modeling were hallmarks of the Göttingen research. Pauly retired from the institute in 1996.

A quiet, gentle, and modest person with the proverbial humor of a Rhinelander, Pauly occasionally enjoyed a good joke. As a colleague and group leader, he was open for discussions and would freely share his deep insights and vast experience. His students and coworkers are deeply grateful to him for supporting them generously, while simultaneously giving them sufficient freedom for their own scientific development.

Pauly will long be remembered for his many reviews, some with one of us (Toennies), but especially for his authoritative two-volume monograph *Atom, Molecule and Cluster Beams* (Springer, 2000). He is missed not only by his wife and two children, but also by the molecular-beam community. We have lost a great scientist, an inspiring teacher, and a loyal colleague.

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Rendel Sebastian Pease

Rendel Sebastian Pease died in Oxford, England, on 17 October 2004 after a short illness. Bas, as he was commonly known, was a former director of the UK research program on controlled thermonuclear fusion research (CTR) and a pioneer in the global program to develop a reactor system based on the fusion of hydrogen isotopes. His vision, scientific acumen, international outlook, and often sheer bloody-minded persistence ensured that the CTR program was never without funding nor indeed out of the headlines.

Bas was born on 2 November 1922 in Cambridgeshire, England, into an academic family. It is difficult to ignore the influence of his distinguished family background on his ambition and confidence. His father was a geneticist at Cambridge University and his grandfather a cofounder in 1884 of the Fabian Society, a socialist think tank. On the maternal side, Bas's grandfather was Josiah Wedgwood, a Labour Cabinet minister. Through the Wedgwoods, Charles Darwin and John Maynard Keynes appear in the family tree, which also boasts of 10 fellows of the Royal Society by 1900. In 1977 Bas kept the family tradition going by being elected a fellow in the society.

During the early 1940s, Bas studied physics at Trinity College, Cambridge. His studies were interrupted by a spell of wartime service, during which he was directed to the Royal Air Force Bomber Command's Operational Research Service. As a member of an operational unit that studied bombing strategy, he had the task of assessing the effectiveness of radar guidance.

After finishing his interrupted BSc in 1947, Bas joined the general physics division of the United Kingdom Atomic Energy Authority (UKAEA) at Harwell. His contributions to early solid-state structure research on fission-reactor-relevant materials, for which he, in collaboration with George Kinchin, used mostly x-ray analysis, have often been cited. To quote Mick Lomer, an early colleague and later successor to Bas as director of Culham Laboratory, "Bas was the itinerant particle that mediated many interactions."

In 1955 Bas moved to the CTR program, whose flagship at Harwell was the toroidal pinch experiment ZETA. The role of radiation loss was highlighted in the determination of a critical pinch current now known as the Pease current. Following international declassification of controlled fusion research in 1958, the main proponent countries—the UK, the US, and the USSR—were pursuing different routes toward the goal of CTR: ignition. The performance of the fusion devices in the West was, however, some seven orders of magnitude short of the requirements for ignition. It was not surprising, therefore, that in 1967 a UK committee assessing the prospects for a fusion reactor recommended a severe cut in the fusion budget. A second problem was the growing and continuous pressure from the UK government to diversify UKAEA staff into commercially viable activities. Bas was appointed director for fusion research in 1968 at the Culham Laboratory. He solved the first problem through his international contacts and the second by minimal concessions to nonfusion activities. At the time, the laboratory was recognized internationally as a CTR powerhouse, and Bas was determined to preserve if not enhance its reputation.

Bas maintained excellent relations with scientists outside the UK. Despite the prevailing cool political climate between the Soviet Union and the West, in 1969 Bas sent a team of UK scientists led by one of us (Peacock) to make measurements on T3, a Soviet tokamak device. The Anglo–Soviet experiments confirmed the outstanding performance of the tokamak and had an almost immediate impact on CTR worldwide. The photograph below shows Bas discussing the Anglo–Soviet experiments on the T3 tokamak with Mel Gottlieb, director of the Princeton Plasma Physics Laboratory, at a conference in Dubna, USSR, in October 1969. Bas's international outlook and contacts paid dividends again in 1978, when, as director of Culham, he ensured that UKAEA would host the European Joint European Torus (JET) project, which is the largest operational fusion experiment in the world.

Rendel Sebastian Pease (right), with Mel Gottlieb

Director of Culham from 1968 until 1981 and then program director for fusion until his retirement in 1987, Bas presided over many advances in our understanding of the behavior of high-temperature plasmas in magnetic fields. His annual talks in which he reviewed the lab's entire program were regarded by the staff as a tour de force. Bas initiated several important fusion reactor studies. He insisted that whatever the funding situation, the UK should have an in-house fusion program

independent of British commitments to the joint European program in JET.

Bas's personality and family background contributed greatly to his success as a leader of a large scientific team. His acute intellect and great personal charm shaped his approach to management of human resources. However, his approach could be provocative, even confrontational, designed no doubt to make his colleagues uncomfortable with complacency.

Bas was a founding member of the European Physical Society, chairman of the International Fusion Research Council (1976–83), and chairman of the Plasma Physics Commission of the International Union of Pure and Applied Physics (1969–78). In the UK he chaired the Institute of Physics (1978–80) and won IOP's Glazebrook Medal in 1989. He also served on the Royal Society's Council as vice president in 1986–87. Bas has been a prominent member of the Pugwash Trust, chairman of the British Pugwash group, and a member of the international Pugwash council.

He is sorely missed for his enthusiasm for fusion and drive for international collaboration.

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Theodore David Schultz

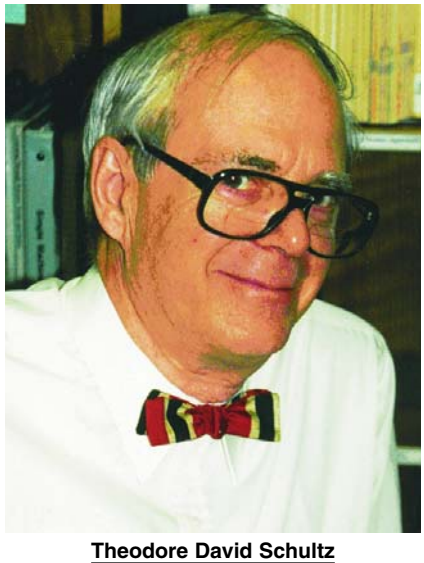
Theodore David Schultz, a theoretical physicist and science education advocate, died of cancer on 20 September 2004 in Washington, DC.

Born in Chicago on 6 January 1929, Ted lived in the city's northern suburbs. As a teenager, he was a contestant on the radio show *Quiz Kids*, and when he was 16, he attended the small Deep Springs College near Death Valley, California. He continued his undergraduate studies at Cornell University and graduated with a bachelor's degree in engineering physics in 1951. He then studied with J. C. Slater at MIT and explored the polaron problem using the path integral methods developed by another Cornell graduate, Richard Feynman. Ted pushed that approach to its limits. In 1956 he received his PhD. His thesis, "Electron-Lattice Interactions in Polar Crystals," was widely read, with more than 2000 copies circulated.

Ted's subsequent two-year postdoctoral work with Rudolf Peierls in Birmingham, England, led to his now well-known paper on polarons, "Slow Electrons in Polar Crystals: Self-Energy, Mass, and Mobility," published in *Physical Review* in 1959. Ted joined the University of Illinois in 1958. During the two years that followed, he worked with John Bardeen, first as a research associate professor and then as a research assistant professor.

He left Illinois to join IBM's T. J. Watson Research Center in Yorktown Heights, New York, where he spent the next 32 years, except for a sabbatical at the University of Munich. Ted started at the research center as a charter member of the theoretical group headed by Elliot Montroll, with Elliott Lieb and Dan Mattis. Particularly productive during those years, Ted wrote the short but elegant book *Quantum Field Theory and the Many-Body Problem* (Gordon and Breach, 1964), one of the first books on this subject. He worked with Lieb and Mattis on ferromagnetism and antiferromagnetism, and they produced probably their best-known paper, "Two-Dimensional Ising Model as a Soluble Problem of Many Fermions," which was published in *Reviews of Modern Physics* in 1964. That article became a citation classic. Mattis has testified to Ted's extraordinary role in research while Ted was at IBM—his close cooperation and ability to be a sounding board for ideas—and noted that all ideas relating to many-body problems, including the original XY model of magnetism, were filtered through Ted. From 1964 to 1965, Ted was a visiting adjunct professor at New York University.

Ted enjoyed another period of great productivity from the mid-1970s to the early 1980s. He worked primarily with experimentalists on the charge-transfer salt TTF-TCNQ;



Theodore David Schultz