

general belief in the need of a more effective transfer of new technologies toward application encouraged him especially to widen the spectrum of interdisciplinary research activities at Jülich. His guidance led to a remarkable and fruitful development of this center.

It was not surprising, considering his background and achievements, that Beckurts was asked to join the board of directors of Siemens AG. He did so in 1980, and soon assumed responsibility for the company's research and development program. Since 1980 he devoted his efforts mainly to guiding and strengthening research in communication and data-processing technologies at Siemens. In his few years at the company, Siemens increased its efforts in the field considerably.

Beckurts was convinced that the success of research and development programs in advanced technologies crucially depends on the close cooperation of groups at universities and basic research institutions on one side and industry on the other side, and he was very active in encouraging such cooperation. His promotion of the new Walter Schottky Institute at the Technische Universität München was one step in this direction.

During his tenure with Siemens he remained an active participant of various scientific advisory committees. He was also president of the German Nuclear Society from 1973 to 1976. From 1977 to 1979 he was president of the European Nuclear Society.

WOLFGANG GLÄSER

Technische Universität München
Institut Max von Laue-Paul Langevin
Grenoble, France

Roman U. Sexl

Roman Ulrich Sexl, professor of theoretical physics and didactics of physics at the University of Vienna, died on 10 July 1986 at the age of 46.

Born in Vienna, he studied physics and mathematics at the University of Vienna. After earning his PhD in 1961, he spent several years in the United States. He held a visiting appointment at the Institute for Advanced Study, was assistant professor at the University of Washington, Seattle, and at the University of Maryland, and associate professor at the University of Georgia. In 1969 he became associate and soon afterward full professor of theoretical physics at the University of Vienna.

He began his research in the field of theoretical solid state physics and quantum field theory, but soon became interested in problems of general rela-



SEXL

tivity and cosmology. He wrote a number of papers on the field-theoretic approach to general relativity, in which he discussed the structure of alternative theories of gravitation. In 1967, in collaboration with H. K. Urbantke, he published a pioneering paper, "Cosmic Particle Creation Processes," on the production of particles by the gravitational field. Several years later (1974) Stephen Hawking showed that black holes should produce particles with a thermal distribution, and since that time the problem of particle production in curved spacetime has become a major field of research.

Sexl wrote several books on the theory of special and general relativity, including *Gravitation und Kosmologie* (Brockhaus, 1975), and *Relativität, Gruppen, Teilchen* (with Urbantke, Springer, 1974). The book, *White Dwarfs—Black Holes*, written together with his wife Hannelore (Academic, 1979), as a semi-popular introduction to general relativity and astrophysics, was first published in German in 1975, but became a best seller and was translated into several languages. In 1984 Sexl produced a German edition of *Einstein: A Centenary Volume*, first published in English in 1979. From 1974 to 1980 he was a member of the International Commission on General Relativity and Gravitation.

Sexl's interests in pedagogy, always strong, became his dominant interest during the last ten years of his life. He was concerned with the teaching of physics not only for physicists and physics students but also for the general public. He addressed the world of physics by editing (and also contributing to) a series of books on philosophical, epistemological, sociological and historical questions of physics, and we owe to him a new edition of Boltz-

mann's collected works. He reached the general public through numerous TV shows and popular lectures.

In an effort to improve physics teaching in schools, Sexl not only initiated a reform of teacher education at the University of Vienna, but was also a coauthor of a physics text book for secondary schools that became so successful it was translated into several languages. The need for continued education of teachers was evident to him, and he contributed vigorously to this aim. To make physics more attractive to pupils he introduced problems from such areas as sports or chaotic dynamical systems into his classes. Similarly, he was quick to realize the pedagogical potential of microcomputers; he integrated the use of the micro into his lectures and became the author of a series of computer programs on special relativity.

His contributions to physics education found worldwide recognition. Besides having become a member of the editorial board of several journals devoted to physics teaching, Sexl was a member of the Advisory Board for Physics Education of the European Physical Society. In 1980 he was the first recipient of the R. W. Pohl Prize of the German Physical Society.

In 1978 Sexl was elected a member of the International Commission on Physics Education of IUPAP, and from 1981, until his untimely death, he was chairman of that body. With his brilliance, energy and drive, his over-all productivity was quite extraordinary, and although his career was cut tragically short, he made a broad and enduring impact on physics and physics education.

PETER C. AICHELBERG

HELMUT KÜHNELT

Institut für Theoretische Physik

University of Vienna

ANTHONY P. FRENCH

Massachusetts Institute of Technology

Cambridge, Massachusetts

Heinz Bilz

Heinz Bilz died unexpectedly on 26 June 1986 in Mainz, Germany. He had become severely ill a few days earlier, while giving a colloquium at the local university.

Bilz was born in Berlin in 1926. He was drafted into the German Navy shortly before the end of the war. After a period as a prisoner of war, he began to study physics in 1947 at the University of Frankfurt where he received his *Diplom* in 1954. He continued there as a graduate student under Fritz Hund and obtained his doctorate in 1958 with a thesis on electronic states of refrac-

DEMANDING spectroscopy applications?

This pair will pull you through



The **BEST** choice for excellent resolution at ultra-high rates . . .

The 673 Gated Integrator Amplifier

- Gated integrator technology to handle ULTRA-high count rates
- Excellent Ge detector resolution at any count rate
- More than double the throughput of conventional amplifiers
- Elimination of ballistic deficit peak-broadening effects

The **ONLY** choice for remote and automated spectroscopy . . .

The 972 Computer Controlled Amplifier

- Computer selection of shaping time constant and gain
- Advanced baseline restorers for superior performance at high count rates
- Sophisticated discriminators that automatically monitor noise and overload recovery to prevent acquisition of distorted data

When your assignment demands exceptional performance . . .

Count on  **EG&G ORTEC** for the answer.

Call the HOTLINE, 1-800-251-9750, or your local EG&G ORTEC representative.



BILZ

tory materials.

After a period as a research assistant in Freiburg he accepted a chair in theoretical physics in Frankfurt. In doing so, he became one of the few German professors to circumvent the painful ordeal of the *Habilitation* usually required for the occupation of a chair.

In 1972 he moved to Stuttgart where he had been offered a position as department head and director of the newly created Max-Planck-Institut für Festkörperforschung. In his new position, which he held till his death, he was highly instrumental in setting up the policies of this center for solid state research.

Bilz dedicated most of his scientific interests to the theory of lattice dynamics and their interaction with light. He contributed greatly to the development of macroscopic and microscopic theories of lattice vibrations, their anharmonicities and interactions with electronic states. Recently, he had made important contributions to ferroelectricity and to the theory of phase transitions as induced by nonlinear interactions. Much of his work can be found in the monumental volume of the *Handbuch der Physik, Vibrational Spectra of Non-Metals*, which he wrote with D. Straucher and Roland K. Wehner (Springer-Verlag, 1984).

Bilz was responsible for training a large number of theorists, both German and otherwise, who now occupy leading positions in teaching and research. As a theorist he always promoted a strong interaction with experimenters. His office door was open at all times to anyone seeking his help or advice and he was always ready to give it. He exuded optimism and friendliness and was noted for his fairness and conciliatory attitude in handling diffi-

cult matters. He was also a gracious host, for which many of his American colleagues will remember him fondly. With his death we have lost a friend, a colleague, a wonderful human being and a first class scientist in the prime of his work. It will not be easy to replace him.

MANUEL CARDONA
Max-Planck-Institut für
Festkörperforschung
Stuttgart, Federal Republic of Germany

John J. Livingood

John J. Livingood died 21 July 1986 at the age of 83. He was one of the pioneer group, centered around E. O. Lawrence, at the Radiation Laboratory at Berkeley who did so much to move nuclear physics from the era of radium sources and ZnS scintillators to the era of cyclotrons and counters. He was born in Cincinnati, Ohio, and got his AB and PhD at Princeton. He stayed at Princeton as an instructor and during this period wrote, with Gaylord Harnwell, the text *Experimental Atomic Physics* (McGraw-Hill). This book was the introduction to modern physics for many of the generation of physicists educated in the thirties and forties. In 1932 he moved to Berkeley and in association with several other people, principally Glenn Seaborg, he found over a dozen new radioactive isotopes. Amazingly enough from their knowledge of nuclear systematics they were also able to find a new stable isotope Te^{120} . The article he wrote with Seaborg (*Reviews of Modern Physics* 12, 30, 1940) was a classic reference in nuclear physics for a decade.

He went to Harvard in 1938 to help in the construction of their first cyclotron, and in 1942 he joined the Radio Research Laboratories that were set up at Harvard during World War II. Here he played a major role in developing the resonatron, a large radio tube used for major jamming. In 1945 he joined the Collins Radio Company where he was in charge of the design and installation of cyclotrons at Argonne and Brookhaven National Laboratories. In 1952 he went to Argonne where he was the leading spirit in the accelerator design project that led to his heading the design and construction of the Zero Gradient Synchrotron, a 12 GeV proton accelerator that made numerous contributions to particle physics until it was shut down in 1979.

In later years he served as consultant to Argonne and others on accelerator matters and wrote two books in this field *Principles of Cyclic Particle Accelerators* (Van Nostrand, 1961) and *The*



LIVINGOOD

Optics of Dipole Magnets (Academic, 1969).

As a physicist Livingood's outstanding characteristic was his drive to understand. He was not satisfied with easy explanations and was not afraid to question anybody. He was energetic and well-focused, but never overbearing. His good manners, cheerfulness and consideration will be missed by all who knew him.

RON MARTIN
ROY RINGO
Argonne National Laboratory
Argonne, Illinois
LEE TENG
Fermilab
Batavia, Illinois

William L. Williams

The physics community suffered a tragic loss with the death of William L. Williams as a result of a plane accident on 11 November 1986.

Williams was born in Chickasha, Oklahoma, on 28 May 1937. He received his undergraduate education in physics at Rice University, where he earned the BA in 1959. He then moved to Dartmouth College, where he completed the MA in 1961, and to Yale University, where he was awarded a PhD in 1965.

He spent his academic career at the University of Michigan, where he arrived as instructor in 1965. He advanced rapidly to professor in 1976. He served as associate chairman of the department of physics and was the associate dean of research for his college at the University of Michigan. His *Doktorfamilie* contains 11 doctoral students, and the list of students whom he influenced in his teaching career numbers in the thousands.