

appointed **William M. Mathis**, retired director of planning for United Nuclear Industries, to its Advisory Committee on Reactor Safeguards.

Albert Gold, vice president of the Rockefeller University since 1973, has been appointed provost of Polytechnic Institute of New York.

appointed to membership on the Advisory Committee to the National Academy of Sciences on the USSR and Eastern Europe.

Herbert Broida was a scientist of remarkable breadth and accomplishments, a teacher with an extraordinary devotion to students and a human being of the finest quality. He was the recipient of many honors and of the highest professional praise, yet he remained a humble man totally sacrificing of his time, talents and energy for the good of his colleagues, his students, the physics community and the University of California.

A. M. BASS
J. R. FULCO
D. O. HARRIS
V. JACCARINO
W. C. WALKER

University of California, Santa Barbara

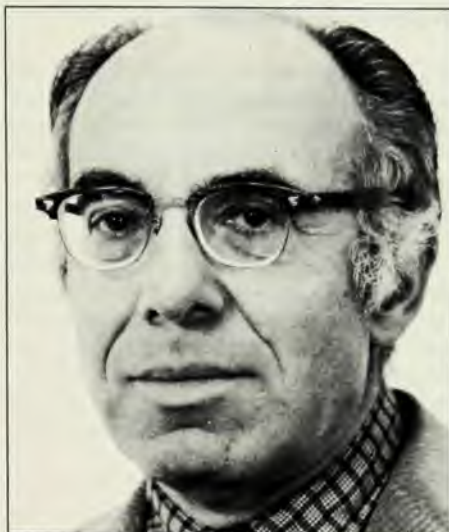
obituaries

Herbert P. Broida

Herbert P. Broida, 57, died 9 April 1978. Broida's professional career was divided almost equally between the National Bureau of Standards (1949-63) and the University of California, Santa Barbara (1963-78). He joined the staff of the National Bureau of Standards, in Washington, DC, in the newly established high-temperature spectroscopy program. His work in this area, which followed directly from his graduate studies on the thermal hydrogen-oxygen reaction led to a long-lasting interest in the chemical and spectroscopic properties of free radicals and in the application of spectroscopic methods to studies of energy-transfer processes in systems containing excited species. From his earliest years at NBS his professional career was characterized by several remarkable features: an outstanding record of productivity (well over 200 publications); a unique ability to work with and to stimulate others in many areas of physics, chemistry, instrumentation, and medical physics (more than 140 collaborators and co-authors); and a phenomenal breadth of scientific interests (high temperature gas-phase processes, low temperature matrix isolation of radicals, atmospheric and solar physics, medical instrumentation and physics, laser physics and chemistry, and surface science).

A characteristically ingenious experiment performed with John Pellam in 1956 demonstrated the trapping of nitrogen atoms and other radicals in rare gas matrices at liquid helium temperatures. In response to the need to evaluate the possibility of using trapped radicals for the storage of energy, Broida organized the Free Radicals Research Program at NBS (1956-59). (Approaching the problem of program management in his own unconventional way, he assembled a research group of more than 50 scientists from university, industry, and government laboratories, stimulated them by his own enthusiasm, and won their respect and admiration by his scientific skills and leadership.) For his contributions in carrying out this program Broida received the Department of Commerce Gold Medal Award for Exceptional Service.

His work in molecular spectroscopy at NBS earned him a series of other honors. In 1952 he was awarded a Simon Guggenheim Fellowship with which he spent a year at Imperial College, London. In 1956 he received the Arthur S. Fleming



BROIDA

Award from the Junior Chamber of Commerce in Washington, D.C., and from 1957 to 1963 he was a Research Associate at Georgetown University School of Medicine. In 1956 he was named Section Chief and Program Coordinator at NBS, and in 1959 he was awarded a Senior National Science Foundation Fellowship to visit Cambridge University, England.

In 1963, responding to his love of the outdoors and the West, and a desire to teach, Broida joined the newly created department of physics at Santa Barbara. Without fanfare, his personality, his drive, his broad scientific knowledge and ability took over. He devoted himself to the growth of the department. He created a molecular-physics laboratory renowned throughout the world for research in combustion energy exchange, chemiluminescent reactions, laser-induced photoluminescence and excitation spectroscopy. He was one of the first to realize and use the potentiality of lasers for the study of molecules. (He put together apparatus to do complicated measurements in ways that delighted most experts.) More recently he became interested in the formation of submicron-size particles and at the time of his death, he had begun a program aimed at the elucidation of surface properties and their interaction with excited molecules and atoms.

He was founder of the Quantum Institute at UCSB, past chairman of the Division of Chemical Physics of The American Physical Society and at the time of his death he was vice chairman and chairman elect of the Division of Electron and Atomic Physics. He was recently

Gregor Wentzel

On 12 August 1978 Gregor Wentzel died in Ascona, Switzerland. Physicists both in this country and in Europe will feel the loss of an eminent colleague, since Wentzel spent about equal periods of his academic life on either continent.

Born in 1898, Wentzel studied under Arnold Sommerfeld in Munich. His somewhat younger fellow-students included Werner Heisenberg and Wolfgang Pauli; a life-long friendship linked him to the latter. Before the advent of "true" quantum mechanics, Wentzel clarified the structure of x-ray spectra. (Much of the terminology still used is due him.) When wave mechanics was discovered, Wentzel formulated the famous "WKB" semiclassical approximation with Hendrik Kramers and Louis Brillouin. He was the first to apply the new mechanics to several key problems, in particular to the photoelectric effect (which had been the starting point of quanta!) and the Auger effect. After leaving Munich, he briefly taught at Leipzig and then (1928) accepted the prestigious chair at the University of Zurich just vacated by Erwin Schrödinger. By coincidence, Pauli was called at the same time to ETH, and between them they made Zurich into a world center of physics and a happy training ground for young theorists. Wentzel, in the best Sommerfeld tradition, was an eminent teacher, both in the classroom and as a thesis adviser. Among his thesis students were Nicolas Kemmer, Markus Fierz, Valja Bargmann, and Res Jost, just to mention a few. In Zurich, after an interlude with classical electron theory (the lambda-limiting process much quoted in P.A.M. Dirac's *Principles of Quantum Mechanics*) Wentzel's interest turned to scattering problems and field theory; his *Handbuch* article on the former (1932) and his book *Quantum Theory of Wave Fields* (1940) on the latter subject are classics.

obituaries

The war years left Wentzel isolated in neutral Switzerland. Pauli had taken refuge in the United States and Wentzel held the fort until 1946 (when Pauli returned), teaching both at the University and at ETH. By now a Swiss citizen, he was more severe than many others in condemning the follies of Nazi Germany. Scientifically, his interests turned to meson theory. He developed the well-known strong-coupling approximation, which predicted, in a special sense, the excited nucleon states (isobars). Several of his students (Jost, Felix Villars) worked on related problems.

In 1948, Wentzel made a US tour and visited the University of Chicago, then the "Mecca of Physics." He was offered an appointment and accepted. At fifty, he



WENTZEL

made the transition from "Herr Professor" to "Dr Wentzel" (or even plain "Gregor") perfectly and without visible effort. He spent the next twenty years happily at Chicago's Institute for Nuclear Studies (now Enrico Fermi Institute), a brilliant lecturer and always an active member of an intense research community. His own interests remained forever topical: QED (self-mass of the photon), superconductivity (the gauge problem), strange particles (introduction of the spurion), and others. His breadth, rare even among physicists of his generation, made him the focus of most seminars, and there were many. The range of his interests can perhaps be inferred from the contributions to a volume, *Quanta* (1970), presented to him by his friends on his retirement.

Wentzel was elected to numerous learned societies, including the National Academy of Sciences. A final recognition of his achievements was the award of the Max Planck Medal to him in 1976.

Wentzel's human qualities were special. He had the gift of being able to criticize without offending; thus, while an imposing figure, he could dispense encourage-

ment to his younger entourage. He was, always and under all circumstances, the perfect gentleman. On two continents, he leaves many friends and no enemies.

V. L. TELEGDI

Sherman Fairchild Scholar
California Institute of Technology
Pasadena, California

Reimar Pohlman

Reimar Pohlman, a pioneer in the field of ultrasonic techniques, died 2 April. After studying mathematics, physics and chemistry at Heidelberg and Berlin he received his doctorate in 1932. In 1934, as assistant to Walther Nernst, he began to investigate various applications of the new field of ultrasonics, particularly problems of ultrasonic imaging of objects. He became interested in many technical applications of ultrasonics, and he was the founder of the first industrial ultrasonics laboratory at Siemens in 1939. There he worked on material testing and underwater imaging.

In 1948 he joined the Technical University Zürich, where he continued his work in biological and medical applications. He also developed new methods for the ultrasonic cleaning, welding and shaping of solids. His long association with the Laboratory for Ultrasound at the Rhenish-Westphalian University at Aachen, Germany began in 1957 when he became professor and director of the laboratory. In his 20 years at Aachen he contributed greatly to his chosen field through hundreds of publications, as German editor of *Ultrasonics*, as a member of the International Electro-technical Commission and as founder of the Ultrasonics Documentation Center at Aachen.

Hellmuth Etzold

Hellmuth Etzold, a professor in the department of electrical engineering at the University of Rhode Island, died on 15 March. Born in Leipzig, Germany in 1909, Etzold was educated in physics at the University of Leipzig and completed his doctoral work in physical chemistry at the University of Freiburg. He went on to become head of the German Forschungsgesellschaft für Funk und Tonfilmtechnik, and Privatdozent and chief engineer with the Department of Technical Acoustics at the Technical University of Berlin. In 1963 Etzold joined the faculty of the University of Rhode Island as a Special Lecturer and became an associate professor in 1965 and a professor in 1975. Etzold was active in many committees concerned with standards and standardization in audio and electroacoustics, and was a US delegate to several meetings of the International Electro-technical Commission. □

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