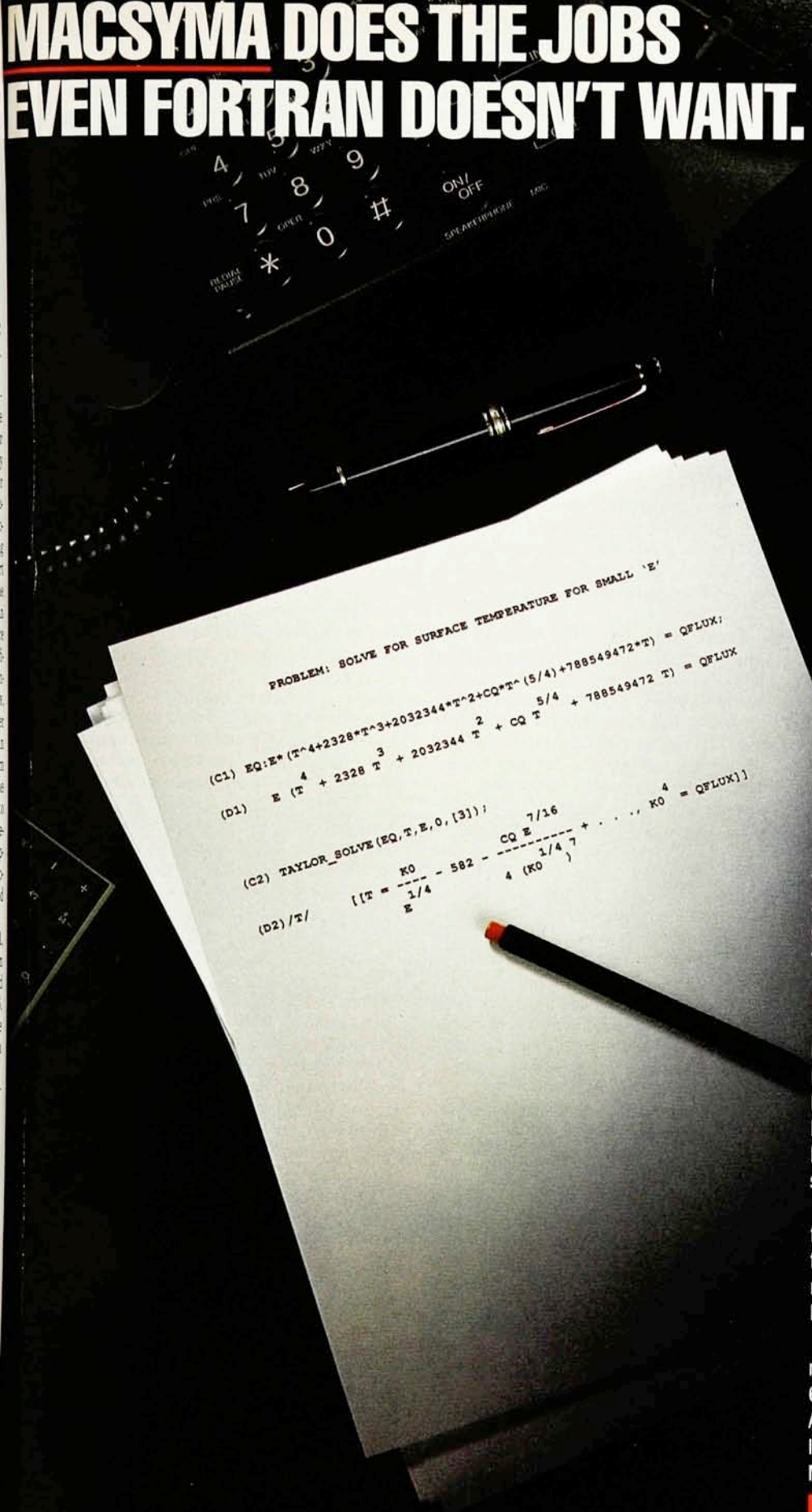

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at Oak Ridge National Laboratory, has been named a senior corporate fellow of Martin Marietta Energy Systems, a subsidiary of Martin Marietta Corporation that manages ORNL and three other government-owned facilities for the Department of Energy.

OBITUARIES

Theodore N. Sarachman

Theodore N. Sarachman, chairman of the physics department at Whittier College and a visiting professor of physics at Caltech, died of leukemia on 2 April 1987 at age 55.

He earned his AB and MS at the University of Chicago, and in 1961 he received his PhD in physical chemistry at Harvard University. His doctoral thesis was notable for the contribution it made to low-resolution microwave spectroscopy. In it Sarachman showed that useful information on the configuration of complex molecules could be obtained from spectra in which rotational lines were highly overlapped. While he was a graduate student, the breadth of his scientific interests set him apart from many of his fellow students and foreshadowed his later contributions to teaching. His somewhat philosophical approach made his presence of unusual value at group discussions.

From 1961 to 1963 he was a National Academy of Sciences–National Research Council postdoctoral research associate at the National Bureau of Standards, where he continued his microwave studies of internal rotation and nuclear quadrupole interactions in organic molecules. Again, his keen interest in all aspects of physics and chemistry led to many useful contributions to the research of his colleagues. He left NBS in 1963 to become an assistant professor of physics, with a research emphasis in microwave spectroscopy, at the State University of New York at Buffalo. In 1970 he was appointed professor of physics at Whittier College. There his focus turned to teaching undergraduate physics and to astronomy. He became a visiting associate professor at Caltech in 1984 and afterward divided his teaching time between Caltech and Whittier. His students loved him; the faculty respected his integrity and wit; and the whole community witnessed, and learned from, his heroic struggle with leukemia.

Through his efforts an astronomy library was started at Western Observatorium in Whittier, California. That library is now named the Ted Sarachman Library. His courageous five-year battle, against what he knew were poor odds, was evident only in his thin hair, not in any diminution of his zest for teaching and learning or his love of astronomy.

ROBERT B. MARKS
Whittier College
Whittier, California
LEONARD J. NUGENT
Santa Clara, California
DAVID R. LIDE
National Bureau of Standards
Gaithersburg, Maryland

Herbert H. Chen

Herbert Hwa Chen died on 7 November 1987 after a yearlong battle with leukemia. He was an outstanding person and scientist, and his passing is a deep loss to his family and colleagues.

Chen was born in Chungking, China, on 16 March 1942. The political changes China was then undergoing made his early childhood one of hardship and uncertainty. As a result of the Eisenhower Refugee Act, he was allowed to enter the United States. His undergraduate education was supported almost entirely by scholarship awards. He received his BS in physics from Caltech in 1964, and earned his PhD in theoretical physics from Princeton University in 1968 as a student of Sam Treiman. After graduation Chen joined the faculty of the newly formed Irvine campus of the University of California as an assistant research physicist in 1968. It was here that he began the transition from theorist to the talented, visionary experimentalist that we all remember.

Chen's long-standing interest in the weak force centered on the study of neutrino interactions. When the high-flux proton linac at the Los Alamos Meson Physics Facility was commissioned, Chen quickly appreciated the potential of this unique source of electron neutrinos, proposing in 1971 that it be used to search for the then unobserved elastic scattering reaction $\nu_e e \rightarrow \nu_e e$. By 1975 he had demonstrated via a feasibility study that such an experiment was possible. With farsighted support from the National Science Foundation, the construction of the detector was begun in 1978. (The related reaction $\bar{\nu}_e e \rightarrow \bar{\nu}_e e$ was observed in 1976 by Henry W. Sobel, Henry Gurr and Frederick Reines.)

The experiment was a resounding success, measuring the cross section to a precision of 18%—sufficient to be sensitive to the charged- and neutral-current interference. This was an extraordinary achievement for a first-generation neutrino experiment, and established the utility of LAMPF as a neutrino source. The vigorous program currently under way there owes much to Chen's foresight. He was among the pioneers in realizing that massive liquid ionization chambers offered a possible key to hitherto inaccessible neutrino physics, and he proposed such a detector to Fermilab in 1976. Chen initiated a systematic attack on the problems facing large liquid time-projection chambers, becoming one of the world's leading exponents of the development of massive liquid argon chambers. Although an early advocate of the argon time-projection chamber for detecting solar neutrinos, he was quick to recognize the possibilities (arising from the temporary surplus of heavy water and the success of light-water proton-decay Čerenkov detectors) of constructing a massive heavy-water Čerenkov detector. Thus was formulated, in 1984, the Sudbury Neutrino Observatory, an international proposal to address the solar neutrino problem by making real-time measurements of the spectral shape and the total flux of high-energy neutrinos originating in the Sun. Such a series of measurements would be a crucial first step in using solar neutrinos to study weak interactions.

Chen left us with a legacy of a bold and exciting program of physics, but further, he left us an example of how one man can be a positive influence on the lives of others. His concern for his students was legendary, as were the standards he set for them. In spite of his hectic schedule, he would make time to explain problems, listen to questions or create new opportunities, the hardships of his early life perhaps making clear the value of such opportunities offered to others. In discussion with colleagues, he was encouraging and helpful.

It required courage to undertake the notoriously difficult experiments that became Chen's hallmark, and he faced his illness with the same courage. Although frequently hospitalized after the onset of his illness, he continued to guide and advise from his hospital bed via modem and telephone, promoting the physics he loved. In a tragically short career he achieved much; the seeds of ideas he left behind promise even more.

RICHARD ALLEN
PETER DOE
FREDERICK REINES
University of California, Irvine ■