IN BRIEF

Boris L. Altshuler, Arkadii G. Aranov, David E. Khmelnitskii, Anatoly L. Larkin and **Boris Z. Spivak** have won the 1993 Hewlett–Packard Europhysics Prize. In giving the prize, the European Physical Society cited the winners for their "pioneering theoretical work on coherent phenomena in disordered conductors." Altshuler is a professor of physics at MIT. Aranov is a department head at the Ioffe Physico-Technical Institute in St. Petersburg, Russia. Khmelnitskii is a senior research fellow at Trinity College of Cambridge University and a staff member of the Landau Institute for Theoretical Physics in Moscow. Larkin is a department head at the Landau Institute and a professor of theoretical physics at Moscow State University. Spivak is a physics professor at the University of Washington in Seattle.

William A. Bardeen is now the head of theoretical physics in the physics research division of the Superconducting Super Collider Laboratory. He was formerly head of theoretical physics at Fermilab.

Steven L. Garrett, a physics professor at the Naval Postgraduate School, was a winner of one of the 1993 Rolex Awards for Enterprise. He was recognized for "developing a new system of refrigeration using sound waves that could end the use of ozone-destroying chlorofluorocarbons."

Federico Capasso has won the 1993 New York Academy of Sciences Award. His citation recognizes "his seminal contributions to semiconductor science and its applications through his pioneering and innovative use of bandgap engineering." He is head of the quantum phenomena and device research department at AT&T Bell Laboratories.

In October **E. W. Schlag** will receive the Gold Honorary J. Heyrovsky Medal of the Czech Academy of Sciences. He is a professor of physical chemistry with the Institute of Physical and Theoretical Chemistry of the Technical University of Munich.

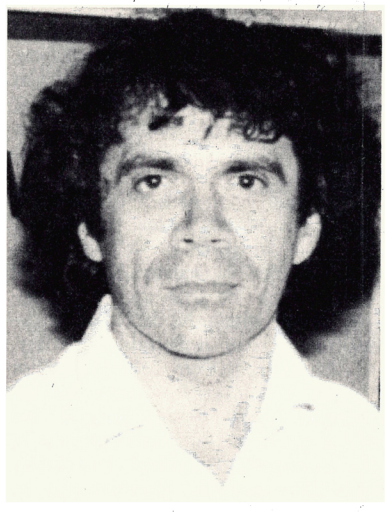
OBITUARIES

Veniamin Chebotayev

The sudden death of Veniamin Chebotayev on 2 September 1992, at age 54, was a tragic loss for the international laser science community, and particularly for his colleagues and numerous students at the Institute of Laser Physics in the Academgorodok near Novosibirsk, Russia. The founder and the first director of this institute, Chebotayev was full of energy and ideas. The range of his scientific interests and publications was astonishing—from atomic physics to the applications of lasers in medicine.

Chebotayev was born in the USSR and educated as an electrical engineer, earning his degree in 1960 from the Novosibirsk Electrotechnical Institute. His bright mind enabled him to become an original research physicist. In 1962 he became a junior research worker at the Institute of Radiophysics and Electronics of the Siberian branch of the USSR Academy of Sciences. He was the first researcher in Siberia to build a laser.

Chebotayev was one of the founders of a new trend in spectroscopy: nonlinear Doppler-free high-resolution spectroscopy. First, he made a great contribution to the development of saturation spectroscopy and the application of the inverted Lamb dip for frequency stabilization. For a long time his laboratory held the world record for accuracy of frequency stabilization in an He–He laser with a CH saturation absorption cell—better than 3×10^{-12}. Second,



Veniamin Chebotayev

with his coworkers he elaborated the method of Doppler-free two-photon spectroscopy, which today is the most efficient method of ultrahigh-resolution laser spectroscopy. Third, he suggested modifications of the Ramsey separated-field technique that allowed it to be applied to an optical region when the range of interaction of particles with the field was much longer than the wavelength of the light. In recent years he did pioneering work in atomic interference in laser beams, the most active field in atomic physics.

Chebotayev and I became friends in 1968, and we worked together on high-resolution laser spectroscopy. We jointly wrote the monograph *Nonlinear Laser Spectroscopy* (Springer-Verlag, 1977), which was published on the recommendation of Arthur Schawlow, who had paid attention to our work on Doppler-free laser spectroscopy. In 1990 a new edition of this book, entitled *Nonlinear Laser High-Resolution Spectroscopy*, was published in Russian by Nauka; we were working on an extended English version of this book at the time of Chebotayev's death.

Veniamin Chebotayev had a bril-

liant gift for generating ideas, which he shared lavishly with his colleagues. He was able to persuade people, charge them with his energy and assure them of success. He will be sorely missed by all those who came into contact with him.

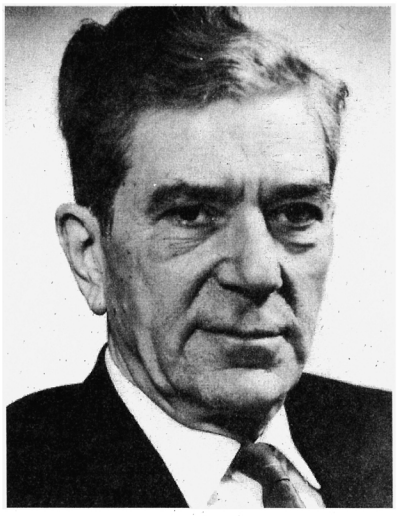
VLADILEN LETOKHOV
Institute of Spectroscopy
Russian Academy of Sciences
Troitsk, Russia

Zoltan Bay

Zoltan Bay, one of the lesser known of the great Hungarian physicists, died painlessly on 4 October 1992 at his home in Chevy Chase, Maryland, while working on a paper on experimental checks of special relativity. He was 92.

Bay had a remarkable career in both fundamental and applied research, in Hungary as well as in the US. In 1926 he earned his PhD in physics from the University of Budapest, after which he worked at the German Bureau of Standards in Berlin. Bay taught from 1930 to 1936 at Szeged University (where he befriended Albert Szent-Györgyi) and was a professor of atomic physics at the Budapest Technical University from 1938 to 1948. Concurrently he directed research at the Tungsram and United Incandescent Lamp companies in Budapest. In that position he built electron multipliers, and in 1938 he was the first to propose their use in particle physics. During the war he developed radar, independently of Allied and German efforts. In January 1946, after the siege of Budapest, he managed under the most difficult circumstances to record radar echoes from the Moon—a feat accomplished just weeks before in the US.

Threatened personally by the Communist regime, which deprived him of his citizenship, he escaped from Hungary in 1948. He settled in Washington, DC, where he worked at George Washington University (1948–55), the National Bureau of Standards (1955–72) and American University (from 1972 onward). At GWU he and his collaborators developed simple but ultrafast coincidence techniques, and they used them to establish simultaneity in the Compton effect to extraordinary accuracy. With the advent of lasers, he focused his attention on the direct measurement of the absolute frequency of an optical transition. Using an ingenious idea that he and Harold S. Boyne had advanced in 1963, Bay, Gabriel G. Luther and John A. White succeeded in making the first such measurement in 1972. This, plus Bay's long-term effort that proved that the velocity of light in a vacuum is independent of frequency, led to his proposal for the unified standardization of time, length and frequency, wherein c, the velocity of light, is a defined quantity. This proposal, now internationally adopted, constituted the greatest advance in metrology since Albert Michelson replaced the physical meter stick with an optical wavelength.



Zoltan Bay

Zoltan Bay was a deep and original thinker, one who could identify important questions and provide elegant experimental solutions for them. Though he was never duly appreciated in his lifetime, he will be long remembered.

VALENTINE L. TELEGDI
California Institute of Technology
Pasadena, California

Hillard B. Huntington

Hillard B. Huntingon, a physicist whose early research on electromigration of atoms ultimately hastened the development of reliable integrated circuits and computer chips, died at his home on 17 July 1992, after a long bout with cancer. He was 81.

Born in Wilkes Barre, Pennsylvania, Huntington received his bachelor's (1932), master's (1933) and doctoral (1941) degrees from Princeton University. He then taught at Culver Military Academy, the University of Pennsylvania and Washington University in St. Louis. During World War II Huntington was a research associate in the Radiation Lab at MIT, where he worked on refinements of radar.

Huntington joined the faculty at Rensselaer Polytechnic Institute in 1946. He served as chair of the RPI physics department from 1961 to 1968. He continued his work at Rensselaer for 12 years after his formal retirement in 1976.

One of the world's first solid-state physicists, Huntington worked on a variety of important problems. He is perhaps best known for his pioneering work in electromigration. This work was undertaken long before anyone recognized the impact it would have on integrated circuit technology.

Huntington's early research also classified the electric constants of crystals, and his measurements became very important in geological research. He was also a specialist in problems dealing with diffusion and the conductivity of metals.

Huntington was always sympathetic to the needs of his graduate students, and it was a pleasure to interact with him. He was a gentle and humble man, always interested in the physics of the problems. When things did not work out he took the blame, and when things did work out the students got the praise.

An accomplished painter, Huntington was active in the Rensselaer County Council for the Arts and served as a member and officer of the Friends of Chamber Music.

Those of us fortunate enough to have been his students are trying to emulate him the best we can.

IVAR GIAEVER
Rensselaer Polytechnic Institute
Troy, New York
ALEXANDER R. GRONE
Hudson Valley Community College
Troy, New York

Herbert Pomerance

Herbert Pomerance, a physicist at the Oak Ridge National Laboratory since 1943, died of heart failure on 9 September 1992. He was 75.

Pomerance began his career in 1942 as an analytical spectroscopist with the Manhattan Project's metallurgical laboratory at the University of Chicago. Upon coming to Oak Ridge in 1944, Pomerance, together with Ernest O. Wollan, developed the pile oscillator for measuring the thermal neutron cross sections of the elements.

Pomerance used this method in 1947 to identify hafnium as a strongly neutron-absorbing trace element in commercial zirconium. Pomerance realized that zirconium, if purified of the contaminating hafnium, would be ideal as a structural material