we hear that

the first to observe the spectrum of the hydrated electron, which had been postulated by Robert Platzman. He has also contributed to the statistical analysis of the results of radiation therapy and to the understanding of linear energy-transfer distribution.

The award was established in 1967 to honor Louis H. Gray, former vice-chairman of the ICRU. Before coming to the Institute of Cancer Research, Boag had worked with Gray at the research unit in radiobiology of the British Empire Cancer Campaign.

Five E. O. Lawrence Award winners named

Charles C. Cremer, of the Los Alamos Scientific Laboratory, Sidney D. Drell, of Stanford University and Paul F. Zweifel, of Virginia Polytechnic Institute are among the five recipients of the Atomic Energy Commissions's Ernest Orlando Lawrence Memorial Award. The awards, consisting of a gold medal, a citation and $5000, recognize contributions to the field of atomic energy.

Cremer, a group leader of the theoretical design division at Los Alamos, was honored for his contributions to the development of weapons design codes and for his design of small weapons. The citation recognized Drell for his "theoretical investigations of the range of validity of quantum electrodynamics and for his contributions to understanding electromagnetic processes involving hadrons." Drell is deputy director and executive head of theoretical physics at the Stanford Linear Accelerator Center. Zweifel, a professor in VPI's department of physics, was cited for his "contributions to the slowing down and thermalizing of neutrons, which have been of particular importance to the design and development of water-moderated reactors."

The other two recipients were Marvin Goldman, a radiobiologist at the University of California, Davis and David A. Shirley, chairman of the chemistry department at the University of California, Berkeley.

Arno A. Penzias has been promoted to head of the radio techniques research department at Bell Laboratories, and **Joe H. Mullins** has been promoted to head of the T2 digital line department there.

Joining the staff of Los Alamos Scientific Laboratory are **William P. Gula** in the theoretical division and **Gregg C. Giesler** in the chemistry–nuclear-chemistry division.

At the University of Virginia, **Stanley Sobottka** has been promoted to professor and **John Ruvalds** and **Hans-Jurgen Weber** have been promoted to associate professors. **Prabahan Kabir**, formerly a visiting professor at the university, has been appointed professor. Other new appointments include **Julian V. Noble**, of the University of Pennsylvania, as associate professor and **Paul M. Fishbane**, from the University of Illinois and **Ronald H. McKnight**, from the University of Washington as assistant professors. **R. Carter Morris** and **Richard J. Van Brunt**, both previously research associates at Virginia, have been named assistant professors.

Norton L. Moise has joined Xonics Inc in Van Nuys, Calif. as director of operations and manager of the company's engineering physics division. He was previously with Montana State University.

Michael J. Brady, formerly of the State University of New York at Stony Brook, has become a member of the acousto-optical physics group at IBM's Thomas J. Watson Research Laboratories.

Erwin F. Shrader has been appointed director of research and development for nuclear-detection systems at the Harshaw Chemical Co's crystal and electronic products department.

William P. Raney, formerly special assistant to the assistant secretary of the navy, has been promoted to chief scientist for the Office of Naval Research.

Pennsylvania State University has named **Roland H. Good**, a senior scientist at the Ames Laboratory, to head the physics department.

George W. Wheeler, formerly of Brookhaven National Laboratory, has been appointed to the high-energy physics branch, division of physical research at the Atomic Energy Commission.

Lewis M. Branscomb has resigned as director of the National Bureau of Standards to become chief scientist and vice-president of research for IBM.

Promotions at Wayne State University include **Harry H. Denman** to professor and **Pao-Kuang Kuo** and **William B. Rol-**

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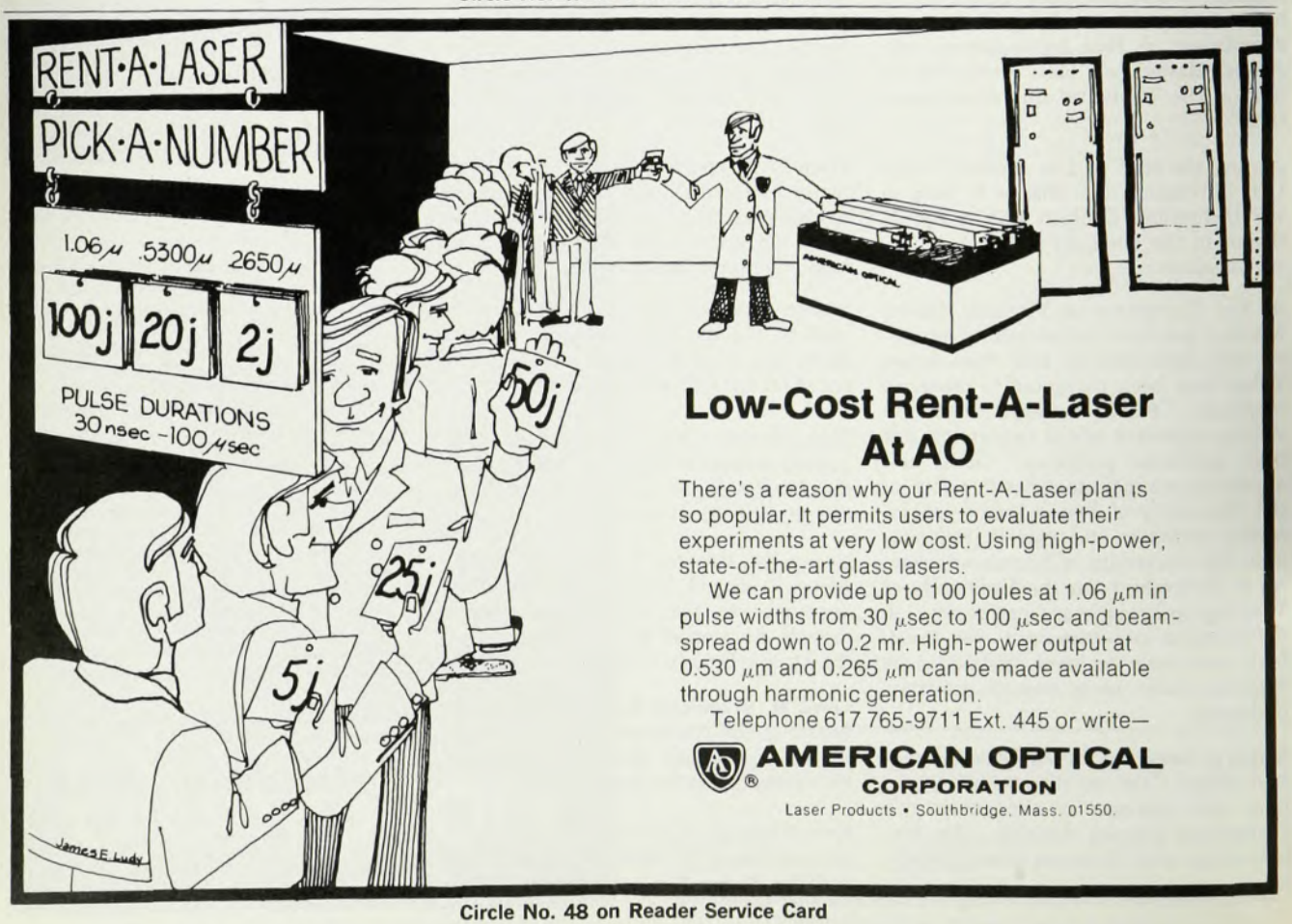

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rick to associate professors. **Kenneth J. Duff**, formerly of Ford Scientific Laboratory and **Gerald L. Dunifer**, formerly of Bell Telephone Laboratories have joined the physics staff as assistant professors.

Alexander Abashian, formerly of the University of Illinois at Urbana, has been appointed program director for elementary-particle physics in the National Science Foundation's physics section. He replaces J. Howard McMillen, who has retired.

The new director of the systems planning center at Bell Telephone Laboratories is **Merle M. Irvine**, who has been with Bell Labs since 1955.

obituaries

John Q. Stewart

John Quincy Stewart died on 19 March after a brief illness. He was 77 years old.

Stewart spent most of his professional life on the faculty of the department of astronomy at Princeton University. He received his higher education

STEWART

there as well, obtaining the BS in 1915 and the PhD in physics in 1919. His dissertation was a classic study of the gyromagnetic ratio for electrons. During 1918–19 he served in France with the US Army Engineers in a sound-ranging unit. Before joining the Princeton faculty in 1921, he spent two years with the American Telephone and Telegraph Company in New York working on the design of the first electronically synthesized human voice.

At Princeton his interests spanned a wide range, from astrophysics and meteorology to social physics, focussing in later years upon the latter. He observed five total eclipses of the sun.

His work in social physics was spurred by a lifelong conviction that physical laws, so long successful in predicting phenomena in their own field, should have applicability in the social sciences. About 1940 he introduced the concept of "potentials of population" (analogous to electrostatic potential), given by the number of people in a city or state divided by the distance of these people from an observing point, as a measure of the influence of populations at a distance. He showed that such diverse quantities as the number of students attending Princeton University from different states and the flow of checks through a particular bank were proportional to this quantity. Other applications followed, and the work expanded to include psychological as well as geographic and economic concepts. He had a number of close associates in this work, notably William Warntz, now at the University of Western Ontario, and James D. Hamilton of Montreal, Canada.

After retirement from Princeton in 1963, Stewart moved to Sedona, Arizona, and in 1966 he was appointed professor of the metaphysics of science at Prescott College in Arizona. There he organized a seminar, "Unified Knowledge," covering his interest in the social field. The work continued until shortly before his death.

Stewart wrote numerous papers in physics, astronomy and social physics, and was the author or coauthor of three books. He was a fellow of the American Physical Society and of the American Association for the Advancement of Science, and an honorary fellow of the American Geographical Society.

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