we hear that

nuclear-technology program at Texas State Technical Institute's Waco campus.

James S. Vinson, formerly chairman of the physics department and director of the computer center at the University of North Carolina at Asheville, has been appointed Dean of the College of Arts and Sciences and professor of physics at the University of Hartford in West Hartford, Connecticut.

Joseph A. Rudnick, formerly of Case Western Reserve University and Tufts University has joined the faculty of the University of California at Santa Cruz.

Richard Kron, previously at the University of California at Berkeley, has been appointed assistant professor in the department of astronomy and astrophysics at the University of Chicago.

Arthur M. Bueche has been elected a Senior Vice President of the General Electric Company. **Roland W. Schmitt,** formerly R&D manager of energy science and engineering at GE, succeeds Bueche as Vice President of Corporate Research and Development.

Michael Doctoroff has been named President of Balzers Corporation, US affiliate of the Balzers group of companies. Doctoroff joined Balzers Corporation in 1977 as executive vice president and general manager.

Mark D. Tabak has been named vice president and manager of Xerox Corporation's Webster Research Center. Tabak joined the Xerox Corporation in 1965.

John Galt, who has been named Director Solid State Sciences at Sandia Laboratories, has been promoted to vice president. Galt came to Sandia in 1974 from Bell Labs, which he joined in 1948.

The board of directors of the Avco Everett Research Laboratory elected **Harry E. Petschek** as chairman and chief executive officer to succeed **Arthur Kantrowitz,** founder of the Laboratory, upon Kantrowitz's retirement on 1 November.

Herbert S. Bridge, professor of physics at MIT, became director of the MIT Center for Space Research in October, replacing **John F. McCarthy,** who is on leave from MIT to become director of NASA's Lewis Research Center in Cleveland, Ohio.

MIT also recently announced that the three-year search for a permanent director of its Plasma Fusion Center has ended in the appointment of **Ronald C. Davidson,** professor of physics at the University of Maryland, to that post.

Kenell J. Touryan has left Sandia Laboratories after 16 years there to become deputy assistant director of R&D in solar photovoltaics, thermal conversion, bio/chemical conversion, storage, materials and system analysis at the Solar Energy Research Institute.

Sydney W. Falk Jr has joined the astronomy department at the University of Texas at Austin as an assistant professor.

Daniel C. Mattis has left Yeshiva University to become Thomas Potts Professor of Physics at Polytechnic Institute of New York. Mattis will lead the new Institute of Theoretical Condensed-Matter Physics there.

Also at Polytechnic, **Stephen Arnold,** formerly of New York University, was appointed assistant professor of physics.

Marc A. Manheimer of the University of Rochester has been named assistant professor at the State University of New York at Buffalo.

Leo P. Kadanoff has left Brown University to become a professor of physics at the University of Chicago and the James Franck Institute.

obituaries

Leonard B. Loeb

Leonard Loeb, professor of physics for 36 years and professor emeritus for 20 more, scientist *par excellence* in many fields but most actively in gaseous electronics, author of some 12 books and 180-odd papers, mentor of countless undergraduates and no less than 60 successful doctoral students, naval expert and reserve officer, died on 17 June, three months before his 87th birthday. His latest book, which was completed when he was 83, contains some of his most penetrating analysis.

He was born in Zurich, Switzerland, 16 September 1891. His father was Jacques Loeb, an eminent physiologist and biologist. His mother, Anne Leonard, held a PhD herself, a remarkable achievement for a woman at that date. Loeb grew up in Berkeley and Pacific Grove, learned to sail his own boat very early, and acquired a deep love for both localities. The family moved to New York just as Leonard finished his sophomore year at the University of California at Berkeley. He transferred to Columbia University for one year and to the University of Chicago for his BS in chemistry in 1912 and PhD under Robert A. Millikan in 1916. There followed a year at the National Bureau of Standards, a second lieutenancy in France during World War I, a half year at the University of Manchester with Ernest Rutherford, and a National Research Fellowship at Chicago from 1919 to 1923, when he was appointed assistant professor of physics at Berkeley. There he spent his entire career; the Navy, however, called him to active duty early in 1941 to set up and staff a "small scale armor and projectile laboratory" at the then Naval Proving Ground at Dahlgren, Virginia. Following Dahlgren, Loeb operated the ship-demagnetization program (de-gaussing) in San Francisco Bay until the end of the war. He returned to his university duties, which he pursued until retirement in 1958 and in emeritus status for many, many more years.

LOEB

Leonard Loeb, in his career, was outstanding in the respect not only of performing every function of a professor, in teaching and research, in counseling and writing, but in performing each with distinction. He approached each task with enthusiasm. He wrote a book for every course he taught. He took a keen, deep, genuine interest in students, from disheartened probationers to geniuses, from freshmen to postdoctorals. Through it all—and in Berkeley of Loeb's time, "all" meant hundreds, verging on a thousand students each semester—he sustained a driving and active scientific research program that placed him at the pinnacle of his field. Through all his activities, students were never shunted aside, nor were their concerns ignored or belittled. And through all his activities, science and research also never suffered from short shrift or neglect. He did not crave titles or honors; on the contrary he abhorred them. He did appreciate the worldwide recognition that his scientific achievements brought him, recognition that enabled him to travel all over the world in his later years to lecture, consult, and advise.

The annual Gaseous Electronics Conference (first initiated by his former student, Leon H. Fisher) became his adopted forum and happy meeting ground. It is likely that his attendance record exceeds that of any other participant, with probably only one absence in 30 years.

Leonard Loeb will be deeply and sincerely missed, throughout the world. He played a role in the lives of many people in addition to students and professional colleagues.

ROBERT N. VARNEY
Palo Alto, California

Arthur L. Hughes

Arthur Llewellyn Hughes, Wayman Crow Professor Emeritus of Washington University, St. Louis, died on 25 June in his 95th year. His career extended from work under Charles Barkla in Liverpool University in 1903, through Cambridge University under J. J. Thomson to his investigation of ultrasonic triggering of spark chambers in the 1960's. He was chairman of the physics department at Washington University from 1923 until 1953.

Hughes was born in Liverpool in 1883 and grew up in a small Welsh village. His early years were typical of that impoverished part: His father died when he was 14, and to support his mother and sister he applied for a job as a telegraph messenger, but failed by one inch to meet the minimum height requirement. At Liverpool University, he started to train as a teacher but was converted to his enduring interest in physics when Barkla needed an inexperienced assistant to take unbiased measurements of his gold-leaf electroscope. In 1908, he won a prestigious "1851 Exhibition Scholarship," which took him to Cambridge. There, as Thomson's last student, he was assigned the task of investigating the kinetic energies of photoelectrons as a function of the wavelength of the incident light. His major paper (Phil. Trans. Roy. Soc. Lond. **212**, 205 (1913)) was the first to demonstrate the linearity of the relation, although it is interesting to note that that paper contains no reference to Einstein and, in later years, Hughes could not recollect either Thomson or himself being aware of Einstein's theory!

Following the award of his DSc in 1912, Hughes held faculty appointments first at the newly-established Rice Institute in Houston, and then at Queens College, Ontario, with an interval in England during World War II to work on the sonic detection of submarines. In 1923 he was appointed to the chairmanship of the department in St. Louis, succeeding Arthur Compton who was leaving for Chicago.

During 30 years as chairman, Hughes guided the department through the difficult years of the Depression and World

HUGHES

War II. After the war, with Compton now the University Chancellor, Hughes could plan an enlarged department, and his first three appointments were Eugene Feenberg, Henry Primakoff and Robert Sard. Even after his retirement and until his late 80's, Hughes continued with his research and always maintained his lively interest in current physics. Throughout his many years here, Hughes was particularly concerned with encouraging his students and the younger faculty. Typically, he engaged Lee DuBridge as an assistant professor in 1928 and invited him to collaborate on what was to become the standard reference work: *Photoelectric Phenomena* (McGraw Hill, 1932). DuBridge reminisced on the occasion of Hughes's 80th birthday that he could think of "no more wonderful place to have begun my career in physics . . . the enthusiasm which you yourself showed in your work and in the work of your colleagues was conveyed to all of us."

Hughes set uncompromisingly high standards for himself and, while he judged others' work by those same standards, he was humane and considerate in his comments. As a teacher he was greatly admired and warmly regarded by his students; as a senior colleague he held a unique place in our affections. Each of us will remember him in our own way, with pleasure.

MICHAEL FRIEDLANDER
Washington University

Judith Bregman

Judith Bregman, professor of physics at the Polytechnic Institute of New York, died of cancer on 2 October, at the age of 57. Her BA from Bryn Mawr in 1942 and her PhD from Cornell University in 1950 were both in physical chemistry, and she was an instructor in chemistry at Barnard College during 1946–48. As a research associate at MIT and at Harvard Medical School she worked in x-ray crystallography, electron diffraction and light scattering, mainly as applied to molecular structure of organic compounds. In 1955 she became a research associate in physics at the Polytechnic Institute of Brooklyn and joined the physics faculty there in 1957. In 1958 she went on leave to the Weizmann Institute in Israel as Weizman Memorial Fellow, and remained until 1962 as a Senior Scientist, acting as head of the department of x-ray crystallography during 1959–61. Since her return she had remained at the Polytechnic Institute.

Bregman became interested in the preparation of instructional films, served on the Board of the American Science Film Association and was a member of the Higher Education Section Committee of the International Scientific Film Association. Her film, *Symmetry*, prepared in 1966 with Alan Holden, Richard Davisson and Philip Stapp, won both national and international honors, and is noteworthy as a combination of art and science. She has been instrumental in the making of other films, notably *Aspects of Symmetry* and computer representations of quantum-mechanical wave-packet behavior.

Judy Bregman has long participated in the struggle for the preservation and extension of human rights. Beginning with the fight for civilian control of atomic energy in the late 1940's she was active in the Federation of American Scientists, serving on the FAS council for several years. During the 1960's she was student draft counsellor at Poly, an activity much appreciated by students throughout the Vietnam War. She was an effective member of the Polytechnic Affirmative Action Committee, and took part in the Association for Women in Science. Even more recently she became a member of the Equality Committee of the American Civil Liberties Union.

Bregman's scientific contacts were widespread: she was a member of the American Physical Society, the American Crystallographic Association, the American Chemical Society, and the American Association of Physics Teachers (serving on the AAPT Instructional Media Com-

BREGMAN