BROOKHAVEN BULLETIN
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BROOKHAVEN NATIONAL LABORATORY

BNL Wins R&D 100 Award for 'Plasma Window'

Last week, for the 19th time, BNL was a winner in the prestigious R&D 100 competition. Ady Hershcovitch, a physicist in the Alternating Gradient Synchrotron Department, garnered the prize for the Lab for the second time with a novel device that he developed called the "plasma window." It has several potential industrial and commercial applications.

R&D 100 Awards have been given annually since 1963 by *R&D Magazine* to the top 100 technological achievements of the year. Typically, these innovations transform basic science into useful products. Among past R&D 100 award-winners have been the digital wristwatch, the automated teller machine, the fax machine and the Nicoderm antismoking patch.

This year, the awards were presented at a banquet in Philadelphia, on October 14. Hershcovitch and Dorry Tooker of BNL's Technology Transfer Office attended the ceremony.

Said Tooker, "I have been informed by the R&D 100 Awards Chairman, Tim Studt, that the competition was particularly fierce this year, but that the plasma window won a unanimous vote as a winner from all the judges."

Hershcovitch is the only scientist at BNL to have won two R&D 100 awards. In 1987, he won for developing an ion probe, a diagnostic device to be used in tokamak fusion reactors.

A "Trekkie" Invention

Hershcovitch likens the plasma window to the "shuttle-bay area" on the Spaceship *Enterprise* in the science-fiction television show, *Star Trek*. In this area, shuttle crafts start their journey into space, and the "force field," which has a bluish color, separates atmospheric pressure on the *Enterprise* from the vacuum in outer space.

The plasma window separates atmospheric pressure from a vacuum, by using an ionized gas, and, when that gas is argon, the plasma window is blue. Additionally, the device can focus charged particle beams, especially electron beams.

Hot ionized gas particles are trapped by electric and magnetic fields in the plasma window, which prevents air from rushing into a vacuum chamber. At 12,000 kelvins, the plasma window is about 40 times as hot as the air at room temperature.

This intense heat makes the ionized atoms and molecules move around faster and collide more often with air molecules, thus stopping most of them

(continued on page 2)

Peter Horton

Ady Hershcovitch displays his R&D 100 Award-winning invention, the plasma window.

NASA-Sponsored Radiation Biologists Return for Second AGS Run

Traveling beyond the protection of the Earth's geomagnetic field and shielded only by their spacecraft and suits, astronauts are constantly being bombarded with cosmic radiation from outer space. While cosmic rays consist mostly of protons, this radiation also includes electrons, positrons, and nuclei of helium and ions of heavier atoms such as iron.

Prompted by concern that heavy-ion bombardment of human beings may cause biological damage, ranging from performance deterioration to cancer, the National Aeronautics & Space Administration (NASA) is investigating the radiation risk from this ionizing radiation on human beings in space.

As a result, for the first time, biology research was done at BNL's Alternating Gradient Synchrotron (AGS) over two weeks last October: Under the aegis of Experiment 898, twelve NASA-sponsored studies were performed to look at the genetic and developmental effects of high-energy heavy ions on biological specimens.

After a successful first run, the radiation biologists are now returning to the AGS for a second run, this time for three weeks starting October 21.

The spokespersons of E898 are: Amy Kronenberg, Lawrence Berkeley National Laboratory (LBNL); Jack Miller, LBNL; and Gregory Nelson, NASA Jet Propulsion Laboratory (JPL). The principal investigators include BNL Senior Scientist Betsy Sutherland, Biology Department, and BNL Senior Research Associate Marcelo Vazquez, who also serves as Biology's beam-line liaison.

Roger Stoutenburgh

Taking data for NASA-sponsored radiation-biology experiments at the AGS are some of the researchers involved: (seated) Ken Frankel, Lawrence Berkeley National Laboratory (LBNL); (standing, from left) Jack Miller, LBNL; Marcelo Vazquez, BNL; Betsy Sutherland, BNL; and Walter Schimmerling, NASA.

In addition to BNL, the original dozen collaborators come from LBNL, Colorado State University, NASA JPL, Los Alamos National Laboratory, NASA Johnson Space Center, University of Maryland at Baltimore (UMB), Georgetown University Medical Center, and the University of California, San Francisco.

Six more principal investigators have joined the experiment for its second run, from Columbia University, UMB, Pacific Northwest National Laboratory, Colorado State University and Bemidji State University.

From the Bevalac to the AGS

From 1974 to 1993, NASA supported experiments at LBNL's Bevalac accelerator to study how heavy ions interact with biological specimens. As a result of the Bevalac's shutdown in 1993, BNL's AGS became the only high-energy heavy-ion accelerator in the U.S. where experiments to predict the radiation risk to humans in space could be performed.

"It was clear that this work needed to be continued after the closing of the Bevalac, and that the AGS is the logical place to do it," says Miller.

So, in 1994, NASA and BNL entered into a memorandum of understanding, in which the Lab committed the AGS to providing iron beam, which is the most suitable for NASA's radiation-biology experiments, for one week each year for two years, 1995 and 1996 (see box below).

Significant Findings

Among the most significant results from the first run were findings by BNL's Sutherland: The induction of double-strand breaks — a type of DNA damage that causes the most harm to cells — could be measured after very low doses of heavy ions.

Sutherland and her BNL colleagues employed a new technique to quantify double-strand breaks, using gel electrophoresis to separate the exposed DNA by size and an I-R 100 award-

(continued on page 3)

AGS: Only Heavy-Ion Accelerator for Radiation Biology in U.S.

For all heavy-ion experiments at the Alternating Gradient Synchrotron (AGS), beam originates at the Tandem Van de Graaff accelerator, where gold ions are usually brought to an energy of 1 million electron volts (MeV) per nucleon for physics research. After injection into the AGS Booster preaccelerator, the beam is then accelerated to 70 MeV, and transferred to the AGS. Accelerated there to 11 billion electron volts (GeV), the beam is then sent down beam lines and smashed into targets, allowing physicists to explore the high-density nuclear matter created in these collisions.

For Experiment 898, not only are the biologists' scientific objectives and their targets — cells and tissues — different, but their beam requirements are disparate. "The biologists require a relatively low-energy iron beam, 1 billion electron volts per nucleon. However, this energy is too high to be provided with just the AGS Booster," explains Thomas Roser, AGS Accelerator Division Head.

So, to provide the low-energy iron beam for these biology experiments, the AGS has to operate its magnets at unusually low current. In addition, since the beam delivery has to be spread out over time, the beam must be extracted slowly, which "is a delicate process, since it relies on an artificial beam instability in the AGS," comments Roser.

Roser adds, "The other challenge during the biologists' first run was that this was the first time we had started up the machine with low-intensity iron beams after a shutdown. We usually start up with high-intensity proton beams. But it all worked well."

And, not only do the biologists want a 1-GeV beam of iron-56, but, also contrary to physicists' usual specifications, they want a broad beam spot and very short exposure times of a few seconds to a few minutes.

During the first radiation-biology run at the AGS, to ensure that the beam that E898 requested in its proposal was what was delivered to its experiments, physicist Jack Miller of Lawrence Berkeley National Laboratory, who is one of E898's spokespersons, and his associates characterized the beam and measured doses received from that beam, using tissue-equivalent materials and targets made of shielding materials used in space.

"The beam was within our specifications and, in every other respect, what was delivered to us by the AGS was comparable to what we had at the Bevalac, but, at the Bevalac, we had had many years to perfect it," says Miller.

— Marsha Belford

Two BNLers Share Big League Involvement in Little League

When most people think about Little League, they envision 12-year-old boys pitching, hitting and running the base pads in emulation of major league baseball players.

But who's calling those balls and strikes? Who's watching to make sure the youngsters touch each base? Official Little League umpires — volunteers like BNL's Doug Fisher and Bill Kollmer, both of the Relativistic Heavy Ion Collider (RHIC) Project.

Both Fisher and Kollmer got involved with umpiring when their sons were of Little League age. Though it's been years since Fisher's son and Kollmer's four boys left the game, the BNLers are still umpiring — at ever higher levels.

This summer, for example, Kollmer first spent almost three weeks in Poland, July 17 to August 5, as an umpire for the European Little League championships. He then came back to the U.S. to umpire his first World Series, August 11-17 — the Junior League for 13-year-olds, in Taylor, Michigan.

While Kollmer was in Poland, Fisher was in Bristol, Connecticut, umpiring the Eastern Regional Little League tournament for 12-year-olds — the tournament that produced the winning team that represented the Eastern Region in the World Series in Williamsport, Pennsylvania, which is Little League's showcase event.

Touching All the Umpiring Bases

Kollmer, who has been at BNL for 33 years and is now a technical project supervisor with RHIC, has been involved with the Sunrise Little League, which covers Oakdale and Bohemia, since 1973. That Little League is one of 12 in western Suffolk, which make up New York District 35, for which Kollmer's wife Carol, who worked in the Photography & Graphic Arts Division, 1961-64, was recently elected district administrator.

Kollmer began a steady rise up the Little League umpiring ladder, going from individual games to local playoffs in the 1970s, then to district tournaments in the early '80s.

In 1984, he decided to go to Williamsport, "to see what the World Series teams had that our teams didn't have. I found out that, while Long Island teams would have four or five excellent players, teams from places like California and Hawaii had 14, because they have more playing time and better facilities."

So, Kollmer said, "I decided that the only way someone from Long Island could participate in the Little League World Series would be as an umpire. So I set the goal for myself: to be good enough to be asked."

Roger Stoutenburgh

Little League umpires Bill Kollmer (left) and Doug Fisher behind home plate.

His first step was to attend the Little League Umpires School at Williamsport in 1987. Then, in 1990, he joined the Western Suffolk Baseball Umpires Association and began to umpiring high school games also.

Since 1988, he has been chief umpire for New York District 35, and, in 1995, he formed the District 35 Little League Umpires Association, of which he is now president and Fisher is vice president.

Kollmer got his first invitation to umpire beyond the district level in 1992, when he worked the Eastern Regional Little League tournament. "At that level," Kollmer said, "you are assessed subtly. If you do a decent job, within a couple of years, you'll get your call."

Sure enough, Kollmer was called for the Eastern Regional Seniors tournament for 14-15 year olds, in 1994. And this year, he was invited to do the Junior League World Series — one of 11 umpires and the first ever from Long Island.

Striking Out for Poland

Kollmer's goal, however, remains Williamsport, where he began volunteering to be an usher at the Little League World Series in 1989. "When you do that," he said, "you get to know people from all over the country, and the camaraderie between umps can be amazing."

And that's what brought Kollmer to Poland. "Last year, while I was working as an usher, an acquaintance umpire asked me if I could do it. No way would I say no!"

So, after purchasing their own tickets, Carol and Bill Kollmer and their youngest son, 17-year-old Tom, a varsity baseball player at Connetquot High School, flew to Poland.

As one of two American umpires in Poland, Kollmer worked the European Senior Regional Tournament, held in Brzeg, a town that seemed straight out of the Middle Ages, then the European Little League championships for 12-year-olds, held in Kutno, a modern industrial center outside of Warsaw.

"Between the two," Kollmer said, "I probably umpired 18-19 games. But my son ended up participating in more games than I did! He became the official scorer for both tournaments because no one else knew how to keep a score book properly."

But the kids knew how to play, and language was not a barrier. "All the common baseball terms — strike, out, foul and so on — are in English," said Kollmer, "so there's no problem unless it's a strange play."

The interpreter on hand for those situations had to be called in when the umpires at Brzeg wanted to eject a player for throwing his bat. But even with the interpreter, said Kollmer, "It proved so hard to explain that we left the kid in the game!"

Kollmer so enjoyed the total experience that he's willing to take the vacation time and spend the money to do it again — perhaps next year in Korea.

Sharing a Fair Philosophy

Fisher might also have umpired overseas this year except that it conflicted with the Bristol tournament — a necessary precursor to any future invitation to Williamsport.

Though he's been umpiring for almost 20 years, Fisher didn't get involved with tournaments until he came to BNL in 1992. "When I first got here," recalled Fisher, who is now Assistant Magnet Production Group Head at RHIC, "I went to a RHIC party. I was talking with one of Bill's co-workers when I mentioned umpiring. 'You've *got* to talk to Bill,' he said. When I did, we found out that our philosophies were almost identical."

Those philosophies include volunteering so much of their time after work and on vacations "to give back to the game that's been so good to me," said Fisher, who now also umpires high school games.

Those philosophies also include wanting to help boys mature into people who learn to function as part of a team. "A lot of people put too much emphasis on the word win," said Kollmer. "It's the competition itself that's really important."

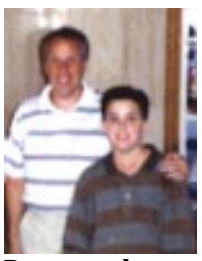
And both Kollmer and Fisher recognize that these programs are important for girls as well as for boys, so that's why they also started umpiring girls' softball games this year.

"Doug and I really enjoy what we do and have a great time doing it," said Kollmer. "I feel like a lottery winner sometimes, having had the opportunity to do this."

Fisher and Kollmer devote most of their spare time to their involvement in Little League, and, said Fisher, "Bill and I receive a lot of support from the RHIC project in terms of flexible scheduling, so we can be at our games on time. Satoshi Ozaki [RHIC Project Head] once said to me, 'It's a community service, and we at BNL support community service.'" —Anita Cohen

Jeffrey's Uncle Works Here

Generally, Peter Maier is known at BNL as the Manager for the Human Resources Information System in the Human Resources Division. But lately, he's been pretty well-known as Jeffrey Maier's uncle.



Peter and Jeffrey Maier

Jeffrey Maier — as anyone who has read a newspaper in the past few weeks can tell you — is the 12-year-old New York Yankees fan who reached out to grab a fly ball he thought was a sure home run. The umpire agreed, and the Yankees went on to win that first game of their American League championship series against the Baltimore Orioles. The team clinched the American League pennant last Sunday, so the Yankees are headed for the first game of the World Series tomorrow.

Young Jeffrey fared pretty well too. He went on to become something of a celebrity, and some of that rubbed off on "Uncle Pete," who called his brother's son "a big sports fan." Peter Maier was not watching the game when Jeffrey put his glove out, but, after being alerted by relatives, he saw the big moment plenty of times on replays and sportscasts.

Bowlers Needed

The Men's League, which bowls at 6:30 p.m. every Tuesday at Port Jeff Bowl, is in desperate need of two male bowlers. Interested? Call Debbie Botts, Ext. 3888.

R&D 100 Award (cont'd.)

when they try to pass through the plasma window. Also, since the plasma window matches atmospheric pressure with only one-fortieth its density, less air pressure can escape from it into the vacuum.

But Hershcovitch did not get the idea for the plasma window from *Star Trek*. His inspiration came in 1988, when he saw a plasma arc in a lab he was visiting at the Technical University of Eindhoven in the Netherlands.

It wasn't until 1991, however, that he calculated how to make the idea work. Then, in 1993, he began in earnest to develop it at BNL, with funding from a technology maturation grant from the U.S. Department of Energy's Energy Research Laboratory Technology Transfer Program.

Hershcovitch gives credit to undergraduate student Peter Kollman, California Polytechnic State University, for helping to fabricate the prototype. Kollman participated in BNL's Science & Engineering Research Semester and the Summer Student Program.

Hershcovitch published a scientific discussion of his invention in the November 1, 1995, edition of the *Journal of Applied Physics*.

The plasma window has several potential commercial uses, and Associated Universities, Inc., will be receiving a patent on the invention shortly.

One application is in electron-beam welding, used for piecing together metal parts in airplanes, ships, scientific equipment and semiconductors.

Existing non-vacuum electron-beam welders have dispersed electron beams, so they are not focused enough for high-quality welds or for reaching crevices. Electron-beam welding in vacuum overcomes this problem, but the vacuum system limits the size of the parts that can be welded.

The plasma window facilitates non-vacuum electron-beam welding at production rates that are at least twice as fast as vacuum systems. At an hourly operating cost of $150 for an electron-beam welder, production-cost savings can be substantial.

The plasma window can also aid in the operation of electron-beam melting, for processing high-temperature alloys used in the aerospace industry. The device increases operating pressure of the electron-beam furnace tenfold, which prevents evaporation of valuable metal alloys.

Ion implantation, dry etching and microfabrication are techniques widely used by industry to make new materials or modify existing ones. For example, they may be used for making patterns on semiconductors. The plasma window could make these processes more efficient, since they would be performed at atmospheric pressure, rather than in a vacuum, and so cut production expenses in half.

Plasma windows could also transmit intense x-rays and ultraviolet light from a vacuum to the atmosphere in advanced light sources. There are difficulties using existing technologies such as beryllium windows for this, because they absorb radiation and degrade the beam. —Diane Greenberg

Pianist Encores to Open BERA Concert Series

Jacques Després was so well-received at the opening of the BERA concert series last year that the Concert Committee has invited him back for an encore. So, on Sunday, October 27, he will open the 1996-97 concert series with a new program to be held at Berkner Hall, beginning at 4 p.m.

Jacques Després

Over the last decade, Jacques Després has delighted audiences in his native Canada, the U.S. and Europe with unique interpretations of a broad range of composers. Després, who has won numerous prestigious awards, earned his master's degree from the Juilliard School of Music and recently completed his doctorate at the State University of New York (SUNY) at Stony Brook.

The program for the October 27 concert includes *Bartok's Mikrokosmos, Vol. 6*; *Beethoven's Sonata No. 31, Opus 110*; *Chopin's Ballade #4*; and *Liszt's Weinen, Klagen, Sorgen, Zagen*.

This season's series will feature three more concerts by major performers, all on Sunday afternoons at 2 p.m.: "Classical Cabaret" featuring soprano Jody Karin Applebaum and pianist Marc-André Hamelin, on December 8; Festetics String Quartet and fortepianist Maria Rose, on March 23; and, performing solo, pianist Marc-André Hamelin, April 13.

Tickets for these regular concerts cost $14 for adults, $9 for seniors, and $5 for students and youths under 18, for each performance.

This season's series will also feature two special Sunday concerts given by promising young artists from SUNY Stony Brook on November 17 and May 4, both at 2 p.m. Tickets for each of these special young artists' concerts are $6 for adults and $3 for students, youths under 18, and seniors.

All of the concerts will be held in Berkner Hall. Tickets for any concert may be purchased at the door and BERA Concert Committee Chairman Otto Lazareth, Ext. 3448, or the BERA Sales Office, from 9 a.m. to 1:30 p.m. on weekdays.

For more information about the concerts, including cancellations due to inclement weather, call Ext. 3550 to listen to a recorded message.

Outreach Workshop
Personality Plus?

Everyone has a personality, the sum total of one's mental, physical, emotional and social characteristics, and it drives your behavior. But is your personality hazardous to your health?

To find out, attend the next Outreach lecture sponsored by the Employee Assistance Program of the Occupational Medicine Clinic. On Tuesday, October 22, at noon, in Room B, Berkner Hall, clinical psychologist Susan Dermit will present her research on the relationship between personality styles and the development of disease, in a talk called "Personality: Is It Hazardous to Your Health?"

To register for this workshop, return the completed bottom portion of the Outreach flyer recently sent to all employees to Dianne Polowczyk, Bldg. 490, by Monday, October 21. For more information, call Ext. 4567.

Free Fun Physics And *Star Trek* Talk

Could *Star Trek*'s tricorders and transporters ever work in real life?

To find out, come hear author Lawrence Krauss speak on "The Physics of *Star Trek*" at 10 a.m. on Saturday, October 26, in Berkner Hall, as part of the 7th Annual Northeast Regional Physics Conference for high school and college physics teachers.

BNLers and their families and friends are invited to join conference attendees at the lecture, and at a physics demo show at 8 p.m. that night, featuring famed demonstrators Dick and Rae. Both events are free. For more information, call Bill Lynch, at 585-2563, or e-mail lynch@bnl.gov.

Fidelity Counseling

A Fidelity Investments representative will be at the Lab on Thursday, November 14, to hold individual sessions with employees interested in learning more about their retirement-savings and investment options.

To schedule one of the 30-minute appointments, call Kevin Wythe, (800) 642-5679, Ext. 5205.

Arrivals & Departures

Arrivals

Sharon P. Benjamin.....Plant Eng.
Malini M. Gupta.....Biology
Gary K. Olsen.....Safety & Envir. Prot.

Departures

None

Suggest an ERC Candidate

In January, two members of the Employee Relations Committee (ERC) will complete their three-year terms, so the Laboratory Director will appoint two new members to the eight-person group.

Selection of ERC members is a sensitive task because of the nature of issues that this committee handles. The ERC is charged with helping non-bargaining, nonscientific employees solve work-related problems that they have been unable to resolve with their supervisors. Therefore, ERC members should be able to hear all sides of an issue objectively and maintain the complete confidentiality under which the ERC operates.

To suggest an ERC candidate, or to request consideration for yourself, contact your department chair or division head before October 31.

To bring a problem to the ERC's attention, call committee chair William McGahern, Ext. 4005; or one of the other current members: Pat Fox, Ext. 2939; Sue Ellen Gerchman, 3417; Marie Hicks, Ext. 3802; Michael Kelly, Ext. 3476; Conrad Koehler Jr., Ext. 4310; Elizabeth McBreen, Ext. 5111; or Grace Webster, Ext. 3227.

NASA at AGS (cont'd.)

winning electronic imaging system developed by John Sutherland, Biology, to analyze the gels.

The biologists' first run was made possible with the help of AGS staffers including: Christopher Gardner, Woody Glenn, Donald Lazarus, Edward Lessard, William McGahern and Thomas Roser; with assistance from John Benjamin, Charles Carlson and Peter Thieberger of the Tandem Van de Graaff; and with round-the-clock coverage by Kenneth Boland, Shelby Bowers, Vincent Polywoda and J. David Stillwell of the Safety & Environmental Protection Division.

Members of BNL's Medical Department also provided invaluable assistance: Michael Bender, Kerry Bonti, Jim Bullis, Kay Conklin, Maryann Kershaw, Mark Linsley, Darcy Mallon, Michael Makar, Deborah Maresca and Bea Pyatt.

The result of nuclear synthesis within stars, "Cosmic rays pervade interplanetary space," explains Walter Schimmerling, Manager of NASA's Space Radiation Health Program, which funds the work.

Iron Predominates

Depending upon how fast they move and their electric charge, the particles within cosmic rays differ in how much biological damage they can do. The more energy they can deposit, the more biological damage they can inflict. For this reason, ions heavier than protons pose a significant risk, and, because iron is the dominant heavy component of cosmic radiation, it poses the most significant risk.

"Biologically, iron is so effective that there is a greater probability of receiving a biologically significant radiation dose from it than from protons," comments Schimmerling. "So, to look at the radiation risk to humans in space, one must study the biological effects of iron ions."

At the Bevalac for 19 years, NASA-sponsored researchers used beams with the same energy and particle range as cosmic rays — including iron beams with energies up to 600 million electron volts per nucleon for iron.

The AGS, in addition to being a high-intensity proton accelerator, has been a high-energy heavy-ion accelerator since 1992. While it never accelerated iron before last year's first radiation biology run, the AGS routinely accelerated gold, but at 11 billion electron volts (GeV) per nucleon.

Since the biologists requested an iron-56 beam with energy less than 1 GeV, which is relatively low in energy by AGS standards, doing biology at the AGS was not only a challenge for the experimenters, but also for the machine (see box on page 1).

Hierarchy of Systems

The E898 biologists used the beam to study how the energy deposited by heavy ions affected a hierarchy of biological systems — from human and rodent DNA, to chicken nerve cells, to nematodes — by looking at DNA damage and repair, chromosome aberration, cell growth and mutation.

For instance, in one experiment still being analyzed, Vazquez investigated the effect that heavy ions have on the retina, which receives images from the eye's lens and relays them to the brain via the optic nerve.

Vazquez explains, "The retina is a model of the central nervous system, so looking at how the regenerative capacity of the retina is affected by radiation dose and the relative biological effectiveness of different heavy ions is a way to assess the vulnerability of the central nervous system, particularly the brain, to heavy-ion bombardment."

In another experiment, Kronenberg looked into how low-level exposures to heavy ions induced mutation or death in certain blood cells, to understand how damage to this cell's DNA is caused and if it can be repaired.

Experiments carried out with human and rodent cells by another group from LBNL revealed that DNA damage induced by iron ions is not distributed randomly along the DNA molecule, but is produced in clusters, and that this clustered damage lessens a cell's ability to repair its DNA properly. These experimenters also discovered that, after DNA repairs itself, its molecules are misjoined, which causes the cell's genetic information to be scrambled. So the LBNL researchers argue that is probably a mechanism by which mutations are created.

Understanding Space Risks

As these and other results from the first AGS run are proving, "Doing ground-based biomedical research at a heavy-ion accelerator is an extremely cost-effective way of understanding the radiation risks in space," says Schimmerling.

With the 1995 run a success and the 1996 run about to begin, "Depending upon the quality of the science that results, we hope to schedule more time in the future," Schimmerling concludes. — Marsha Belford

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50 YEARS AGO THIS WEEK

This series, which recounts the earliest days of Associated Universities, Inc. (AUI), and BNL, will run as appropriate throughout 1996 and 1997, the 50th anniversary years of AUI and BNL, respectively.

• **October 24, 1946** — The AUI Board of Trustees holds its first annual meeting.* The Trustees currently serving are all re-elected and, as per the bylaws, are divided into three classes to serve for one, two and three years, respectively.

The Executive Committee, consisting of Robert Bacher, George Brakeley, P. Stewart Macaulay and Jerrold Zacharias, is also reelected, as are AUI President Edward Reynolds, and Treasurer Joseph Campbell — all to serve until the next annual meeting. The president serves *ex officio* on the Executive Committee.

Additionally, the Board empowers the Executive Committee to fill the offices of Executive Vice President, Assistant Treasurer and Secretary. Lastly, the Planning Committee, composed of nine Trustees representing the scientific departments of their individual universities, is redesignated as the Scientific Advisory Committee.

(To be continued on November 1).

**AUI's 51st annual meeting will be held next week, October 23-24, at BNL.*

Voice-Mail Upgrade

To enhance message clarity and add more features, the Octel voice-mail system is being upgraded to the new Overture 250. According to Telecommunication Services of the Computing & Communications Division, the changeover to the new system will occur over six hours on Friday, October 25, with work starting after 5:30 p.m.

Though all greetings, passwords and messages will be transferred to the new system, archived messages should be written down, to ensure they are not lost. Also, any unnecessary messages should be deleted from the existing system before the changeover.

When Overture 250 is up and running, voice-mail users will hear a new voice prompting them through a slightly different main menu. For documentation on the use of Overture 250, contact Telecom Services, Ext. 3030.

BWIS Wine & Cheese

All are invited to the Brookhaven Women in Science (BWIS) Wine & Cheese Party, on Friday, November 1, from 5:15 to 7 p.m. in the Recreation Building.

BWIS holds this free, informal get-together annually to acquaint prospective BWIS members—women and men—with BWIS members and officers, and with the group's accomplishments, which have benefited the entire Lab community.

Elected last month, the BWIS officers for fiscal year 1996 are: Lisa Tranquada and Ruth Kempf, group coordinators; Anne Dunbar, secretary; Dorry Tooker, treasurer; Eena-Mai Franz, seminar-lecture chair; Jean Howard and Carol Kramer, program chairs; Vinita Ghosh and Louise Hanson, scholarship chairs; and Anita Cohen, publicity chair. Cindi Griffiths and Gail Schuman have been appointed membership chairs, Jody Fanizza has accepted reappointment as newsletter editor, and Pam Mansfield and Mary Wood are trustees.

Reminder: Register Your Vehicle Now

By October 30, all employees and Laboratory guests who have not already done so must register their private motor vehicles used on site with BNL's Police Group of the Safeguards & Security Division (S&SD). To obtain a current registration sticker, come to S&SD's Personnel & Information Security Office in the Brookhaven Center, Bldg. 30, weekdays during usual business hours. For more information, call Hank Raimondo, Ext. 7258.

Equipment Demo

Sager Electronics and J-Square Marketing will demonstrate new products from Burr Brown on Tuesday, October 22, from 9 a.m. to noon in the Snyder Seminar Room, Bldg. 911. The display will include OP, instrumentation and isolation amplifiers, and A/D and D/A converters. For more information call Andy Soukas, Ext. 4735, or Lissa Sagginario, 348-1300.

Computing Corner

The Computing & Communications Division (CCD) offers the following PC training:

Oct. 15 & 17	beg. ACCESS
Oct. 22	beg. WordPerfect
Oct. 23	beg. PowerPoint
Oct. 30	basic Windows
Nov. 4	beg. EXCEL
Nov. 5	interm. WordPerfect for Windows

For more information or to register, contact your department or division's training coordinator or Pam Mansfield, Ext. 7286 or e-mail pam1@bnl.gov

Classified Advertisements

Placement Notices

The Laboratory's placement policy is to select the best-qualified candidate for an available position. Consideration is given to candidates in the following order: (1) present employees within the department/division and/or appropriate bargaining unit, with preference for those within the immediate work group; (2) present employees within the Laboratory; and (3) outside applicants. In keeping with the Affirmative Action plan, selections are made without regard to age, race, color, religion, national origin, sex, handicap or veteran status.

Each week, the Human Resources Division lists new placement notices, first, to give employees an opportunity to request consideration for themselves through Human Resources, and second, for general recruiting under open recruitment. Because of the priority policy stated above, each listing does not necessarily represent an opportunity for all people.

Except when operational needs require otherwise, positions will be open for one week after publication.

For more information, contact the Employment Manager, Ext. 2882, or call the JOBLINE, Ext. 7744 (344-7744), for a complete listing of all openings.

Current job openings can also be accessed via the BNL Home Page on the World Wide Web. Outside users should open "http://www.bnl.gov/bnl.html", then, under "Information," select "Jobs." For scientific staff openings, select "Scientific Personnel Openings"; for all other vacancies, select "General Personnel Openings."

SCIENTIFIC RECRUITMENT - Doctorate usually required. Candidates may apply directly to the department representative named.

SCIENTIST - Trained in experimental nuclear or high-energy physics, with experience in the design, fabrication, mapping and operation of large spectrometer magnets. Experience in relativistic heavy-ion experimentation is preferred. Responsibilities will include mapping three large PHENIX spectrometer magnets and participating in the construction, operation and research program of PHENIX. Contact: Samuel Aronson, Physics Department.

LAB RECRUITMENT - Opportunities for Laboratory employees.

DD 3850. ADMINISTRATIVE POSITION - Requires a bachelor's degree in business administration or equivalent and previous experience in an administrative/business systems-support capacity. Familiarity with Access/Excel and JCARS is also required. Will assist in daily administrative functions of the division in the areas of ES&H, training, computer security programs and functioning as building manager. Additional responsibilities include liaison to the Plant Engineering and Administrative Support Divisions. Instrumentation Division.

OPEN RECRUITMENT - Opportunities for Laboratory employees and outside candidates.

DD 6189. TECHNICAL POSITION - (term appointment) Requires an AAS or equivalent experience in mechanical or electrical technology. Knowledge of shop tools, precision measuring devices, close tolerance mechanical assemblies, voltmeters and oscilloscopes is highly desirable, as is familiarity with PCs. Will provide varied support for the Beam Component Group. (reposting) Alternating Gradient Synchrotron Department.

DD 0588. TECHNICAL POSITION - (term appointment) Requires an AAS degree in mechanical technology or equivalent experience. Familiarity with alignment fixturing and setups for welding, with experience and knowledge in machine shop practices, also required. Assignments will be with the mechanical assembly aspects of RHIC Magnet Production. Excellent communication skills and demonstrated problem-solving skills highly desired. RHIC Project.

NS 3568. PAYROLL MANAGER - Requires a bachelor's degree in accounting or taxation (MS preferred) and substantial experience with a computerized payroll system for a large organization. Demonstrated analytical skills and knowledge of Excel are essential; prior supervisory experience is desirable. Responsibilities will include managing the Laboratory's payroll function, which includes payroll processing, ACH transactions, regulatory reporting, reconciliations to payroll system "feeds," and compliance with IRS payroll and fringe-benefit accounting and report regulations. Will develop and implement payroll policies, procedures and practices, and coordinate changes within Laboratory. Financial Services Division.

MK 2422. SPONSORED-RESEARCH CONTRACTS ADMINISTRATOR - Requires an MS in molecular biology, experience in intellectual property licensing, and excellent analytical, marketing, organizational and negotiating skills. Will be responsible for conducting market evaluations of invention disclosures, developing market and business analyses for potential technology commercialization projects with industry, marketing intellectual properties to licensees and industrial collaborators, and negotiating these agreements with industry. Office of Technology Transfer.