

we hear that

Herring, Nozières and Marcus receive Wolf Awards

Among the recipients of the 1984-85 Wolf Foundation Awards are the following: Conyers Herring (Stanford University) and Philippe Nozières (Institut Laue-Langevin, Grenoble, France), who were named to share the foundation's prize in physics for "their major contributions to the fundamental theory of solids, especially of the behavior of electrons in metals;" and Rudolph A. Marcus (Caltech), who received the foundation's prize in chemistry for "his contributions to chemical kinetics, especially the theories of unimolecular reactions and electron-transfer reactions."

Herring received his PhD in mathematical physics in 1937 from Princeton University. He then worked as a National Research Council Fellow at MIT (1937-39) and as an instructor, both at Princeton (1939-40) and at the University of Missouri (1940-41). Herring developed the orthogonalized-plane-wave method for calculating band structures of metals and semiconductors, which he detailed in a 1940 paper; his method is the basis of modern band theory. In collaboration with Albert G. Hill (MIT), he applied the OPW method to calculate the details of the band structure of beryllium; they

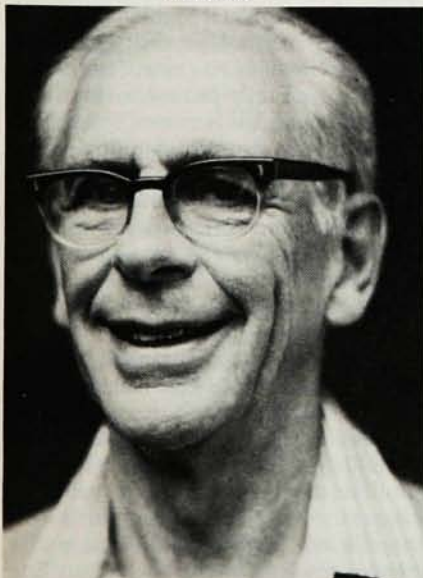
published these results in 1940. During World War II, Herring was a member of the scientific staff of Columbia University's division of war research (1941-45). After a year at the University of Texas as a professor of applied mathematics, Herring became a member of the technical staff at Bell Laboratories in 1946. There he worked on thermionic emission, with M. H. Nichols; sintering and diffusion phenomena; and magnetic effects, especially the theory of spin waves and Bloch walls. His work on spin waves was one of the first studies of collective excitations in metals. In the 1940s and 1950s, Herring undertook a classic series of studies of transport phenomena in semiconductors, which included effects associated with anisotropic effective masses, piezoresistance and, especially, phonon-drag thermoelectric and thermomagnetic effects. His work was fundamental to our present understanding of semiconductors.

Herring was the first head of Bell Labs' Theoretical Division (1956-60). In the 1960s, he returned to the study of magnetism and showed how to calculate rigorously the exchange couplings of magnetic atoms in the limit of large separation. In 1966, he wrote *Ex-*

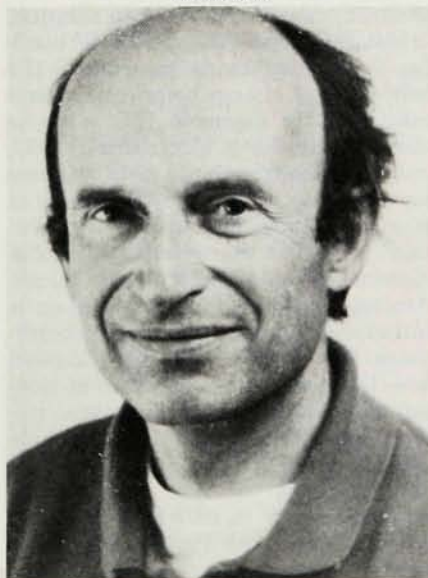
change Interactions among Itinerant Electrons (Volume 4 of *Magnetism*, edited by G. T. Rado and H. Suhl), which dealt with ferromagnetism, antiferromagnetism and paramagnetism of metal electrons. Herring became a professor of applied physics at Stanford University in 1978. He is currently engaged in what he calls "a long-odds quest" for a quantitative method of approximating many-electron problems without using the Schrödinger equation.

Nozières received his PhD in physics in 1957 from the Université de Paris for work carried out at Princeton University under the direction of David Pines. He then became the assistant director of the physics laboratory of the École Normale Supérieure, remaining there until 1961, when he became a professor of the Faculty of Sciences of Paris. From 1972 to 1976, Nozières worked for the Laue-Langevin Institute. He then became a professor of the Université Scientifique et Médicale in Grenoble, where he remained until 1979, when he accepted a joint appointment at the Collège de France and Laue-Langevin. With Pines (now at the University of Illinois, Urbana) he wrote a series of papers from 1956 to

HERRING



NOZIÈRES



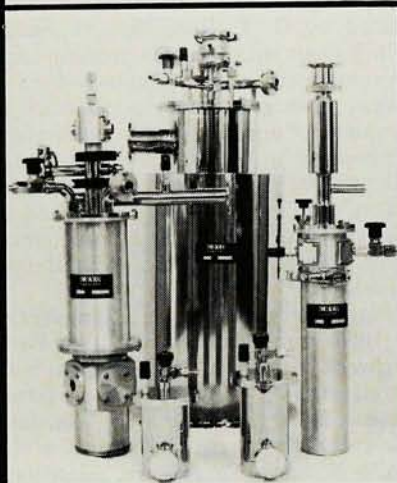
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1958 demonstrating that several different formulations of the random-phase approximation for an electron gas are, in fact, equivalent and giving the definitive calculation of the correlation energy of the electron gas. Nozières has written two books: *N-Body Problem: The General Problem of a Gas of Fermions* (1962), a field-theoretic description of Fermi interactions; and *Theory of Quantum Liquids* (1965), with Pines. Nozières has worked on the explication and justification of the Landau-Fermi liquid theory; in addition, he has studied the interaction of local perturbing potentials with the electron gas. A key contribution was the explanation, partly with Cyrano De Dominicis (Paris), of what are called edge singularities, observed in the x-ray spectra of metals. This led him to important work on the Kondo problem of magnetic spins interacting with the Fermi gas, which he formulated in a Fermi liquid version. He has recently studied many-body interactions of excitonic liquid states (droplets) in semiconductors. He and Bernard Castaing have proposed a quick-melt method for producing spin-polarized helium.

Marcus received his PhD in physical chemistry in 1946 from McGill University in Montreal, Canada. He held postdoctoral positions with the National Research Council of Canada in Ottawa (1946-49) and with the University of North Carolina (1949-51). He taught at the Polytechnic Institute of Brooklyn 1951-64, becoming a full professor in 1958. In the 1950s, Marcus worked on what is now called the RRKM theory of unimolecular reactions, which unifies an earlier description of the breakup and rearrangement of molecules put forth by Oscar Rice, H. C. Ramsperger and Louis Kassel in the 1920s. He published his results, first in a paper with Rice (1951) and later in a series of his own papers (1952). From 1956-65, Marcus studied electron-transfer reactions in solution, investigating how the reactants' bonding links and angles, as well as the solvent itself, change before and after a reaction. He extended this work to electron transfer at electrodes in 1957, and to proton transfer in 1968. Marcus joined the faculty of the University of Illinois in 1962. In parallel with William H. Miller, he developed a semiclassical theory of molecular collisions. Among other contributions, Marcus introduced natural collision coordinates for reactions and also showed how the canonical invariants of non-separable anharmonic vibrational systems could be obtained from suitable classical trajectory calculations. He used the latter to treat bound states semiclassically. In 1978 he became the Arthur Amos Noyes Professor of Chemistry at Caltech.

AAPT honors Leonard Jossem and James Gerhart

At its spring meeting, the American Association of Physics Teachers named E. Leonard Jossem (Ohio State University) as the second recipient of its Melba Newell Phillips Award, which recognizes creative leadership and dedicated service within the Association. James B. Gerhart (University of Washington) was named the 1985 Robert A. Millikan Lecturer.

Jossem received his PhD in physics in 1950 from Cornell University. He held appointments at Cornell (1940-42) and at Los Alamos National Laboratory (1945-46). In 1946, he returned to Cornell, where he remained until 1956. He then joined the faculty of Ohio State University, becoming a full professor in 1964 and serving as chairman of the physics department 1967-80. Jossem served as president of AAPT for 1973-74. In addition, he has served on the AAPT committees on professional concerns (1976) and on national policy (1984), and he is currently the chairman of the AAPT Committee on International Education. Jossem has participated in numerous national and international committees and conferences on education: the Commission on College Physics (1963, 1964 and 1966), the US National Advisory Council on Education Professions Development (1967), the NAS-NRC Physics Survey Panel on Education (1970), the AIP Advisory Committee on Education and Manpower (1976) and the International Committee on Physics Education (1981). In 1981 Jossem served as US liaison for the International Union of Pure and Applied Physics.

Gerhart was cited for "his long and devoted service to the teaching of physics and dedication to the affairs of physics teachers everywhere." Gerhart received his PhD from Princeton University in 1954. In 1956 he joined the faculty of the University of Washington, where he has remained since, becoming a full professor in 1965. Gerhart began his service in AAPT as chairman of the Washington State Section's committee on the crisis in science education in 1957. He was elected section representative in 1964 and, in 1971, was elected secretary of AAPT; Gerhart was president of AAPT for 1979. In addition, he has served on every AAPT constitutional committee, as well as serving for eight years on both the Awards and Publications Committees. Gerhart was a member of the AIP Governing Board for 1973-76 and for 1977-81. He has served for 18 years as director, and for three years as chairman, of the Pacific Northwest Association for College Physics. He presented his lecture, "Handling