



Teller

According to the citation, Teller, who was born in 1908 in Budapest, Hungary, left Europe “to escape the rise of Nazi Germany. After arriving in America, he established himself as a premier physicist. His work on national defense projects such as the Manhattan Project and the Strategic Defense Initiative helped protect our Nation and bring about the end of the Cold War.”

“In my long life,” said Teller, “I had to face some difficult decisions and found myself often in doubt whether I acted the right way. Thus the medal is a great blessing for me.”

For the past 28 years, Teller was a consultant to the Lawrence Livermore National Laboratory, where he was a director emeritus. He also was a senior research fellow at Stanford University’s Hoover Institution on War, Revolution and Peace.

Teller died at his home in Palo Alto, California, on 9 September.

In Brief

The United Kingdom Atomic Energy Authority gave the nod to **Chris Llewellyn Smith** to direct its Culham division, located near Abingdon, England. A senior research fellow in physics at Oxford University, Llewellyn Smith took his post on 8 September. He succeeds **Derek Robinson**, who died in December 2002.

The University of California, Santa Cruz, has added a new faculty member. In July, **Sriram Shastry** joined the university as a professor of physics. He previously had been a professor of physics at the Indian Institute of Science in Bangalore, India.

At the Third International Conference on Inertial Fusion Sciences and Applications in Monterey, California, last month, the American Nuclear Society bestowed its 2003 Edward Teller Medal on two recipients: **Larry Suter** and **Hideaki Takabe**. Suter was cited for his “seminal work on almost all aspects of laser hohlraum physics.” He is the associate program leader for inertial confinement fusion theory and design at Lawrence Livermore National Laboratory. Takabe, who is a professor in

the Institute of Laser Energetics at Osaka University in Japan, was acknowledged for his “pioneering work on laser–plasma interactions, atomic physics, and hydrodynamic instabilities of laser implosions.”

After 16 years as director of the Russian-based Ioffe Physico-Technical Institute, **Zhores Alferov** stepped down in June to become the institute’s scientific supervisor. **Andrei Zabrodskii**, former deputy director of the institute, is the new director.

Joe Kilkenny became manager of the General Atomics inertial fusion

technology division in La Jolla, California, in June. Formerly a senior physicist at Lawrence Livermore National Laboratory, Kilkenny replaced **Jill Dahlburg**, who is now a senior scientist for science applications at the Naval Research Laboratory in Washington, DC.

The Pennsylvania State University’s physics department has added two new assistant professors to its ranks. **Alejandro Perez** joined the faculty in August and **Réka Albert** became a faculty member in June.

Obituaries

Olli V. Lounasmaa

Olli V. Lounasmaa, a pioneer of ultra-low-temperature physics and engineering, died on 27 December 2002 while swimming in the Arabian Sea on his vacation trip to the Indian state of Goa.

Born on 20 August 1930 in Turku, Finland, Olli received his master’s degree in experimental physics from Helsinki University in 1953. He continued his studies in the Clarendon Laboratory at Oxford University. His PhD project, under the supervision of Ron Hill, was to measure the thermodynamic properties of liquid helium-4 between 1.5 and 20 K. At Clarendon, he learned about and adopted the visions of such celebrated low-temperature physicists as Francis Simon, the head of the lab, and Nicolas Kurti, the pioneer of nuclear cooling, and discovered the importance of the in-depth theoretical support supplied by Brebis Bleaney and Roger Elliott. In those days, the supply of liquid hydrogen for precooling purposes was the principal bottleneck that forced different groups to take turns cooling down their experiments. Olli demonstrated his organizational skills among the graduate students by becoming the self-styled clearing agent for the liquid hydrogen supply.

After graduating in 1958, Olli gained further international experience as a postdoctoral researcher at the Argonne National Laboratory from 1960 to 1964. Under the leadership of Oliver Simpson, Olli constructed one of the first liquid helium-3 evaporation refrigerators and launched a series of specific-heat studies on rare earth metals down to a temperature of 0.4 K.

In 1965, Olli was appointed professor of technical physics at the Helsinki University of Technology. In



Olli V. Lounasmaa

the 1960s, academic research in Finland enjoyed improved funding. Combined with a good supply of bright students, Olli started an ambitious and energetic research program of the then lowest temperature regimes by focusing first on refrigeration and measuring techniques. He developed adiabatic demagnetization cooling, $^3\text{He}/^4\text{He}$ dilution refrigeration, nuclear cooling, and the adiabatic compression of liquid ^3He , known as Pomeranchuk cooling. It is from this work that nuclear cooling, performed with a powerful superconducting magnet and reliable precooling with $^3\text{He}/^4\text{He}$ dilution refrigeration, became the accepted technique in cryogenics. With his managerial skills and straightforward no-nonsense attitude, he built his low-temperature laboratory in 10 years from nothing to an international center—a task that serves as a model for science management.

Olli organized and hosted the 14th International Conference on Low-

Temperature Physics in 1975; it drew 900 participants. That event apparently had an influence on Japan's low-temperature research proposals, which persuaded funding agencies by noting that "even the Finns could cool to those temperatures."

His most lasting contributions to science, though, came after 1975, in three areas: the study of spontaneous magnetic ordering in nuclear spin systems, the investigation of rotating ^3He superfluids, and the development of multichannel superconducting quantum interference device (SQUID) magnetometers for noninvasive studies of the human brain. His contributions in each of these fields alone correspond to more than an average lifetime's scientific achievements. The first two became feasible following his development of the different cooling techniques, and neuromagnetometry required a thorough understanding of SQUID-based measuring techniques.

In his low-temperature laboratory, nuclear ordering has now been investigated, using a cascade of two nuclear cooling stages in a series, in copper, silver, and rhodium at record-breaking low temperatures. In copper and silver, the ordered spin configurations of the magnetic-field-temperature phase diagram have now also been mapped in neutron diffraction measurements that involved a collaboration of Olli's laboratory with high-flux reactor teams from the Risø National Laboratory in Denmark and the Hahn–Meitner Institute in Germany. In the rhodium experiments, his low-temperature laboratory reached a nuclear spin temperature of 100 pK in 2000.

In the second area of superfluid ^3He research, Olli gained a 20-year monopoly on the exploration of quantized vorticity by starting a bold new initiative—the construction of a rotating nuclear-cooling refrigerator. Eight new structures were discovered in his low-temperature laboratory. The continuous meandering vortex sheet has become one of the celebrated epitomes of these unusual forms of quantized vorticity in systems with a multicomponent order parameter. When the 1996 Nobel Prize in Physics was awarded to David Lee, Douglas Osheroff, and Robert Richardson for their discovery of the ^3He superfluids, the Nobel committee noted that the researchers in Olli's laboratory had established the connections between quantized vorticity in superfluids and the quantum field theory of cosmic strings.

Similarly, in brain research, Olli's vision of the whole-head SQUID array

as an efficient brain imaging technique, now known as magnetoencephalography (MEG), has proven to be the best and only existing method for probing the brain on a time scale down to 1 ms with a spatial resolution of a few millimeters. Today, such equipment is approaching routine clinical service and more than 30 laboratories worldwide are using the MEG devices and techniques developed in Olli's laboratory.

During his more than 40 years of research, Olli generated numerous successful scientific and engineering projects. For those, he was recognized with distinction: He held foreign memberships in the US National Academy of Sciences and the Royal Swedish Academy of Sciences. In 1984, he shared the Fritz London Memorial Award with Weiner Buckel and David Thouless.

Most of all, his many PhD students and colleagues in the Helsinki University of Technology remember him as the dynamic founder of the low-temperature laboratory in 1965 and its charismatic leader until his retirement in 1995.

Matti Krusius

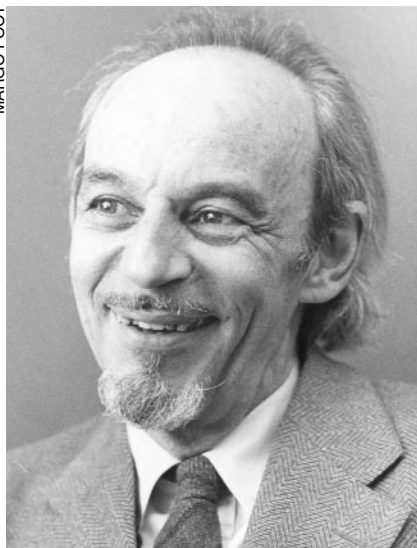
Mikko Paalanen

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Martin Deutsch

Martin Deutsch, who pioneered the use of organic scintillators in the US and established the existence of positronium, died on 16 August 2002 of cardiac arrest at his home in Cambridge, Massachusetts.

Deutsch was born in Vienna, Austria, on 29 January 1917. When he



Martin Deutsch

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