Heineman Prize to Ruelle; AAPT honors Treiman, Neugebauer

The American Physical Society and the American Institute of Physics last month presented the 1985 Dannie Heineman Prize for mathematical physics to David P. Ruelle of the Institut des Hautes Études Scientifiques, Bures-sur-Yvette, France, for his "systematic pursuit of the mathematical basis needed for broadened physical insight in the areas of quantum field theory, statistical mechanics and turbulence." The award took place at the annual joint meeting of APS and the American Association of Physics Teachers, held in Toronto. At that meeting, AAPT presented the Oersted Medal to Sam B. Treiman of Princeton University; the Richtmeyer lecture was given by Gerry Neugebauer of the California Institute of Technology.

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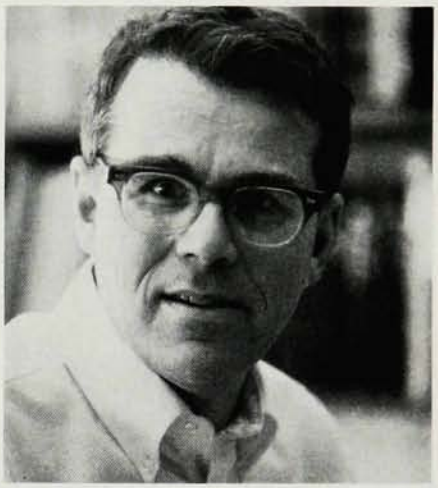

NEUGEBAUER

Ruelle pursued his graduate studies at the Free University of Brussels, receiving his PhD in 1959 for work done in Zurich under the supervision of Res Jost. After a year of military service in the Belgian army, Ruelle returned as a research assistant to the Eidgenossische Technische Hochschule in Zurich, and then as Privatdozent, from 1960 to 1962. His research in Zurich was in quantum field theory, a subject that at the time was just being established on a rigorous basis. In extending the scattering theory of Rudolf Haag, Ruelle was the first to demonstrate that a scattering theory for particles having a sharp mass was implicit in the postulates of quantum field theory, and the Haag–Ruelle theory is a fundamental result. Ruelle's research interests then shifted to statistical mechanics, centering on the statistics of equilibrium states. Here he and his collaborators provided rigorous first-principles derivations for many of the established methods for calculating the thermodynamical limits of various thermodynamical quantities under equilibrium conditions. Ruelle was a member of the Institute for Advanced Study at Princeton from 1962 to 1964, and again for the academic year 1970–71. He has been a member of the faculty at the Institut des Hautes Études Scientifiques since 1964. He has written two books: *Statistical Mechanics, Rigorous Results* (1969); and *Thermodynamical Formalism* (1978). Much of his recent research has been concerned with dynamical systems and chaos. In 1971, Ruelle and Floris Takens wrote an influential paper, "*On the nature of turbulence*," in which they postulated that the solutions to differential equations for dissipative systems were often described by highly irregular asymptotes, which they called "strange attractors." These attractors, they suggested, were characteristic of turbulence. These connections, some of which had been anticipated in earlier work by E. N. Lorenz and others, have become the subject of intensive inquiry. Ruelle presented a talk on this work at the Toronto meeting.

The Dannie Heineman Prize for mathematical physics was established in 1959 by the Heineman Foundation for Research, Education, Charitable and Scientific Purposes, Inc. The prize, which includes an award for $5000, is administered jointly by APS and AIP and is given in recognition of distinguished work in mathematical physics.

AAPT has awarded the Oersted Medal annually since 1936 to recognize "notable contributions to the teaching of physics." Treiman joined the faculty of Princeton in 1952 after receiving his PhD from the University of Chicago. In 1958 he was promoted to full professor; Treiman was named Higgins Professor in 1977 and has served as chairman of the Princeton physics department since 1981. Over the years he has gained a reputation as an outstanding physics instructor, in particular as an instructor of graduate-level courses. He initiated the University's introductory fluids course and, in his role as department chairman, has successfully campaigned to restrict the size of freshman physics courses to 25 students. Treiman has also made significant contributions to theoretical particle physics: the Treiman–Yang test for single pion exchange, the Goldberger–Treiman relations, the Johnson–Treiman relation for total cross sections, the Callan–Treiman relation for K decays and the Pais–Treiman test for dimuon production in heavy-lepton decay. He has served as an Associate Editor of *Reviews of Modern Physics*. Among the 23 students who have obtained their PhDs under his supervision is Steven Weinberg, who, with Sheldon L. Glashow and Abdus Salam, received the 1979 Nobel Prize in Physics for their unified theory of weak and electromagnetic interactions.

The Richtmeyer Memorial Lecture is given annually in memory of Floyd K. Richtmeyer, one of the founders of AAPT. Neugebauer, who received his PhD in 1960 from the California Institute of Technology, presented his talk on "Infrared astronomical satellites" at the ceremonial session of the January meeting. Neugebauer joined the faculty of the Caltech physics department in 1962 as an assistant professor, becoming a full professor in 1970. As a

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staff member of the Hale Observatories (1970–80), he served as principal or co-investigator for several satellite infrared radiometers and as team leader of the infrared radiometer for the Large Space Telescope definition study. Since 1980, he has served as director of the Palomar Observatory. Since 1976, he has been the US Principal Scientist for the infrared astronomical satellites.

First Frenkiel Award for fluid mechanics to Herbolzheimer

Erich Herbolzheimer of the California Institute of Technology is the first recipient of an award established by the journal *The Physics of Fluids* to honor its founder and longtime editor, François Naftali Frenkiel. Herbolzheimer is being honored for his "complete and well-presented analysis of the stability of sedimentary layers in inclined channels," in a paper that appeared in the journal in 1983. He received his PhD in chemical engineering from Stanford University in 1980. During the academic year 1979–80, he worked as a National Science Foundation postdoctoral fellow in the department of applied mechanics and theoretical physics at the University of Cambridge. Herbolzheimer has been an assistant professor of chemical engineering at the California Institute of Technology since 1980.

The Frenkiel award will be given annually hereafter to recognize significant contributions to the study of fluid mechanics that have been published in *The Physics of Fluids* by young investigators during the preceding calendar year.

Coleman receives Bingham Medal from Society of Rheology

Bernard D. Coleman of the Carnegie–Mellon University has been named the 1984 Bingham Medalist of the Society of Rheology, in recognition of his influential work in rheology.

Coleman received his PhD in physical chemistry in 1953 from Yale University. He then worked for three years at the Carothers Research Laboratory of the Du Pont Company, conducting basic research on the tensile strength of fibers—the results of which are still widely quoted in the literature. He joined the Mellon Institute in 1957 and is currently professor of mathematics and biology at the Carnegie–Mellon University. Coleman and his collaborators have performed basic theoretical studies of the viscometric flow of non-Newtonian fluids, linear and nonlinear viscoelasticity, thermo-

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dynamics of deforming materials, the stability of various types of flows, and deformations and birefringence of flowing and deforming materials. His work is known for its mathematical rigor. In addition, he has obtained some important results that can be checked experimentally; some have been confirmed. The book he wrote with H. Markowitz and W. Noll, *Viscometric Flows of Non-Newtonian Fluids*, has received wide recognition as a reference on viscometry and the measurement of normal-stress differences.

APS Southeastern Section honors research, teaching

The Southeastern Section of The American Physical Society has presented the following annual awards: the Beams Award was presented to Rufus H. Ritchie of the Oak Ridge National Laboratory and the University of Tennessee in Knoxville; the Pegram Medal was awarded to L. Craig Whitlock of Mississippi College in Clinton, Mississippi; and special Pegram Medals were awarded to Donald E. Edwards, professor emeritus of physics at North Carolina A&T State University in Greensboro, and Peyton Nalle Rhodes, professor emeritus of physics and former president of Rhodes College in Memphis.

The Beams Medal is presented to persons who have done outstanding physics research in the southeast; Ritchie was recognized for "his work in theoretical analysis and his discovery of surface plasmons in 1957, which has led to a broad vista of research in surface physics, and for his pioneering contributions in the theory of stopping power in condensed matter."

The Pegram Medal is awarded to outstanding physics teachers in the southeast; special Pegram Medals are