

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.

William M. Awad, assistant professor of biochemistry, associate professor of medicine and current director of the program, reported that evaluations of accomplishment among physics PhD's indicated that they do as well or better than PhD's with other educational backgrounds. He added that some of the highest scores in both Medical College Aptitude Tests and National Board Examinations have been achieved by physicists, and their success appears to continue through their later careers.

Awad stated that over 80% of the PhD's in the program go on to receive house staff appointments at some of the most prestigious university affiliated hospitals in the US. "Typically specializing in internal medicine, diagnostic radiology, ophthalmology and radiation therapy, physicist-MD's bring with them a maturity and a wealth of new approaches to problems in medicine not often found in medical school graduates who have followed a more traditional path to their MD," said Awad.

To better evaluate the qualifications of physicist PhD's, the program has utilized the expertise of two physicists on the medical school faculty for guidance in evaluating the quality of material published by the candidates, the excellence of their previous graduate programs and the worthiness of different postdoctoral experiences. This has facilitated the appraisal of the physicist's credentials, a task that would otherwise be difficult for faculty members with purely medical backgrounds.

The pre-clinical segment of the program is completely separated from the four-year traditional curriculum. It involves six months of intensive basic science study followed by two courses totalling 2½ months duration (Introduction to Medicine and Mechanisms of Disease), which serve to introduce the student to the following clinical segment. Thereafter all students enter a full year of core curriculum, which involves rotation through the various clinical services; this year is identical in content to the junior year of most medical schools. The program ends with 10 to 12 weeks of elective clinical courses that serve to prepare each student for internship.

The curriculum is monitored by in-house testing and National Board Examinations. The latter are taken by most medical students throughout the US. According to Awad, the average scores for some of the PhD-MD classes are the highest for any of the over 80 ranked medical schools and experience has shown that physicists consistently place in the highest percentile of the testing group.

In 1974, because of the program's demonstrated success, enrollment was expanded to 28 admissions each year. In 1978, the program will be further expanded to 36 admissions for the eighth entering class.

—RAW

S of R elects Bagley as vice - president

Edward B. Bagley, chief of the engineering and development laboratory at the United States Department of Agriculture's Northern Regional Research Center, has been elected vice-president of the Society of Rheology. He succeeds Irvin M. Krieger, professor of physical chemistry and macromolecular science at



BAGLEY

Case Western Reserve University. Krieger now becomes the Society's president.

Bagley received his BSc in chemistry and physics from the University of Western Ontario in 1950 and a PhD in physical chemistry from Cornell University in 1954. He first worked as an industrial scientist at the Central Research Laboratory, Canadian Industries Ltd. and later on the faculty of Washington University in St. Louis, where he taught chemical engineering.

Joining the USDA's Northern Research Center in 1971, Bagley's background in synthetic polymers and polymer engineering was applied to studying the properties and behavior of natural polymers and chemical combinations of both natural and synthetic polymers. He participated in the development of starch-graft copolymers.

William R. Schowalter of Princeton University and Arthur B. Metzner of the University of Delaware were both elected members-at-large of the executive committee.

AIP to send journal articles by satellite

Beginning this month, the American Institute of Physics will investigate a new method by which the scientific community can quickly locate and obtain copies of journal articles. The experiment, directed by AIP's Rita Lerner and funded by the National Science Foundation, is

entitled "Assessment of Data Base Searching via Communications Satellite." The project is designed to evaluate the remote searching of a computerized file of abstracts of journal articles and bibliographic information, combined with the ability to transmit the full text to the user almost instantly. The result is a dramatic reduction in the time required to search for and obtain an article of scientific interest.

Scientists and engineers at the National Aeronautics and Space Administration's Goddard Space Flight Center, Ames Research Center, Lewis Research Center and California Institute of Technology's Jet Propulsion Laboratory will participate in the test. Using a communications "linkup" between computer terminals routed through the geosynchronous Communications Technology Satellite, interested parties at the listed institutions will examine AIP's SPIN data base, consisting of abstracts from all AIP and Member Society journals published over the past several years. The data base, which will be maintained at AIP and at Lockheed Information Systems, is used by AIP to produce portions of the journals and is current with journal publication. Upon finding an abstract of interest, the user flashes AIP, where copies of the requested material can be sent by facsimile transmitter at the rate of one page every 30 to 90 seconds.

Following a year of actual operation, an evaluation of the timeliness and economic advantages of the system will be undertaken, with the assistance of Applied Communication Research of Palo Alto, a nonprofit group that does research on communication systems.

in brief

Applications for scholarships from the American Vacuum Society are being invited. The grants are offered to assist graduate work in vacuum science and technology, vacuum metallurgy, surface physics and thin-film research. Deadline for the completed application is 31 March 1978. Information may be obtained from: American Vacuum Society, 335 East 45th Street, New York, NY 10017.

A visiting Women Scientists Program, in which women scientists visit schools in a given area for three to five days and encourage high-school girls to consider careers in science and technology, is being sponsored by the National Science Foundation. Information on the program is available from Carol Place, Research Triangle Institute, PO Box 12194, Research Triangle Park, N.C. 27709 (tel 800 334-9571, toll free, or 919 541-6319, collect). Expenses and an honorarium for program participants will be provided. □