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Richter to be SLAC director

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from industry.

The group on the Federal role in the education of physicists was led by Mildred Dresselhaus (MIT) and Ralph Simmons (University of Illinois). In FY 1984, 600 new NSF fellowships will be offered, an increase of 20%. Some of the participants felt the fellowships might be more cost-effective if they were only for one year. The group discussed the reestablishment of a commission on college physics, a body to focus attention on education and to gather community opinion, something like peer review without the elements of isolation.

John Layman (University of Maryland) and Robert Bauman (University of Alabama) led the group on education of physics teachers and education for the general public. Participants felt that we must encourage members of the public not to leave technological decisions to experts. One way of increasing the number of persons literate in physics is to make high-school physics more attractive, perhaps dealing with atomic physics, astronomy and computer science. Physics teachers would like to learn to explain how technology relates to life and to physics. We should not assume that we know how to teach physics just because we understand it; students learn at different levels. The group spent a lot of time discussing elementary schools because they play a critical role in shaping attitudes towards science in later study.

Perceptions. There was a general recognition among the conference participants that the public perception of physics is dramatically different today from what it had been in the 1950s. Physics then, and for many years after, was seen as the exciting leading edge of new knowledge. Now physics is more often thought of as a quaint backwater for the scientifically curious, or worse, as the field that spawned and continues to spawn nuclear weapons.

Entering college science students also view physics as too hard and less relevant to contemporary issues than other sciences. Dan Quisenberry (Mercer University) said, "We now offer a preparatory course before the introductory physics course and have found that students who take it and get at least a C do well in the introductory course. Without it, 60% of the students in introductory physics were getting Ds and Fs." The perceived difficulty of physics may be due largely to a lack of adequate science and math background, but many people also described the "density" of present curricula as a problem.

At colleges that give engineering degrees, physics department chairs find it difficult to recruit physics majors because of the competition. At colleges that do not give engineering degrees, the physics department chairs find it difficult to maintain a large department because of the small number of students taking service courses. Further, many participants provided anecdotal evidence that bright students interested in studying physics became engineering or computer-science majors instead, because of both the comparative poverty of the physics department and the poorer prospects for employment with a physics BS degree.

Some statistical trends suggest that these perceptions and other factors are leading fewer and fewer young people to study physics. H. William Koch (director of the American Institute of Physics), using data from the AIP Manpower Statistics Division, compared physics to the other natural sciences and engineering:

- ▶ The relative number of physics PhDs to all PhDs in the sciences and engineering has drastically declined since the 1950s.
- ▶ Over the past decade, the percentage of engineering PhDs granted to women has quadrupled; in the same decade, the percentage of physics PhDs granted to women has not even tripled.
- ▶ The percentage of young physics faculty, those within seven years of their PhDs, is declining for physics, while growing for the other sciences and for engineering.
- ▶ The number of BS degrees in physics has declined 20% from 1970 to 1980, while in other fields, such as in computer science, the number has more than doubled.

—JC & GBL

Education

Conference on summer institutes

The Committee on Education of The American Physical Society and the American Association of Physics Teachers are sponsoring a conference on the planning of summer institutes and supplementary courses for high-school physics teachers. It is to be held in Washington, D.C., 13–14 April.

The organizers—Peter Lindenfeld (Rutgers) and Jack Wilson (AAPT)—hope to bring together those intending to plan such courses, those who have had experience with them in the past, and personnel from NSF and other funding agencies.

According to Lindenfeld, "A number of years ago the NSF was heavily engaged in funding such institutes and was, in fact, instrumental in changing the nature of high-school physics education. The time has come for a renewed effort that brings together the schools, the colleges and the government. Especially with the reestablishment of the NSF education directorate there is hope again for Federal support."

The conference will deal with the nature of the population from which the participants will be drawn, the philosophy and aims for such workshops, the level of math and physics to be used, budget and logistics, and means of continuing the associations begun among participants and faculty.

Richter to be SLAC director

Burton Richter will succeed Wolfgang Panofsky as director of SLAC effective 1 September. Panofsky, who is retiring at the age of 65, has been director of SLAC since its inception. He will remain at SLAC working on accelerator problems. Richter has been technical director of SLAC since 1982 and had been expected to succeed Panofsky.

Richter is one of that rare breed who are active both in accelerator physics and experimental particle physics. He

At the groundbreaking for the SLAC Linear Collider in October, Energy Secretary Donald P. Hodel wields the shovel with a spiritual assist from SLAC Director Wolfgang Panofsky. Applauding the effort at the far left is William Kimball, President of the Stanford Board of Trustees.

pioneered in the development of electron–electron colliders and electron–positron colliders. In 1976 he shared the Nobel prize in physics with Samuel C. C. Ting of MIT for the discovery of the ψ/J particle.

On 31 October a groundbreaking ceremony was held for the SLAC Linear Collider, a $113-million project conceived by Richter. SLC is a single-pass linear collider that will have 50-GeV electrons colliding with 50-GeV positrons.

Richter was a student at MIT, getting his BS in 1952 and his PhD in 1956. Since 1956 he has been at Stanford, joining SLAC in 1963, where he has been a full professor since 1967.

RICHTER

OSA elects Bennett vice president

The Optical Society of America has elected Jean M. Bennett to be its vice president in 1984. Bennett, who is a physicist and research scientist at the Michelson Laboratory of the Naval Weapons Center, will become president-elect in 1985 and president in 1986. She will succeed Donald R. Herriott of the Perkin-Elmer Corporation, who will be president in 1984, and Robert R. Shannon, professor at the Optical Sciences Center of the University of Arizona, who will be president in 1985.

Bennett received a BA from Mt. Holyoke College in 1951, and, from Pennsylvania State University, an MS in 1953 and a PhD in physics in 1955. She worked for the Wright Air Development Center from 1955 to 1956, when she joined the Naval Weapons Center as a physicist. Her research has concentrated on the optical properties of solids, solid-state physics, interferometry and thin films.

In the same election, new members were chosen as directors-at-large of the OSA Board: James B. Breckinridge (Jet Propulsion Lab), Richard K. Chang (Yale University) and William T. Rhodes (Georgia Institute of Technology). Paul L. Kelley (MIT Lincoln Lab) was elected as the new editor of *Optics Letters* and member of the Board, and Jay M. Eastman (Optel Systems, Inc) is the new chairman of the Technical Council. He will also serve on the Board. *Optics News* is also getting a new editor: John N. Howard (Air Force Geophysics Lab) will edit that magazine as well as *Applied Optics*.

BENNETT

AIP Corporate Associates at Xerox

The physics of information technology was the theme of the annual AIP Corporate Associates meeting, held at the Xerox Palo Alto Research Center 25–26 October. Among the 180 persons attending were leaders of industry, heads of graduate physics departments and government officials.

John Hopfield (Caltech) discussed his work on collective computational properties of neuronal networks. These properties, Hopfield said, can account for the intactness of memories, that the human brain is content addressable, that it can learn sequences and is damage resistant. He believes that the bridge between conventional computers and neurobiology is statistical physics and the spin glass.

Scott Kirkpatrick (IBM, Yorktown Heights) discussed the use of Monte Carlo techniques in circuit design (PHYSICS TODAY, May 1982, page 17). Michael Kriss (Eastman Kodak) described Eastman Kodak's work on modern color photographic systems and dealt with the question: will electronic image-processing systems replace silver halide systems or will a hybrid be the system of the future?

Bela Julesz (Bell Labs) described his work on a "texton" theory of visual perception. He and his collaborators have found two visual systems—a preattentive system that is parallel, instantaneous and processes the entire visual field at once, and an attentive system that serially searches by focal attention in 50-millisec steps limited to a small aperture. Textons are the atoms of preattentive vision and are characterized by elongated blobs, terminators and crossings of elongated blobs. The preattentive system ignores relative positions between textons, but can count textons; the preattentive system directs focal attention to the loci where the textons differ.

An overview of research at Xerox PARC was provided by William J. Spencer, who manages the center. Organizationally, PARC is divided into laboratories for general sciences (including semiconductor properties, surfaces, integrated optoelectronics), optical sciences, integrated circuits, integrated design, computer sciences and a laboratory for cognitive and instructional sciences and software concepts. William Verplank demonstrated the Xerox 8010 STAR Office System and Math Package, William Paxton discussed Cedar computer graphics and Bernardo Huberman talked on the dynamics of complex adaptive automata. During a tour Gary Starkweather described laser printing research, Robert Nemanich and David Biegelsen discussed thin-film structures and Thomas Paoli described high-power GaAs lasers (including a chip containing several quantum wells that emits 2.5 W of cw optical power).

During the conference banquet, the AIP Prize for Industrial Applications of Physics was awarded to Joseph E. Killpatrick and Frederick Aronowitz (see the story on page 60); the AIP–US Steel Foundation Science Writing Award in Physics and Astronomy was awarded to Abraham Pais (PHYSICS TODAY, October, page 58). The after-dinner speaker was Robert R. Wilson, who discussed neutrino exploration of the Earth (August, page 20).

Lectures on frontiers of physics included Luis Alvarez (University of California, Berkeley) on asteroids and dinosaurs, Mildred S. Dresselhaus (MIT) on modifications to the properties of materials by intercalation, Arthur L. Schawlow (Stanford) on precision laser spectroscopy, Paul Lauterbur (SUNY, Stony Brook) on nmr imaging and spectroscopy and Douglas J. Scalapino (University of California, Santa Barbara) on special computing machinery for physics (PHYSICS TODAY, May, page 44).