We Hear That

In Brief

Thomas Ackerman has accepted the position of chief scientist of the US Department of Energy's Atmospheric Radiation Measurement (ARM) program. He is currently making the transition to his new position, and next summer will move from Pennsylvania State University, where he is a professor of meteorology, to Pacific Northwest National Laboratory, where ARM is based. Ackerman is replacing **Gerald Stokes**, who will direct the environmental and health sciences division at PNNL. Ackerman will also be a Battelle fellow, only the second person to bear such a title.

In September, the White House gave ten individuals and ten institutions Presidential Awards for Science, Math and Engineering Mentoring. One of the ten institutions was the physics department at Bryn Mawr, where 5% of graduates in recent years have been physics majors—ten times the national average. (See PHYSICS TODAY, August 1996, page 57.)

In September, **Michael A. Stroscio**, principal scientist at the US Army Research Office, received the 1998 Harry Diamond Memorial Award from the Institute of Electrical and Electronics Engineers.

The nuclear medicine division of Mallinckrodt Inc, in Petten, The Netherlands, has dedicated a new building to **Powell "Jim" Richards.** Richards suggested the medical use of technetium-99m in 1960 while working for Brookhaven National Laboratory, from which he retired in 1983. With its short halflife and absence of beta decay, technetium-99m is now used each year in nearly 20 million diagnostic procedures worldwide.

In a ceremony in Heidelberg, Germany, in September, the Astronomische Gesellschaft presented the 1998 Karl Schwarzschild Medal to **Peter A. Strittmatter**, in part "for his theoretical work on stellar structure and star formation within rotating and strongly magnetic fields and for his observational work on white dwarfs and on quasars." Strittmatter is a regent's professor of astronomy at the University of Arizona and director of the university's Steward Observatory.

In February, **Jean Futrell** will become the new director of the Environmental Molecular Sciences Laboratory at the Pacific Northwest National Laboratory. Futrell is currently the Willis F. Harrington Professor of Chemistry at the University of Delaware. He will replace **Teresa Fryberger**, who led the EMSL during its first year of operation as interim director.

In February, **Stephen Strom**, a professor of astronomy at the University of Massachusetts, Amherst, will join the National Optical Astronomy Observatories as an astronomer in the science/operations division in Tucson, Arizona. Strom served as director of the Large Millimeter Telescope project from 1996–98 and will continue to work with the project after his move.

Last May, **Thomas Mason**, formerly an associate professor of physics at the University of Toronto, became the deputy project manager for neutron science at the Oak Ridge National Laboratory.

William Moerner became a professor of chemistry at Stanford University in July but, until his lab is ready next spring, he will continue to do research at the University of California, San Diego, where he had previously held the position of distinguished chair of physical chemistry.

Obituaries

Shlomo Alexander

Shlomo Alexander, a versatile physicist who both experimented and theorized on condensed matter, was killed in a car accident near Caesarea, Israel, on 6 August.

Born in Freiburg, Germany, on 4 September 1930, Shlomo grew up in Jerusalem, where he earned a BSc from the Hebrew University of Jerusalem in 1955. Under the guidance of Saul Meiboom, he earned a PhD in physics from the Weizmann Institute of Science in 1958.

Although Shlomo is best known for his theoretical contributions to condensed matter physics, for which he was awarded the Israel Prize in 1993, he began his research career as an experimenter. As part of his thesis work, he helped to build a high-resolution nuclear magnetic resonance spectrometer—no small feat in 1950s Israel. Using this instrument, he studied the structure of the proton NMR spectrum in vinyl derivatives. Contrary to the generally accepted view in those days, he found that proton spin–spin couplings could be negative, as well as positive. He then went on—still as part of his thesis—to use the Dirac vector model to explain the origin of the coupling sign.

In 1961, Shlomo went as a postdoc to AT&T's Bell Laboratories to study—with Phil Anderson—the interactions between magnetic moments in metals and to participate in experimental work on metals and superconductors. At the same time, he wrote two definitive papers on dynamic NMR line shapes, using the density matrix formalism.

In 1962, Alexander returned to the Weizmann Institute and initiated theoretical and experimental activity in pure nuclear quadrupole resonance (PNQR) spectroscopy. He formulated a new theory, which involved the sudden approximation, to account for the effect of molecular jumps on the PNQR relaxation and applied it to molecular crystals. In these systems, he discovered second-order displacive phase transitions, which, though well known in ferroelectrics, were a surprise in molecular crystals.

SHLOMO ALEXANDER

In 1969, Shlomo moved to the Hebrew University, where he established a theoretical physics group at the university's Racah Institute. From that time on, he never set up an experimental lab again, though he always maintained a close connection with experimentalists.

In the 1970s, Shlomo continued his work on dynamic effects on NMR spectra and studied fluctuation effects on NMR in superconductors. He also branched into new directions—namely, phase transitions, disordered systems and soft condensed matter. Many of

his works in this period became classic. His study of helium adsorbed on grafoil, for example, (*Physics Letters*, volume 54A, page 353, 1975) was the forerunner of numerous works on commensurate–incommensurate transitions, and the Alexander–McTague theory of the liquid–solid transition is now standard textbook material.

Shortly after he was introduced to polymers during his sabbatical at the College of France in 1976, Shlomo developed the scaling theory of polymers attached to surfaces. His seminal papers on this subject gave birth to a new branch of polymer science, and there are hundreds of references to the "Alexander–de Gennes brush" in the literature. This work was followed by another classic in the area of soft condensed matter: the first lattice gas model of microemulsions.

In 1978, Shlomo was elected dean of the faculty of science and mathematics at the Hebrew University, a position he held until 1981.

Following many visits to UCLA in the beginning of the 1980s, Shlomo joined the UCLA physics faculty in 1986. There, he made major contributions to the study of transport and excitation dynamics in one-dimensional disordered systems. In 1982, he and Raymond Orbach wrote the famous Alexander–Orbach conjecture concerning the density of states of excitations on fractal lattices ("fractons"), which became one of the most cited works in the physics literature. Shlomo made important contributions to a broad range of subjects, including the theory of colloidal crystals, superconductivity in disordered systems, the structure and packing of quasicrystals, polymers at interfaces, hydrodynamics of electrolyte solutions, nonequilibrium growth of crystals and inter-diffusion.

In the early 1980s, he became occupied with the development of a new, fundamental description of the elastic properties of disordered materials, which culminated in a pioneering study published in *Physics Reports* shortly before his untimely death.

In 1989, Shlomo retired to emeritus status from the Hebrew University and joined the department of chemical physics at the Weizmann Institute, where he remained until his full retirement in 1995. Since then, he was affiliated with the physics department of Bar-Ilan University.

Shlomo had an unusually reliable intuition about physics and a rare ability to translate experimental observations into simple physical models. The combination of his extremely broad range of interests and deep knowledge of physics with his gentle and friendly personality made his office and home a Mecca for colleagues and students alike. He collaborated with an enormous number of people from a variety of fields, ranging from organic chemistry to mathematical physics, and even ventured outside of physics to economics—a subject he worked on with his wife Esther. Age and scientific stature had no effect on his youthful mind: He remained energetic, inquisitive and open-minded, and would address a young student with the same courtesy and respect as a public or scientific celebrity. He had a passion for scientific integrity, and deep awareness of the need to protect science against dangers ranging from downright fraud to the presentation of half-baked ideas as scientific truths.

Shlomo was a noble human being, a brilliant physicist and a dear friend. We are deeply saddened by his death.

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Achilles Papapetrou

Achilles Papapetrou, a leading researcher in the field of general relativity for over 50 years, died in Paris at the age of 90 on 12 August 1997.

Born in northern Greece, he studied mechanical and electrical engineering at what is now the National Technical University of Athens from 1925 to 1930, working afterwards as an engineer. In 1934, he moved to the University of Stuttgart to study with Paul Ewald. Although he worked first on solid-state theory, his interest shifted to relativity as he and Helmut Honl worked on special-relativistic equations that described the motion of spinning particles.

After obtaining his doctorate in engineering at Stuttgart in 1935, Papapetrou returned to the technical university in Athens as an assistant in the electrical engineering department. He became a professor of physics there in 1940 and taught throughout World War II. Well-known as an opponent of collaboration during the brutal German occupation, he participated in the Greek people's remarkable odyssey of resistance and liberation.

In 1946, Erwin Schrödinger invited Papapetrou to the Dublin Institute for Advanced Studies, where he started to work on Schrödinger's unified field theory. He found exact spherically symmetric solutions and proved that nonsingular solutions to the nonsymmetric field equations do not exist. In 1948, he became a physics research fellow at the University of Manchester, where he worked mainly on problems connected with the equations of motion in general relativity. He introduced marked simplifications in the derivation of the slow-motion equations, and derived the equations of motion of spinning test particles, partly in collaboration with Ernesto Corinaldesi.

In 1952, Papapetrou moved to East Berlin, where he established a relativity group in the German Academy of Sciences of the German Democratic Republic. His work there, often in collaboration with the younger research workers whom he was training, included a proof of the nonexistence of periodic, nonsingular solutions to the gravitational field equations, investigations of gravitational shock waves and further studies of the equations of motion.

Papapetrou moved to Paris in 1962 to become a research director at the National Center for Scientific Research (CNRS), a post he held until he retired in 1977. There, he again trained a large group of younger researchers, who joined the already well-established French relativity community.

In 1975, he became director of the Laboratory of Theoretical Physics at the Henri Poincaré Institute. His work there, in Paris, which ranged over almost all topics of current interest in general relativity, included doing research on elastic waves and their use in gravitational-wave detectors, gravitational collapse of shells of matter, the Newman–Penrose formalism and its identities and stationary axially symmetric gravitational fields. His publication list includes over a hundred articles and two highly regarded textbooks, one on special relativity in German and one on general relativity in English (*Spezielle Relativitätstheorie*, VEB Deutscher Verlag der Wissenschaften, 1967; *Lectures on General Relativity*, D. Reidel, 1974).

Papapetrou was a colleague, mentor and friend to several generations of relativists in countries scattered across the globe, and, after he retired, he and his wife Koula continued to receive many of them at home with a warmth and affection that were heartily reciprocated. For many of us, Paris without Achilles will never be the same.

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