

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