

Ernest O. Lawrence Awards honor five scientists

Five young scientists received Ernest Orlando Lawrence Awards at a White House ceremony on 27 April. Frank Press, the presidential science adviser, and John Deutch, director of the Office of Energy Research, jointly presented the awards to James D. Bjorken (Stanford Linear Accelerator Center), John L. Emmett (Lawrence Livermore Laboratory), F. William Studier (Brookhaven National Laboratory), Gareth Thomas (Lawrence Berkeley Laboratory) and Dean A. Waters (Oak Ridge Gaseous Diffusion Plant).

The Lawrence Award is given to scientists under the age of 46 for outstanding contributions to all areas of the sciences related to nuclear power. Established in 1959, the awards are in honor of Ernest O. Lawrence, inventor of the cyclotron and director of the laboratories at Livermore and Berkeley that now bear his name. The winners receive a citation and \$5000.

Bjorken's citation mentions his "elementary-particle physics, including the concept of scaling and the introduction of charm..." He has been at Stanford since earning his PhD there in 1959, and he attained his present position, professor of physics at SLAC, in 1967. His work on the fundamental processes involved in nucleon structure has earned him honors and awards that include the AIP-APS Dannie Heineman Prize for Mathematical Physics (1972) and membership in the National Academy of Sciences.

Emmett's present position is associate director for lasers at Livermore. The award citation speaks of his leadership in "the development of laser science and technology and... their application to the generation of nuclear and thermonuclear energy," and he has been involved with lasers throughout his career. After taking his PhD at Stanford in 1967 he joined the Naval Research Laboratory in Washington D.C., becoming head of the Plasma/Laser Technology Branch two years later and head of Laser Physics Branch in 1970. At Livermore since 1972 Emmett has been involved with the work on the Argus laser system and the current Shiva system, both part of the laboratory's laser-fusion program.

Studier has a PhD in biophysics,



At the presentation of Ernest Orlando Lawrence Awards in the White House are (left to right): James Bjorken (SLAC); Dean Walters (Oak Ridge); Frank Press and John Deutch, who jointly presented the awards; John Emmett (LLL); William Studier (BNL), and Gareth Thomas (LBL).

awarded in 1963 by Caltech. He joined Brookhaven in 1964 and has remained there to the present, adding the duties of adjunct professor at SUNY, Stony Brook in 1971. His work on the characterization of the genetic structure of the virus bacteriophage T7, which provides improved understanding of the control mechanisms that lead to the appearance of new proteins, is linked to nuclear-power generation by the insights it offers to radiation-damage processes. As the Lawrence Award citation explains, his "fundamental contributions to DNA and gene structure [have been] essential to understanding radiation- and chemical-induced genetic damage and repair."

Thomas, professor of metallurgy at the University of California, Berkeley and principal investigator of the Materials and Molecular Research Division at Lawrence Berkeley Laboratory, is cited for his "pioneering work in applying transmission electron microscopy to materials science and engineering." This work has included contributions to failure analysis in aircraft components, the development of lightweight steel alloys and of ceramic alloys. His PhD, awarded in 1955, is from Cambridge University.

Waters is noted for "his leadership and engineering inventiveness in the development of gas-centrifuge systems for the

enrichment of uranium," in the words of the award citation. In fact, when he joined the nuclear division of Union Carbide in Oak Ridge after receiving his MS in 1960 from North Carolina State University (which itself followed two bachelor's degrees at Yale), Waters worked first on liquid centrifuges for biological research. After turning to gas centrifuges for uranium isotope separation he made innovations to the end caps and the suspension systems that significantly improved the economics of these devices. His current position is deputy director of Union Carbide's Separation Systems Division at the Gaseous Diffusion Plant.

Elections at National Academy of Sciences

Sixty new members and 15 foreign associates joined the ranks of the National Academy of Sciences, as the result of elections held last April.

Physicists and scientists in physics-related areas include:

Gerald E. Brown, Leading professor of physics at the State University of New York, Stony Brook; E. Margaret Burbidge, professor of physics at the University of California, San Diego; Morrel H. Cohen, Louis Block professor of physics

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and theoretical biology at the University of Chicago; Sidney Darlington, a consultant for Bell Labs, Murray Hill, N.J.; Hans G. Dehmelt, professor of physics at the University of Washington, Seattle; Robert N. Hall, a physicist with the General Electric R&D Center, Schenectady, N.Y.; Leo P. Kadanoff, university professor of physics and engineering at Brown University; Isabella L. Karle, head of the x-ray analysis section, Laboratory for the Structure of Matter, Naval Research Laboratory; Richard J. Reed, professor of atmospheric sciences, University of Washington, Seattle; Peter M. Rentzepis, head of the physical and inorganic chemistry research department, Bell Labs, Murray Hill; F. Sherwood Rowland, professor of chemistry, University of California, Irvine; David A. Shirley, head of the materials and molecular research division, Lawrence Berkeley Laboratory; Walther Stoeckenius, professor of cell biology at the Cardiovascular Research Institute, University of California, San Francisco; Lynn R. Sykes, professor of geology, Columbia;

Ping King Tien, head of the electron physics research department, Bell Labs, Murray Hill; Shmuel Winograd, an IBM Fellow at IBM, Yorktown Heights, N.Y.; Lincoln Wolfenstein, professor of physics at Carnegie-Mellon University, and Carl I. Wunsch, Cecil and Ida Green professor of oceanography at Massachusetts Institute of Technology.

Among the new foreign associates are: Johannes Geiss, director of the Institute of Physics, University of Berne; Rudolph L. Mössbauer, professor of physics at the Technical University of Munich; Giuseppe Occhialini, professor of physics at the University of Milan; John C. Polanyi, professor of chemistry at the University of Toronto, and Maarten Schmidt of the Netherlands, chairman of the division of physics, mathematics and astronomy at California Institute of Technology.

In addition to these new members, the Academy elected four new councillors, two of whom are physicists: Philip H. Abelson, president of the Carnegie Institution of Washington, and Charles H. Townes, university professor of physics at the University of California, Berkeley.

Physicists receive NAS awards

The National Academy of Sciences presented nine awards at its annual meeting in April. Physics-related winners were John R. Winckler, Raymond Davis Jr., John Verhoogen, Sir George Porter and Günter Blobel.

Winckler received the Henryk Arcowski Medal and a \$5000 honorarium for his work on solar modulation and acceleration of high-energy particles, and also for his discovery of solar-flare gamma rays and auroral x rays. He is a professor in the School of Physics and Astronomy at the University of Minnesota, Minneapolis.

Davis, a member of the department of chemistry at Brookhaven National Laboratory, was awarded the Cyrus B. Comstock prize "for his determination of the intensity of neutrino radiation reaching the earth." A \$5000 honorarium accompanies the prize.

Verhoogen won the Arthur L. Day Prize and Lectureship, together with a \$10 000 honorarium, for his work on the thermodynamics of the Earth's core and mantle and general contributions to Earth sciences. He is a professor in the department of geology and geophysics at the University of California, Berkeley.

Porter, director and Fullerian professor of chemistry at the Royal Institution in London, delivered the Howard P. Robertson Memorial Lecture and received the \$2500 honorarium that accompanies it. This award honors Porter's work on photochemistry and photobiology, espe-

cially the development of flash photolysis.

Blobel is the winner of the US Steel Foundation Award in Molecular Biology and its \$5000 honorarium. A professor in the department of cell biology at Rockefeller University, he receives the award for his work on mechanisms by which secreted proteins pass into and across membranes.

Other NAS award winners were John N. Mather, mathematician at Princeton (John J. Carty Medal), Donald A. Henderson, dean at the School of Hygiene and Public Health, Johns Hopkins University (NAS Public Welfare Medal), Howard Green, biologist at MIT (Selman A. Waksman Award in Microbiology) and Noel D. Vietmeyer of the Commission on International Relations (NASA award for Distinguished Service).

IOP honors seven physicists

The Institute of Physics made a series of awards at its Annual Dinner held on 2 May in London. Covering a wide range of research and administrative areas, the awards were presented to the following seven physicists:

R. A. Sherlock of the University of Waikato, Hamilton, New Zealand and A. F. G. Wyatt from the University of Exeter in the United Kingdom both received the Charles Vernon Boys Prize for their work

on the propagation of phonons in liquid and solid helium.

E. G. S. Paige of the University of Oxford was presented with Duddell Medal and Prize for his contributions to the physical understanding, invention and design of devices based on surface acoustic waves.

The Glazebrook Medal and Prize was awarded to Sir George Macfarlane, formerly of the British Ministry of Defense for his administration of governmental science and technology.

Philip Anderson of Bell Laboratories received the Guthrie Medal and Prize for his outstanding work in the field of theoretical solid-state physics.

The IOP Maxwell Medal and Prize was presented to M. V. Berry of the University of Bristol, for his general work in several fields within theoretical physics.

P. T. Matthews, of the University of Bath, received the Rutherford Medal and Prize for his work in elementary-particle physics.

Marvin L. Goldberger, the Joseph Henry Professor of Physics at Princeton University, was appointed president of the California Institute of Technology. Goldberger, a theoretical high-energy physicist, takes office on 1 July and will succeed Harold Brown in the post. Brown resigned his position at Caltech last year to become Secretary of Defense.

The French Legion of Honor was bestowed upon **Chauncey Starr**, physicist and president of the Electric Power Research Institute. The Legion of Honor is the highest award given by the French Republic in recognition of outstanding service to France and was presented to Starr for his efforts in promoting scientific and industrial understanding between France and the United States.

Frank Franz, professor of physics at Indiana University, was named the Dean of Faculties at the University. He will maintain his position within the physics department while serving in the new post.

Neville J. Woolf was appointed the acting director of the new Multi-Mirror Telescope for its final construction and early testing phase. The MMT, owned and operated by the Smithsonian Astrophysical Observatory and the University of Arizona, is scheduled to begin astronomical observations by next fall.

Robert K. Soberman is the new manager of the physics and materials section of the Franklin Institute Research Laboratories physical and life sciences department. He was formerly a vice-president at the University City Science Center in Philadelphia.