

no idea what accounted for them; samples with mobilities of 12 000–15 000 $\text{cm}^2/\text{V sec}$ are “their routine and ours too,” he said.

The US group found no MBE devices at Chernogolovka, as noted, and the two early models seen at Novosibirsk were unsatisfactory. “They were all built in-house and gave the impression—well, ‘outdated’ is not even the right word—of being built out of equipment that is just unsuitable for building MBE machines.” At the end of the tour the US group was told during its visit to the Science and Technology Corporation, the new instrument manufacturer in Leningrad, that the company’s first MBE device had been not very successful. The next-generation machines, the product of a joint venture with Vacuum Generators, were said to be up to snuff. “We asked to see one, but they are being manufactured in Chernogolovka (Hmmm), not in Leningrad.”

Largely because molecular-beam epitaxy is so important in the production of gallium arsenide materials, one member of the US group concluded: “In the area of semiconductor materials, especially III-Vs, the Soviet Union is simply not in the game. We saw one, repeat one, MBE machine, at the Ioffe Institute, dedicated to growing AlGaAs lasers. Maybe there are half a dozen others elsewhere in the USSR.” In the US, in contrast, any modern lab doing semiconductor physics will have several MBE machines, and even five years ago you had to have at least one.

Members of the group got somewhat different impressions about the quality of the gallium arsenide samples produced in the USSR. One says that the mobilities the Soviets have attained are an order of magnitude below those achieved in the US. According to another, the Soviets routinely achieve mobilities of about 100 000 $\text{cm}^2/\text{V sec}$ —“about where we were five years ago.” According to yet another, the best mobility the Soviets have achieved is about 1 million $\text{cm}^2/\text{V sec}$, compared with 5 million here.

At least one visitor characterized the GaAs/AlGaAs samples he saw at the Ioffe Institute as “very good quality.” “I was surprised,” he says. “I would not have expected it.” He would not agree that the Soviets are not in the game in III-Vs.

Profits and politics

The US group was impressed that the Soviets have set up the Science and Technology Corporation with a staff of some 17 000 to make a success of instrument manufacturing capitalist-

style. “Many of the usual Soviet bureaucratic rules have been eliminated, especially on foreign trade and hard money. Disemployment [that is, firing employees] is allowed.” STC operates under the aegis of the Soviet Academy, which partly accounts for its special status.

Instruments made so far by STC include the first (unsuccessful) MBE device, a Mössbauer spectrometer, and cryogenic pumps using liquid helium and liquid nitrogen. The corporation hopes this year to build a device for focused ion beam lithography at 10–100 keV, 50-nm resolution, 2 A/ cm^2 and a field of 150×150 micrometers.

The US group was impressed by the invigorating effects that new rules permitting retention of earnings are having at the STC and Chernogolovka.

The group also was impressed, more generally, by the freedom with which their Soviet counterparts talked about politics and expressed critical opinions in public. “Most striking... is the new freedom of people to know and speak the truth. For us, this removes several layers of barriers in our relationships with Soviet scientists,” Worlock observed.

The US group found that the Soviets, from lab technicians to experimenters to theorists, have been achieving remarkable results considering the circumstances under which they have been working and the

materials at their disposal. “It is a general property of Soviet labs that you can’t buy a lot of equipment off the shelf, and so you have a remarkably elaborate machine shop and foundry and impressive technical skills,” Girvin said, referring to Chernogolovka. Referring to the MBE machines at Novosibirsk, Stormer said, “It is just extremely impressive what these people get out of this kind of equipment.” Sham, a theorist, found that the Soviet solid-state physicists “tend to think very deeply about problems, which to some extent compensates for the weakness of their tools.”

The US visitors detected a general eagerness for more contact with physicists in the West, a desire to get US physics publications more promptly and a yearning for greater recognition of their work in the West. Fowler said that at all sites they visited questions were raised about the possibility of young Soviet scientists visiting labs in the United States.

With the winds of *perestroika* and *glasnost* transforming Soviet society, as well as relations between the US and USSR, the visit to Chernogolovka may not figure very big in the greater scheme of things. But for the Soviet solid-state physicists who engineered the visit, it was a “triumph,” as Worlock sees it. “The meeting had the feeling of a real celebration.”

—WILLIAM SWEET

KLEIN TO BE NAMED SENIOR EDITOR OF EINSTEIN PAPERS

An announcement is expected early this month that Martin Klein of Yale University is to be named senior editor of the Einstein papers, a joint publishing venture of Princeton University Press and the Hebrew University of Jerusalem. Klein will be assisted by two coeditors, Robert Schulmann and Jürgen Renn, who already are connected with the Einstein project. The project will continue to be headquartered at Boston University.

Klein will have overall responsibility for mapping out future volumes and for seeing to it that they meet standards, but he will stay at Yale and will not be much involved in day-to-day editing.

A theoretical physicist turned physics historian, Klein has been an adviser to the Einstein papers project from its inception. He has done research as a historian in the papers

and has published a number of articles about Einstein, mainly on Einstein’s work outside relativity.

John Stachel of Boston University, the first editor of the Einstein papers, announced his retirement earlier this year. Stachel will continue to pursue his research interests—mainly general relativity and the foundations of quantum mechanics—as a professor at Boston University, and he may continue to work as a consulting editor on the Einstein papers.

Stachel became project editor in 1977. During his tenure the project was troubled by many difficulties, including a lawsuit between Einstein’s executor and Princeton University Press. Nevertheless, the initial volume in a projected series of 40 was published last year and attracted considerable attention, especially because of the newly disclosed correspondence it included between Ein-

stein and Mileva Marić, his first wife (see *PHYSICS TODAY*, May 1987, page 45). The second volume, which will include Einstein's writings from the years 1901–09, will appear next year. The following three volumes, completing Einstein's Swiss years, are already mapped out.

The project has operated with a staff of five and an annual budget of about \$300 000, roughly a quarter of which comes from the National Science Foundation. A gift of \$1 million from Harold W. McGraw Jr., a publishing executive, endows the editorship; matching grants from the National Endowment for the Humanities and the Sloan Foundation provide nearly \$300 000 each for a five-year period. Significant support also has come from the Swiss government's science foundation.

Klein earned his BA (1942) and his MA (1944) at Columbia University and his PhD (1948) at MIT. He taught at Case Institute of Technology from 1949 to 1967, rising from instructor to full professor of physics. He joined the faculty at Yale as a professor in 1967 and was named Eugene Higgins Professor of the History of Physics in 1973. Until the late 1950s, when his attention shifted to physics history, he worked primarily as a theorist in statistical mechanics. His research interests included critical-point fluctuations, ferromagnetism of thin films and the principle of minimum entropy production. As a historian, he has studied the development of thermodynamics, quantum mechanics and statistical mechanics. He is the author of *Paul Ehrenfest: The Making of a Theoretical Physicist* (North Holland, 1970).

Klein was the first chairman of The American Physical Society's history of physics division.

ROMER SUCCEEDS RIGDEN AS AJP EDITOR

Robert H. Romer of Amherst College is the new editor of the *American Journal of Physics*, a monthly journal published by the American Association of Physics Teachers. Romer succeeds John S. Rigden, who joined the American Institute of Physics as director of physics programs last year. The editorial offices of *AJP* have been moved from the University of Missouri, St. Louis, where Rigden was a professor of physics, to Amherst College. A search committee headed by Roderick M. Grant (Denison University) selected Romer for the *AJP* post.

Romer, a low-temperature physicist and an author of several books on energy, received his BA from Amherst College in 1952 and his PhD from Princeton University in 1955. He joined the physics faculty at Amherst in 1955 and became a full professor in 1966. He has held concurrent positions at Duke University, Brookhaven National Laboratory, the University of Grenoble and Voorhees College. He was an associate editor of *AJP* from 1968 to 1974 and has been the journal's book review editor since 1982.

Editorial correspondence should be addressed to Robert H. Romer, Editor, *American Journal of Physics*, Merrill Science Building, Room 222, Box 2262, Amherst College, Amherst MA 01002.

HUBBARD IS PRESIDENT-ELECT OF ACOUSTICAL SOCIETY

Harvey H. Hubbard is the president-elect of the Acoustical Society of America, and Richard H. Lyon is vice president-elect. They will succeed the current president and vice president, W. Dixon Ward of the University of Minnesota and Eric E. Ungar of Bolt Beranek & Newman Inc. in 1989. The newly elected members of the ASA executive council are Ilene J. Busch-Vishniac, an associate professor of mechanical engineering at the University of Texas, and Joseph L. Hall of AT&T Bell Laboratories, Murray Hill.

Hubbard earned a BS in electrical engineering at the University of Vermont in 1942, and served for three years in the US Air Force. He was head of basic research in atmospheric acoustics for the National Advisory Committee for Aeronautics from 1945

Harvey H. Hubbard



to 1959 and head of basic research in acoustics for NASA from 1959 to 1973. From 1973 to 1980 he was assistant chief of the acoustics and noise-reduction division at NASA. He was a senior research associate at the College of William and Mary from 1981 to 1985, and he currently works as a consultant for Planning Research Corporation in Hampton, Virginia.

Hubbard has been involved throughout his career in research on the generation, propagation and control of aircraft noise and sonic booms, and their effects on structures and people. He also has shared responsibility for the conceptual design of a number of research facilities, including NASA's aircraft noise-reduction laboratory.

Lyon received a BA in physics from Evansville College in Evansville, Indiana, in 1952 and a PhD in physics from MIT in 1955. He taught in the electrical engineering department at the University of Minnesota from 1956 to 1960, and he was senior scientist at Bolt Beranek & Newman in Cambridge, Massachusetts, from 1960 to 1970. He joined the department of mechanical engineering at MIT as a professor in 1970.

Lyon's research work is in the area of sound-structure interaction and the use of acoustical signals for machinery diagnostics. He is chairman of Cambridge Collaborative Inc., which performs R&D studies in acoustics and vibration, and president of R. H. Lyon Corp., which develops diagnostic systems for industrial use.

IN BRIEF

An education resource center that provides teachers with access to materials about aviation and space has opened at the National Air and Space Museum in Washington, DC. Resources include slide sets, computer programs, lesson plans, curriculum packages and audiovisual materials. Further information can be obtained by calling (202) 786-2109.

A new journal, *Superconductor Science and Technology*, was launched this year by Britain's Institute of Physics; the American Institute of Physics will handle marketing in North America. Editorial correspondence should be addressed to the editor, Jan Evetts, at the Department of Materials Science and Metallurgy, Pembroke Street, Cambridge CB2 3PZ, England. The individual subscription rate in the US, Canada and Mexico is \$35; the institutional rate is \$155.