

Edward Knapp named NSF director

Edward A. Knapp, who has been serving since September as assistant director for mathematical and physical sciences at NSF, has been nominated by President Reagan as the new NSF director. Knapp replaces John B. Slaughter, who resigned (PHYSICS TODAY, October, page 51). Slaughter originally planned to leave on or about 15 January to become chancellor of the University of Maryland, College Park. (Our October story incorrectly stated his new position.) Instead, Slaughter became chancellor effective 2 November; he will also be professor of electrical engineering at the College Park campus. Knapp's appointment now awaits Congressional approval.

President Reagan has also nomi-

nated three more persons to the National Science Board (PHYSICS TODAY, December, page 55), which sets policy for NSF. Confirmation by the Senate of the appointment of Robert F. Gilkeson, chairman of the board of Philadelphia Electric Company, William F. Miller, president and chief executive of SRI International, and William A. Nierenberg, director of Scripps Institution of Oceanography at the University of California, San Diego, will bring the NSB membership to 23 out of its total of 24 members.

Prior to becoming an assistant director of NSF in September (PHYSICS TODAY, October, page 50), Knapp led the Accelerator Technology Division at Los Alamos.

private initiative like the threat of Federal help." Pewitt feels the Federal government's key responsibility is for the health of basic science, such as particle physics, topology, and astronomy. The other end of the R&D spectrum clearly belongs to industry, he said. He decried the Federal attempt in the 1970s to speed up energy technologies, which he said cost \$30 billion.

The Federal government is taking "a fresh look at the areas of basic research it traditionally supports in the nation's universities and Federal laboratories. Some areas seem ripe for rapid advances in knowledge that could have medium-term impact on high technology. Fields like materials science and engineering, for example, or plant biology can very effectively use whatever additional funding we can make available over the coming years...[As government involvement in near-term development-type activities is reduced] we are shifting some of those resources into support for especially promising basic research. We made a good start last year, and we expect to make further inroads this year."

The Administration plans to encourage "better interaction between academic and Federal scientists and engineers on the one hand and their industrial counterparts on the other." Cooperative research in fields such as solid-state physics, electronics, combustion and aerodynamics could result in major benefits for the economy, he said.

Trade barriers or subsidies, Pewitt said, would distort free-market mechanisms. "We suffer from a poor atmosphere in this country for timely transfer of new knowledge between

AIP Corporate Associates meet at Sandia laboratories

The theme of the 25th annual meeting of the AIP Corporate Associates was science policy for interactions between industry, universities and the Federal government. The meeting, held at Sandia National Laboratories in Albuquerque 14-15 October, had a capacity audience of industry leaders, heads of graduate physics departments, government officials and AIP representatives.

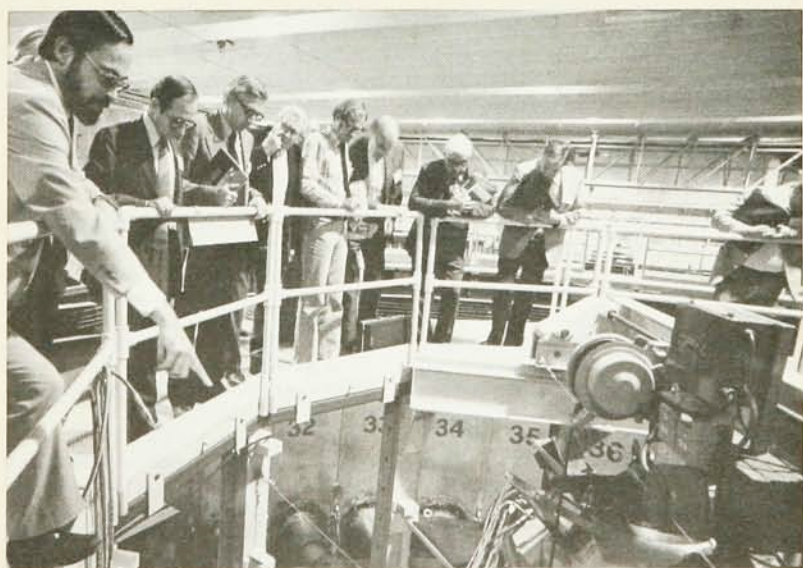
Douglas Pewitt (Assistant Director for General Sciences, White House Office of Science and Technology Policy and originally a particle physicist) said that the Reagan Administration's science policy "is directly concerned with strengthening the world market positions of our high-technology industries."

"The modern history of Federal support for science has been one of massive support for nonindustrial basic research with little attention to its ultimate use," so that although the US has the best basic-research capability, it has weak links to the applied research and development of industry. "To the discredit of those of us in government, we've managed to isolate much of the scientific community from the needs of the nation." He cited microelectronics as "an area of business that best demonstrates the advantages of a close interaction between university and industrial researchers.... The vitality of a place like Silicon Valley surrounding Stanford, or the electronics firms that have grown up around MIT, remind us that an institution—or a region—that

invests in high-quality research becomes a magnet for high-technology business.... The rapid expansion of electronics—especially computers—is due in part to the similarities between the kinds of problems driving industrial and university research."

Pewitt said OSTP has and will continue to sort out the Federal and private-sector responsibilities in science and technology. He deplored the blurring of those responsibilities that has occurred, saying, "I can't think of anything that can drive out

the physics community



Gerold Yonas (bearded) points to the Particle Beam Fusion Accelerator during a guided tour of experiments at Sandia. PBFA is part of the lab's inertial-confinement fusion program. The tours were a highlight of the 25th annual meeting of AIP Corporate Associates.



PEWITT

domestic sectors and for commercial application of new technologies. That's where we should be focusing our attention—not on Japan."

The next speaker *did* in fact focus his attention on the apparent success of Japan, particularly in computers and semiconductors. William Howard (vice president, Motorola Inc) said that the US balance of trade during 1981 was estimated as a negative \$28 billion, and Japan was responsible for \$15 billion of this shortfall. Through quasigovernmental organizations such as the Ministry of International Trade, Nippon Telephone and Telegraph, and the VLSI Technology Research Association, Japan has supported the development of computer and communications industries. Many governments, Howard notes, are concerned because these are strategic industries. One European response, he said, might be to raise trade barriers. Howard believes that within the next five years the US also will erect some protectionist regulations or laws. He expects that other European countries will follow the Japanese model with suitable alterations.

"What is Motorola's plan for survival?" asked a participant. Howard said that, among other things, Motorola is one of the companies supporting the recently established Semiconductor Research Cooperative (PHYSICS TODAY, March 1982, page 57) for academic research support. He is concerned about the antitrust ramifications of cooperation among rival companies. "Should Japanese graduate students be restricted in US universities?" another participant asked. "Don't close the doors in academia," he urged. It's a

two-way street, he continued—the Japanese are at US universities as grad students and postdocs; at the same time, Japanese companies have been spending money to support research on US campuses.

Restrictions on scientific communication were discussed by Dale Corson (president emeritus, Cornell University), who described the work of his National Academy committee studying the national security implications of scientific communication in universities (PHYSICS TODAY, November, page 69).

Policies for university research involving industrial interests were discussed by Kenneth A. Smith (associate provost and vice president for research, MIT). He said that a collaborative program must maintain a balance between the university's pursuit of research as part of the educational process and industry's search for useful knowledge, applicable to the development of products, processes and services. The program must accommodate the different time constants of industry and the university, where increments of time are measured in doctoral theses.

MIT can claim more expertise than almost any other university. In FY 1982 MIT on-campus sponsored research cost \$193 million, of which 11% came from industry. Smith guesses that fraction might grow to 15–20% but no more. Of the remainder, 81% was Federally sponsored and the rest came largely from foundations. For the US, total industrial sponsorship of academic research has been estimated at \$200 million; so MIT can claim a 10% share of industry support.

MIT policy guidelines allow a principal investigator to receive proprietary information from the sponsor but not others. Thus a student isn't restricted in his freedom to discuss his work. MIT grants a sponsor a 30-day delay for screening proprietary or possibly patentable information before submitting a paper for publication.

To avoid a conflict of commitment, MIT doesn't allow a faculty member to have line responsibility in any outside firm. However, MIT will grant a leave of absence for up to two years for such a purpose. After that the faculty member must either return to the university or cease having full line responsibility in the outside firm.

John Layman (University of Maryland and AAPT president) described the crisis in physics teaching and potential limitations on future research. AAPT has formed a Crisis in Physics Teaching Committee that is producing a first-aid kit for the underprepared teacher. The APS Education Committee in cooperation with AAPT is sponsoring the CHIPS project to improve the

interface between high-school and college physics teachers. Some states and local school systems are launching retraining programs for experienced teachers shifted to science teaching.

Kumar Patel (executive director, physics research division, Bell Labs) spoke about the future of basic sciences and telecommunications innovation at Bell Labs in view of the recent antitrust settlement. In the post-divestiture environment, the mission of research at Bell Labs will continue to be that of carrying out fundamental and applied research in those areas of science and engineering relevant to telecommunications and information technologies, he said. New market opportunities in such areas as processing, handling and transmission of information, products for the end users in the information-technology business, and so on, will clearly modify and broaden the overall mission of Bell Labs. However, Patel continued, "the three fundamental factors responsible, in part, for the success of research in basic sciences at Bell Labs—the sustained funding, focus, and freedom—will remain unchanged. More importantly, the relationship between funding and focus, namely funding provided by our owners and customers but focus (and priorities) for research provided by technical management at Bell Labs will continue to be operative in the future." Quoting Arno Penzias (vice-president for research at Bell Labs), he said, "We are not going to conduct a going-out-of-business sale."

Science and technology in France under the government of Jean-Pierre Chevènement was discussed by Abraham Friedman, who is counselor for scientific and technological affairs, American Embassy in Paris.

Other speakers at the two-day meeting were Michael Knotek (Sandia) on electron- and photon-stimulated desorption of ions from surfaces; Thomas Picraux (Sandia) on ion implantation metallurgy; Alexander Malahoff (National Ocean Survey) on marine polymetallic sulfide; Mitchell Feigenbaum (Cornell) on the onset of chaos; William Brinkman (Bell Labs) on the physics of two-dimensional systems, and David Schramm (University of Chicago) on cosmology, black holes and the early universe.

The meeting was organized by Albert Clogston (Bell Labs, retired). Participants were offered their choice of five different guided tours of various Sandia laboratories. At the banquet the AIP-US Steel Foundation Science-Writing Award was presented to Heinz Pagels of Rockefeller University (PHYSICS TODAY, October, page 51). Leon Lederman (director of Fermilab) spoke on "high-energy physics for culture and profit."

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