Kerman Named to Fusion Policy Advisory Committee

Arthur Kerman, director of LNS has been named to the DOE Fusion Policy Advisory Committee by Secretary of Energy James D. Watkins. This committee will recommend a policy for conducting the DOE’s fusion energy research.

"Fusion energy has the potential to provide electricity in the next century safely and without the creation of highly radioactive waste products of greenhouse gases," said Admiral Watkins. "The development of fusion as a viable technology is an important long-term goal of the department. This independent committee will help me determine the best way to reach that goal."

The committee will provide advice on how to structure the Department’s magnetic and inertial confinement fusion programs. The recommended policy will include goals and objectives of the programs, a strategy, an outline of the development path, identification of major decision points, determination of the role of international collaboration and recommendations of funding levels. The committee will address issues including the balance of research activities within the programs, the timing of experiments to test the burning of plasma fuel, the International Thermonuclear Experimental Reactor and the development of laser technologies.

The fusion process confines the nuclei of light atoms, usually isotopes of hydrogen, to extremely high pressure and temperature sufficient for the atoms in the hot gases or plasma to collide and fuse to form larger atoms, usually helium, along with the release of energy. Magnetic fusion uses magnetic fields to confine the fuel; inertial confinement uses lasers to compress fuel pellets.

United Way Status
by Earl Haywood

This year M.I.T. set $290,000 as its share in supporting the United Way which serves 1.7 million people through 200 local health and human services agencies in eastern Massachusetts. M.I.T. has reached 84% of its goal, and expects only a 90% return. The shortfall is believed to be objections to the high salary of the United Way’s president.
However, LNS/Bates contributed $3,375, 18.5% more than its share of the goal. As you may have seen on our reports, 48 people contributed, 24 said no, and 112 have not been heard from yet.

As your chief solicitor, I thank you. I know you will join me in thanking our co-solicitors for their successful efforts -- Steve Bradley, Mark Damian, Jed DeCobert, Mary Hogan and Dave Kelley.

For your further consideration I offer these thoughts. It is not too late to give a gift, however small. Forget the high salary of the United Way executive and remember the total administrative expenses are only 15% of your gift. Let's dig down deeper so that M.I.T. can stand shoulder to shoulder with Boston University and Harvard in this worthy endeavor.

Please contact me at 253-2385 or 183-338. Thanks.

Planning Workshop Held at Bates

In preparation of the new research programs accessible with the South Hall Ring capabilities, a Planning Workshop was held at Bates June 21-23, 1989. There were ninety participants from twenty-five different universities and laboratories. The workshop served to underline the wide range of new opportunities available to the electronuclear research community in the next decade. There were ten working groups: photon beams; spectrometers; polarized gas targets; unpolarized internal targets; large acceptance magnetic detectors; nonmagnetic detectors; high power cryogenic targets; electron polarization (source and measurement); out-of-plane magnetic spectrometers; nucleon polarimeters. Each working group produced a short summary of the discussion; the collection of reports has been distributed to users and is available upon request. The possibilities for improving the spectrometer coincidence capability for use with extracted CW beams were explored. The needs of a robust internal target program including the benefits of large acceptance detection, were discussed at length. In addition, the experimental capabilities needed for a second generation parity program were presented. We expect that collaborations will form around specific physics programs and that these groups will propose construction of the relevant facilities.

--W.L.

Bates Program Advisory Committee

The Program Advisory Committee meeting took place on February 1-3, 1990. A major focus of the PAC was the consideration of a first generation set of South Hall Ring experiments.

--W.L.

Bates Annual Report

The 1987-88 Bates Annual Report is now available. Copies have been sent to those on our mailing list. If you have not received a copy and would like one, please contact Gary Nixon at MIT extension 183-326 or via FAX at (617) 245-0901.

--W.L.

XII International Conference on Particles and Nuclei

The next PANIC meeting will be held at MIT from June 25-29th, 1990. The Co-chairmen are Arthur Kerman and Ernest Moniz. The Honorary Chairman is Viki Weisskopf. Committee Chairpeople are Steve Steadman, Organizing Committee; Robert Redwine and Robert Jaffe, Program Committee; and June Matthews, Editorial Committee. The Scientific Secretary is T. William Donnelly.
The Conference will cover a wide range of subjects spanning the fields of particle and nuclear physics, including the following topics: hadron and nuclear structure; interactions at intermediate and high energies using leptonic, electromagnetic, and hadronic probes; tests of QCD and dynamics of strongly coupled gauge field theories; relativistic heavy-ion reactions and matter under extreme conditions; electroweak interactions and tests of extensions of the Standard Model; nuclear and particle astrophysics and cosmology. New results and opportunities will be highlighted at the Conference.

There will be plenary sessions with invited talks, parallel sessions with invited and contributed talks, and poster sessions with contributions. The proceedings will be published in Nuclear Physics A.

W.L.

Lab Staff Gears Up for PANIC XII

Members of the Laboratory's staff are getting ready to work for the PANIC XII Conference which begins June 25, 1990. The Lab staff will work Sunday, June 24 registration from 2:00 p.m. - 10:00 p.m. There will be a eight tables setup for registration. Eight members of our staff will work with eight Conference staff from outside M.I.T. Those who will work registration are: Mark Damian, Cliff Peacock, Mary Hogan, Alan Beatrice, Art Scully, Tom DeChicco, Dick Adams, Mario Aloisi. Working at PC's will be Cheryl Cagnina, Anne MacInnis, and Donna Henderson. Bob Bruen will setup and oversee computer networking and printers and Bob Callio, Bob Byrda, Jerry Fiumara, and Emmy Munroe will setup the registration desks and equipment and transport participants from the hotels to registration.

Earl Haywood and Dave Kelley will be at the Airport overseeing the 11 students who will be working. Their job will be to check to see that participants find the PANIC buses.

During the week much of the staff will be used to help out with the Monday morning registration, exhibitions, the clam bake, parallel sessions, the harbor cruise and the banquet. Of course Jean Hudson will oversee the travel and Donna Sears will work on the Tuesday evening Special Plenary Session.

Staff Notes

Dick Heider, an electrician at the Bates Center, won first prize in the color category of the 1989 Lawrence Eagle Tribune juried photographic contest. Dick's photograph was of a swan spreading its wings on the water's edge of the Atlantic in Falmouth, with the sun setting in the background.

Teva Regula, Computer Center, performed at the M.I.T. Chapel on Feb. 8th. The all Mozart program included organ and harpsichord. Teva will also play the role of Rose in Street Scene at the Longy School of Music, Cambridge.

Groups Visiting Bates

The Bates Laboratory continues to be an educational attraction from those interested in the sciences. Many of these visitors are local, but we are also now hosting people from quite a distance. Visiting groups in 1989 include LaPocatiere College near Quebec, Canada; North Shore Community College, Keene, New Hampshire High School; University of Massachusetts at Amherst; North Shore section of IEEE; St. Paul's High School in Concord, New Hampshire; Phillips
Andover Academy; Triton Regional High School in Newbury, Massachusetts; Danvers, Massachusetts High School; the IEEE student section of Merrimac College; Hamilton-Wenham Regional High School in Hamilton, Massachusetts; Oxford High School near Worcester, Massachusetts; and Boston College. Thanks are due to the following who give the talks and tours: Betsy Beise, Peter Binns, Don Biron, Werner Boeglin, Steve Bradley, Don Cyr, Karen Dow, Harry Eisner, Manouchehr Farkhondeh, Jay Flanz, Ken Jacobs, Paul Krippendorf, Larry Longcoy, Joe McCormack, Mike Riordan, Tom Russ, Wade Sapp, Coles Sibley, Larry Weinstein, and Claude Williamson.

The M.I.T. Knight Fellows visited Bates on Wednesday, April 11.

Laboratory Reaches Historic Agreement with ETHZ

President Paul Gray, M.I.T. and President H. Buhmann of the Swiss Federal Institute of Technology, Zurich have agreed jointly to undertake a new scientific and technical cooperation between the Laboratory (Prof. Arthur K. Kerman) and ETHZ (Head Prof. Hans Hofer).

This historic agreement has enabled scientists, engineers and technicians from MIT and ETHZ to exchange resources on common projects such as L* and the SSC and is also a way of expediting work for future joint understandings at both institutions.

This cooperation is based on mutual support and each project will be defined in separate agreements. The initial cooperation will be for five years.

Lab Rents Okuma Milling Machine

Ihoff attended the Robert E. Morris Co. school to learn how to operate and program the machine. The 1000th Okuma Machine made in America was presented to Mario Aloisi and Jean Flanagan at a December 8, 1989 ceremony in Charlotte, North Carolina.

The machine, an MC-4VA Vertical Milling Center will be used by the Lab to machine components for the South Hall Ring project at Bates and the prototype components for the Super Conducting Super Collider, near Dallas, Texas, as well as for School of Science and M.I.T. machining projects.

Okuma of America is a U.S.-based affiliate of Okuma Machinery Works, Ltd. of Oguchi, Japan. Okuma of America opened its manufacturing and marketing facility in Charlotte, N.C. 2 1/2 years ago and is the world leader in the design, manufacture, and integration of CNC machines.

The Laboratory negotiated a lease with Okuma in order to upgrade our present machining capabilities and to bring this sophisticated milling machine into the shop on an experimental basis.

Bob Calileo together with Jerry Fiumara and Bob Byrda were responsible for the preparation of the new home for the CNC in the Bldg. 20D high bay area. The site had to be cleared of years of miscellaneous accumulated items and the area needed to be painted, new windows installed, and new power and air supply services put in. Bob Calileo also worked with the rigging company used by Okuma in coordinating the move to MIT. The machine is 8' x 9' x 9' high and weighs 12,500 pounds. The machine just cleared the building by a few inches.
New Employees

Ellen Bober is a senior secretary for the EMI Group. Ellen is a graduate of Dartmouth College and has taught English in China.

Robert Bruen is the manager of the LNS Computer Facility. Bob transferred from Astro and Aero.

Oscar A. Calvo is the Control Systems Programmer at Bates. He worked at Fermilab after obtaining a Master’s degree in EE at Illinois Institute of Technology.

William W. Forbes is a machinist in the LNS shop who transferred from the Nuclear Reactor Lab.

Michael Grossman is a machinist in the LNS shop.

Mary Hogan is an Administrative Assistant in the Fiscal Office. Mary transferred to LNS from the Center for Cancer Research.

Xiang-dong Ji joined the Center for Theoretical Physics from the California Institute of Technology.

Walter L. Kehoe joined the Heavy Ion Group as a postdoc. He recently received his Ph.D. from the University of Maryland.

Michael Kogan is an electrical engineer at Bates. Mr. Kogan is a graduate of Leningrad Polytech Inst., U.S.S.R.

Louise Morin joined the fiscal office where she is a computer systems analyst. Louise is from Quebec, Canada.

Michael Musolf has joined the Center for Theoretical Physics as a nuclear physicist. He recently received his Ph.D. from Princeton University.

Elsye Nicolas is working in LNS HQ office as a secretary. Elsy is helping Jean Hudson with travel and Donna Henderson with Lab projects.

Teva Regule is the Networks Manager at the LNS Computer Facility.

Suzanne Sloan is the senior secretary for the PANIC XII Conference. Suzanne is a graduate of Northwestern University and plans to pursue an MBA program in the fall.

Anne Staff is a stock clerk at Bates. Anne joins us from Phillips Academy where she worked as an assistant equipment manager.

Christoph Tscharlaer is a Senior Research Scientist at Bates. He comes from the Paul Scherrer Institute where he headed the Engineering and Technical Services Division. Chris will coordinate the tasks of the Accelerator Systems Group.

Emanuel Zalejko is a machinist in the LNS shop who transferred from the Nuclear Reactor.

Joseph Dzengeleski of the Research Support Group and Robert Abruzzio of the Electronics-Electrical Group at Bates were promoted to Sponsored Research Staff.

Appointments Announced

by Fred Eppling

We would like to announce two appointments in the LNS HQ office — that of Jean Flanagan to Communications Officer and Richard Adams to Assistant to the LNS Directorate. These changes have been in effect for some time, however this is the first opportunity to announce these positions in our newsletter. We note that both bring to these positions a total of about 1/2 century of experience in LNS.
Dick Adams started in LNS as a technician in Emil DeAgazio's LNS Electronics Shop in 1964. Dick then became associated with the LNS Property Office in 1968 and was promoted to a staff position in LNS HQ in 1975. His role as Assistant to the LNS Directorate is intended to more formally recognize the many responsibilities he now holds in LNS -- as that of Personnel Officer, Affirmative Action Officer, Equal Opportunity representative, Property Manager, telecommunications coordinator, payroll supervisor, and coordinator of special laboratory functions. He also works closely with Laboratory and MIT staff on matters pertaining to parking, and visas. His new position recognizes this spectrum of expertise so that he may apply his experience to new problems and activities as they arise. For example, last year Dick was one of three M.I.T. employees to be honored by Dr. Paul Gray for his work on the United Way Campaign.

Dick is a member of the Society for Property Administrators and the College and University Personnel Administrators Organization. He is an accomplished painter and from time to time has exhibited his paintings during the M.I.T Independent Activities Period.

Jean Flanagan started with the Laboratory in 1969 as secretary to Dr. Jake Haimson, who at the time, was closely associated with the construction of the Bates Linac. In 1971 she moved to the HQ office and in 1975 was promoted to exempt staff and to staff in early 1982. She holds a B.S. and an M.A. degree in English.

Although formally on a part-time basis, Jean is responsible for a broad range of activities in the communications-public relations area. She works with the Industrial Liaison Office, News Office, Communications Office, Development Office, and with Laboratory faculty and staff to carry out ideas and projects. She is responsible for updating and compiling various reports and proposals. Currently she is working closely with Sheila Dodson, Bill Lobar, and Suzanne Sloan on the many details associated with the LNS/Bates sponsored PANIC Conference which will be held at M.I.T. from June 25-29.

With Bates personnel, she is working on a Teacher Enhancement Program which was recently funded by NSF and is she largely responsible for the acquisition of the new Okuma controlled milling machine which is now part of the LNS Machine Shop facility.

In her "spare" time Jean is the Poet-in-Residence at the Hardy School in Arlington and is developing a program integrating science and poetry. Jean will have poems published soon in several anthologies: If I Had a Hammer, poems about women and work, Piece by Piece, Only Morning in Her Shoes, and City River of Voices an anthology on city life. She is also a member of the Board of Directors of the Arlington Center for the Arts.

Barbara Morris retired on December 31, 1989 after a long career of nearly 44 years at the Institute. Barbara started work at the Radiation Laboratory in 1946, then worked at Lincoln Laboratory before coming to LNS in 1958 to take charge of the tool crib. In 1987, Barbara transferred to Bates where she has been in charge of the stockroom. We wish her the best in all her leisure time endeavors.

Attention: Students, Faculty, Staff

LNS-Bates Slow-pitch and Fast-Hit Softball. We need players. Please call or write to Earl Haywood.
expressing your interest in playing, managing or coaching. On a scale of 1 - 10, how do you play? What positions. Nominate a name for the team and then we’ll vote. The summer Community League is from May 29 - August 17. There are 9 games beginning at 5:30 p.m. $200 per team for umpires and equipment.
PANIC NIGHT AT THE

POPS

JUNE 27, 1990

SEATS $21.00 & $25.00
PER PERSON

Everyone in Laboratory for Nuclear Science
and the Physics Department is invited.

Sign up sheet in Room 26-505

Tickets must be purchased by May 11, 1990
The Physicist and the Physicians

Ulrich Becker, a professor of physics in the Laboratory for Nuclear Science, in 1974 was teaching at MIT as well as commuting to Brookhaven National Laboratory three times a week. He was designing and building the precision chambers for a Brookhaven experiment which involved long hours for him and the other LNS staff who were working there at the time. Becker was a heavy smoker with abnormally high cholesterol.

When you looked at him you thought he was indestructible. You thought -- strength. But, one day at a meeting in 1974 he felt a tremendous pain in his leg and then the leg went numb. He knew he hadn't done anything to cause that kind of pain so he went to the M.I.T. Medical Dept. to be examined. They were just about to release him when a nurse-practitioner found no pulse in his left foot. Becker had a life-threatening blood clot in a main artery.

The next day he was operated on at Mt. Auburn Hospital and a vein graft was performed. Although well done the procedure gave him only 8% blood circulation in his leg and it greatly limited his quality of life. After working diligently at an exercise program he only raised the circulation to 15%. He adhered to a special diet to help lower his cholesterol level and wherever he went he carried his diet food in child's lunch box. But even the special diet didn't lower the cholesterol significantly.

During his recovery he spent his time at MIT analyzing data which his colleague predicted would reveal a new particle of the atom, later named the "J." Becker's chambers were an integral part of the detector which detected the particle and

Prof. S.C.C. Ting won the Nobel Prize in 1976 for this discovery. Later Leon Lederman using one of these same chambers discovered another particle at Fermilab for which he also won the Nobel Prize. (Note: One of these chambers is on display at the Smithsonian Institute, Washington, D.C.)

In 1982, the aggressive Electromagnetic Interactions Group (EMI) of the Laboratory for Nuclear Science sent a letter of intent called L3 so that they could do an experiment at CERN in Geneva, Switzerland where the Europeans were building a ring called the Large-Electron Positron Collider. This project was accepted by CERN. The EMI Group built a huge detector which represented the largest physics collaboration in the world. It is the first collaboration to include scientists from the U.S., U.S.S.R. and the People's Republic of China.

Becker developed the new chambers with the Draper Lab for the L3 experiment. In 1985 he went to CERN for a year to lead the construction of the huge sub detector because he felt he couldn't continue travelling between Geneva and Cambridge. Returning in 1987 with the production of the chambers hopelessly behind, Becker was forced into a highly stressful situation again. By May of the same year the production of the chambers was back on schedule but Becker had another incident with his leg. He couldn't walk more than 300 feet. Responsible for finishing the $30M construction and facing the installation work in 40-50 foot heights, he felt that he had to take some drastic measures.

This is where the physician comes in. Becker went to see Dr. Chris Kryder, an Internist and Assistant Director of the M.I.T. Medical Department. Dr. Kryder explained that medical technology had improved but that the operation on his leg was more intricate than a triple bypass operation on the heart because of the knee and the muscles around the knee area. Kryder felt that the risk was worth it and suggested that the Chief Surgeon at Mt Auburn Hospital, Dr. I.
Mehrez, do the operation. Becker trusted Mehrez because he was the physician who performed the first operation.

Dr. Kryder took a sincere interest in Becker, and understood the impact that Becker's condition might have on the L3 project. Not only did Becker need endurance, but stability was imperative given the need to climb to rather precarious heights. When the decision was made to proceed with an operation, the Medical Department's resources were aptly mobilized.

The MIT Medical Department is a large multi-specialty group practice which provides a full range of inpatient and outpatient services, to the faculty and staff of MIT, and to their families, through the MIT Health Plan, as well as to the students through the Student Health Plan. Dr. Kryder explains that the Department's mission is to provide the highest quality health care service, with easy access for its patients at a reasonable cost. In a world of rapidly changing medical technology and finance, Kryder notes that "the Medical Department has maintained a traditional atmosphere where physicians were able to deliver personal care to patients."

In addition to Dr. Kryder and Dr. Mehrez, Dr. Steven Healey, the Chief of Surgery at MIT, was engaged. The procedure, a Saphenous Vein Graft, was performed on Becker's 49th birthday at Mount Auburn Hospital. It was lengthy operation but without complications. Post-operatively, Becker was transferred to the Inpatient Unit at the Medical Department in E23 for recuperation. Kryder then started Becker on a new medication for control of cholesterol in hopes of preventing further buildup of plaque -- not only on the leg arteries, but throughout the body.

Becker was able to finish his work at the L3 experiment which is now producing a wealth of new data. He can even walk on the L3 magnet. Climbing on the magnet is no trivial matter. The magnet is 50 feet high and is slippery. A fall from the magnet would surely mean injury if not death. A grateful Becker feels that he has a new lease on life and his quality of life is much improved and is looking forward to the next phase of construction and experiments the L* and the SSC.