

state & society

AIP Corporate Associates examine trends in research

The theme of the recent American Institute of Physics Corporate Associates meeting was "Gauging the Future: New Directions for Physics and Physicists." Held at the IBM Research Laboratory in San Jose, California late in October, the meeting covered trends in industrial and government-sponsored research, applications of physics and energy options for the future. The 181 participants—Corporate Associates representatives, physics-department chairmen, society officers and government officials—were also given a tour of the IBM Laboratory.

George Mechlin (Westinghouse Electric Corp) expressed concern about the support of basic research, particularly in the universities. He noted that "the broadly based planning of basic research by the peer groups is a far more dependable process than the concept of central state planning." He urged that we educate the general public about the value of basic research and that we maintain personal contact with legislators, government officials and the media.

Mechlin finds no significant basis for alarm about applied research from the trends of support. However, he is concerned about "the possibility that an unexpectedly large and hidden alteration of applied research and development objectives is taking place as a result of the accelerating trend in our society to impose legislative regulations on environment,



Sharing coffee at the American Institute of Physics Corporate Associates meeting are (from left) George Mechlin (Westinghouse Electric Corp), Frank Jamerson (General Motors Research Labs), chairman of the Corporate Associates Advisory Committee, and Richard Post (Livermore).

safety and product performance. While the motives for regulation are beyond reproach, the technical basis for at least some of the regulations is uncertain and the execution of the regulation is sometimes clumsy as well."

IBM's Ralph E. Gomory described the work of the IBM Research Division in conducting basic research and in devel-

oping advanced data processing methods and technologies. Over 200 of the Division's 650 PhD's are physicists.

E.I. duPont de Nemours & Co employs 325 physicists, about 2% of the technical staff, according to F. J. Darnell. Most of the company's physicists are not doing physics research. Their activities range

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NBS problems come under Congressional scrutiny

The National Bureau of Standards "is on the brink of serious trouble. The persistent retrenchment that has taken place threatens to bring NBS to a mediocrity that is unacceptable." So testified Charles Peck, an Owens-Corning Fiberglass Vice President and the Chairman of the NBS Visiting Committee, at an oversight hearing (the first in many years to focus particularly on NBS) held on 25 October by the Subcommittee on Science, Research and Technology of the House Committee on Science and Technology. The hearing was arranged apparently because of increasing political perception of the Bureau's inability to carry out fully its mandated tasks.

Peck, citing from the annual report of his committee, pointed out that although

Congress has passed 15 new laws since 1965 giving NBS assignments, the funding in constant dollars for the Bureau over the same period has remained nearly constant. Basic research has suffered even more severely; the committee cited an NBS staff report that indicates that funding in constant dollars for this area may have been halved during the past decade. Long-range programs have been cut back or curtailed so that the short-term objectives arising from the new legislation can be met to some degree.

NBS obtains its funding in three ways: fee-charged services (about \$5.6 million this year) to both government agencies and the public, direct assistance (\$48 million this year) to other Federal agencies on scientific and technical problems

directly related to the Bureau's mission and Congressional appropriations (\$70 million this year) for meeting obligations under the Organic Act establishing NBS and other subsequent pieces of legislation that have assigned the NBS direct responsibilities.

Ernest Ambler, who was nominated by the President on 10 November to be permanent Director of NBS after two years of service as Acting Director, testified before the subcommittee that "in many pieces of legislation NBS is given neither direct assignment nor funding, and we often have trouble obtaining funds in a timely fashion from the prime agency for support of our efforts."

The Visiting Committee, a statutory panel that reports annually to the Secre-

ing created made the authorities feel that he should either be arrested or released. They chose to let him go.

With Azbel in Israel, the Moscow seminar continues at Brailovsky's apartment. Azbel fears that Brailovsky is now in danger of imprisonment. A schedule for the weekly seminar is available from the Committee of Concerned Scientists, 9 East 40th St., New York, N.Y. 10016. (Azbel's US tour was sponsored by the Committee, The American Physical Society and the American Association for the Advancement of Science.)

Azbel's current research interest is in DNA sequencing. He has developed a theory according to which the DNA differential coiling curve explicitly determines the sequence and the nucleotide composition of certain segments within the DNA.

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from research through development to the product. The emphasis is on interdisciplinary activities.

The American Physical Society, President George Pake said, has taken steps toward expanding the role of physicists in government and industry. APS initiated its Congressional Fellowship Program five years ago. The combined total of all Congressional fellows is already 50 scientists and engineers from several societies. He noted that in addition to APS, the Optical Society of America and the Acoustical Society of America have such programs. More recently APS started an Industrial Fellowship Program, awarding these fellowships last year to three physicists.

How has academia responded to declining job opportunities? Roland Good (Pennsylvania State University) said that about 40% of the physics departments have set up new applied courses, about 25% have revised PhD requirements, and that about 55% have increased their interaction with industry.

Two federally funded research and development laboratories were described—Argonne National Laboratory and Lawrence Livermore Laboratory. Robert Sachs noted that Argonne has had experience in the transfer of nuclear

power to industry. With the advent of the energy crisis, the laboratory has taken new directions. For example, Argonne had been doing advanced vehicle battery development. Once this development was far enough along, research and development has been carried out with battery firms. Another project has been on solar collectors; these devices, which grew out of work on Cerenkov counters, are now being developed in a partnership with industry.

Livermore, Richard F. Post said, recently celebrated its 25th anniversary. Although its primary mission is nuclear weapons, Livermore has a growing component of research on energy. The lab employs 6500 persons, 447 of them PhD physicists. Livermore is playing a leading role in both magnetic fusion and laser fusion. The \$100-million Mirror Fusion Test Facility, now approved, is scheduled to be completed in 1981. The Shiva laser fusion facility was expected to be operating by the end of 1977. Post said that the next stage, called Shiva Nova, is expected to demonstrate breakeven.

A broad range of energy options was discussed by Robert H. Cannon (California Institute of Technology). He feels that "with a problem this important the prudent thing is not to rely on one panacea or another, but to pursue every approach that can help—every means to conserve energy, every promising supply option, protection for every potential risk."

Solar energy research was described by Charles Grosskreutz (Solar Energy Research Institute). Opportunities for physicists in this field include: solid-state and semiconductor physics, properties of surfaces and thin films, innovative energy storage, systems analysis, optics, optical properties of materials, new photo and thermal conversion techniques.

Others speakers included Walter A. Hahn (Congressional Research Service) on US science and technology policy, Elliott W. Montroll (University of Rochester) "on the breadth of physicists' style of thought," Joseph Heiserman (Stanford University) on the acoustic scanning microscope, Laurence L. Rosier (IBM San Jose) on magnetic bubbles and Malcolm R. Beasley (Stanford) on energy-related

applications of superconductivity.

At the banquet AIP director H. William Koch presented the AIP-US Steel Foundation Science-Writing Award in Physics and Astronomy to Steven Weinberg (PHYSICS TODAY, October 1977, page 88). In the absence of Weinberg, who was ill, Sachs accepted the award for him. The banquet speaker was Andrew S. Grove (Intel Corp), whose topic was "Silicon Valley—Its Development and Growth." —GBL

Funding for chemistry computation center

The National Resource for Computation in Chemistry began operations in October at Lawrence Berkeley Laboratory. The facility, jointly funded by the Department of Energy and the National Science Foundation, has a first-year budget of \$1.3 million; this is projected to increase to \$2.4 million by 1980. Academic, industrial and government chemists from throughout the US who need access to advanced computer hardware and specialized software to solve research problems will be able to use the NRCC, which will make extensive use of LBL's existing computer center.

Basic research in chemical kinetics, crystallography, macromolecular science, nonnumerical methods, quantum chemistry, physical organic chemistry, statistical mechanics and energy systems will be undertaken at the facility. Earl K. Hyde, deputy director of LBL, predicts that the NRCC "should develop into a unique intellectual facility that will aid theoretical chemists from all over the US in frontier calculations which require the power and capacity of a modern computer center. It should make possible state-of-the-art computations that were not possible before."

A twelve-member Policy Board, which will determine the scientific goals and policies of the NRCC, was recently selected by representatives of LBL, DOE and NSF. It named James E. Ibers (Northwestern University) as its Chairman and appointed the LBL Deputy Director, Earl K. Hyde, to serve as Administrator of the NRCC until a permanent Director is selected by the Board.

the physics community

Miami's program to turn PhD's into MD's succeeds

PhD's in physical, biological and engineering science are studying for the MD degree in a special program conducted at the University of Miami School of Medicine. Based on the premise that well-

qualified individuals already holding a PhD can be educated in an accelerated curriculum, the program allows participants to earn the MD within 24 months.

Implemented in 1971, the innovative program attracted worldwide attention. The first year saw 20 students enrolled in the PhD-MD program from an applicant

pool of about 130. Four of the 20 possessed backgrounds in nonbiological science. The success of this latter group led to no further bias in favor of the biologically oriented scientist. As a result, the majority of admitted candidates have since been non-biologists, with over 25% being physicists.