obituaries

In spite of his time-consuming work as the key man of French science, he maintained a personal interest in CERN and in activities directed towards international cooperation in science. In 1975 he was chosen to be the chairman of the Division of Particles and Fields of the International Union of Pure and Applied Physics and also served as the chairman of the newly founded International Committee of Future Accelerators. Only weeks before his death, Gregory was elected chairman of the CERN Council, the decision-making body of the Laboratory.

Everyone who had the opportunity to work with Gregory was struck by his simplicity and modesty. He had a rare gift of cool, rational, cartesian thinking in matters where others might react emotionally or impulsively. This trait made him an extraordinary coordinator and administrator. At the same time he had a deep love for simple, elegant physics.

Above all, he was a wonderful human being; without him it will be difficult to continue the drive towards European and world collaboration in science to which he devoted so much of his life.

RONALD R. RAU
Brookhaven National Laboratory
VICTOR F. WEISSKOPF
Massachusetts Institute of Technology

Reuben S. Title

Reuben S. Title, research physicist at the IBM Thomas J. Watson Research Center, Yorktown Heights, New York, died suddenly at the age of 47 on 28 November 1977. His work in electron spin resonance is well known to solid-state physicists and chemists.

He was born in Toronto, Canada, in 1930 and received BA and MA degrees in physics from the University of Toronto in 1951 and 1952. After studying on an 1851 Exhibition Scholarship, he was awarded the PhD degree from Cambridge University in 1956. After one year at the National Research Council of Canada and another at the Bell Telephone Laboratories, he joined the IBM Research Division in 1958 as a research physicist and later became manager of the Electronic Properties of Materials group. He returned to the Cavendish for a sabbatical year in 1973–74.

Title began his scientific career in atomic beams, but soon made the transition to electron spin resonance, a subject in which he made many important contributions. He saw spin resonance as a powerful tool in obtaining specific and unique structural information about materials and was usually one of the first to obtain samples of new materials in order to see what useful information about them he could uncover.

TITLE

Title was one of the earliest workers to use the technique of photoexcitation to produce or change epr spectra in luminescent materials, especially in rare-earth phosphors and II–VI materials. He also wrote a definitive survey of paramagnetic resonance in II–VI materials.

He and his co-workers were the first to report the characteristic epr signal of amorphous silicon and germanium. Their interpretation in terms of "dangling bonds" has provided the basis for many further developments. His studies on ion-implanted silicon crystals led to useful models for the formation of continuous amorphous layers and for the kinetics and annealing of ion damage.

Title also investigated various III–V semiconductor materials. Some of his last experiments were on superionic conductors, where the paramagnetic ion itself may be in motion.

In his years at IBM he helped to establish a sense of cooperation and of mutual interest and support within the laboratory. His advice and expertise were highly valued by all his colleagues. He will be greatly missed.

A. H. NETHERCOT
IBM Corporation
Yorktown Heights, N.Y.

Richard Roberts

On 17 January Richard W. Roberts, age 43, died suddenly at his home in Wilton, Connecticut. He had become widely known and admired as an administrator and manager of research organizations in both private industry and the Federal government. All who knew him had high expectations for his future.

He graduated in chemistry from the University of Rochester (BS in 1956) and from Brown University (PhD in 1959), and spent a year as a National Academy of Sciences postdoctoral fellow at the National Bureau of Standards, an organization to which he would later return as director.

After joining the General Electric Research and Development Center in 1960,

he did research in ultra-high vacuum technology, surface chemistry and lubrication and had more than 70 technical publications and one book to his credit. His managerial talents became evident early in his career as he progressed through appointments of increasing responsibility until he became research and development manager of materials science and engineering in 1968.

In February 1973, Roberts left General Electric to become the seventh director of the National Bureau of Standards and the first chemist ever to head it. Then in June 1975 he moved to the newly formed Energy Research and Development Administration as assistant administrator for nuclear energy.

He rejoined the General Electric Company in February 1977 at its home offices in Fairfield, Connecticut where he was carrying out a comprehensive study of technology in the company at the time of his death.

Dick Roberts's achievements as a manager and leader grew out of his ability to motivate others to do their best and to find gratification in their efforts. He displayed extraordinary talents for communicating effectively with all types of people, and for finding his way through complex issues, bureaucratic intricacies and human diversity to reach important goals. He had toughness tempered by graceful cordiality, ambitious drive tempered by empathy with others, and impatience tempered by realism. The scientific community has few young leaders of his quality; in this light, his death appears all the more tragic.

ROLAND W. SCHMITT
General Electric Company
Schenectady, N.Y.

John R. Pellam

The death on 23 July 1977 of John R. Pellam, professor of physics at the Irvine campus of the University of California, was a great loss to the community of low-temperature physicists. Pellam had long been a leader in the field of liquid-helium physics, and had contributed significantly in many areas of physics.

John Pellam was well known and respected in the international community of low-temperature physicists, especially through his work on helium three-four mixtures and his use of the Andronikashvili disk technique.

Pellam had a varied career. He received his undergraduate degree from MIT just before the start of World War II, and began immediately to work with Philip Morse on operations research problems for the US Navy, where he contributed to the founding of this new field. After the war he returned to MIT to work on his doctorate.

At that time Samuel Collins was completing the first model of his famous helium liquifier, which later became the mainstay of most low-temperature physics laboratories. Pellam enjoyed recounting the story that the first successful run of his thesis experiment was carried out inside Collins's first liquifier—on the day of its first successful run.

Pellam was a supreme example of the intuitive physicist. His understanding of how helium "thinks" was rivalled only by that of his colleague Richard Feynman. He enjoyed designing conceptually simple experiments to illustrate complex phenomena. Much of his career was devoted to exploring hydrodynamic forces exerted by superfluid helium II. He invented a way to use the thermal Rayleigh disk to demonstrate in a clear and unequivocal way that the two-fluid model for helium II could explain extremely complex forces operating in a second sound field. Another example was his invention of the "superfluid wind tunnel," a device that allowed the superfluid component to move, while constraining the normal fluid component. He used this device in a successful experimental verification (known as "Pellam's Fly Wing Experiment") that the lift on an airfoil immersed in a viscosity-free fluid vanished.

Following completion of his doctorate at MIT, Pellam served as chief of the low-temperature physics program at the National Bureau of Standards. In 1954 he accepted a Professorship at Caltech, where he spent a highly productive decade. Following a brief period in private industry, he moved to Newport Beach as professor of physics at the Irvine campus of the University of California.

John Pellam was an extraordinarily powerful man. His physical strength and his intolerance of bureaucracy are illustrated by a story told of him when he was at the National Bureau of Standards. He had placed a request to have some cylinders of helium gas moved. After a typically long bureaucratic delay a team of riggers showed up and began to debate among themselves how to proceed. Pellam, growing increasingly impatient and wanting to get on with his research, finally stepped in and picked up one cylinder under each arm. As he walked down the stairs with them the riggers stared after him in disbelief.

John Pellam maintained his good humor and actively contributed to the very end to an experimental test of the inverse square law of gravitation at short distances. He was a warm, dynamic individual whose loss will be felt by his friends in many walks of life in the US and throughout the world.

PAUL P. CRAIG
University of California, Davis
FREDERIC REINES
University of California, Irvine
GORDON SHAW
University of California, Irvine □