

chael B. Rossmann of Purdue University will receive the Elisabeth Roberts Cole Award; **Winfried Denk** of Lucent Technologies, Bell Laboratories, will garner the Young Investigator Award; and **Victor A. Bloomfield** of the University of Minnesota will be given the Distinguished Service Award.

Heading the list of five awards given this year by the Gravity Research Foundation for essays on gravitation was a submission by **Robert Myers**, a physics professor at McGill Univer-

sity. His piece was entitled "Pure States Don't Wear Black."

In September, **Susumu Takeda**, an emeritus professor of electrical engineering at Nagoya University in Japan, has received the biennial 1997 Penning Prize, sponsored by Philips Lighting. He has been honored for "his many, long-standing contributions to the field of plasmas and ionized gases, and in particular, for his work on an extension of Paschen's law to high-frequency discharges and waves in plasmas."

physics teachers.

Harold was always ready to help students, and his enthusiasm and notable character were responsible for recruiting numerous students to physics. These students included two of his sons, Richard and Robert, who are also physics professors and with whom he wrote *Physics: Including Human Applications* (Harper & Row, 1978). An active citizen, Harold was elected to several state and city offices. He was also one of Missouri's leading breeders of Corriedale sheep. He is clearly remembered and will be missed by many physicists.

EDWARD B. HALE

RALPH W. ALEXANDER JR

ROBERT H. MCFARLAND

University of Missouri—Rolla

OBITUARIES

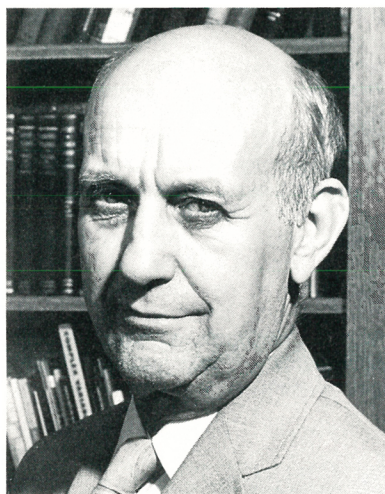
Harold Q Fuller

Harold Q Fuller, dean emeritus of the College of Arts and Sciences at the University of Missouri—Rolla and a professor emeritus of physics, died in Rolla on 30 November 1996 at the age of 89. Harold was known as an outstanding physics educator and for his strong support of the American Association of Physics Teachers and physics in general.

Born in Waynetown, Indiana, Harold graduated from Wabash College in 1928 with a BA in physics. In 1930, he earned an MA in physics at what is now the University of Illinois at Urbana-Champaign. Two years later, he earned a PhD in physics at the same university. Most of his research used spectroscopic methods to explore the structure of atoms and molecules.

During the Great Depression, he taught both at Illinois and at Illinois College (1932–38) and then moved to Albion College, in Michigan. For a time late in World War II (1944–45), Harold was with the Manhattan Project, working at Oak Ridge, Tennessee. Concurrently, he was also a senior physicist at the process improvement division of Tennessee Eastman Corp. After the war, he returned to Albion College to teach, but soon moved to the Missouri School of Mines and Metallurgy (now the University of Missouri—Rolla) to head the physics department.

Under his chairmanship, the department evolved from being a service organization in a mining school to becoming a nationally recognized science enterprise with a significant research base. The doctoral program, originally in engineering physics, was initiated in 1960 under Harold's leadership and was one of the institutions's first PhD programs. In 1964, in recognition of his leadership, the National Science Foundation awarded the department a department development grant.



HAROLD Q FULLER

This large grant, for which Harold was the principal investigator, was one of the first awards made under this NSF program.

Harold served as department chair from 1948 to 1970, when he was selected to be the first dean of Rolla's College of Arts and Sciences. Two years later, when, at the age of 65, he could no longer be an administrator, he returned to teaching physics and stayed on until reaching the mandatory retirement age of 70.

One of Harold's major contributions to science education was his direction of a series of 15 NSF-sponsored summer institutes held at Rolla to improve the teaching of science and mathematics in high schools. During the 1960s and 1970s, over 1000 science teachers attended those institutes.

Harold was an active member of the American Association of Physics Teachers, which honored his contributions to education with its Distinguished Service Award in 1978. With an endowment from Harold, AAPT established the Harold W. and Charlotte Mae Fuller Fund, which pays AAPT membership dues for international

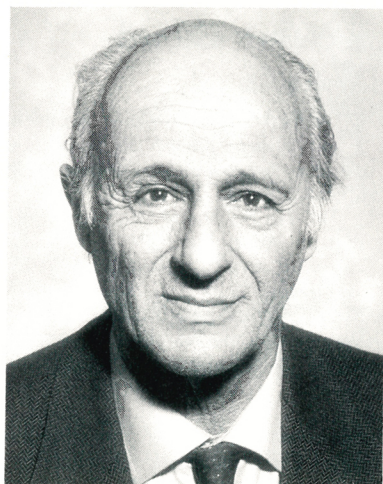
Giovanni Astarita

Giovanni Astarita, a professor of chemical engineering and materials science at the University of Naples in Italy and of chemical engineering at the University of Delaware, died in Naples on 28 April, following a stroke on 24 April. He was 63 years old. His work spanned a wide range of interests in rheology, continuum mechanics, polymer processing and chemical engineering.

Astarita earned his master's degree in chemical engineering from the University of Delaware and his *laurea* (doctorate), also in chemical engineering, at the University of Naples in 1957.

In the fields of rheology and polymer processing, Astarita contributed extensively throughout the 1960s to studies of the mechanisms through which minute concentrations of macromolecules in flowing liquids reduce both turbulence levels and the resulting drag. He discovered previously unexpected discontinuities in the rates at which gas bubbles move through viscoelastic liquids and applied this understanding to later studies (in the 1980s) of devolatilization processes in the production of plastics and rubbers. Astarita was one of the first, in 1970, to note the surprisingly high resistance of viscoelastic fluids to extensional deformations, a subject that was one of the core components of much work in rheology in the ensuing three decades. The use of plastics in many automotive and aircraft applications is critically dependent on their resistance to solvents. Astarita's work in this area served to organize the badly fragmented literature and identify worthwhile areas for further study. All these studies were carried out in both Naples and Delaware, although the majority of the work was with students and colleagues in Naples.

Astarita wrote or edited nine books,



GIOVANNI ASTARITA

which encompassed the full range of his interests in research and teaching. His second book, *Mass Transfer with Chemical Reaction* (Elsevier, 1967), impressively organized the literature on that subject but also served, to a greater extent, as a philosophical tract on how the rigorous analysis of all problems in science and technology should be approached. His insightful analyses of problems enabled others to see the critical issues in new and frequently much clearer ways. Consequently, he was an inspiring mentor for both his students and his colleagues.

He gave of himself unqualifiedly to a wide variety of professional organizations. He organized and later became president of the Italian Society of Rheology. He was also a member of Italy's National Academy of Sciences, Letters and Arts. In the US, he was elected a foreign associate of the National Academy of Engineering in 1994. At the time of his death, he was chairman of a group organizing European polymer engineering into a coherent unit to replace the myriad of separated and somewhat fragmented national groups.

Whereas Astarita's primary loves were clearly his family and his profession, he also enjoyed being near the water and was an avid boater, swimmer, diver and spear fisherman and spent much of his spare time in San Marco, a small fishing village near Naples. A keen bridge player, he attained the rank of master in the Italian Bridge Federation.

We mourn the loss of a longtime and esteemed Renaissance scholar, colleague and friend. We are left enriched by his presence among us.

ARUP K. CHAKRABORTY

University of California, Berkeley

T. W. FRASER RUSSELL

ARTHUR B. METZNER

University of Delaware
Newark, Delaware

Bartington
Instruments

Mag-03

Three Axis Magnetic Field Sensors

FOR PRECISION MEASUREMENTS OF STATIC AND ALTERNATING MAGNETIC FIELDS

- Noise levels down to 5pT rms/√Hz at 1Hz
- Measuring ranges from ±70 to ±1000μT
- Cylindrical, square and submersible enclosures
- Versions with three independent elements
- Three analog outputs from 0 to ±10V
- Battery power supply unit available

New

- Mag-03IEHV for high vacuum operation

GMW Associates
Telephone (415) 802-8292
Facsimile (415) 802-8298

Bartington Instruments Ltd
E-mail sales@bartington.com
Internet <http://www.bartington.com/>

Circle number 62 on Reader Service Card

VARIABLE TEMPERATURE CRYOSTATS FROM

JANIS

Systems feature:

- 1.4-300 K temperature range
- 5 watt cooling capacity
- Optical access along any direction
- Vacuum surfaces electropolished for low outgassing
- Quick sample exchange
- Automatic and precise temperature control
- Low helium consumption
- Reliable proven performance

JANIS RESEARCH COMPANY, Inc.

2 Jewel Drive • Wilmington, MA 01887-0696

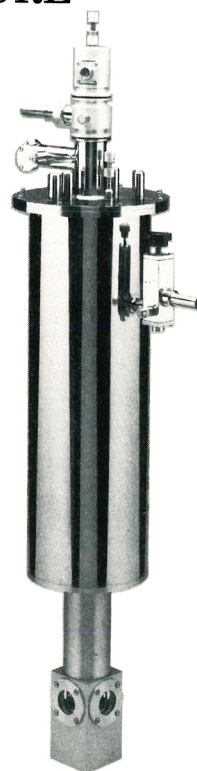
TEL: (978) 657-8750, FAX: (978) 658-0349

IN EUROPE: Cryophysics SA, Geneva

TEL: 41 22 732 95 20

E-MAIL: janis@janis.com

WORLD WIDE WEB: <http://www.janis.com>



Circle number 63 on Reader Service Card