

tory of Columbia University, where he collaborated with Henry Boorse on the measurement of heat capacities of superconducting metals and other researches.

During his long association with the American Association of Physics Teachers he was associate editor of the *American Journal of Physics* from 1941 to 1947, president of the Association in 1951 and, from his retirement from CCNY until 1970, executive secretary.

Mark's former students and colleagues at CCNY remember him as an inspiring and irreplaceable teacher and friend, who had a profound, determining influence on their lives and achievements. Literally hundreds of well-known (and thousands of not so well-known) scientists, engineers and other professionals passed through Mark's hands at City College, among them physicists Benjamin Bederson, Sidney Borowitz, Lawrence Cranberg, Gregory Dash, Bernard Feld, Herman Feshbach, Edward Gerjuoy, Robert Gluckstern, Herbert Goldstein, Morton Hamermesh, William Havens, Robert Herman, Robert Hofstadter, Leon Lederman, William Nierenberg, Arno Penzias, Frank Press, Julian Schwinger, Gary Steigman and Leonard Susskind.

Recipient of the 1956 Oersted Medal, he was a marvelous lecturer and—although possessed of deep and secure knowledge in most areas of physics—was totally unassuming and eager to learn new ideas and developments from his junior colleagues. While he was a hard taskmaster who suffered neither sloth nor folly gladly, he was also a kind and helpful mentor and friend. His door was always open to students at a time when sixteen hours per week was his and everyone else's normal teaching load. How he prepared and taught his classes, helped his students, did his research, wrote his books and made his contributions to the AAPT, all at the same time and all so well, was something that his colleagues found hard to understand even at the time and that his successors find incomprehensible today.

ROBERT HOFSTADTER

Stanford University

HARRY LUSTIG

HENRY SEMAT (EMERITUS)

The City College of the City University of New York

Arthur M. Bueche

Arthur M. Bueche, senior vice president of corporate technology for the General Electric Company, died 22 October 1981 in Bridgeport, Connecticut. He was a graduate of the University of Michigan in 1943, attended Ohio State University and received his doctorate

in physical chemistry from Cornell University in 1947. He joined General Electric in 1950 and began a distinguished career that carried him to the front ranks of the nation's scientific



BUECHE

and technological leaders.

When GE's corporate Research and Development Center was formed in 1965 through the merger of the company's research and engineering laboratories in Schenectady, Art Bueche became its first director. One of his finest achievements was demonstrating that it was possible for such an industrial organization to achieve a critical balance in its activities: helping the company's operations to overcome near-term technical challenges while sponsoring longer-range research that resulted in new ideas and new opportunities.

Bueche's success as a research director was recognized worldwide. As a member of the national academies of sciences and of engineering, as the president of the Industrial Research Institute, as co-chairman of President-elect Reagan's advisory task force on science and technology, and in the innumerable other professional, governmental, academic, and industrial activities of his career, he displayed an unflagging dedication to science and technology and to their effective contributions to our society.

At the time of Art's death, I was visiting the Stanford Medical Center on a trip that he had suggested. Stanford had just succeeded in making clear pictures of arteries *in vivo*, using computed-tomography and dual-energy x rays. Ironically, one goal of this experimental diagnostic technique is to detect and make possible surgical correction of just those incipient conditions that had caused his heart attack. Art him-

self had formed the team that developed the advanced computed-tomography scanner used at Stanford.

This achievement in computed tomography is only one of many industrial successes that resulted from Bueche's career as a manager and director of industrial R&D. Others include Noryl resin, an engineering plastic based on polyphenylene oxide chemistry charge-injection-device solid-state cameras; polycrystalline cutting tools fabricated from synthetic diamond and cubic boron nitride (a synthetic material second in hardness only to diamond); a unique, high-efficiency phosphor for fluorescent lamps; and surface charge-transfer devices from analog signal processing, to name just a few of the many examples that might be cited.

Bueche's instincts as a research director were superb. "What is the new, unique idea or discovery?" "Who is the advocate?" and "Why not faster?" were not just questions for him. The answers nourished him, and, unless he felt comfortable about those answers, he was as restless as a caged bear. Presenting information to him could be like feeding a bear; he was so ravenous for ideas that he could intimidate the timid or uncertain bearer. In the balance of traits—between enthusiasm and analysis, between advocacy and criticality, between intuition and logic—Bueche was not one of steady, placid equilibrium. Instead, he had all of these traits, strongly, in a dynamic interaction that made him a stimulating, challenging man with whom to work.

In the final analysis, Bueche cared—and cared deeply—about success for the organization he ran, the company for which he worked, the institutions to which he belonged, and his country. He contributed to all of these sectors: new organizational concepts and methods of planning and managing R&D; new products, processes and businesses; new activities and leadership for entities such as the Industrial Research Institute; and missionary zeal in spreading an understanding of the nation's challenges in science and technology.

R. W. SCHMITT

Research and Development

General Electric Company

Schenectady

Hans H. Staub

Hans Staub, born in 1908, was educated in his native Switzerland. At the age of 25 he received the doctor's degree of the Federal Institute of Technology in Zurich, where he stayed four more years as an assistant of Paul Scherrer. In line with Scherrer's then-prevailing inter-

ests, Staub started his research with the investigation of solids by x-ray scattering, but later turned to studies of cosmic rays on the Jungfrauoch and to his first experiments in nuclear physics, which, from then on, remained the principal concern of his scientific activities.

An important new phase of his life began when Staub came in 1937 to the California Institute of Technology as an International Exchange Fellow, expecting to return afterwards to Switzerland. As it happened, the year spent in Pasadena was only the first of twelve he and his wife were to live in the United States. Before leaving Caltech, he accepted an offer from Stanford University, where in 1938 he started as an instructor in the department of physics. His gift for finding simple solutions enabled him, with very limited funds, to advance significantly previous investigations of the scattering of neutrons on helium and their polarization in the passage through magnetized iron. A small cyclotron, built for the latter purpose during World War II, was converted under contract with the Manhattan District to determine the energy distribution of fission neutrons. Upon completion of this work, he brought some of the equipment with him to the newly formed enterprise at Los Alamos and remained there until a year after the war. His work with Bruno Rossi and the progress in the development of detectors achieved during that time led to the later publica-

tion of their book on ionization chambers and counters.

In the fall of 1946 Staub returned as a full professor to Stanford, happy and eager to engage himself again in the peacetime pursuit of research. By incorporating the results on the polarization of neutrons obtained before the war, he, with David Nicodemus and myself, succeeded in measuring the neutron magnetic moment with high accuracy; in a separate, elegant experiment with Emery Rogers, he ascertained unambiguously the sign of the moment.

Except for two later visits as a guest professor, Staub's long and fruitful association with US physics ended in 1949 when he was chosen to become the new director of the Physics Institute at the University of Zurich. It was not an easy decision for him to accept this position. However, the 24 years he held it were to show that a better choice could hardly have been made. From its rather antiquated state he brought the Institute to modern standards, not only by installing a Van de Graaff accelerator in an excellent new building but also by inspiring his colleagues and students with the free spirit of inquiry. His lectures were distinguished by the same lucid presentation that one finds in the textbook on atomic physics he wrote with Paul Huber.

Staub continued to make important contributions in undiminished devotion to his research until he retired at the age of 65. His health steadily declined during the last few years, and in December 1980 he died peacefully at his home.

F. BLOCH

Stanford University

Lester Winsberg

Lester Winsberg, professor of physics at the University of Illinois at Chicago Circle, died on 26 August 1981 in Pasadena. He was spending the summer at the Jet Propulsion Laboratory, where in typically vigorous and enthusiastic fashion he had just embarked on a new venture in solar energy.

Les was born in Montreal on 31 January 1921 and became a naturalized US citizen. He spent his youth and much of his professional life in the Chicago area and also worked at Los Alamos (1945-46), at the Lawrence Berkeley Laboratory (1955-59) and at the Weizmann Institute in Israel (1950-52 and 1954-55). He maintained close ties to Israel throughout his career.

Les was a highly regarded nuclear chemist and physicist. He was educated at the University of Chicago (BS in chemistry in 1942 and PhD in chemistry in 1947). He began his research

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