the Pontifical Academy, Weisskopf was recently sent to present the Academy's position on the dangers of nuclear war to President Reagan.

in brief

The **Materials Research Society** has presented the 1982 **von Hippel Award** to **Clarence C. Zener**, Emeritus University Professor of Physics at Carnegie–Mellon University. The award, which recognizes outstanding and interdisciplinary contributions to a broad spectrum of work in materials science, was given to Zener for his "contributions of great originality and impact in the fields of metallurgy, physics and applied mathematics." His research interests include theoretical atomic physics, dielectric breakdown, ferromagnetism, an elasticity internal friction, solid-state diffusion, elastic constants and the thermodynamics and kinetics of metallurgical transformations. Most recently he has been involved in developing solar sea power.

Surendra P. Singh, formerly of the University of Rochester, and **Howard J. Carmichael**, formerly of the City College of the City University of New York, were appointed assistant professors of physics at the University of Arkansas, Fayetteville.

Torgeir Engeland and **John Rekstad** of the University of Oslo were presented jointly with the nuclear-physics prize of Norsk Data for their contribution to the understanding of the structure of deformed atomic nuclei. The prize is sponsored by Norsk Data, the computer manufacturing firm, and is given annually at the Norwegian Physical Society Meeting.

Donald Voss, formerly of Lawrence Livermore Lab, has joined the staff of Mission Research Corporation in Albuquerque.

John Philip, director of the Australian Institute of Physical Sciences, has been awarded the **Robert E. Horton Medal** by the American Geophysical Union for his contributions to geophysics. Philip is most widely known for his work in developing the physical theory and mathematical analysis of water movement in soil. He explained for the first time the physics of infiltration, a process of water movement which plays a central part in the hydrologic cycle.

Gerald A. Smith, formerly of Michigan State University, has been appointed professor of physics and head of the physics department at Pennsylvania State University. Joining him in the newly-formed Laboratory for Elementary Particle Science are his colleagues **James J. Whitmore**, as professor of physics, and **Benedict Y. Oh**, as associate professor of physics, both formerly of Michigan State University.

David Schramm, Chairman of Astronomy and Astrophysics at the University of Chicago, has been named Louis Block Professor in the Physical Sciences.

Margaret L. A. MacVicar, associate professor of physical science and Cecil and Ida Green Professor of Education at MIT, has joined the Carnegie Institution of Washington as vice president. While at Carnegie she will retain her academic affiliation with MIT and work with Carnegie's president, James Ebert, on policy and financial administration.

obituaries

Philip Rudnick

Philip Rudnick, a research physicist and mathematician at the Marine Physical Laboratory of the Scripps Institution of Oceanography from 1949 to 1969, died 10 June 1982.

Rudnick was born on 21 May 1904. He received his BS, MS and PhD degrees in physics from the University of Chicago. After graduation in 1931, Rudnick served as assistant, associate and full professor of physics at Vanderbilt University. From 1942 to 1945, he worked at the Applied Physics Laboratory of Johns Hopkins University with Merle Tuve's group on proximity fuses and later on ram-jets. In 1947, in correspondence with Carl Eckart, he expressed an interest in the Bureau of Standards' high-speed computer that was to be located at UCLA. This interest in computational physics led him, two years later, to join the Marine

RUDNICK

Physical Laboratory, where he used the Danielson–Lanczos technique for analyzing signal spectra. Prior to World War II he had worked in spectroscopy and also on the optical and magneto-optical activity of crystalline nickel sulfate hexahydrate.

During his long affiliation with MPL, he made substantial contributions to sonar signal processing, underwater acoustics and electromagnetic wave propagation in the sea. His theoretical work with Victor C. Anderson on digital multibeam beamforming (DIMUS) processing provided the basis for DIMUS sonars now in service in the US Navy. He was also a member of the scientific team that developed the tapered hull shape and the wave-response capabilities of FLIP, Scripps's unique floating instrument platform. His other contributions include studies of very-low-frequency radio communication through the sea and advances in theory that made possible digital beamforming and other sonar system advances.

Rudnick's ability and innate modesty are epitomized by a comment he made when the fast Fourier transform algorithm became "discovered" and publicized. He had done quite a bit of work in acoustics and was always using the Fourier transform (based on the 1942 paper of Gordon Danielson and Cornelius Lanczos), which at best was a very tedious computation. When, in 1965, other mathematicians and physicists discovered the fast Fourier transform algorithm, a great to-do was made about it. The discoverers soon learned that Rudnick had been using the method for a long time. When they asked him why he had not advertised it, he replied that it had never occurred to him to do it any other way.

WILLIAM A. NIERENBERG
FRED NOEL SPIESS
VICTOR C. ANDERSON
FRED H. FISHER
Scripps Institution of Oceanography

Otto Halpern

Otto Halpern, a distinguished theoretical physicist, was born in Vienna on 25 April 1899. He was educated at the University of Vienna, completing his doctoral dissertation, in 1922, on photophoresis, under Hans Thirring. His attempt to take the next step in an Austrian academic career, to become *Privatdozent*, was unsuccessful, anti-Semitic attitudes being particularly pronounced in university circles in Vienna at that time. Instead he applied for a Rockefeller fellowship and studied for two years with Werner Heisenberg in Leipzig. In 1930 Heisenberg recommended him for a post at New York University, where he re-