ered serious errors and did not hesitate to argue with even the most prominent authors about corrections. Many physicists appreciated his efforts on their behalf, but it is doubtful he received all the credit he deserved.

When the growth of the journal made it necessary to divide the editorial tasks, Pasternack was reluctant to give up some of his duties. He kept for himself the editing of a difficult section—the physics of particles and fields. The problems in this area were caused by its rapid development and the competitive

PASTERNACK

spirit of the practitioners. This often led to the submission of hastily-written papers, but Pasternack was adamant in imposing his standards. He set an example for those who edited other parts of the *Physical Review* as well as editors of various journals to whom he was always ready to give guidance and advice.

With respect to refereeing, he was completely impartial. He insisted that each paper be reviewed by the best-qualified referee, no matter who the author was.

Pasternack was aware that his enforcing of high standards for the appearance of the journal was an uphill battle. He initially opposed the introduction of typewriter composition, but when he saw that it offered advantages, he changed his mind and made sure that it was fully incorporated. He was also an expert on notations and was an influential member of the Symbols, Units and Nomenclature Commission of the International Union of Pure and Applied Physics. In spite of this background, he had to allow some notations and new expressions that were not to his liking; but his continuous opposition to anything below the standards he had set has had a beneficial long-term effect.

Pasternack's success as an editor was possible because he was also an accomplished mathematical physicist—he earned his doctorate in physics from the California Institute of Technology in 1939, held teaching positions at San Bernadino Valley Junior College and the University of Pennsylvania and was a staff member of Brookhaven National Laboratory from 1947 to 1951. At the *Physical Review* he kept up with modern advances and consequently was able to appreciate most of the papers submitted to him.

His own work goes back to 1937. His best-known publication dealt with the fine structure of hydrogen-like spectra (*Phys. Rev.* **54,** 1113, 1938). He noticed that a small discrepancy between theory and spectroscopic measurements could be explained by assuming a displacement of certain levels—ten years later, modern techniques used in an experiment by Willis E. Lamb and R. Curtis Retherford confirmed Pasternack's assumption. Work on neutron and radiation scattering are among his other contributions. His last publication in 1963, was a short paper with Rudolph M. Sternheimer about hydrogen-like eigenfunctions (*J. Math. Phys.* **3,** 128, 1963). Afterwards, the growth of the journals and his devotion to editorial tasks kept him from doing independent research.

Pasternack's humor was evident from his office blackboard, part of which was filled with the unintentionally amusing expressions and mistakes that he found in submitted papers; perhaps these should have been left in the published versions.

There is no doubt that his guidance will now be lacking in the editorial profession. Physicists owe him a great debt, which can be repaid perhaps by trying to adhere to his standards of fairness and excellence.

SAMUEL A. GOUDSMIT
University of Nevada, Reno

George J. Schulz

George J. Schulz, who died on 15 January at the age of 50, will long be remembered for his contributions to the field of atomic-collision physics—not only for his pioneering research, but also for his definitive review papers and his efforts towards more effective information exchange at conferences.

Schulz was born in Czechoslovakia and in 1947, emigrated to the United States to complete his war-interrupted studies. He studied first at the Pennsylvania State University (BS 1949), and then at the Massachusetts Institute of Technology, where he earned his doctorate in 1954.

He then joined the atomic-physics group at Westinghouse Research Laboratories, where his first research involved improved, quantitative determinations of the cross sections for excitation of atoms by electron impact. He developed methods of creating low-energy electron beams of narrower and narrower energy spread, which enabled him to investigate the effect of sharp energy "resonances" (associated with compound-state formation) on the scattering of electrons by atoms and molecules. He announced the discovery of the now-famous helium resonance at 19.3 eV in 1963. Schulz traced the spectacular increases in the cross sec-

SCHULZ

tions for vibrational excitations of molecules (such as N_2) to the effect of the compound-state resonances—an effect that found practical application in the N_2–CO_2 laser. He followed these initial findings with numerous discoveries of resonances in a host of atoms and molecules. It was appropriate that for this pioneering work he was awarded the first Davisson-Germer Prize, established by the division of electron and atomic physics of The American Physical Society in 1965. His most recent work had been the investigation of electron collisions with larger molecules, which has shed new light on their structure and reactivity.

During his twelve-year association with the Gaseous Electronics Conference in successive roles as executive committee member, secretary and chairman, Schulz was greatly concerned about the shortcomings of conventional paper sessions in providing an effective information exchange for the participants. The adoption of the successful small workshops on various topics within the framework of the conference is largely a result of his efforts.

In 1966, he joined the Yale University

faculty as professor of engineering and applied science and added teaching to his professional activities. Schulz's success in communicating his enthusiasm for the hard work of truly innovative research is marked by the dedication and ability of his graduates. His own insistence on developing a clear picture of the phenomena under investigation carried over to his teaching in graduate and undergraduate courses.

Schulz wanted no memorials, except perhaps his own work—his two classic reviews of resonances and of vibrational excitation provide a fitting summation of his life's research. Yet we shall remember also the warm and caring character of this man who enriched not only the scientific but also the personal side of our lives.

MANFRED A. BIONDI
University of Pittsburgh
ARVID HERZENBERG
IRA B. BERNSTEIN
Yale University
New Haven, Connecticut

Roger W. Hickman

Roger W. Hickman, formerly director of Harvard University's physics laboratories, died last 18 December at the age of 75. A native of Ohio, Hickman graduated from Whittier College in 1922 and then received master's degrees from the University of California at Berkeley (1925) and Harvard (1926). He went on to earn his doctorate from Harvard in 1932.

Hickman took up his first of many positions at Harvard in 1929 as an instructor of physics. During the late thirties, he collaborated with Frederick V. Hunt in the development and analysis of stabilization currents for electronic-power supplies. Subsequently, he served as the associate director of the radio-research laboratory for two years, and later joined the underwater-sound laboratory. From 1947 to 1966 he served as the director of the Jefferson Physical Laboratory and the Lyman Laboratory of Physics. During this time he was also assistant to the provost (1948–53) and then assistant to three successive deans of the faculty of arts and sciences until 1966, the year of his retirement.

Joseph R. Dillinger

Joseph R. Dillinger, professor of physics at the University of Wisconsin-Madison, died 16 November, 1975. Born in 1916 in Carbondale, Illinois, he received his BA from Southern Illinois University in 1938, and enrolled as a graduate student at the University of Wisconsin. World War II interrupted his graduate training and consequently he spent five years (1941–46) with the radiation laboratory at MIT developing power-pulse generators and discharge tubes for radar purposes. After the war, he returned to the University of Wisconsin and completed his PhD work on thermionic emission in 1947. Dillinger joined the faculty there the same year.

As a young faculty member, Dillinger foresaw the research potential of the new low-cost helium liquifiers and took a leading part in the initiation and development of a low-temperature physics program at Wisconsin. In the subsequent years he and his twenty PhD-thesis students made important contributions in the field. In 1957 Dillinger chaired the steering committee for the International Conference on Low-Temperature Physics in Madison, was in charge of organizing the meeting and was editor of the proceedings of the conference.

In 1970, Dillinger had just completed an experimental setup for maintaining temperatures below one kelvin when a blast from a bomb destroyed his laboratory on the Madison campus (see PHYSICS TODAY, October 1970, page 73). Shortly before his death, Dillinger had finished reconstructing this equipment.

Dillinger was concerned with improving the quality of physics courses from the time he began teaching at Wisconsin—where he eventually reorganized and upgraded the general physics laboratories. He was also actively involved with many colleges and universities as a consultant and lecturer in his later years. These and other contributions to instruction and research are a result of Dillinger's dual commitment to physics throughout his professional career.

Rupert Wildt

Rupert Wildt, who retired as professor of physics at Yale University in 1973, died 9 January at the age of 70. He was known for his work in theoretical astrophysics and stellar spectroscopy.

Born in Munich, Wildt received his PhD from the University of Berlin in 1927. He came to the US as a Rockefeller Foundation Fellow at the Mt Wilson Observatory in 1935. Wildt had taught at many institutions before joining the Yale University faculty, including the University of Hamburg, the University of California at Berkeley and the National Autonomous University of Mexico.

Among his accomplishments during his professional career, Wildt received the Eddington Gold Medal of the Royal Astronomical Society in 1966 for his theoretical work on solar and planetary atmospheres; he also served as president of the Association of Universities for Research in Astronomy in the years 1965–68 and 1971–72. □