Physics Today

Fifth Marconi Fellowship awarded to John Peirce

Citation: Physics Today **32**(4), 70 (1979); doi: 10.1063/1.2995510
View online: http://dx.doi.org/10.1063/1.2995510
View Table of Contents: http://scitation.aip.org/content/aip/magazine/physicstoday/32/4?ver=pdfcov
Published by the AIP Publishing

earned his PhD at the Swiss Federal Institute of Technology in 1943 and remained there until 1947. He then spent a year at the division of industrial cooperation of MIT. In 1948 Matthias joined Bell Labs, with whom he is still associated today. From 1948 to 1951 he was assistant professor of physics at the University of Chicago. In 1961 he became professor of physics at the University of California at La Jolla, as it was called then. In 1971 Matthias was made director of the Institute for Pure and Applied Physical Sciences at the University of California, San Diego.

The Oliver E. Buckley Solid State Physics Prize was presented to Marvin L. Cohen, a professor of physics at the University of California, Berkeley. The $5000 award recognized his "timely explanations and novel predictions of electronic properties of solids through the imaginative use of quantum-mechanical calculations. Cohen holds a PhD in theoretical solid-state physics, which he received in 1964 at the University of Chicago. Cohen has been at Berkeley since 1964.

Abraham Pais wins Oppenheimer prize

The 11th annual J. Robert Oppenheimer Memorial Prize of the University of Miami's Center for Theoretical Studies has been awarded to Abraham Pais of Rockefeller University. P.A.M. Dirac presented the prize, which consists of a gold medal, a citation and $1000. Designed to recognize outstanding contributions to the theoretical natural sciences and to the philosophy of science, the Oppenheimer prize was given to Pais for his contributions to elementary-particle physics.

Pais received a bachelor of science degree from the University of Amsterdam in 1938 and his master's degree in 1940 and PhD in 1941 from the University of Utrecht in Holland. Prior to joining the faculty of Rockefeller University in 1963 he was a Rask Oersted research fellow in Copenhagan (1946), a member of the Institute for Advanced Study at Princeton University (1946–50), and a member of the faculty there from 1950 to 1963.

MacCready wins AIAA Reed Aeronautics Award

Paul B. MacCready has won the Reed Aeronautics Award of the American Institute of Aeronautics and Astronautics. MacCready, president of AeroVironment, Inc., was honored for "the ingenious conception, creative design, and masterly execution of the Gossamer Condor—the first man-powered aircraft capable of sustained flight in all directions under perfect equilibrium and control."

The Reed Award is given each year "to honor the most notable achievement in the field of aeronautics science and engineering." The award consists of a medal, certificate and rosette pin.

MacCready founded AeroVironment in 1971, and prior to that was simultnaeously involved as president of Meteorology Research, Inc. (1951–70), president of the affiliated Atmospheric Research Group (1958–70), director of Cohu Electronics, Inc. (1966–70) and consultant and then research associate to the Munitalp Foundation (1953–58). MacCready earned his BS in physics at Yale (1947), his MS in physics at Caltech (1948) and his PhD in aeronautics at Caltech (1952).

Hardy and Boyd share Steacie Prize

The Steacie Prize for 1978 has recently been awarded jointly to Walter N. Hardy and David W. Boyd, both of the University of British Columbia. The prize, which is named after a former president of the National Research Council of Canada, has been awarded annually since 1964 for distinguished contributions to the natural sciences in Canada by persons under 40 years of age. It currently consists of a cash award of $3000.

Hardy, a professor of physics, was cited for "his recent observation of the microwave spectrum of isolated pairs of ortho-H_2 molecules in a solid matrix of para-H_2 molecules." Hardy carried out his undergraduate and graduate studies at the University of British Columbia. After completing his PhD thesis in 1964, he spent two years at Saclay, France with Anatole Abragam's group on an NRC postdoctoral overseas fellowship and a Rutherford memorial fellowship. He was a staff member at the North American Rockwell Corporation's Science Center in California for five years, returned to UBC as an associate professor in 1971, and promoted to professor in 1974.

Boyd, a mathematician, won his award for his research in functional and numerical analysis.

Fifth Marconi Fellowship awarded to John Pierce

The fifth Marconi International Fellowship has been awarded to John R. Pierce, professor of engineering at Caltech. The fellowship was established in 1974 to commemorate inventor Guglielmo Marconi's creative contributions to scientific discovery, engineering and technology. The winner receives a $25 000 grant "to undertake or complete a project or study which has as its ultimate objective the well-being of mankind."

Pierce was educated at Caltech, where he earned his BS, MS and PhD degrees in electrical engineering in 1933, 1934 and 1936, respectively. He joined the staff of Bell Labs in 1936. Early in his career he devoted himself to the development of high-frequency electron tubes, particularly traveling-wave tubes, and to microwave research. During World War II he concentrated on the development of electronic devices for military applications. He became director of electronics research at Bell Labs in 1952, and director of research in electrical communications in 1955. He retired in 1971 as executive director of research in the communications-sciences division and became a professor of engineering at Caltech.

In 1954 Pierce analyzed the possibilities of radio relay by way of artificial satellite and, in 1955, two years before the launching of the first satellite, he offered proposals for satellite communications. Later in his career his interests shifted to the computer and to computer music. Pierce, who has published a number of science-fiction stories, owns more than 80 patents for his inventions in electron tubes and communications circuits, especially electron multipliers, electron guns and microwave tubes.

Michael Beer, professor and chairman of the Thomas C. Jenkins Department of Biophysics at The Johns Hopkins University, has been elected president of the Electron Microscopy Society. Beer will serve for a year as president-elect to be followed by a year as president of the society.

John G. Simmons, formerly professor of applied science and engineering at the University of Toronto, has joined the staff of Lehigh University in Bethlehem, Pennsylvania, as Sherman Fairchild Professor of Solid State Studies–Electrical Engineering.

Warren E. Winsche has been appointed Deputy Director of Brookhaven National Laboratory. He has been associate director at Brookhaven for energy for the past four years.

Simon Ramo, recently retired Vice Chairman of the Board of TRW, Inc.; **Robert T. Jones,** senior staff scientist at NASA–Ames Research Center; and **Alexander H. Flax,** president of the Institute for Defense Analyses, have been elected Honorary Fellows of the American Institute of Aeronautics and Astronautics.

Betsy Ancker-Johnson has been appointed a Vice President in charge of the environmental activities staff at General Motors. She has served as Assistant Secretary of Commerce for Science and Technology and most recently associate director for physical research at Argonne National Laboratory.

John C. Dainty has joined the faculty of the University of Rochester as associate professor of optics in the Institute of Optics. He was previously a lecturer in physics at Queen Elizabeth College, University of London.

Jay C. Young has been elected vice president of Stafco, Inc., a consulting team of engineers and scientists in the energy field. Since 1975 Young had been managing Stafco's Portland, Oregon division.

obituaries

Samuel A. Goudsmit

Samuel A. Goudsmit died on 4 December on the campus of the University of Nevada, Reno, where he had been a Distinguished Visiting Professor since 1974. Sam—as he was called by his friends—was a man of many parts and possessed an interesting and complex personality.

He was born in The Hague, Netherlands on 11 July 1902. He studied physics at the University of Leiden and received his PhD in 1927. As a beginning student, only nineteen years old, Goudsmit published his first paper (Naturwiss. **9**, 995, 1921); he pointed out that the relativistic Sommerfeld formula for x-ray doublets was also valid for the alkali doublets. As George Uhlenbeck wrote to me: "It showed his remarkable instinct for finding empirical regularities. At that time because of the 'Rumpf-Modell,' Sam's paper was a kind of heresy, so that he never got the proper credit for it. Still, I think, it foreshadows the spin!"

After his first examination, he became a kind of "house theoretician" of Zeeman at the University of Amsterdam. While both Goudsmit and Uhlenbeck were still students they realized that the fourth quantum number introduced by Pauli in formulating his exclusion principle could be interpreted as a new degree of freedom of the electron. They found that a spin $\frac{1}{2}$ and a magnetic moment of one Bohr magneton could explain the spectroscopic results (Naturwiss. **13**, 953, 1925). Goudsmit and Uhlenbeck charmingly and instructively told of their outstanding discovery at the American Physical Society Annual Meeting in January 1976 (PHYSICS TODAY, June 1976, page 40). After some resistance—as any important new idea is likely to meet—and especially after Llewellyn H. Thomas had explained a missing factor of two in the doublet splitting as a relativistic effect, the electron spin was generally accepted and its role in atomic and solid-state physics recognized as basic. The generalization to protons and neutrons ensures its role also in nuclear and elementary particle physics. It is now generally believed that all matter contains spin-$\frac{1}{2}$ constituents, leptons and quarks (fermions), which communicate with each other via particles of integer spin (bosons). For electrons, Dirac's relativistic theory (1928) "predicts" the spin $\frac{1}{2}$.

GOUDSMIT

Among Goudsmit's many other spectroscopic contributions was the determination with Ernst Back of the first nuclear spin and its Zeeman effect in Bi^{209} from an analysis of its hyperfine structure (1927–28). Sam said that he was more thrilled by this discovery than by the electron spin.

In 1927 Goudsmit and Uhlenbeck joined the physics department of the University of Michigan at Ann Arbor. This was the first place in the United States to have a Physics Summer School, an idea inspired by Harrison M. Randall which has since spread all over the world. Goudsmit helped greatly in the running of the summer school. While at Ann Arbor, he had a number of PhD students, including Robert F. Bacher, R. A. Fischer, David R. Inglis, and Ta-Yau Wu. With Bacher he introduced fractional parentage coefficients for the treatment of many-electron problems, an idea which Racah and his students later applied fruitfully to nuclear physics. Bacher and Goudsmit published a book, *Atomic Energy States* (McGraw-Hill, New York 1932), an important source book for many years. Sam also published a lucid introduction to atomic physics with Linus Pauling (*The Structure of Line Spectra*, McGraw-Hill, 1930) for which Goudsmit's Leiden PhD thesis supplied important background. Besides spectroscopy his main scientific interest was in statistical problems.

After World War II broke out, Sam joined the MIT Radiation Laboratory to work on radar and was detailed to the Army on a scientific intelligence mission for which he was uniquely qualified: To find out where the German scientists stood in the race for the atomic bomb. He found that they were far behind the American–British effort—not to the surprise of every nuclear physicist but to the relief of all. He reported on his mission by its code name in a widely-read (and now sold-out) book, *Alsos*, (H. Shuman, New York, 1947). In the course of this mission he had the devastating experience of seeing the ruins of his childhood home in The Hague and of learning that his parents had been deported by the Germans to an extermination camp. These tragic events depressed Sam and his ebullience and enthusiasm for research suffered.

In 1946 he joined Northwestern University, Evanston, Illinois. In 1948 he came to Brookhaven National Laboratory, where he remained until his retirement in 1970. From 1952 to 1960 he was the Chairman of the Brookhaven Physics Department and in this capacity attracted many outstanding physicists who played a vital role in the development of the Laboratory. Here also he carried out his only experimental work, the building and use of a magnetic time-of-flight mass spectrometer of his design (with E. E. Hays and Paul I. Richards, Phys. Rev. **84**, 824, 1951).

Sam was Editor-in-Chief of the American Physical Society from 1951 to 1974. He founded *Physical Review Letters* in 1958, a much imitated letter journal and still the most widely known. His sense of humor helped him deal with the many idiosyncrasies of authors: without mentioning names he enjoyed telling some of his experiences such as the story of a manuscript which was followed by a telegram saying simply, "I am worried about equation two." He also liked to tell the joke, provoked by the explosion of physics articles, that simple extrapolation shows that by the year 2000 the speed of growth of the *Physical Review* on a shelf would exceed the velocity of light; but this would not contradict the special theory of relativity since the information transfer would by then go to zero!

While at Brookhaven he also found time to teach courses at Rockefeller University. He especially enjoyed teaching physics to "humanists" and continued to do this at the University of Nevada. His warm interest in young people, his enthusiasm, his scholarship and his wit made his lectures a great success.

Among his honors, many of which he shared with his friend George Uhlenbeck, are the Max Planck Medal of the German Physical Society (1965), the Karl T. Compton Award for Distinguished Statesmanship in Science, American Institute of Physics (1974), Commander of the Order of Orange-Nassau (1977) (one of the highest Dutch distinctions), and the