we hear that

Grove is AGU president-elect

An MIT geology professor whose research focuses on the processes that led to the formation of Earth's crust and mantle has taken office as president-elect of the American Geophysical Union.

Timothy L. Grove, whose two-year term began 1 July, told PHYSICS TODAY he was "very honored to be chosen by [his] colleagues." He will become the union's president for a two-year term in 2008.

Grove

In a prepared statement, Grove said he feels a responsibility to support and further the work of the organization. "I think that AGU does the best job of any geophysical society in fostering scientific excellence through its meetings and publications and that it provides the most effective medium for communicating with the public and government," he stated.

"I'll be involved with AGU for the next six years," Grove said to PHYSICS TODAY. "A lot is bound to happen during that time, and my priorities will no doubt evolve considerably to meet the changing situations that the Union will encounter."

Grove earned a BA in geology in 1971 from the University of Colorado at Boulder and a PhD in geology in 1976 from Harvard University. He's been a member of the MIT faculty since 1979; he served from 1993 to 1994 as a visiting scientist at the University of Cape Town, from 1997 to 2001 as a research scientist at the University of Zimbabwe, and in 2002 as a visiting professor at ETH Zürich. Grove was named an AGU fellow in 2001.

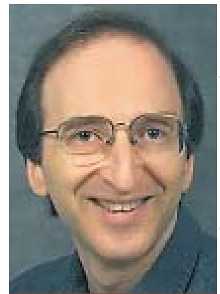
Other newly elected AGU officers include general secretary **Carol Finn** (US Geological Survey) and international secretary **Jaime Urrutia Fucugauchi** (Instituto of Geophysics, National Autonomous University of Mexico).

Perlmutter wins Feltrinelli Prize

Saul Perlmutter, whose research on the nature of dark energy has brought him great renown, is the winner of the 2006 International Antonio Feltrinelli Prize in the Physical and Mathematical Sciences. The honor is awarded every five years by Italy's Accademia Nazionale dei Lincei, one of whose earliest members was Galileo Galilei.

Perlmutter is a senior scientist and astrophysicist in the physics division of the US Department of Energy's Lawrence Berkeley National Laboratory and a professor of physics at the University of California, Berkeley. He is the cofounder and leader of the international Supernova Cosmology Project, principal investigator of the proposed *SuperNova/Acceleration Probe* (*SNAP*) satellite, and leader of other efforts to discover more about the nature of dark energy.

The Lincei Academy—literally "Academy of Lynxes," named for the animal's supposed powers of observation—was founded in 1603, at the dawn of the scientific revolution. Today it is regarded as Italy's premier scientific academy. The Antonio Feltrinelli Prizes, including the International Prize, are the academy's most important awards and among Italy's highest scientific and cultural honors.



LAWRENCE BERKELEY NATIONAL LAB

Perlmutter

Antonio Feltrinelli, an industrialist and financier, bequeathed his fortune to the Lincei Academy to support the recognition of eminent scholars in the arts and sciences; Feltrinelli Prizes were first awarded in 1950.

In addition to a cash award of €250 000 (about $315 000), the prize includes a certificate and a gold medal. The 2006 prizes will be presented at a ceremony in Rome on 10 November, during which Perlmutter will give an address.

obituaries

PHYSICS TODAY has changed the way it publishes obituaries. Some will continue to appear in print, but most will be available only online (see PHYSICS TODAY, October 2005, page 10). Subscribers can visit http://www.physicstoday.org/obits to notify the community about a colleague's death and submit obituaries up to 750 words, comments, or reminiscences. Each month, recently posted material will be summarized here, in print. Select online obituaries will later appear in print.

Arthur B. Metzner

Arthur B. Metzner, a pioneer in the development of rheology as a significant field of applied science, died of a sudden heart attack on 4 May 2006 in Washington, DC.

Born on 13 April 1927 in Gravelbourg, Saskatchewan, Art spent his formative years in Barrhead, Alberta, where he met Elizabeth (Betty), his wife of 58 years. Art studied chemical engineering at the University of Alberta (BS, 1948) and MIT (ScD, 1951). After a brief stint in industry, he joined the chemical engineering faculty of the University of Delaware in 1953. He took emeritus status in 1993 but remained professionally active until his death.

Art's contributions to rheology and the mechanics of non-Newtonian fluids encompass the major problems in those topics over the past 50 years. The unusual behavior of complex liquids became technologically important in the 1950s, and he quickly recognized that existing analyses were not applicable to these nonlinear materials. In a series of papers he wrote with his students, Art

Recently posted death notices at http://www.physicstoday.org/obits:

James Woodham Menter
2 August 1921 – 18 July 2006

G. O. Jones
29 March 1917 – 3 July 2006

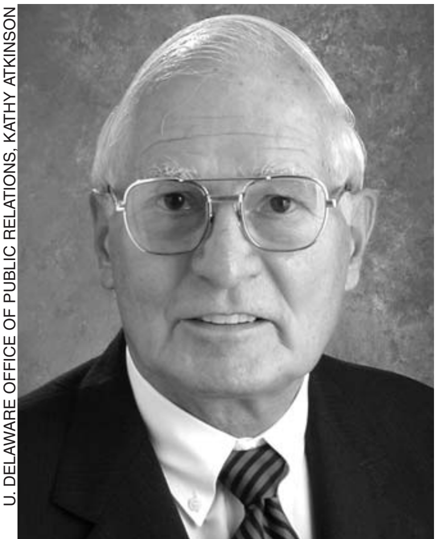
Jorgen Lykke Olsen
10 May 1923 – 14 March 2006

Arthur C. Wahl
8 September 1917 – 6 March 2006

Charles A. Randall Jr
12 September 1915 – 29 January 2006

Bilha Segev
7 May 1963 – 17 March 2005

U. DELAWARE OFFICE OF PUBLIC RELATIONS, KATHY ATKINSON



Arthur B. Metzner

showed how to treat pipeline flow and determine the transition to turbulence for non-Newtonian fluids, how to analyze mixing, and how to analyze heat transfer. His chapter on non-Newtonian fluids in the first volume of *Advances in Chemical Engineering* (Academic Press, 1956) served as the sole introduction to this important new area of engineering for a generation of practitioners and students. He and a few colleagues subsequently convinced NASA to establish a major research effort in non-Newtonian flow, thus providing a stable funding base for a large number of young investigators. Art's contributions were quickly recognized. He received the Junior (now Allan P. Colburn) Award from the American Institute of Chemical Engineers (AIChE) in 1958, and he was the first recipient of the American Society for Engineering Education's Chemical Engineering Lectureship in 1963.

Turbulent drag reduction, whereby very small quantities of polymers of high molecular weight in a solvent can substantially reduce the pumping energy, was an important discovery during World War II. In a 1967 experimental study, Art and Fred Seyer demonstrated that a polymer's presence changes the structure of the wall sublayer. Their picture of polymer behavior near a wall, validated by modern calculations, enhanced the development of drag-reduction methodology by George Savins and others. Drag reduction is an essential component of modern oil-pipeline practice.

In the early 1960s, rheological measurement—determining the nonlinear mechanical properties of complex fluids—was in its infancy. Theoretical results abounded, but practical measurements were difficult; even the algebraic sign of the "second normal stress difference," a small quantity that determines the onset of some instabilities and is a sensitive test of rheological constitutive equations, was unknown. Art and his students attacked the measurement problem for steady shear, and in a landmark 1969 paper with Bob Ginn, he demonstrated that the full stress distribution can be measured reliably. For the next three decades, despite improvements in mechanical and electronic components, that work defined the scope and limits of measurement. (When one of us mentioned once to Art that the paper was required reading in our rheology course, he mused that it would have become a classic if they hadn't included the error bars.)

Through their demonstration of a dramatic increase in frictional resistance for flow of dilute polymer solutions through porous media, Art and his undergraduate student Ronald Marshall revolutionized the understanding of the role of so-called pusher fluids in advanced oil-field recovery. With Jan Mewis, he published a definitive experimental confirmation of George Batchelor's theory of the extensional flow of fiber suspensions, in which the fibers greatly increase the tensile stress.

Art was primarily an experimentalist, with great intuition and a knack for choosing just the right experiment, but his contributions also include clever analyses that cut to the essence of difficult problems. His 1966 "Deborah number" scaling arguments for defining elastic and dissipative flow regimes, together with confirming experiments on sudden viscoelastic deformation, are an integral part of polymer flow culture. His extensional primary field approximation, published in 1971 with his son Arthur P., established a scaling framework for finding the dominant stress contribution in polymer processes. The White–Metzner constitutive equation for stress is still a feature of computer codes for polymer-processing applications.

This catalog of Art's accomplishments is incomplete, albeit representative, and it hardly reflects the enormous contributions of this gifted man. Through his teaching and consulting, he brought his remarkable insight to a broad community. As chair of Delaware's highly rated chemical engineering department from 1970 to 1977, he hired and nurtured a group of outstanding young faculty who have themselves become leaders in their field. A valued consultant to numerous companies, he not only provided technical advice but also effectively interacted with management personnel to ensure that projects were completed on time and advocated the importance of publication by industrial scientists when it could be done without compromising the value of those results to the corporations. In his 10 years as editor of the *Journal of Rheology*, he established the standards that resulted in the highest Institute for Scientific Information (ISI) impact factor of any research journal in rheology, fluid mechanics, or polymer processing. His professional recognitions include being elected to the National Academy of Engineering and receiving the Society of Rheology's Bingham Medal and Distinguished Service Award, numerous awards from AIChE, and honorary doctorates from Katholieke Universiteit Leuven in the Netherlands and the University of Delaware. He was also a member of the Governing Board of the American Institute of Physics.

Those of us who were privileged to have worked with him and to have been mentored by him recall mostly his unremitting commitment to excellence, coupled with extraordinary warmth, humor, and generosity.

Morton M. Denn
City College of the City University of New York
New York City
A. V. Ramamurthy
Union Carbide Corporation (Retired)
Surprise, Arizona
T. W. Fraser Russell
University of Delaware
Newark

Philip Russell Wallace


Philip Russell Wallace

Philip Russell Wallace—"Phil" to all, young and old—played a leading role after World War II in bringing Canadian theoretical physics onto the intellectual stage created by relativity and quantum mechanics. He died in Victoria, British Columbia, on 20 March 2006 of complications of advanced age.

Phil was born in Toronto on 19 April 1915. Like most physicists born around then, he found his options constrained by the Great Depression during his education and prewar career. In Canada at that time, a student of theoretical physics faced an additional hurdle; as Phil recalled, "Our teachers were scarcely aware of relativity and quantum mechanics, which were deemed to be the unique preserve of an esoteric coterie of brilliant but quite impractical minds." Fortunately for Phil as he finished his undergraduate education, John Synge, head of the applied mathematics department at the University of Toronto, hired Einstein's assistant Leopold Infeld, who hardly fit the Canadian teacher stereotype. Under Infeld's direction, Phil earned his doctorate in general relativity in 1940.

Phil was a mathematics lecturer at MIT in 1942 when he was called back by Synge to join the Canadian Atomic Energy Project as one of its first members. Under the leadership of Georges Placzek, an impressive group of young theorists and mathematicians, including Ernest Courant, Robert Marshak, George Volkoff, and Carson Mark, worked on neutron diffusion and other aspects of reactor physics. One open question was how materials – especially graphite – would be affected by continuous intense neutron bombardment. That problem kindled Phil's interest in solid-state physics, which became the central focus of his research for the rest of his career.

In 1946, Phil accepted an offer from the McGill University mathematics department and became its only associate professor of mathematical physics. He remained at McGill until his retirement in 1981. That he was in the mathematics department conformed to the Rutherford tradition: Many Canadian experimenters who were trained at Cambridge University thought of theory as applied mathematics, not physics; nevertheless, Phil and the young theoretical physicists he brought to the mathematics department taught all the graduate courses for physics PhD students and many of the courses for undergraduate physics majors. Over time that anachronistic classification faded, and in 1961 Phil and the active group he had formed joined the physics department.

During a visit to England not long after World War II, Phil wrote a seminal paper in 1947 on the band structure of graphite, a topic to which he was to return often. His research, and that of his many students, was also devoted to a wide range of condensed matter problems, such as various properties of semiconductors, positron annihilation in liquids and solids, and numerous magnetic phenomena. The quality of Phil's research was recognized by his colleagues with his election to the Royal Society of Canada and the Indian Academy of Sciences.

Phil was a superb lecturer and demanding instructor. His undergraduate course on mathematical physics was inspirational and allowed many students to see for the first time what a disciplined and well-trained mind could accomplish by applying mathematics to real problems. No wonder that so many of them saw him as a role model and devoted their lives to his craft. And no wonder that many people encouraged him to publish his lectures, which he finally did in 1972 as *Mathematical Analysis of Physical Problems* (Holt, Rinehart, and Winston).

His classroom performance was just one facet of his persona as an outstanding teacher. He mentored more than 30 graduate students, more than one-third of them to the PhD degree. He was always eager to discuss any problems that students and colleagues were struggling with, to share his broad command of physics, to relate his experiences through a large store of anecdotes, and to engage in discussions on a wide range of topics—especially politics. He was among the founders of the Canadian Association of Physicists in the postwar years. His curiosity about what physics had to say as it evolved went far beyond the areas in which he had actually conducted research.

That theoretical physics in Canada is now conducted at the cutting edge owes much to Phil's leadership and devotion. Those who had the good fortune to be among his students and colleagues will always remember him with affection.

Kurt Gottfried
Cornell University
Ithaca, New York
John David Jackson
University of California, Berkeley
Harry C. S. Lam
McGill University
Montreal, Quebec ■