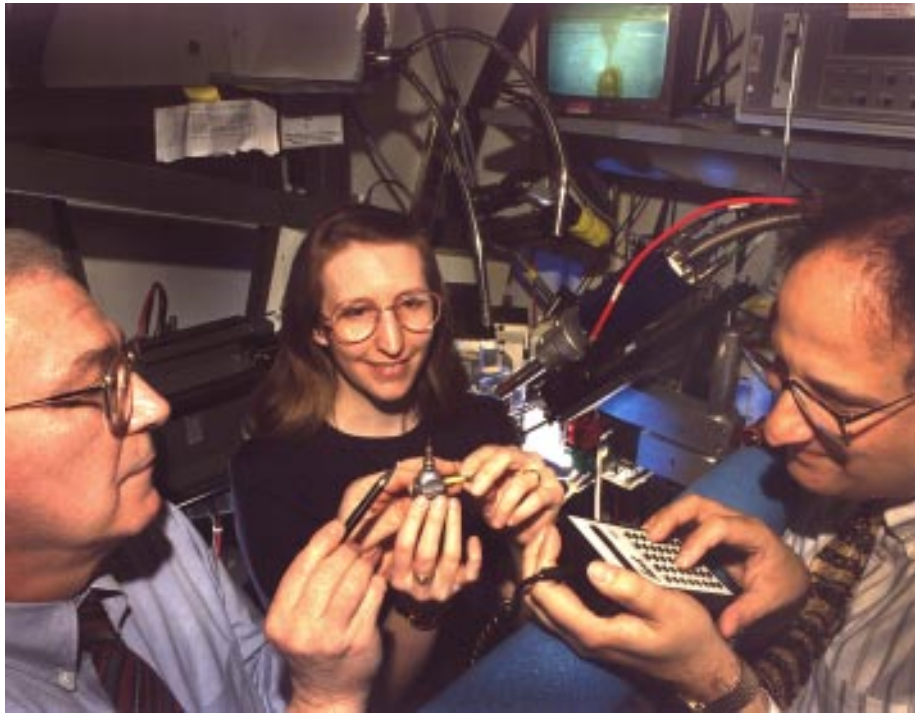


## BNL Researchers Offer Insights Into Two Serious Long Island Concerns

### Lyme Disease Secrets Revealed at Light Source



BNL's John Dunn (left) and Cathy Lawson, Biology Department, and Ben Luft, State University of New York at Stony Brook's School of Medicine, inside the hutch at beam line X12 at the National Synchrotron Light Source, where they study the important Lyme disease bacteria protein known as OspA.

Tantalizing clues in the mystery of Lyme disease have been uncovered at BNL, using a structural biology beam line at the National Synchrotron Light Source (NSLS).

Scientists from BNL's Biology Department and the School of Medicine at the State University of New York (SUNY) at Stony Brook have built the first detailed atomic model of an important Lyme disease bacteria protein, called OspA, that is already being tested in humans as an experimental vaccine.

The structure, which was published

in the April 15 issue of the *Proceedings of the National Academy of Sciences*, will aid vaccine developers in designing improved second-generation vaccines more effective in blocking the disease's transmission. Lyme disease strikes more than 10,000 Americans each year, through a bacterial infection that causes rashes, fever, arthritis and even neurological symptoms.

"OspA is an important piece in the Lyme disease puzzle," said biophysicist and co-author Cathy Lawson, Biology. "With OspA now being used as (continued on page 2)

## What Causes Brown Tide?

### BNL, Suffolk County Scientists Publish New Hypothesis

A precarious balance between two kinds of nitrogen may be the long-sought trigger for the devastating brown tides that have plagued Long Island's bays and decimated its shellfish harvest since 1985.

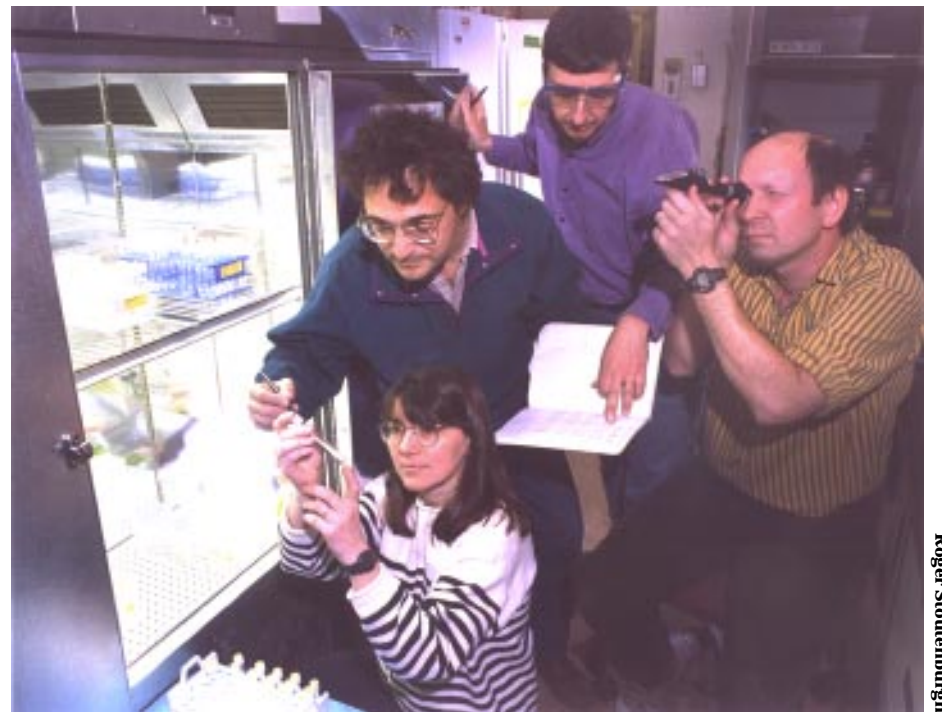
And the finger on the trigger may be year-to-year variations in groundwater flow that slowly carries nitrogen from land to the bays — variations that are influenced by the force of regional climate change.

This new idea is being published in

the peer-reviewed journal *Global Change Biology* by scientists from BNL's Department of Applied Science and the Suffolk County Department of Health Services (SCDHS).

The paper's authors are BNL's Julie LaRoche, Douglas Wallace, Kevin Wyman and Paul Falkowski, and SCDHS's Robert Nuzzi and Robert Waters. The scientists presented their results at the New York Sea Grant's Brown Tide Symposium, held last Saturday, April

(continued on page 2)



The four BNL scientists — (clockwise from bottom) Julie LaRoche, Paul Falkowski, Douglas Wallace and Kevin Wyman, all of the Department of Applied Science — who have collaborated with Robert Nuzzi and Robert Waters of the Suffolk County Department of Health Services on a new hypothesis for the cause of brown tide.

### Attn. BNL Retirees: Your Help Needed!

BNL retirees will soon receive a letter from Sue Davis, Associate Director for Reactor, Safety & Security, requesting their assistance in the ongoing site-wide review of facilities (see story at right).

They will be asked to recall any and all operations and activities that they were involved in during their employment at BNL that possibly could have resulted in any environmental pollution, no matter how slight. Recollections could include accidental spills, then-standard waste-disposal practices, location of storage and disposal areas, etc.

These recollections may then be provided to the Lab on the form included with the letter, which may then be returned in the stamped, self-addressed envelope. Or, via phone, e-mail, mail or fax, retirees may get in touch with the site-review team leader from their former department or division, so they can be interviewed by the team personally.

"There are multiple ways that retirees can get this information to us," states Davis. "Since we really need their input, we hope we are making it easy."

## Aim of Ongoing, Site-Wide Review of BNL Facilities: To Ensure No Other Environmental Surprises

To discover if the site contains any other abandoned or operating sources of environmental pollution and to ensure that the environmental impact of all BNL facilities and operations, past and present, is thoroughly understood, a site-wide review of all BNL buildings and grounds began April 9, at the request of the Associate Director for Reactor, Safety & Security, Sue Davis.

This review of buildings and facilities associated with the Lab's past activities and present operation was brought about as a result of the lessons learned from both the January discovery of the tritium leak from the HFBR's spent-fuel storage pool and the March rediscovery of an underground concrete wastewater collection tank found also to be leaking tritium into the groundwater.

"We initiated this review in order to identify activities and operations in facilities that have the potential to degrade groundwater or otherwise impact the environment," states Davis. "The success of this review depends upon the timeliness and thoroughness with which it is undertaken, so we are requesting the cooperation of every BNL employee, active or retired [see box at left]. While it is urgent that it take place as quickly as possible, the

quality of the investigation must not be compromised — we must do this properly."

While the review is being managed by BNL's Safety & Environmental Protection (SEP) Division, it is being conducted by teams assembled by the individual departments and divisions on site. The Lab has invited its regulatory agencies, offices of the U.S. Department of Energy (DOE), and other DOE facilities to assist the department and division teams in this task.

In addition, the departments and divisions are being helped in this undertaking by a coordinating group chaired by Barbara Royce, SEP.

Her group includes John DiNicola of the Plant Engineering Division; Bob Howe, Office of Environmental Restoration; Bob Lee, SEP; Caroline Polanish of DOE's Brookhaven Group; and Jim Pim of the Suffolk County Department of Health Services.

"We want to find any and all existing or potential threats to the environment and eliminate them once and for all," states Royce. "Clearly, we don't want to keep finding the 'sump of the week.'"

Group members will not only coordinate the planning of the review and

summarize all the departments and divisions' findings, but they will also participate in a department or division's review at its request.

"This is a significant task which cannot be accomplished without the help and cooperation of all departments and divisions," comments Royce. "So my group is willing to give them whatever help they need."

Each department chair and division head has named a senior manager to captain that unit's own facilities review team. In addition to inspecting their department or division's physical plant, the members of each team are to interview current and retired personnel, study facility designs and floor plans, and review all information previously collected by the Lab and/or its regulators on its facilities' operations and discharges.

Regarding the review of existing data, "We want to make sure that any existing groundwater data or other environmental-monitoring information that could be an indicator of an existing or potential environmental problem that has yet to be acted upon is not overlooked," comments SEP Head Bob Casey. A separate review of (continued on page 2)

## Lyme Disease (cont'd.)

a vaccine, we have a firm foundation for the identification of the regions of the protein that interact with the body's immune system to help the body ward off future infection."

Lawson and her colleagues studied the protein using intense x-rays at NSLS beam line X12C. Their results are being made available to the scientific and pharmaceutical community through the Protein Data Bank, based at BNL.

On Saturday, April 12, a Pennsylvania-based pharmaceutical company announced that it had shown that, based on recent clinical trials, an OspA vaccine holds solid promise for human use.

### A Key Lyme Protein

Lyme disease was named for a town in Connecticut where a cluster of arthritic children and adults led to the discovery of the bacteria, called *Borrelia burgdorferi*, that caused their symptoms.

Now an increasing health concern in the northeastern U.S., Lyme disease infects mice and deer and is transmitted to humans via the bite of tiny blood-feeding deer ticks. Although treatable with antibiotics,

Lyme disease can be hard to diagnose, and untreated infections can progress to severe complications. As a result, there has been a growing desire for a safe, effective vaccine to prevent the spread of infection.

Scientists know that, before a tick bites a victim and begins its "blood meal," Lyme bacteria lingering in the tick's midgut display OspA on their cell surfaces. Studies have already shown that laboratory animals vaccinated with OspA do not develop Lyme disease — they become immune to the transmission of the bacteria from a tick bite.

But vaccination can fail if the bacteria in the tick are of a different strain from the bacteria used to make the vaccine — the slightest difference in the protein's structure is all it takes.

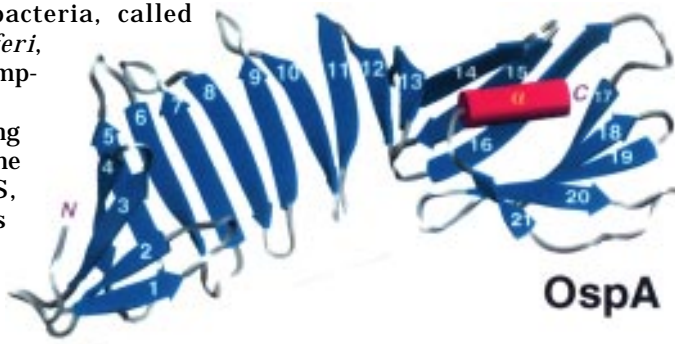
The BNL-Stony Brook structural model of OspA shows the exact locations where different strains of *Borrelia* vary. That will make it useful in the development of vaccines that

protect against many strains. Results are expected soon from trials being conducted by two pharmaceutical companies to see how effective first-generation OspA vaccines are in preventing Lyme disease in humans.

### Mighty X-Rays

To make the structural model of OspA, Lawson and her colleagues first needed to make crystals of the protein that could withstand intense x-rays. They used the T7 gene-expression system developed at BNL to make large quantities of OspA.

When attempts to crystallize the protein failed, Stony Brook collaborators provided an antibody derived from a mouse that had been infected with the Lyme bacteria. That antibody, which specifically recognizes OspA, was divided into smaller pieces called Fab fragments. Mixing OspA with the Fab formed a complex that could be



The Lyme disease bacteria protein OspA, with its structural elements numbered for reference.

crystallized and x-rayed.

Then, the researchers brought the crystals to the NSLS. There, they fired strong beams of x-rays at the crystals and recorded how the rays diffracted from them. Using powerful computers, they turned the diffraction patterns into the three-dimensional map that led them to the atomic models of the OspA and Fab.

BNL and Stony Brook are appropriate locations for Lyme disease research not only because of their advanced scientific facilities but also because of Long Island's high rates of the disease. Other Lyme-related work at both institutions includes studies of diagnosis and treatment techniques, immune response, protein expression and genome sequencing.

BNL and Stony Brook have been collaborating on Lyme research for over five years, with funding from the National Institutes of Health and the U.S. Department of Energy.

— Kara Villamil

## Facilities Review (cont'd.)

existing groundwater data is also under way.

In reevaluating every nook and cranny of the site with regard to its past or present use, Davis asserts, "We must take off any blinders we've been wearing, ask questions that haven't been answered and evaluate all of our past assumptions."

The report on what are called high-priority buildings and their grounds is due June 1. These buildings include: 197, 526-528, 555, 801/802, 830, 901, 902, the High Flux Beam Reactor (HFBR), the Brookhaven Medical Research Reactor, the retired Brookhaven Graphite Research Reactor, and all facilities associated with the work of the Alternating Gradient Synchrotron.

They have been deemed a priority because significant quantities of radioactive material were used or generated within a facility through past activities or present operations, and/or because of the age and/or history of work in that building.

The report on BNL's remaining facilities, all designated "priority 2," is due on July 1.

DOE will be kept up to date on the review's progress through weekly status reports. "If, during the review, something significant is found that warrants immediate action, then it will be reported to DOE immediately and whatever sampling, analysis and remediation that may be necessary will be undertaken, and any information will be provided to all interested parties," concludes Davis.

— Marsha Belford

## Reports Available

The following reports are available from the designated contact to Lab staff and affiliates of DOE, AUI and NRC. Others may purchase them from the National Technical Information Service, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161.

### BNL-NCS-51800 (revised 08/96)

Contact: A. Lopez, Ext. 2590  
Nuclear Science References Coding Manual. S. Ramavataram; C.L. Dunford

### BNL-52201 (revised 12/95)

Contact: J. DePass, Ext. 2114  
Selected Text of Atomic Energy Act, Executive Orders and Other Laws of General

(continued on page 4)

## Oceanography Researchers Recognized



Julie LaRoche (right) and Helen Murray-Tobin

Julie LaRoche and Helen Murray-Tobin, both from the Oceanographic & Atmospheric Sciences Division of the Department of Applied Science, were awarded the Luigi Provasoli Award by the Phycological Society of America for the most outstanding research paper published in the *Journal of Phycology* during 1994-95.

Their award-winning paper, "Flavodoxin expression as an indicator of iron limitation in marine diatoms," was published in the journal's August 1995 issue, and the February 1997 issue announced the award.

Phycology is the study of algae, and the researchers' experiments examine how environmental variables, such as nutrient limitation, affect the physiology and gene expression in marine algae.

The paper was selected from 240 published in the scientific journal, and the two BNL winners shared the \$500 award with the paper's co-authors: Mónica Orellana of the University of Washington and Jan Newton of the Washington Department of Ecology.

LaRoche, the paper's lead author, is now using the findings reported in it to examine the causes of brown tide as part of the New York Sea Grant Brown Tide Research Initiative.

— Diane Greenberg

## Brown Tide (cont'd.)

12, in Westhampton Beach.

Brown tide takes its name from the color of the water when an algae that is called *Aureococcus anophagefferens* "blooms," or reproduces in vast numbers. The cause has been a mystery since the first brown tide clouded the waters of several major bays along the eastern U.S. coast in 1985, nearly wiping out Long Island's \$2 million shellfish industry.

Scientists have blamed many culprits for causing brown tide over the years, including too much or too little nitrogen or salinity, and trace elements, but no explanation has proven all-encompassing.

The authors now believe that it is the balance between two very different forms of nitrogen that is the key to the mystery. The two nitrogen forms are inorganic, consisting mainly of nitrate and ammonia, and organic, which are nitrogen compounds that contain carbon.

According to their paper, inorganic nitrogen carried to the bays by groundwater in a wet year feeds the growth of algae other than *A. anophagefferens*. Over the subsequent year, the inorganic nitrogen is converted to organic nitrogen through the decay of plants and algae. If there is relatively little inorganic nitrogen delivered during that second year, the imbalance of nitrogen supply may create ideal conditions for a brown tide. The scientists also suggest that human population growth and fertilizer use on land may amplify the effect, by increasing the inorganic nitrogen levels in the bays during wet years.

"This is perhaps the simplest scenario that fits in with all that scientists already have learned about brown tide," said LaRoche, the paper's lead author. And, she added, it means that brown tides may even be predictable.

LaRoche and her colleagues say that large year-to-year shifts in rainfall patterns caused equally large changes in the amount of groundwater — and therefore inorganic nitrogen — that entered the bays in the 1980s and 90s. The result was that the supply of the two forms of nitrogen got out of balance, creating opportunities for the brown tide algae to bloom.

"The brown tides consistently occurred in relatively dry years when the groundwater flow to the bays was low and the organic nitrogen levels were quite high," said Wallace. "Low groundwater flow to the bay means low inorganic nitrogen input. It also means higher salinity, which is an-

other factor associated with brown tides."

"Many people have long suspected that specific forms of nitrogen caused brown tide," said Nuzzi. "Others considered climatological factors to be important. Finally, we have a plausible hypothesis that ties both factors together."

It was 11 years of data collected by Nuzzi's staff that led the scientists to formulate their ideas. Every week since the first brown tide 12 years ago, the team has tested water in Flanders Bay, the Peconic Bay and Gardiners Bay for the presence of *A. anophagefferens* and recorded the temperature, salinity and other factors. Those data were combined with the U.S. Geological Survey's information on groundwater levels in local wells, information that relates to the flow of groundwater to the bays.

"Without Suffolk County's remarkable effort and the Geological Survey's data, it just wouldn't have been possible to figure this out," said Wallace.

He added that Suffolk County and BNL have gone even further in their brown tide research, entering a \$100,000 cooperative venture to place monitoring buoys in the Peconic Bay that will collect continuous information on brown tide conditions.

Groundwater is estimated to carry much more nitrogen to the bays than any other external source, but its slow flow rate — about a foot per day — means that it may take decades to reach the open water.

So, the scientists speculate, higher nitrogen input to groundwater from activity on land during the boom years of the 1950s, 60s and early 70s may have started to affect the Peconic Bay strongly during the 1980s. And the unusual weather patterns of the 1980s may have compounded the effect.

"It's as if the Bay's algae population were being fertilized through the groundwater in wet years. And in others, the fertilizer just wasn't there, and the vegetation that died as a result decomposed to provide organic nitrogen to feed a brown tide," said LaRoche.

But she also urged caution until further studies are performed. "Obviously we think we're on the right track, but there are certainly things we don't understand," she said.

The researchers think their ideas may apply to similar coastal areas throughout the world, where "nuisance" algae, some with toxic effects, have become much more prevalent over the past 20 years.

— Kara Villamil

## An Invitation . . .

All employees are invited to a reception in honor of BNL Director Nicholas Samios, to wish him well as he returns to the Physics Department to continue his distinguished research career. The reception will be held on Thursday, April 24, from 4 to 6 p.m., in the lobby of Berkner Hall. Refreshments will be served.

## A Stress Test For Model Bridges



Roger Stoutenburgh

Standing alongside his bridge, which took first-place in BNL's 1997 Model Bridge contest and is shown set up in the machine that tested its ability to bear weight, is East Islip High School junior Aaron Glaser, proudly displaying the trophy he won for his school.

Over 360 high school students from 21 schools in Suffolk County entered BNL's 1997 Model Bridge Contest — and many of these students came to the event held in Berkner Hall on March 1 to see how their carefully constructed creations fared when crushed by a machine called a stress tester to determine their strength.

Sponsored by the Museum Programs of the Public Affairs Office, the contest required that, using only basswood and glue, students design and construct model bridges according to certain size and weight specifications, with the goal being to build the lightest bridge that supports a maximum load of 110.2 pounds.

The winning bridge, which weighed 17.6 grams and held more than 97 pounds, or about 2,500 times its own weight, was built by Aaron Glaser, a junior from East Islip High School.

Second- and third-place winners were both Huntington High School students: Teddy Rave, a senior, came in second with a 13.7-gram bridge that held over 71 pounds, and freshman Mike White's third-place 12.6-gram bridge held 65 pounds. Jennifer Finley, a freshman at Dayton Avenue School in Manorville, won the prize for the most aesthetically pleasing bridge.

The winners received gift certificates to a local computer store, courtesy of BNL. The two top winners are eligible to enter the 1997 International Bridge Building Contest, to be held in Chicago on May 3. —Diane Greenberg

## BNL 50th Anniversary Celebration

# Reminiscence Seminars to Recall Lab's Early Years

Brookhaven today is known as a world-class, forefront scientific research facility. But how did it reach such a height? Who were the scientists whose vision helped this multidisciplinary laboratory rise from the remnants of a World War II Army camp 50 years ago? What is their perspective on BNL's achievements over its first half century?

These questions and more will be answered by 34 longtime BNL scientists — some retired, some still active, all with wonderful stories — who will be participating in the Reminiscence Seminars scheduled for May 7, 9 and 13, in Berkner Hall.

Part of BNL's golden anniversary celebration, the Reminiscence Seminars are being organized by former Department of Applied Science (DAS) Chairman Bernard Manowitz, now a senior chemical engineer in DAS. Manowitz, the Lab's longest-term active employee, will celebrate his 50th anniversary at BNL in October of this year.

Manowitz will introduce each seminar, then turn the proceedings over to moderator Robert Crease, who is BNL's Historian. Under Crease's guidance, each seminar will be divided into two segments. Each



**Bernard Manowitz**

first segment will begin at 2:30 p.m., with brief talks by each of the speakers, followed by a question-and-answer session. The second segment will follow the same format.

The seminars will feature segments and speakers as follows:



**Robert Crease**

## 50 YEARS AGO . . .

*This series, which recounts the earliest days of BNL, will run as appropriate throughout 1997, BNL's 50th anniversary year.*

• **April 1, 1947** — BNL issues its first quarterly scientific progress report, which includes the following highlights:

"The Brookhaven National Laboratory . . . is the central laboratory for fundamental and applied atomic energy research for the Northeastern United States.

" . . . It is one of the instruments through which the Atomic Energy Commission carries out the responsibility, entrusted to it by the Atomic Energy Act of 1946, of directing the development and application of atomic science in the United States . . .

"The work of the laboratory will, in the main be unclassified, since its major interest is to be in the peacetime applications of nuclear properties.

"All activities and operations of [BNL] are under the direction and supervision of the Director. A Scientific Advisory Committee, consisting, in part of the scientist members of the [AUI] Board of Trustees, assists the Director in the determination of both the policy and the research program of the Laboratory. As in a university, research will be carried on by Departments of Physics, Chemistry, Biology, Medical Research and Engineering. . .

"A permanent staff is being assembled to assure continuity in the Brookhaven Program. This staff will be supplemented by the employment of many scientists on leave from their institutions for periods of six months to two years.

"The work will be planned so as to make full use of the cooperation of university staffs and so as to help train graduate students from universities.

"The major appointments to the scientific staff, as of April 1, 1947, are:

**Director:** Dr. Philip M. Morse (on indefinite leave from M.I.T.)

**Executive Assistant:** Dr. Lincoln R. Thiesmeyer

**Assistant Director:** University Cooperation and Scientific Personnel, Dr. R.A. Patterson

**Acting Head of Dept. of Physics:** Dr. N.F. Ramsey (on part-time leave from Columbia University)

**Acting Head of Dept. of Chemistry:** Dr. William F. Dodson (on part-time leave from Columbia University)

**Leader of Pile Project:** Dr. Lyle B. Borst (on indefinite leave from M.I.T.)

**Leader of Cyclotron Project:** Dr. M.S. Livingston (on indefinite leave from M.I.T.)

"The fundamental purpose of the laboratory is to provide research and training facilities in nuclear and related studies which are not possible for the individual university. . . .

" . . . [T]o carry out this broad program, powerful sources and accelerating devices for both electrons and nucleons will be required.

"Devices now under design or construction, but subject to such changes and sub-

stitutions as research and study may determine to be desirable, are:

"An air-cooled graphite uranium pile with many avenues of access to neutron fluxes and an associated laboratory where the radioactive isotopes may be purified.

"A second pile with 100 times the neutron flux of the first pile.

"An electro-nuclear machine capable of accelerating either electrons or positive particles, possibly both, to energies of billions of electron volts.

"A 600-1000 MEV synchrocyclotron.

"A 30-40 MEV cyclotron and possibly a 10-20 MEV Van de Graaf generator.

"One of the primary purposes of the Laboratory is to afford exceptional opportunities to young scientists for training in the new and most advanced techniques of atomic science. . . . Brookhaven will employ qualified persons who desire such experience and who can obtain leave of absence from their institutions for . . . six months or more. . . . [A]t Brookhaven they will have intimate association with scientists from all parts of the [Northeast], and will be engaged in work that is coordinated and in close liaison with the research at other national atomic energy centers. The need for men with this training is urgent at all research institutions. The present demand from industry for such scientists and engineers is expected to increase greatly as the new knowledge and techniques are applied to meet human needs. . . ."

Most research departments are in the process of organization, but some additional activity goes on:

• **Theoretical Division, Physics Department**

"The work . . . will include research in meson theory and the theory of nuclear forces. . . .

" . . . [The department] intends to invite leading theoretical physicists to spend part of the coming summer at the Brookhaven Laboratory. . . . Drs. Bethe and Weisskopf have already indicated a desire to be at Brookhaven for part of the summer and preliminary discussions indicate that other outstanding theoretical physicists will be here part of the time."

• **Pile Project**

" . . . [I]t has been decided to make the first [chain-reacting] pile an air-cooled graphite pile similar to the one now in operation at Clinton [Laboratories]. The design work on this first pile is near completion and construction should begin shortly. . . .

"The second pile is to be a high-flux unit. During the next six months designs submitted for this pile will be studied."

• **Accelerator Project**

" . . . Three high-energy proton accelerators are now under consideration: The synchrocyclotron (F.M. Cyclotron), the linear accelerator, and the proton synchrotron. . . ."

**Wednesday, May 7**

• **Early Brookhaven** — Lyle Borst, Gerald Tape, Martin Plotkin, Bernard Manowitz, Dennis Puleston and R. Christian Anderson.

• **Brookhaven Graphite Research Reactor** — Lyle Borst, Robert Powell, Herbert Kouts, Vance Sailor, Julius Hastings.

**Friday, May 9**

• **Early Physics: The Cosmotron-AGS** — Ernest Courant, George Collins, John Blewett, Irving Polk, Ronald Rau, Maurice Goldhaber, Gerhart Friedlander.

• **Chemistry** — Jacob Bigeleisen, Lester Corliss, Raymond Davis, Lewis Friedman, Alfred Wolf.

**Tuesday, May 13**

• **Biology** — Marian Koshland, Dan Koshland, Jack Van't Hof, Martin Gibbs, Peter Carlson, Jerry Miksche, Sanford Lacks.

• **Medical** — Eugene Cronkite, Harold Atkins, Robert Conard, Pete Hughes, Irving Schwartz.

More information about the speakers and their topics will be provided in future Bulletins.

## Coming Up

**Victor Emery, a senior physicist in the Physics Department, will give the 326th Brookhaven Lecture on Wednesday, April 30.\* His talk on "High Temperature Superconductors" will begin at 4 p.m. in Berkner Hall.**

\*Note change in date from April 23.

**Lucerne DeSa, a promising young artist from the State University of New York at Stony Brook, will give a special BERA concert on Sunday, May 4, at 2 p.m. in Berkner Hall. A doctoral student under the tutelage of the internationally known pianist Gilbert Kalish, DeSa will play compositions by Beethoven, Brahms, Chopin and Prokofiev.**

**The suggested donation for the concert is \$6.**

## In Addition

A key responder was omitted from the Bulletin's March 28, 1997, story about "Lab and Ridge Fire/Rescue Crews Respond Quickly to Auto Accident."

As the Bulletin has since discovered, the first witness to the car accident that took place on March 7 outside the Lab contractor service station, Upton Industries, Inc., was Michael Hickey, Plant Engineering (PE) Division. Hickey, who had formerly been a fire fighter with the Safety & Environmental Protection (SEP) Division's Fire/Rescue Group, saw the accident while he was getting gas and responded in true Fire/Rescue fashion.

"I went to both cars to check on the occupants," he said. "I could see right away they needed expert help, so I asked someone at the gas station to call 'the deuces,' as we all call the Lab emergency phone number, Ext. 2222."

Three minutes later, Hickey was able to give a brief outline of the situation to the rescuers who had responded from the Safeguards & Security Division and Fire/Rescue group. "Then, I had to go back to my PE job — but I was glad that my training had probably saved some time in getting the rescue started," Hickey said.

— Liz Seubert

## BROOKHAVEN BULLETIN

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## ☆☆☆☆☆ Five-Star Music & Entertainment for the Troops!

# LAST OFFICIAL USO DINNER-DANCE & SHOW TICKET SALES STARTS TODAY

Go back 50 years in time.

*The year is 1947. The date:* May 9 — the day after the second anniversary of V-E Day. *The time:* 5:30 p.m.-midnight. *The place* is the Officers' Club at Camp Upton, Yaphank, Long Island, New York. *The event:* the Last Official USO Dinner-Dance & Show at Camp Upton. *The reason:* Camp Upton has been transferred from the War Department to the Atomic Energy Commission, to make way for Brookhaven National Laboratory.

So, out go the soldiers and in come the scientists. But, the enlisted men and their girls, and the officers and their ladies are going out in style — at one last big band bash.

Now go 50 years forward in time.

*The year is 1997. The date:* Friday, May 9 — the day after the 52nd anniversary of V-E day. *The time:* 5:30 p.m.-midnight. *The place* used to be the Camp Upton Officers' Club during World War II, but now is the Brookhaven Center at Brookhaven National Laboratory, Upton, New York. *The event:* BNL's 50th Anniversary Dinner-Dance & Show, organized by the BNL Ballroom, Latin & Swing Dance Club as part of BNL's 50th anniversary celebration. *The reason:* To give Brookhaven employees a reason to celebrate BNL's 50th.

For this night and this night only, employees and retirees are invited to go backward and forward in the Lab's

50-year history, while enjoying a delicious three-course buffet dinner under a tent on the patio; five hours of dancing to their choice of DJ Ed Taylor's R&B and pop-dance music in the South Room, or big band ballroom, Latin and swing by the 18-piece Big Band East in the North Ballroom; a display of Camp Upton memorabilia in the lobby; and a cash bar.

Plus, there will be a standing-room-only, 40s-style dance show featuring the jumpin' jitterbug of the Big Apple Lindy Hoppers of New York City, the frisky fox trot and lightning quickstep of the Dance Magic Dancers of Smithtown, and the spirited swing and jammin' jive of Patti's Swing Kids of Bellport — with each group offering surprise performances by BNL's dancing stars.

And, the Lab's own historian, Bob Crease, will narrate the USO-style show, setting the historical stage for the performances and putting BNL's 50th anniversary in perspective.

Throughout the night, BNL Dance Club members serving as USO girls and guys will be soliciting contributions from party-goers for the United Services Organization (USO), a non-profit civilian agency chartered by the U.S. Congress and incorporated in 1941. Relying upon voluntary contributions from private American citizens, the USO exists to help meet the social, spiritual, educational and en-

tertainment needs of the men and women serving in the U.S. Armed Forces and their families, wherever they may be stationed.

The USO has officially authorized the BNL Dance Club to use its name in association with this event, and the collective donation from the gala evening will be forwarded to USO World Headquarters in Washington, D.C.

To encourage donations, every contributor who gives \$10 and over will be entered into a drawing to win a bit of BNL history — one of the large American flags to be on display that evening, which were flown over the U.S. Capitol on BNL's 50th birthday, March 21, 1997, at the request of the BNL Dance Club in honor of the event. Each flag comes with a certificate authenticating this fact.

So, if you are a scientist, engineer or technician, then trade in your lab coat in exchange for a uniform jacket. If you are an office worker, then straighten your seamed stockings or your narrow tie. If you are a tradesperson or service worker, then dust off your coveralls because Rosie the Riveter will be there after the swing shift.

In other words, if you can, dress your World War II best for the occasion — for you'll be eligible to win one of the prizes to be awarded for best costumes.

On sale beginning today, Friday, April 18, tickets are \$25 per person, in



**Camp Upton's most famous soldier was Sergeant Irving Berlin, who, during World War I, remained stateside to write the musical *Yip, Yip, Yaphank*.**

checks payable to the BNL Dance Club. A maximum of 325 tickets will be issued: 175 for ballroom dancing, and 150 for DJ dancing. While, during the evening, you may go from one dance room to the other, buy your ticket now for the venue offering your favorite type of dancing.

Tickets for ballroom dancing may be purchased from: Rudy Alforque, Ext. 4733, Bldg. 817; Nelson Cause, Ext. 5354, Bldg. 134; Harold Kirk, Ext. 3780, Bldg. 901; Don Litcher, Ext. 7587, Bldg. 515; or Dick Savage, Ext. 4640, Bldg. 120.

Buy tickets for DJ dancing from: April Donegain, Ext. 2459, Bldg. 134; Patti Bender, Ext. 3145, Bldg. 134; Charles Gardner, Ext. 5214, Bldg. 911; Rosemary Taylor, Ext. 3251, Bldg. 535; or Nedy Santiago, Ext. 3402, Bldg. 197.

— Marsha Belford

## In Memoriam

**Zbigniew Richard Korszun**, a scientist in the Biology Department, died suddenly on March 31. He was 47 years old.

Korszun was associated with BNL since October 1982, when he started a five-year guest scientist appointment in Biology. He renewed his link with BNL in 1991, becoming a visiting scientist and research collaborator. In December 1992, he joined the Biology staff as an associate scientist and was named Scientist in 1994.

Korszun's undergraduate studies were done at the Rensselaer Polytechnic Institute, and he received his Ph.D. from the University of Arizona.

Before joining the Lab, he had performed postdoctoral work at Cornell University and the University of Pennsylvania, and he held a professorship at the University of Wisconsin. Among other contributions during this period, he carried out the first multi-wavelength x-ray structure determination of the protein azurin.

At BNL, Korszun's scientific interests were centered on neutron protein crystallography, a subject he had reviewed for *Methods in Enzymology*, a standard reference work in the field.

With his students and collaborators over the past several years, he had advanced the characterization of the protein solvent interface by experimental studies of myoglobin and ribonuclease crystals at various temperatures.

Colleagues Sanford Lacks and Dieter Schneider wrote in tribute, "Richard Korszun, always searching for ways to improve the rather slow data collection rates inherent in neutron diffraction, pioneered exploratory Laue diffraction measurements on

perdeuterated myoglobin and demonstrated that this simple technique has great potential for obtaining high-resolution protein structures efficiently."

They added, "Richard, who was an active experimenter at the National Synchrotron Light Source, was very happy a few weeks ago, when he and his student Alex Tran solved the crystallographic structure of a DNA methylase isolated by Sandy Lacks and other coworkers in Biology."

Another pursuit that Lacks and Schneider described as having "captured Richard's imagination" was the growth of protein crystals in space and their characterization by x-ray methods. The crystals were produced in a payload chamber of his design carried on several space shuttle flights.

Korszun's students, colleagues, friends and collaborators remember him as a crystallographer with broad interests in science, who, "although he was an intensely private person, showed great generosity to others. He will be very much missed."

Korszun, who was a resident of Flanders, is survived by his wife, Barbara; two daughters, Bethany and Helena; and his brother, Henry.

— Liz Seubert

The following retirees passed away recently:

**Kenneth Bubb**, who at his retirement had concluded 29 years of BNL service, died on December 31, 1996. He was 84 years old. He had started at the Lab on September 7, 1948, as a laborer in the Grounds Section. In March 1951, he joined the Operations Group of the Brookhaven Graphite Research Reactor as a pile operator. In March 1960, he transferred to the Instrumentation & Health Physics Division as a waste technician II, and, in May 1971, he joined the Medical Department, from which he retired on December 30, 1977, as a veterinary services assistant IV.

**Robert A. Feindt**, who retired from the Medical Department on May 17, 1985, as a senior technical specialist, died on January 29, at the age of 72. When he was hired on March 31, 1952, his first BNL

position was as a patrolman trainee with the Police Group. In January 1956, as a technician B, he joined the Nuclear Engineering Department, which later evolved to the Department of Applied Science. He transferred to the Medical Department in October 1977.

**James E. Carroll**, who spent 28 years at BNL with the Plant Engineering (PE) Division and its predecessors, died on February 16. He was 64 years old. He had started in the Plant Maintenance Division on December 21, 1964, as an electrician A, and retired on February 16, 1993, as PE's General Electrical Supervisor.

**Sigmund Clausen**, who was a machine shop foreman in the Central Shops Division when he retired on March 30, 1973, died on March 6, at the age of 85. He

had joined BNL on November 6, 1950, as an experimental machinist in the General Shop A.

**Franklin J. Powers**, who retired from the Plant Engineering Division on December 13, 1987, died on April 3. He was 72 years old. He had started in the Plant Maintenance Division on February 2, 1959, and served the Lab for 28 years as a refrigeration & air-conditioning engineer.

**Stephen T. Waski**, who had completed 29 years at BNL on June 30, 1978, as a motor vehicle maintenance supervisor in the Staff Services Division, died on April 6, at the age of 84. He had joined the Lab on June 13, 1949, as a heavy equipment mechanic operator with the Grounds Section. His son, Stephen Waski Jr., is with BNL's Plant Engineering Division.

## Reports Available (cont'd.)

Interest to Safeguards and Security Executives. J.J. Cadwell, C.J. Ruger

**BNL-52506**

Contact: A. Waltz, Ext. 5834

Proceedings of the 1996 Oil Heat Technology Conference and Workshop Held at Brookhaven National Laboratory, Upton, N.Y. R.J. McDonald

**BNL-52511**

Contact: L. Morrison, Ext. 4208

Environmental Monitoring Plan for Calendar Year 1996. J.R. Naidu, D. Paquette; R. Lee, G. Schroeder, J. Williams, B. Royce, S.L. Briggs

**BNL-52512**

Contact: E. Zukowski, Ext. 3866

AGS-2000: Experiments for the 21st Century. Proceedings of the Workshop Held at Brookhaven National Laboratory, May 13-17, 1996. L. Littenberg, J. Sandweiss

**BNL-52351 (revised 12/95)**

Contact: R. Paquette, Ext. 5737

Laboratory Directed Research and Development Program: Annual Report to the U.S. Department of Energy. G.J. Ogeka, A.J. Romano

**BNL-NUREG-52425; NUREG/CR-6253**

Contact: N. Siemon, Ext. 2397

Pius Core Performance Analysis. J.F. Carew, A. Aronson, D.M. Cokinos, A. Prince, E.C. Selcow

**BNL-NUREG-52460; NUREG/CR-6336**

Contact: P. Van Gorp, Ext. 7362

Aging Assessment of Large Electric Motors in Nuclear Power Plants. M. Villaran

**BNL-NUREG-52462; NUREG/CR-6339**

Contact: P. Van Gorp, Ext. 7362

Aging Assessment of Westinghouse PWR and General Electric BWR Containment Isolation Functions. B.S. Lee, R. Travis, E. Grove

**BNL-NUREG-52476; NUREG/CR-6374**

Contact: K. Wagner, Ext. 3122

Whole-Body Effective Half-Lives for Radiolabeled Antibodies and Related Issues. D.G.L. Kaurin; D.E. Barber; A.L. Carsten; J.W. Baum

**BNL-NUREG-52480-V1**

Contact: P. Van Gorp, Ext. 7362

Literature Review of Environmental Qualification of Safety-Related Electric Cables: Summary of Past Work. M. Subudhi

**BNL-NUREG-52480-V2**

Contact: P. Van Gorp, Ext. 7362

Literature Review of Environmental Qualification of Safety-Related Electric Cables: Literature Analysis and Appendices. R. Lofaro, B. Bowerman, J. Carbonaro, S. Kasturi, B. Lee, M. Subudhi, J. Taylor, M. Villaran

**BNL-52496**

Contact: E. Rothman, Ext. 7114

National Synchrotron Light Source Activity Report for the Period October 1, 1994, Through September 30, 1995. E.Z. Rothman, J. Hastings, N.A. Wright

**BNL-NUREG-52508; NUREG/CR-6489**

Summary of Failure Analysis Activities at Brookhaven National Laboratory. M.G. Cowgill, C.J. Czajkowski, E.M. Franz

See Supplement for other news and for classified ads.

## Arrivals & Departures

### Arrivals

**Simon C. Durrant**.....Physics  
**Vivek Jain**.....Physics  
**Margaret M. Lynch**.....Director's Office  
**Sharadha Sambasivan**.....NSLS

### Departures

This list includes all employees who have terminated from the Lab, including retirees:

**Christine A. Bartling**...Admin. Support  
**Ziping Chen**.....Physics  
**Christian Muentz**.....Physics

## Housing Help For Summer Guests

As the Lab prepares to welcome summer visitors and guests, unfortunately, BNL's on-site housing cannot accommodate all who come to BNL for a summer of research. So, for the fourth consecutive year Marie Betzold has returned to the Housing Office to assist summer guests and their families who cannot secure on-site housing in finding off-site accommodations.

Betzold is establishing an inventory of available rentals. If you have or know of furnished apartments, condos or houses that would be suitable for BNL guests and their families, call her at Ext. 4489.

## Letters Posted At Info Center

Now posted at the High Flux Beam Reactor (HFBR) Tritium Remediation Information Center in Berkner Hall are several letters that BNL employees have recently had published in local newspapers.

The center also provides current information and maps showing the status of the HFBR Tritium Remediation Project. It is updated as new information becomes available.

## Bowling

### Results from week of March 31

#### Red and Green League

K. Asselta 234/232/637 scratch series, K. Koebel 225/201/616 scratch, R. Eggert 222/212/632 scratch, H. Arnesen 222/205/608 scratch, W. Powell 217/202/610 scratch, O. Mirjah 208/206/612 scratch, R. Raynis 207/206/602 scratch, G. Mack 220/602 scratch, E. Sperry IV 215, A. Pinelli 213, R. Larsen 202.

#### Purple and White League

B. Mullany 222/212/205/639 scratch, Doug Fisher 237/225/631 scratch, J. Goode 231/187, E. Sperry IV 227/211, Wayne R. 210/188, A. Almasy 203/202, K. Riker 206/186, S. DiMaiuta 204/200/600 scratch, S. Frei 203/191, J. Zebuda 194/194/182, B. Giuliano 186/180, J. Pinelli 172/170, M. Guacci 255, P. Wynkoop 214, I. Sperry 205, E. Sperry III 203, B. Tozzie 203, Don King 203, M. DiMaiuta 201, P. Manzella 200, P. Callegari.

### Results from week of April 7

#### Red and Green League

K. Koebel 235/222/650 scratch series, J. Goode 221/201/615 scratch, D. Fisher 215/213, R. Raynis 215/208, J. Griffin 207/203/606 scratch, N. Besemer 256/639 scratch, G. Mack 255/627 scratch, R. Wiseman 246, H. Arnesen 242, E. Meier 238, G. Weresnick 238, O. Mirjah 210, R. Mulderig, Jr. 203, J. Toner 202, P. Baker 202, E. Larsen 200, A. Pinelli 200.

#### Purple and White League

M. Meier 225/223/204/652 scratch series, B. Tozzi 246/184/183/613 scratch, J. Meier 221/183/194, M. Guacci 202/187/184, S. Frei 256/182, Don King 218/218/604 scratch, R. Picinich 214/203, J. Zebuda 212/200, A. Pinelli 212/195, Doug Fisher 201/200, B. Mullany 199/198, J. Gormley 198/190, S. DiMaiuta 257, R. Raynis 212, M. DiMaiuta 207, Wayne R. 194, A. Almasy 191, C. Johnson 182, D. Botts 183, L. Hermes 175, Donna King 170, L. Hermes converted the 5/10 split.

## Attn: Women Re-Entering School

If you're a woman who had to interrupt formal studies in science, engineering or mathematics, but who is now back to the books, you may be eligible to win the Renate W. Chasman Scholarship for Women.

This one-time, \$2,000 award is given annually by Brookhaven Women in Science to a woman who is currently enrolled or has been accepted in a degree program at an accredited institution. To be considered for the 1997 scholarship, you must be studying for 1997-98 at the junior or senior undergraduate level or first-year graduate level on a half-time or greater basis. You must also be a U.S. citizen or permanent resident alien who lives in Nassau or Suffolk County or the boroughs of Brooklyn or Queens.

If you're the winner chosen by an independent committee, the award will be presented to you in August, and you will be expected to complete at least two consecutive school terms in good academic standing.

For application forms and more information, write to: Chasman Scholarship Fund, PO Box 183, Upton, NY 11973. The deadline for applying is May 5.

First awarded in 1986, the scholarship honors the late Renate Chasman, a noted BNL nuclear physicist and accelerator theorist. She co-designed the Lab's National Synchrotron Light Source, and her work influenced the design of other synchrotrons around the world.

## Retirement Counseling

A TIAA-CREF representative will visit the Lab on Wednesday and Thursday, May 7 & 8, to answer BNL employees' questions regarding the TIAA-CREF retirement plan in one-on-one counseling sessions. Questions employees might have include:

- What are the differences between TIAA and CREF?
- How should I allocate my money between TIAA and CREF?
- What options and flexibilities do I have for my existing dollars with TIAA-CREF?
- What are my retirement options?

A limited number of 45-minute appointments are available; to arrange one, call Valerie James, (800) 842-2011.

## Here's to a Better You!

If you're looking for a weight-loss program designed around you, then consider "A Better You!"

Offered by the Health Promotion Program of the Occupational Medicine Clinic, A Better You! is a ten-session program designed and supervised by a registered dietitian and nutritionist, stressing life-style changes, not caloric deprivation. Starting April 24, it will meet from noon to 1 p.m. on Thursdays. During two sessions, participants will have private consultations with the dietitian or nutritionist, to assess individual needs and customize weight-loss programs. Remaining sessions will focus on nutrition, healthy cooking, dining-out techniques, food shopping strategies, exercise, stress reduction and more. Progress will be monitored by computerized body-composition analysis, as well as weighing and measuring.

The per-person cost is \$140. For more information or to register, call Mary Wood, Ext. 5923.

## Volleyball

### Standings as of April 3

Open League - final	League II - final
Shank Carry & Throw 52-20	Spiked Jello 41-13
Far Side 42-30	Safe Sets 40-14
Pass, Set & Crush 37-35	Fossils 33-21
Spikers 25-47	Jao-About-That 32-22
Death Volley 20-52	Monday Nite Live! 30-24
<b>League I - semifinals</b>	Lift Carry Throw 22-32
Bikers & Spikers 3 v.	Nuts & Bolts 17-37
Scared Hitless 0	Jolly Veggies 10-44
Rude Dogs 3 v.	
Set to Kill 1	

### League III - quarterfinals

Just 4 Fun 2 v. Night Court 0  
 Group Sets 2 v. Court Hogs 0  
 Silver Bullets 2 v. OER 0  
 Newcomers 2 v. Upton-Ups 0

### Standings as of April 11

Open League - playoffs	League I - finals
Death Volley 3 v. Spikers 2	Bikers & Spikers 3 v. Rude Dogs 1
<b>League II - quarterfinals</b>	<b>League II - quarterfinals</b>
Safe Sets 2 v. Nuts & Bolts 0	Lift Carry Throw 2 v. Fossils 0
Spiked Jello 2 v. Jolly Veggies 1	Spiked Jello 2 v. Jolly Veggies 1
Monday Nite Live! 2 v. Jao-About-That 1	Monday Nite Live! 2 v. Jao-About-That 1
<b>League III - semifinals</b>	<b>League III - semifinals</b>
Silver Bullets 3 v. Newcomers 0	Silver Bullets 3 v. Newcomers 0
Group Sets 3 v. Just 4 Fun 2	Group Sets 3 v. Just 4 Fun 2

## Register Vehicles Now

As of last October, Lab employees and guests who regularly drive their privately owned vehicles on site have been required to register them and obtain vehicle-registration stickers from the Police Group of the Safeguards & Security Division.

If your vehicle does not have a red registration sticker stuck on the back of its rear-view mirror, then get one at the Personnel Security Office in the Brookhaven Center, Bldg. 30, weekdays during usual business hours. For more information, call Hank Raimondo, Ext. 7258.

## Amateur Radio

The BERA Amateur Radio Club will next meet at noon on Thursday, April 24, in Room C, Berkner Hall. All BERA members and licensed amateur-radio operators are invited to attend. For more information, call Chris Neuberger, Ext. 4160, or Nick Franco, Ext. 5467.

## Computing Corner

The Computing & Communications Division (CCD) is offering the following:

### MIX Meeting

"Site-Wide Hardware and Software Contracts" will be discussed at CCD's next Monthly Information eXchange (MIX) meeting, on Wednesday, April 23, at 11 a.m. in Berkner Hall. All are welcome to attend.

### LabVIEW Demo

Representatives of National Instruments will demonstrate the following LabVIEW software on Friday, May 2, at 10 a.m. in the seminar room of the Computing & Communications Division, Bldg. 515: LabVIEW 4.1, Internet toolkit, professional G developers' toolkit, G Math toolkit, and SQL toolkit. For more information, call Susan McKeon, Ext. 7795.

### Meet UNIX

A few seats remain in the introduction to UNIX course scheduled for May 27-29. The training fee is \$300 per person. For more information or to register, contact Pam Mansfield, Ext. 7286 or e-mail pam@bnl.gov, by Wednesday, April 30.

### May Computer Training

The following PC training classes are scheduled for May:

date	time
May 13 & 15	beg. ACCESS
May 16	beg. WORD
May 20	beg. PowerPoint
May 22	int. EXCEL
May 28 & 29	int. ACCESS

For more information or to register, contact your training coordinator or contact Pam Mansfield.

## Employee Meetings Through Next Week

Employee meetings on issues of concern continue today with employees from the **Director's Office, Human Resources Division** and on-site employees of **Siemen Rolm** and the **National Weather Service** gathering in Berkner Hall, at 11 a.m.

Meetings next week are as follows:  
 • Mon., Apr. 21, and Tues. Apr. 22, **Plant Engineering Division and Supply & Materiel** group of the Administrative Support Division, 11 a.m., Berkner Hall.  
 • Thu., Apr. 24, **Relativistic Heavy Ion Collider Project**, 11 a.m., Berkner Hall.  
 • Fri., Apr. 18, **Information Services Division and Central Shops Division**, 11 a.m., Berkner Hall.

Future meetings will be listed in the Bulletin on the Friday before they are scheduled.

## Memo

To: All BNLers  
 Re: Laboratory Picnic!

Saturday, July 19, is the date of BNL's 50th Anniversary Picnic.

There will be a parade, food, drinks, dancing, face painting, cotton candy, and, of course, the Fun Olympics!

Ticket sales start in May — so keep that date!

## Basketball

### Games on April 3

Chemistry 73	Scram 58
Simon North 23	Steve Nappi 15
Rich Domenech 15	John Duggan 13
Dennis Ryan 11	Al Boerner 7
Lee Walcott 7	John Skonieczny 6
Chris Fockenber 6	Tim Powers 5
Joseph Dvorak 4	Jim Rank 5
Tracey Fountaine 3	Joe Barkwill 4
Lou DiMauro 2	Steve Jao 2
Steve Springston 2	Pat Moylan 1

Three-point shots: Domenech (3), Nappi (3), Boerner, Rank, Ryan.

Magic 64	PE Wolfpack 55
Jerry Gaeta 12	Wayne Cummings 17
Ray Jackson 12	Jerry Hobson 16
Pete Ratzke 12	Jim Desmond 6
Terry Buck 11	Rob Singleton 5
Chris Ingoglia 8	Hal Van 4
Greg Mack 5	Brian Hobson 3
Hector Machado 2	Charlie Edwards 2
Fred Maier 2	Darren Harris 2

Three-point shots: J. Hobson (3), Buck, Cummings, B. Hobson, Williams.

### Games on April 10

Magic 72	Chemistry 61
Terry Buck 17	Lee Walcott 22
Jerry Gaeta 15	Simon North 13
Ray Jackson 12	Steve Springston 12
Chris Ingoglia 8	Dennis Ryan 5
Hector Machado 6	Lou DiMauro 2
Pete Ratzke 6	Chris Fockenber 2
Greg Mack 4	Tracey Fountaine 2
Al Langhorn 2	Dorian Megen 2
Mitch Williams 2	Joseph Dvorak 1

Three-point shots: Ingoglia (2), Machado (2), Walcott (2), Gaeta, Ryan.

PE Wolfpack 77	Scram 65
Wayne Cummings 28	Al Boerner 20
Mike Fulkerson 12	Tim Powers 12
Charlie Edwards 11	Joe Barkwill 11
Rob Singleton 10	Steve Nappi 10
Brian Hobson 8	Jim Rank 8
Jerry Hobson 8	Gerry Shepherd 4

Three-point shots: Boerner (3), Powers (3), Nappi (2).

## Classified Advertisements

### Placement Notices

The Laboratory's placement policy is to select the best-qualified candidate for an available position. Candidates are considered 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, disability or veteran status.

Each week, the Human Resources Division lists new placement notices, first, so employees may request consideration for themselves, and, second, for 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; call the JOBLINE, Ext. 7744 (344-7744), for a complete list of all job openings; use a TDD system to access job information by calling (516) 344-6018; or access current job openings on the World Wide Web at <http://www.bnl.gov/JOBS/jobs.html>.

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

**SCIENTIST** - With several years' experience in relativistic heavy-ion physics and in programming of FORTRAN and C++ code for AIX, Solaris, and SGI platforms. Experience in the design, development and implementation of software for large, modern physics detectors' infrastructure, and knowledge of AFS and UNIX will be preferred. Will join the STAR collider detector experiment at RHIC. Responsibilities will include aspects of the design, development and implementation of the software infrastructure system, such as library maintenance and development of coding standards. Contact: Timothy Hallman, Physics Department.