IN BRIEF

Todd Boronson, formerly a professor at the University of Michigan, Ann Arbor, has joined the staff of the Carnegie Institution's Mount Wilson and Las Campanas Observatories. **John Caldwell,** formerly a Carnegie Fellow, has become a senior researcher at the South African Astronomical Observatory in Cape Town.

Herbert Inhaber, formerly a senior staff member at Oak Ridge National Laboratory and founding director of a consulting firm involved with risk analysis, has become a member of the reliability and risk assessment staff at NUS Corporation (Gaithersburg, Maryland).

Dennis M. Manos, formerly a branch head at the Princeton University Plasma Physics Laboratory, has become vice president of corporate development at Materials Research Corporation.

Robert P. Lowndes, most recently professor and chairman of the physics department at Northeastern University, has become dean of the university's college of arts and sciences; he had served as acting dean since March.

Peter E. Norris, formerly a principal member of the technical staff at GTE Laboratories, has become vice president of materials at Emcore (South Plainfield, New Jersey).

Mark H. Shapiro, professor of physics at California State University (Fullerton), is serving as a program director in the Teacher Enhancement Program in the Science and Engineering Education Directorate of the National Science Foundation.

OBITUARIES

A. Theodore Forrester

Ted Forrester died 28 March 1987 at age 68, after a heroic seven-year battle with cancer. He was a distinguished experimental physicist who made important contributions in areas as diverse as ion beam physics, optical coherence and superconductivity. After receiving his PhD in physics from Cornell University in 1942, he worked for the Manhattan District at the University of California, Berkeley, and at Oak Ridge National Laboratory, where he played a key role in developing the electromagnetic process for obtaining highly U^{235}-enriched uranium. Thereafter he worked at a number of academic and industrial institutions, including the University of Southern California, the University of Pittsburgh, the University of California at Irvine, RCA Laboratories, Westinghouse Research Laboratory and North American Atomics International. At his death he was a professor of physics and of electrical engineering at the University of California, Los Angeles, where he had been working since 1967 and had been chairman of the academic senate during the 1978 academic year. Forrester wrote numerous scientific articles, and had recently completed a book, *Large Ion Beams: Fundamentals of Generation and Propagation*, which will be published by Wiley. He held six patents on ion beam technology.

Ted was blessed with many of the talents that facilitate a successful career in experimental physics. In particular, he had a deep understanding of the theory underlying his experimental programs, he could make equipment work, and he was indefatigably cheerful and optimistic. These talents were especially manifested in the two projects that constituted his major scientific achievements: the demonstration of interference beats between two incoherent light sources and the development of a space propulsion ion engine. He worked on the photon-beat experiment from 1946 to 1954, successfully completing it despite the frequently unsolicited advice of many physicists that it was much too difficult. Forrester had to design and build just about

A. Theodore Forrester

everything he needed for this experiment—light sources, photon detectors, microwave cavities and so forth. There was almost nothing he could use off the shelf. The resultant, rightly famous paper (A. T. Forrester, R. A. Gudmundsen, R. A. Johnson, *Phys. Rev.* **99,** 1691, 1955) was way ahead of its time; its full import was not realized until much later, after laser sources became available and laser physics became a field of study. The photoelectric tube that was at the heart of the experiment now is part of the historical collections of the Smithsonian Institution.

Forrester's development of the space propulsion ion engine (1959–65) was an equally impressive feat. He developed the engine between 1959 and 1965, and it was tested successfully on a space vehicle. In 1962 the American Rocket Society (now the American Institute of Aeronautics and Astronautics) gave him their annual research award for this work. In fact, the ion engine is now an exhibit in the National Air and Space Museum of the Smithsonian, with the caption "Developed by Dr. A. T. Forrester." Surely very few physicists have been honored by having apparatus from two so entirely different projects made part of the Smithsonian's collections.

Ted always was a joy to be with. His courage during his protracted illness and his insistence on not letting his illness prevent him from living a meaningful life were an inspiration to all who knew him. In the last year of his life, even though he was well aware that his cancer no longer was being held in check, he found the time, energy and resolve to finish his book on ion beams, to celebrate the weddings of two of his children, to give numerous speeches on SDI, and to chair the UCLA Concerned Faculty—a group of about 200 UCLA faculty members working to reverse present US policies on nuclear arms and Central America.

In sum, Forrester lived a full life, a good life, and died with dignity. In so doing, he enriched my life and the lives of all his other friends and colleagues. I can think of no greater tribute to him than the continued memory of this enrichment.

EDWARD GERJUOY
University of Pittsburgh
Pittsburgh, Pennsylvania

Arnold R. Moore

Arnold R. Moore died on 26 March 1987. He had retired from RCA Laboratories in Princeton, New Jersey, in 1984; for the past three years he was on the staff of the Institute of Energy Conversion at the University of Delaware.

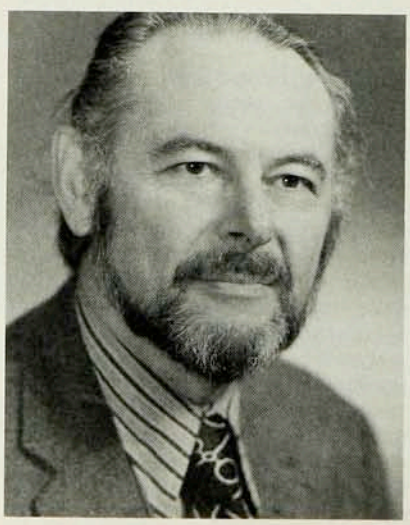
Moore was born in Brooklyn, New York, in 1923. At the age of 19, after graduating from the Polytechnic Institute of Brooklyn with a degree in chemistry, he joined RCA in Lancaster, Pennsylvania. During World War II, he worked on phototubes, and developed a stable blue-green photoemissive surface that is still in use today. After earning a PhD in experimental physics at Cornell in 1948, he joined the RCA Laboratories.

At RCA he began by growing the first germanium crystals for the lab's early transistor program. Moore was one of the first researchers to recognize the importance of surface states for the characteristics of junction transistors, and he made many improvements—later extended to silicon devices—toward obtaining stable p–n junctions. He followed this with a comprehensive investigation of the optical properties of the Si–Ge alloy system, the findings of which proved useful in the development of new thermoelectric materials. Together with J. O. Kessler, he developed an ultrasensitive reed balance for magnetic susceptibility measurements that was used in studies of the magnetic moments of solid-state plasmas.

Following the discovery of acoustoelectric current saturation in CdS by R. W. Smith at RCA, Moore devised an ingenious photographic method for observing the motion of acoustic domains. His motion pictures demonstrating the generation, motion, reflection and absorption of acoustic packets at gigahertz frequencies in CdS and GaAs were shown at many technical meetings.

During the last ten years, Moore devoted his skills to developing solar energy. At first he worked with crystalline silicon photovoltaic cells; he then became an important member of the RCA team that pioneered the amorphous silicon photovoltaic cell. He was the first to measure the mobility of holes and, later, the minority carrier diffusion length in amorphous Si using the photoelectromagnetic effect. He thoroughly analyzed the theory of the constant-photovoltage method for measuring the diffusion lengths, then made an elegant experimental simplification that established the technique as the practical standard in the field today. He later continued this work at the University of Delaware. During 1970–71 he was visiting professor of electrical engineering at Brown University.

Arnold Moore



Moore was an intrepid and ingenious experimenter, always ready to learn and master the most arcane techniques. He freely shared his broad knowledge of both chemistry and physics. He was much respected for his high ethical and intellectual standards. His bubbling enthusiasm, which delighted and inspired those who came to know him well, will be acutely missed.

JOSEPH DRESNER
David Sarnoff Research Center
Princeton, New Jersey

Julius Sumner Miller

Seldom has a flame burned with more energy and enthusiasm in the classroom than in the robust lectures of Julius Sumner Miller, professor emeritus of physics at El Camino College (Torrance, California). Students either loved him for his dramatic demonstrations, his teaching of humanistic values and his old-fashioned rigor, or they despised him for making excessive demands on their intellectual lives. Nonetheless, all were saddened by his death in April 1987 at age 77, for he changed their lives irrevocably.

Miller's autobiography, *The Days of My Life*, will be published soon. As a young schoolboy, he "read the libraries dry." Having grown up on a farm "with mud on his shoes," he adjusted well to Boston University, graduating with two degrees and no job during the Depression. A great desire to improve his understanding of physics drove him to develop mathematical results into dramatic physics demonstrations. Several hundred physics demonstrations used today around the world originated from his ambition. A fascination with toys, young