BROOKHAVEN BULLETIN
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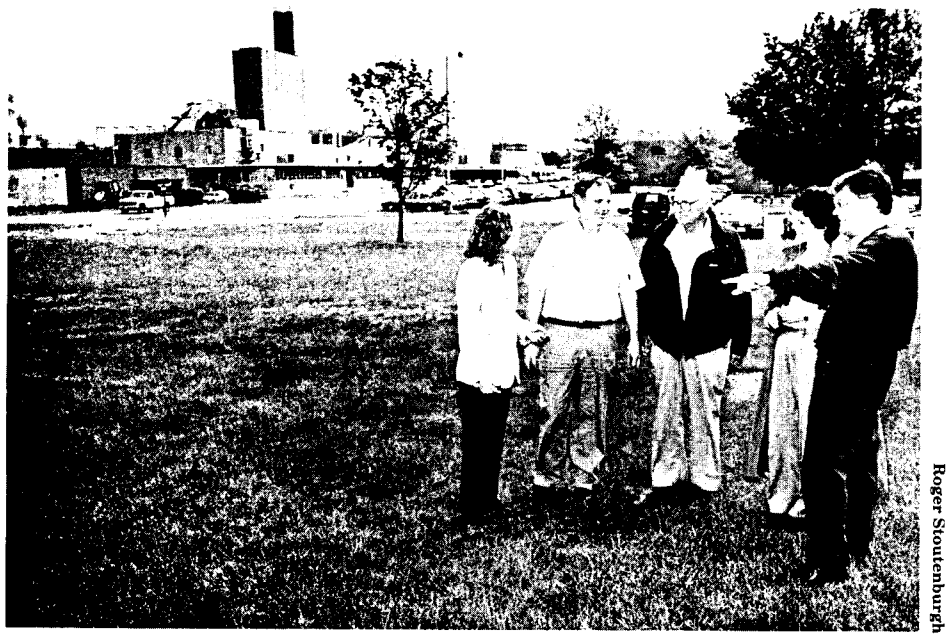
BROOKHAVEN NATIONAL LABORATORY

Ground Breaking Next Week for Powerful MRI Research Unit In New BNL Imaging and Neurosciences Center

Ground will be broken next Thursday for a brand-new building to make its mark on the BNL landscape — part of the new Brookhaven Center for Imaging and Neurosciences.

The ceremony will begin at 11 a.m. on Thursday, September 22, at the building site, the north end of the open ground between the Chemistry Department, Bldg. 555, and the Physics Department, Bldg. 510. The keynote speaker will be James Decker, Deputy Director of the Office of Energy Research in the U.S. Department of Energy (DOE). All employees who have prior permission from their supervisors are invited to attend.



Roger Stoutenburgh

Standing at the site of the proposed new magnetic resonance imaging research building are: (from left) Joanna Fowler, David Schlyer, Alfred Wolf, all of the Chemistry Department; Nora Volkow, Medical Department; and Charles Springer, Chemistry.

When completed in early 1995, the building will house an extremely powerful — four-tesla — magnet, which will be used for magnetic resonance imaging (MRI) research.

The four-tesla MRI facility will provide one of three complementary imaging methods on which will be founded the center's work on understanding the relationship between mental and physical processes in the human brain.

The other two-thirds of the center's team are the positron emission tomography, or PET, facility, which has gained world renown since beginning operations at BNL in the 1970s, and the Medical Department's Single Photon Emission Computed Tomography (SPECT) program, where research started in the mid-1980s.

Said Alfred Wolf, who pioneered PET research in the Chemistry Department from 1964 on, "The new center will provide a unique opportunity to combine PET, MRI and SPECT in coordinated research. We can study the same subjects and obtain cross references that will be invaluable. It will also further strengthen our interaction with the Medical Department where Nora Volkow is the new head of the SPECT program. These three modalities will form the nucleus of the Brookhaven Imaging Center, and will constitute a unique set of tools for

(continued on page 2)

RHIC Detector Groups Meet

When the Relativistic Heavy Ion Collider (RHIC) comes on line by 1999, two major RHIC detectors will search for the quark-gluon plasma (QGP), thought to have existed immediately following the Big Bang. One detector is called the Solenoidal Tracker at RHIC (STAR); the other is the Pioneering High Energy Nuclear Interaction Experiment (PHENIX).

Sitting in adjacent positions around the 3.8-kilometer-in-circumference RHIC ring, STAR will be found at the 6 o'clock position while PHENIX will be built at 8 o'clock. Using different approaches, each will look for new phenomena that signal the creation of QGP.

STAR will search for plasma signals on an event-by-event basis, using particles such as protons and mesons, which are produced in the later, cooling stages of RHIC's heavy ion collisions. PHENIX will concentrate on amassing statistical samples of rare events containing leptons and photons produced in the early, hotter stage of the collisions. The complementary approaches of STAR and PHENIX will give the RHIC program a balanced strategy in the search for QGP.

When completed, both of these huge detectors, each costing tens of millions of dollars, will result from major collaborations among hundreds of scientists from all over the world. Now, as they finalize designs and begin building the detectors' major components, many of these scientists recently converged on BNL for collaboration meetings (see photos inside).

BNCT Enters Next Phase

On Tuesday of this week, the first patient in over 30 years received radiation treatment in the Brookhaven Medical Research Reactor, as part of the Medical Department's boron neutron capture therapy (BNCT) research program.

BNCT is an experimental treatment for glioblastoma multiforme, a type of brain cancer that affects about 7,000 Americans each year. This cancer gives a life expectancy of only nine months after diagnosis for 50 percent of its victims, with fewer than three percent surviving beyond five years.

The patient, a 50-year-old woman, was treated under a U.S. Food and Drug Administration protocol described as "single-patient use." The protocol was also approved by BNL's Human Studies Review Committee, as well as the institutional review board at Beth Israel Hospital, the Lab's collaborating institution.

In BNCT, a compound containing the element boron-10 is administered to the patient, where it accumulates preferentially in malignant tumor tissue. The tumor is then irradiated with low-energy neutrons. Some of the boron nuclei absorb some of these neutrons and then self-destruct, releasing powerful but very short-ranged radiation. Because the boron is mostly concentrated in the tumor cells, the cancer should be destroyed without seriously affecting normal brain cells nearby.

BNL's original BNCT work, carried out in the 1950s to early 1960s, had disappointing results. The current BNCT program has been ongoing since the 1980s, with researchers developing an improved neutron beam and carrying out animal studies of a new boron compound known as BPA. The procedure this week is the first experimental application of the improved beam and new compound on a patient.

Further clinical experiments to determine the safety and efficacy of BNCT will be carried out in a few months, after the results of this first experiment are evaluated. — Mona S. Rowe

Gunther Now Heading Office of Environmental Restoration

William Gunther has been named Manager of BNL's Office of Environmental Restoration (OER), effective September 1. OER is responsible for managing environmental remediation projects on the BNL site, which has been on the National Priorities List of federal Superfund sites since 1989.

In announcing Gunther's appointment, Deputy Associate Director for Reactor, Safety and Security Michael Brooks said, "The Laboratory looks forward to the successful fulfillment of the OER mission by the OER staff under Bill's leadership."

Brooks also noted that Acting OER Manager Edward Murphy has returned to the Plant Engineering Division as Deputy Division Head. "The Laboratory is indebted to Ed for the excellent job he did in taking over the reins of OER until a permanent manager could be selected," Brooks said.

Gunther came to BNL in 1984 from the Long Island Lighting Company, or LILCO, where he managed fossil-fuel and nuclear power-plant operations for 15 years. At BNL, he joined the Department of Nuclear Energy, which is now the Department of Advanced Technology (DAT), as a research engineer, working on projects related to both commercial and U.S. Department of Energy (DOE) nuclear facilities.

A senior research engineer since 1990 and a group leader in DAT's Engineering Technology Division, his research projects have included engineering assessments and studies of the effects of aging in nuclear power plants. Over the past one and a half years, he has visited Los Alamos National Laboratory periodically to provide technical assistance in a variety of areas, including environmental remediation.

Roger Stoutenburgh

William Gunther

"My major emphasis will be to ensure the confidence of DOE's headquarters and area office in our ability to meet the program's milestones and goals. This means conducting aggressive programs to clean up the site," Gunther said. "We are at an exciting time right now, when we are able to put some of our plans into action to achieve the goals and commitments we have made."

Gunther said he also hopes to integrate OER's environmental remediation mission better with the environmental research being performed in such departments as Applied Science and Advanced Technology. "If we pool our resources and expertise, we should be able to become a regional center of excellence for environmental remediation, which can benefit other sites as well as our own," he continued.

Part of the Director's Office, OER was created in 1991 to oversee Superfund cleanups on site under an agreement among DOE, the U.S. Environmental Protection Agency and the New York State Department of Environmental Conservation.

OER's staff of 18, Gunther said, has been both friendly and supportive in helping him to adjust to his new position. He concluded, "I couldn't be more pleased with their technical ability and attitude." — Kara Villamil

Collaborating on Detectors for the Relativistic Heavy Ion Collider . . .

A STAR-Struck Meeting

Attending the meeting August 14-20 were over one third of STAR's 300-some collaborators from 33 institutions. The collaboration now includes 60 members from three institutions that just joined: Germany's Max Planck Institute for High Energy Physics, and Russia's Particle Physics Laboratory and Laboratory for High Energy Physics.

Shown below are the meeting's organizers: (from left) Ken Foley, BNL, project manager of the magnet; Tim Hallman, University of California, Los Angeles, deputy spokesman; Lee Schroeder, Lawrence Berkeley Laboratory (LBL), deputy project manager; Jay Marx, LBL, project manager; William Love, BNL, software project manager; John Harris, LBL, spokesman; Edward Platner, BNL, deputy spokesman.

"STAR will be a broad-based detector, ready and able as approved to see the signatures of a quark-gluon plasma," says Platner. "But, given that RHIC physics cannot be predicted precisely, we want to have as much flexibility in our search as possible, so even though the detector's four major systems are now under construction, we have proposed upgrades to improve our chances of seeing new physics."

Roger Stoutenburgh

Specifically, accepting the recommendations of STAR's upgrade committee, the collaborators have proposed to RHIC management a scenario whereby, before and/or after the experiment has begun, they can add a time-of-flight system, electromagnetic calorimeter, silicon vertex tracker and external time-projection chamber.

The PHENIX Also Rises

More than 100 of the 376 collaborators in the effort to build PHENIX came to the meeting and theory workshop, August 29 to September 1. Among the participants were: (from left) Soren Sorensen, University of Tennessee, a member of the theory interface committee, or THINC, that organized the theory workshop; Donna Earley, BNL, secretary for the PHENIX collaboration; Johanna Stachel, State University of New York at Stony Brook, chairwoman of the THINC committee; Shoji Nagamiya, Columbia University, PHENIX spokesman; Mariette Faulkner, BNL, secretary for PHENIX and the RHIC Detector Group; Sean Gavin, BNL, a member of the THINC committee; and Sam Aronson, BNL, PHENIX project director.

Roger Stoutenburgh

Discussion at the meeting ranged from the status of relativistic heavy-ion theory to the detector's ongoing design and construction. Said Aronson, "With PHENIX approved as a construction project and a plan for upgrades to the detector approved by the collaboration, we devoted a large fraction of the recent collaboration meeting to physics. We began a dialogue with many active theorists in the relativistic heavy-ion field at this meeting, and they gave us a summary of the latest theoretical developments, while we told them what PHENIX could measure. As this dialog continues, we will be building the detector, while trying to keep PHENIX flexible and open to new physics ideas."

Now that the research and development phase is complete, Aronson continued, contracts are being let, and design and prototype-building continue.

MRI — How It Works

From Basic Research . . .

MRI comes from a 1946 Nobel Prize-winning laboratory technique originally developed by Felix Bloch of Stanford University and Edward Purcell of Harvard University, for basic research in physics and, later, on the chemical features of molecules.

Their method uses the fact that the nuclei of many atoms have a quantity called a magnetic moment, which points in the direction of the spin of the atom's nucleus and behaves as a tiny compass needle in the presence of a magnetic field. By using a sufficiently large magnetic field, scientists can align the magnetic moments, and thus, the spin direction, of the atomic nuclei in a sample of material to be tested. Then, if radio-wave pulses are sent through the sample, the aligned spins emit their own radio signals that give the scientists information about the sample.

To Daily Use . . .

In 1973, Paul Lauterbur, then of the State University of New York at Stony Brook, and, in 1975, Richard Ernst in Zurich, showed how to take the technique into the everyday world. They demonstrated that, in the presence of magnetic field gradients, the radio-frequency signals from the spins could be used to produce a picture of the nuclei's spatial distribution. Since protons are naturally very abundant in the water of the human body, and the proton has a particularly large MRI signal, images of the organs inside can be made, with a clarity that depends partially on the strength of the magnet. Using magnets of up to two teslas, MRI became a common diagnostic tool.

Because it pertained to the nucleus of the atom, the original experiment was called nuclear magnetic resonance, or NMR. However, many nonscientists mistakenly thought that the "N" of NMR referred to nuclear radioactivity. So, to lessen the misunderstanding, the name of the medical imaging application was changed to MRI.

. . . And Back to New Basic Research: fMRI

As early as 1936, the late Linus Pauling at the California Institute of Technology had found that the amount of oxygen carried by hemoglobin in the blood changes the hemoglobin's electronic magnetic properties.

In 1990, Seiji Ogawa and colleagues at AT&T Bell Laboratories showed that MRI could detect these tiny changes in a living being.

This was important, because when a part of the brain is used, more blood flows to it, yet, initially, the active neurons seem to consume little of the extra available oxygen. Therefore, blood oxygen levels rise in an area where there is mental activity. Because MRI can detect these functional changes, scientists often refer to it as *functional* MRI, or fMRI. When powered with a magnet of four teslas, MRI gives images of such high resolution that it has become a top-ranking technique for the latest neuroscientific research.

MRI (continued)

studying normal and pathological states and support our growing neurosciences program."

The new center is being funded by DOE with support from the National Institutes of Health.

Both the PET and SPECT techniques use injected radiopharmaceuticals to study metabolic processes and the movement of drugs in the human body. PET research at BNL has included studies of schizophrenia, Alzheimer's disease, brain tumors and substance abuse.

MRI also gives clear, detailed pictures of soft tissue deep in the body, but the picture is obtained differently from PET and SPECT, using the response of the body's own protons to an external magnetic field (see box).

MRI is now quite commonly used in general medicine to diagnose damaged tissues invisible to x-rays. However, recent technological advances have greatly speeded up MRI's image-making. Images are now formed so swiftly that they can be used in forefront research on cognitive neuroscience — making MRI a worthy partner for PET.

For example, while PET shows blood flow to the active parts of the brain by detecting the increased delivery of the injected labeled water, which diffuses out of blood vessels to all parts of the brain, MRI shows blood flow by detecting rising blood oxygen levels in the active part of the brain.

Spearheading the massive organization required to get the new center operational is Charles Springer, for 26 years Professor of Chemistry at the State University of New York (SUNY) at Stony Brook. In January, Springer, whose main research interests are in MRI, also took up a joint appointment in BNL's Chemistry Department.

"We're looking forward to the new studies that can be done with this powerful tool, and we're pressing forward with planning and building as fast as possible," emphasized Springer.

This MRI image of a region at the back portion of Charles Springer's brain that includes the occipital pole was obtained with a four-tesla magnet at the Center for Magnetic Resonance Research of the University of Minnesota. The image was taken while a checkerboard pattern was flashed before Springer's eyes. When compared with a control image, it shows that only certain well-defined regions of gray matter in the visual cortex respond to the stimulus.

"We are already in the final stages of negotiation with a vendor [Siemens/SISCO] for the instrument."

The 3,500-square-foot building to house the MRI facility was designed by Ehasz Giacalone Associates, a Long Island-based architectural firm, and will be built by M.H. Kane Construction Inc., also a Long Island firm. The $980,000 facility will have special features, such as copper shielding around the magnet and examination rooms to shield against external radio-frequency electromagnetic radiation, and laminated-wood roof beams to eliminate any interference with the high magnetic field.

A high magnetic field magnet of four teslas is crucial for the exacting research to be done at BNL. "Clinical work in this country is all done using magnets of two teslas or less," Springer explained. "but we'll be doing *functional* MRI studies, known as fMRI, which need very high spatial resolution [see box]. The high magnetic field will allow us to distinguish tissues at least as small as one to two millimeters."

The $3.54 million instrument, including the superconducting magnet, was manufactured by Siemens Medi-

(continued on page 3)

Travel With BERA

Tickets for the following BERA trips are on sale now at the BERA Sales Office in Berkner Hall, weekdays from 9 a.m. to 1:30 p.m. For more information, call Andrea Dehler, Ext. 3347, or Kay Dellimore, Ext. 2873.

. . . To Atlantic City

The next BERA-sponsored, one-day trip will be to the Claridge Hotel and Casino on Saturday, October 29. The initial cost will be $22, but the hotel-casino will give a $10 coin return. The bus will leave Brookhaven Center promptly at 10 a.m., with an extra pickup at LIE Exit 63, if necessary. After a six-hour stay in Atlantic City, return will be about 11:45 p.m.

. . . To Radio City Music Hall

This is the last chance to put down a $50 deposit to reserve seats for the 1994 Christmas Show at Radio City Music Hall, on Sunday, December 11. The $99 cost will include:

- round-trip bus transportation from the Brookhaven Center, leaving at 10:30 a.m. and returning at 9 p.m.
- seeing the tree at Rockefeller Center, Christmas shopping or browsing on Fifth Avenue, visiting points of interest such as St. Patrick's Cathedral, Trump Plaza, FAO Schwarz, Barnes & Noble, Tiffany's, various museums and Central Park.
- full-course dinner at 4 p.m. at the Cafe 44 Restaurant in the theater district, with choices of steak, seafood, pasta and more.
- orchestra seats for the 6 p.m. show.
- all taxes and tips.

MRI

(continued)

cal Systems, a German firm with a U.S. affiliate, in collaboration with Spectroscopy Imaging Systems, a subsidiary of Varian Associates, in California. Only three other four-tesla MRI facilities are operating worldwide, all in the U.S, and all federally approved for research. "After two years, and a number of safety studies, experimental results from this higher field have shown no untoward effects on humans," Springer said.

"fMRI is a totally noninvasive technique," continued Springer, who, several times, has had his own brain imaged in the four-tesla facility at the University of Minnesota. "Also, the signals come directly from functional changes in the subject, together with information on the structure of the active region. So you get a very good picture of what is going on. With the added advantage of collaborative work with PET and SPECT, we expect to conduct some valuable studies."

In addition, the four-tesla instrument will be important for pursuing *relaxographic* MRI. This new, fundamental form of MRI was developed by Springer's research group at Stony Brook and can potentially produce extraordinarily clear, living maps of the precise volume of cells in different parts of the brain or other organs, as well as of the concentrations of metabolites. — Liz Seubert

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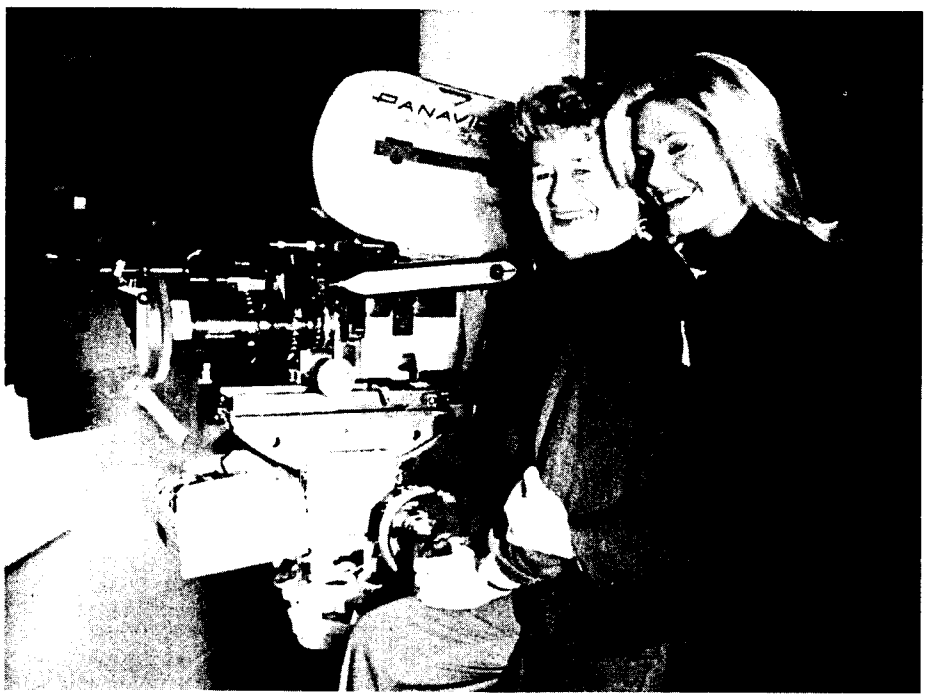
Her Trip Was *Under Suspicion*



Janet Sillas (left), Public Affairs Office, just returned from a trip to Portland, Oregon, where she spent many hours on the set of the new CBS series *Under Suspicion* — which stars her daughter Karen Sillas (right) as police detective Rose (Phil) Phillips, working in a mostly all-male precinct. The show makes its two-hour debut tonight, September 16, at 9 p.m., on WCBS (locally channel 2), and it can be seen thereafter on Friday nights at 9 p.m. Karen Sillas also stars in the award-winning film *What Happened Was*, which will be playing at the Cinema Arts Center in Huntington, September 30 through October 6.

Camera Club

The BNL Camera Club will hold its first meeting of the fall season on Tuesday, September 20, in Room D, Berkner Hall, from noon to 1 p.m. Bring prints or slides (a projector will be available) for a show and tell of "What I Did on My Summer Vacation." Other topics will include plans for activities for the coming year and the upcoming Photo-94 Expo at the Javits Center in New York City.

The Club is open to all BNL employees and family with an interest in photography. Activities include discussion groups, instructional programs, studio instruction and practice shoots with models, field trips and use of the club's darkroom in the Recreation Building. The club also maintains a display in Berkner Hall presenting the works of BNL employees and family, both members and nonmembers.

Club dues of $10 per year are due this month. Send a check made out to BNL Camera Club, to club treasurer, Richard Witkover, Bldg. 911B. For more information, call the club president Ripp Bowman, Ext. 4672.

Coming Up

The Vanguard Ensemble, a 15-member instrumental ensemble, will present a special concert in the 1994-5 BERA Concert Series, on Tuesday, September 27, at 8 p.m. in Berkner Hall. A donation of $6 is suggested for the performance.

LIANS Meeting

The Long Island Section of the American Nuclear Society (LIANS) will hold its first dinner meeting of the season on Wednesday, September 21, at the Radisson Hotel, Islandia. BNL Senior Physicist Kelvin Lynn, who is head of the Material Science Division in the Department of Applied Science and Leader of the Particle Investigations of Solids Group in the Physics Department, will speak on "Antimatter Does Matter."

Following cocktails at 6 p.m. and dinner at 7 p.m., the speaker will be introduced at 8 p.m. by David Rorer of BNL's Reactor Division. For reservations, call Jeanne D'Ascoli, Ext. 2277, by Monday, September 19.

Money Talks: Retirement Investments and Options

On Wednesday, September 21, a Money Talks lecture, entitled "Investments and Options at Retirement" will be presented from noon to 1 p.m. in Berkner Hall.

A representative from TIAA-CREF will discuss withdrawals, minimum distributions, survivor benefits and annuities. The seminar will also include information on providing spousal and beneficiary benefits, and on allocating assets at retirement.

For more information, contact Denise DiMeglio, Ext. 2881.

Let's Dance

Sign up now for the next session of lessons to be offered by the BNL Ballroom, Latin & Swing Dance Club, starting on Wednesday, September 21, in the north ballroom of the Brookhaven Center. Beginners can take lessons in tango and waltz from 6:30 to 7:30 p.m., while intermediates can learn fox trot and cha-cha from 5:30 to 6:30 p.m. For fees and other information, call Marsha Belford, Ext. 5053, or Susie Perino, Ext. 2477.

Defensive Driving

The Safety & Environmental Protection Division and the Occupational Medicine Clinic have scheduled Defensive Driving courses once a month from October through December. The course is designed and approved by the National Safety Council.

The six-hour course will be offered from 6 p.m. to 9 p.m. weekdays and from 9 a.m. to 3:30 p.m. on Saturdays. The fee is $19.95 per person, and the course is open to all employees, guests and family members.

To register, send your name, building and telephone number to Ronnie Zambelli, Bldg. 129A, or Mary Wood, Bldg. 490.

BNL's 2nd Healthfest — A Week Of Health, Fitness & Safety

During the week of October 10, BNLers are invited to participate in *Healthfest* — the Lab's second health, fitness and safety fair.

The four-day festival celebrating health, fitness and safety will include five lunchtime activities:

- **Monday, October 10 — Fitness Walk**.
- **Tuesday, October 11 —Talk** on reducing physical stress at home and at work with ergonomics.
- **Wednesday, October 12 — Workshop** on stress management, from a behavioral medicine perspective.
- **Thursday, October 13 — Seminar** on how to quit smoking once and for all.
- **Thursday, October 13 — Fitness Run**.

Also, on **Tuesday and Wednesday, October 11 and 12**, the main attraction of the festivities will be the **Health, Fitness and Safety Fair** itself. In Berkner Hall from 11 a.m. to 2 p.m. both days, all may peruse the displays, observe the demonstrations and take part in the free health screenings.

Employees and retirees who wish to volunteer to help with *Healthfest* should call Mary Wood, Ext. 5923. For more information and to sign up for the walk, run and/or screenings, look for a mailing to all employees and see the Brookhaven Bulletin of September 30.

Note to Employees:

Attendance at lectures, meetings and other special programs held during normal working hours is subject to supervisory concurrence.

1+ Dialing Coming To Long Island

Starting September 24, Long Island will join the majority of the U.S. in that the three-digit area code must be preceded by the digit 1 when placing telephone calls to other areas. The same pertains when dailing 800 toll-free calls.

So, when placing calls from BNL to locales off Long Island, the complete call structure will be: 9 + 1 + area code + 7-digit number.

Calls within the Long Island 516 area code will continue to be placed as they are now, by dialing 9 + 7 digits.

Leaves & Antiques

Fall for leaves and the beautiful 18th-century Van Cortlandt Manor and tavern house, as well as picturesque Cold Spring village on the banks of the Hudson, when you join the annual up-the-river-in-autumn bus trip sponsored by the BERA Art Society on Saturday, October 22. All are welcome.

The luxury coach will leave the BNL tennis court parking lot at 7:15 a.m. and, after a coffee stop, arrive at the manor at about 10:45 a.m. Visit the manor and adjoining tavern to view original and period paintings and furniture, together with demonstrations of early American open-hearth cooking and brick making.

The next stop will be nearby Cold Spring, to lunch and wander among historic houses and antique shops or stroll down to the bandstand in the tiny harbor until 5:30 p.m., when the bus will leave for BNL to arrive by about 8 p.m.

The cost is $25, including the group museum ticket. To join the trip or for information, call Liz Seubert, Ext. 2346 or 286-8563.

SUN Seminars

Starting Wednesday, September 21, representatives from SUN Microsystems will present technical seminars on a regular basis at BNL. The first of the series, entitled "SUN's Graphics Products and Strategy," will be held in the Physics large seminar room, Bldg. 510, from 9:30 a.m. to 10:30 a.m. with a Q&A session afterwards.

For a complete list of dates and topics for the SUN Seminar Series, check LINK.bnl or the Brookhaven Bulletin, or subscribe to the SUN Local User Group (SLUG-L) listserve. Topic suggestions are always welcome; e-mail them to sge@bnl.gov or call Susan Eng, Ext. 7988.

Bowling

Red and Green League

R. Wiseman bowled a 290/211/202/703 scratch series, R. Mulderig 257/203/631 scratch, R. Larsen 246/232/224/702 scratch, J. Griffin 245/212/654 scratch, K. Asselta 244/615 scratch, K. Koebel 241/221/639 scratch, F. Griswold 235, J. Goode 225/204/612 scratch, H. Arnesen 224, E. Larsen 221, R. Raynis 216, E. Meier 215, M. Palumbo 204, R. Scala 204, B. Sick 202, E. Sperry III 201, K. Riker 201.

Purple/White League

Gary Bryant 205, Ben Belligan 200, Ed Meier 194, John Niemczyk 184, Jim Meier 184, Doug Fisher 181, Joe Sheehan 181, John Addessi 180, Debbie Botts 178, Maureen DiMaiuta 175, Kay Conkling 173.

Cafeteria Menu

Monday, September 19	
Soup: Chicken noodle	.90/1.20
A la Carte: London broil w/mushrooms	3.85
Fitness: Italian calzone	3.50
Deli: Pastrami	3.20
Grill: Reuben	3.30
Tuesday, September 20	
Soup: Cream of broccoli	.90/1.20
A la Carte: Liver & onions	3.70
Fitness: Pasta w/marinara sauce	3.50
Deli: Virginia ham	3.20
Grill: Western omelet w/fries	3.30
Wednesday, September 21	
Soup: Bavarian lentil	.90/1.20
A la Carte: Pork chops	3.65
Fitness: Vegetable lasagna	3.50
Deli: Roast beef	3.20
Grill: Italian cheesesteak	3.30
Thursday, September 22	
Soup: Beef vegetable	.90/1.20
A la Carte: Deviled hens	4.00
Fitness: Spinach & feta quiche	3.65
Deli: Corned beef	3.20
Grill: Ham & cheese	3.30
Friday, September 23	
Soup: Seafood chowder	.90/1.20
Display Cooking: Oriental	4.25
Fitness: Baked flounder d'Uxelles	3.95
Deli: Turkey	3.20
Grill: Fried shrimp boat	3.30

Water Aerobics

Classes in water aerobics will be held at the Lab pool on Mondays, Tuesdays and Thursdays, from 5:15 to 6 p.m., starting September 19. For more information and registration, call Mary Wood, Ext. 5923.

Arrivals & Departures

Arrivals

Ruian Fei ..... Chemistry
Jessica R. Wilke ..... Dir. Off.

Departures

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

Deborah G. Blasco ..... Con. & Proc.

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 Personnel Division lists new placement notices. The purpose of these listings is, first, to give employees an opportunity to request consideration for themselves through Personnel, 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 (282-7744), for a complete listing of all openings.

LABORATORY RECRUITMENT - Opportunities for Laboratory employees.

DD 2793. OFFICE SERVICES POSITION - Requires AAS or previous relevant office experience. Will provide varied clerical support to Division administrative office including word processing, filing, distribution of documents and records maintenance. WordPerfect experience required; familiarity with IPAP and capital equipment records desirable. Plant Engineering Division.

OPEN RECRUITMENT - Opportunities for Laboratory employees and outside candidates.

DD 2985. MEDICAL ASSOCIATE POSITION - (term appointment) Requires MS, a strong background in toxicology, and a thorough knowledge of lead and its metabolism. Will pilot a DOE study of major hazards, starting with lead, which will include types of exposure, routes of uptake and prevalence. Extensive travel is also required. Medical Department.

Motor Vehicles & Supplies

89 VW CABROLET - convertible, ac, a/t, Blaupunkt, 68k hwy. miles, excel. cond., $8,500. 821-0686.

87 PLYMOUTH SUNDANCE - 67k mi., well maintained, 2-dr., driver's door needs repair, $3,000 neg. Wayne, Ext. 7238.

86 MONTE CARLO SS - a/t, p/s, p/w, high mi., $3,200. Clarence, Ext. 7238 or 281-0586 after 5 p.m.

82 HONDA CIVIC WAGON - 4-dr., 5-spd., am/fm, 120k mi., runs well, $800. Valerie, Ext. 5881.

TRAILER HITCH - class III, Draw-Tite model, from Dodge, $20. Don, Ext. 7237 or 744-2921 after 5:30.

TIRES - P225X75R14, 2, excel., $40/ea. 698-9274.

92 VW PASSAT - 4-dr., a/t, 28k mi., 5/50 warr., like new, $12,500. Joe, 331-0945.

91 SUZUKI QUADRUNNER 230 - $2,000. Eric, 369-2963.

90 FORD RANGER 4X4 - supercab, 5-spd., cap, 78k mi., $7,600. Joe, Ext. 4139 or 467-2422.

90 MITSUBISHI ECLIPSE - 37k mi., $8,000. Obelix, Ext. 4014.

90 MAZDA PROTEGE - 5-spd., ac, 86k mi., orig., owner, excel., $4,800. Mike, Ext. 4519 or 929-8453.

89 NISSAN SENTRA - white, 2-dr. sedan, 4-spd., m/t, 74k mi., very clean, new exhaust system, sunroof, am/fm cass., runs well, $3,300. Brian Hanson, 878-6452.

88 BUICK CENTURY - loaded, 50k mi., ac, p/s, p/b, am/fm tape, vinyl top, $6,000. Allen, 581-2961.

88 DODGE VAN - Tern conver., 51k mi., TV, ac, loaded, excel. cond., $8,900. Joan, Ext. 3305 after 4 p.m. or 265-4811.

87 FORD ECONOLINE 150 VAN - high mi., good cond., $2,000. Leo, Ext. 2952.

87 MAZDA 626 LX - 4-dr. sedan, a/t, ac, p/s, p/b, p/w, am/fm cass. stereo, cruise, air bag, 100k mi., $3,000 neg. Joe, Ext. 7496 or 924-7823.

86 MAZDA 323 - 4-dr. sedan, 4-cyl., a/t, ac, alarm, p/w, p/s, good eng, new tires/exhaust/batt., 85k mi., good cond., needs trans. work. $900. Jim, Ext. 5537.

86 MITSUBISHI MIRAGE - m/t, perfect running cond., new brakes, tires, $1,200. Edward, Ext. 7502.

86 MONTE CARLO SS - a/t, p/s, p/w, high mi., $3,200. Clarence, Ext. 7238 or 281-0586 after 5 p.m.

85 CUTLASS CIERA - 4-cyl., 100k mi., dependable transportation, needs minor mech. work, asking $900. Joe, Ext. 5139.

85 YAMAHA PW 80 DIRT BIKE - excel. cond., $550. Jason, 727-6714.

The Brookhaven Bulletin is printed on paper containing at least 50 percent recycled materials, with 10 percent post-consumer waste.

84 TOYOTA TERCEL - a/t, ac, am/fm, 110k, needs body work, $450. 444-8876 or 345-3253.

85 PONTIAC BONNEVILLE - p/s, ac, 4-dr., some rust, new trans. & radiator, reliable, smooth ride, $1,500 neg. 744-9368.

84 TOYOTA COROLLA - 5-dr., 5-spd., ac, 30+ mpg, runs well, some rust, $1,800. John, 821-2602.

84 TRANS AM 305 - H.O., black, loaded, mint, asking $3,800. Mike, 369-2170.

83 LINCOLN CONTINENTAL - reconditioned transmission $2,000 neg. Udo, Ext. 2245 or 286-1592.

81 CADILLAC COUPE DE VILLE - 89k mi., $1,500 or best offer. Ext. 1373.

81 FORD GRANADA - 6-cyl., good station car, $700. Ext. 2816 or 878-0480 eves.

79 HARLEY SUPERGLIDE MOTORCYCLE - 15k mi., excel. cond., $8,000. Dave, Ext. 4417.

65 FORD FALCON - collector, all orig., mint, low mi., must see. Joyce, Ext. 5241 or 727-1071.

POP-UP CAMPER - new cover, needs canvas, sleeps 6, good cond., $250 neg. 924-2298 eves. & wknds.

HEADS - for 3.8 engine, just rebuilt, $150. Phil, Ext. 3084.

LADDER RACK - for pickup truck, new, $275. Roy, 727-6714.

TIRES - radial, Response GT, 195x60HZ15, $80/pr.; Delco Freedom battery, $35; Craig Benri box radio, $60. 689-9234.

RIMS - 16", sets of original & Enkei, black/silver for '86 Corvette, best offer over $200/set. Frank, Ext. 5377.

Boats & Marine Supplies

19' FOUR-WINNS - cuddy, 190-h.p., FWC, Merc cruiser I/O, canvas, good cond., best offer. Michael, Ext. 2081 or 878-9384.

16' STARCRAFT - 35-h.p. Evinrude, Cox galvanized trailer. 325-0447 after 6 p.m.

12' AQUA-CAT CATAMARAN - ready to sail, trailer, new tramp, perfect starter boat, $795. Ron, Ext. 4553.

23' AUX KETCH - centerboard, shallow draft, 6-h.p. ob, sleeps 2, $1,500. Ext. 3749 or 286-5897.

21½' PURSUIT - deep V cuddy, 150-h.p. Yamaha, 140 hrs. ob, loaded, 1993 E-Z trailer, full canvas, mint, asking $18,000. Lloyd, 587-7876.

20' REGAL - 1985, cuddy cabin, complete, w/Marinz radio, 140-h.p. i/o, freshwater cooled, $2,500. Joel, Ext. 5038 or 751-3408.

19' BOAT - fg, 115-h.p. Johnson, nearly new trailer, p/winch, $2,500. Jim, Ext. 3372 or 821-0250.

12' SEA EAGLE - inflatable boat, 1993, hard floor, wooden transom, will take up to 15-h.p. motor, used twice, trailer incl., $750 new, asking $600. 732-9118.

ANCHORS - VHF, radio, compass, life preservers, bilge pumps, Zincs bilge switches, 100W radio antenna, 30-A shore cord, more. Allen, 581-2961.

Furnishings & Appliances

DINING ROOM - contemp., china closet, w/table, 4 chairs, good cond., $75. Linda, Ext. 2733 or 878-8491.

LOVE SEAT - excel. cond., brown, arm pillows, protectors, used 1 yr., $150. Ext. 3872.

AIR CONDITIONER - GE, 5,940 Btu, $30; rocking chair, brown, $12; juicer, Tefal, $15. Ivan, Ext. 5254.

AREA RUG - 9'x11', 1-yr. old, orig. $199, sell for $80. Tang, Ext. 7022.

CHINA CLOSET - upper leaded glass, lower solid oak, orig. $1,200, now $500; sofa, purple flowers on white, $50; table & 2 chairs, 1920's, $40. Joe, 281-8943.

CRIB - Child Craft, Chesapeake, oak, w/mattress, excel. cond., $150. 929-3235.

CRIB - Bassett, light oak, w/mattress, excel. cond., $100. Rich, Ext. 2386 or beeper 0713.

DINING ROOM - chairs, 4 ladderback, country French, light pickled finish, rush seats, $600. 473-2473.

DINING ROOM - Broyhill, china cabinet, buffet, good cond., large table, 3 leaves, 6 chairs, $450. Lloyd, 422-5881.

HIGH CHAIR - like new, $20. Phil, Ext. 5669.

REFRIGERATOR - Sears, model stock #6601, white, orig. $400, now $100. 727-0488.

REFRIGERATOR - Avanti, 5 cu. ft., excel. cond., $80. Bruno, Ext. 1373.

SHOWCASES - 6'-long, mirror doors, 4 shelves. Leo, Ext. 2952.

KITCHEN TABLE - 4 captain's chairs, $150; chest of drawers, $20; wicker storage hamper, $20; headboard bookcase, $20. Kathy, 744-2203.

TELEVISIONS - lamps, vacuum, TV cabinet, kitchen appliances, mixer, outdoor toys. Ext. 4014.

WASHER & DRYER - Frigidaire, stacked, large capacity, 4 yrs. left on 5 yr. warranty, orig. $1,300, sell for $800. 821-1042.

WASHING MACHINE - apt. size, lg. capacity, like new, portable hook-up, almond, on wheels, price neg. Angela, Ext. 5166.

WASHER - compact, Sanyo, $30; GE wall oven, $30; glass-top coffee table, $20; glass-top dining table, $30. Edward, Ext. 7502.

WATER BED - queen-size, Simmons, w/frame, sheets, $250; wicker nightstands, headboard, $20/ea.; hanging lamps, $10/ea. Nancy, Ext. 5744 or 286-0353.

WATER BED - queen size, w/heater, frame, $100. Lou, Ext. 7313 or 473-8562.

Sports, Hobbies & Pets

BIKE - 21", boy's freestyle, good cond., orig. $280, asking $50. Ext. 5316 or 289-0034.

DOG - black mixed poodle, approx. 6 yrs. old, very sweet, doghouse trained. Lori Wood, Ext. 7698.

DOG CRATE - collapsible, holds 60-lb. dog, $25; Vari-Kennel, for transport, $25. Nancy, Ext. 5744 or 286-0353.

DOG MEDICATION - heartworm, hookworm, 150 tablets Filarahits Plus, $20. 744-5448.

DOLLHOUSE - farmhouse-style, full assembled, cedar shake roof, $75 firm. 924-2298 eves & wknds.

FISH TANK - 125-gallon, Perfecto hood, wet/dry filter, stand, heaters, air tubing, air pump, etc. 345-0568.

FISH TANK - 70-gallon, all necessary filters, gravel, lights, etc. $200 or best offer. 589-9325.

PICCOLO - Gemeinhart, 1 yr. old, high impact plastic body, headjoint, conical bore, great for beginner, $195. Danielle, 286-0259.

R/C CAR - JrT, w/charger, extras, best offer. Ext. 7225.

SEWING MACHINE - Brother, model 5100, good cond., needs new bobbin, case, many stitches, in cabinet, w/drawers, $50. Kathy, Ext. 2267.

SEWING MACHINE - embroidery stitches, zig zag, $50. Joe, 331-0945.

SKIS - Olin 180cm w/Salomon 444 bindings, run-away straps, $20. Don, Ext. 7237 or 744-2921 after 5:30.

Tools, House & Garden

BELT SANDER - stationary, w/9" disk sander, ask. $175; Shopsmith w/bandsaw, jointer, lathe duplicator, scroll saw, more, ask. $1,000. D. Shea, Ext. 5042.

SWIMMING POOL EQUIPMENT - solar heat exchange panels, 4'x9', $40/ea. or best offer. Ext. 2165.

TREES - Japanese maples, $10-45+, 265-6542.

HEATER - kerosene, like new, orig. $135, asking $50. Tom, Ext. 7330 or 874-2340.

PATIO SET - wrought iron, table, 4 set, $200; stove, tempwood, wood burning, square cabinet shape, top load, $150. Marty, Rxt. 2214.Marty, Ext. 2214.

PUMP MOTORS - two 1-h.p., $10/ea.; two ¾-h.p., $5/ea. Ralph, Ext. 2180.

SWIMMING POOL - above ground, 30x16', all access., $600 neg. Edward, Ext. 7502.

WELL PUMP - F&W, 3-stage, good cond., $75. Mauro, 265-6542.

Audio, Video & Computer

CD PLAYERS - Magnavox (Phillips) CDB-650 & Technics SL-P3 CD player, w/manuals and test reports, $50/ea. Phil, Ext. 7934.

COMPUTER - Apple IIC, 7 yrs. old w/printer, perfect cond., some software incl., $390; table & chair, perfect cond., $100. Donna, 281-4866.

JUKEBOX - 1977 Seeburg, Art Deco style, stores 100 45 rpm disks, quadraphonic sound, vol. cont., coin & bill acceptor, $900 neg. T. Sanchez, 732-2427.

MONITOR - Apple Color, 13", high resol. (640 x 480) RGB, excel. cond., $200. Bob or Nancy, 722-3635.

MOVIES - VHS, original, 10/$20. 924-7823 after 5:30.

SOFTWARE - never used, Quattro-Pro $35, Word for Windows, $40. Turbo Pascal Windows, $40, $100 for all. Gil, 744-5553.

STEREO - GE w/cabinet, am/fm record player, r/r tape, speakers, $200. 286-3377.

TAPE BACKUP - 250 MEG internal tape backup, 3 tapes, DOS and Windows software, less than a year old, used twice, $140. Bob, Ext. 7257.

TURNTABLE - dual, and LP records, classical, shows, popular, any reasonable offer. Allen, 581-2961.

TV - 13" color, $25; 13" b&w TV, $15; electric heater, $10. Peter, Ext. 3048.

CAMCORDER - RCA, VHS, low hrs., case, zoom, $250. Ext. 5316.

TV - 20", RCA, color, 2 yrs. old, $95. Joe, 331-0945.

VIDEO - Panasonic, Pro-Line, MX10 A/V mixer, $1,400; AG-450 S-VHS camcorder, $1,000; AG7400, S-VHS, $1,500. Brian, Ext. 7519 or 234-9487.

Miscellaneous

JACKET - silver fox, med. size, like new, orig. $600, ask. $200. Ext. 3872.

BABY SWING - Graco, battery powered, $12; infant car seat & carrier, Century, $20. Luba, 341-1054.

STROLLER - Duo, great cond. $50. Diana, Ext. 3681 or 399-3910.

WEDDING DRESS SLIP - 1-layer netting, size 10, control waist band, $10. Kathy, Ext. 2267 or 395-6520 after 6 p.m.

Yard Sale

EAST ISLIP - furniture, moving, everything must go, lamps, hi-riser, paintings, Sat., 9/17, 10 a.m., 135 Simmons Dr. Allen, 581-2961.

Free

DOG - 2½-mo.-old Chow Chow, light cin. male, housebroken, lovable, needs good home, no toddlers, great watch dog. Ext. 3426.

PING-PONG TABLE - regular. Ext. 2423.

SWIMMING POOL EQUIPMENT - in-ground, ladders, diving board, submerged light, hose, etc. Ralph, Ext. 2180.

WINDOWS - four, double hung w/storms & screens. Lou, Ext. 7313.

Lost & Found

FOUND - money, by Post Office. Ext. 2345.

LOST - model rocket, on Wed., 9/7, east of 7th Ave., near fields by Bldg. 211, orange fins and cone. Mark, Ext. 4125.

LOST - U.S. Savings Bond, possibly at Post Office. Ext. 3032.

Wanted

BABYSITTER - for 4-yr.-old girl, Shoreham-Wading River area, flexible hours, after work and occasional evenings. Denise, Ext. 2776 or 878-3618.

BOOKCASE - wood, open-shelf cabinet, 4-5' high, but not more than 28" wide. John, Ext., 7671.

FOOTBALL FANS - people for luxury bus to Army vs. Air Force at West Point, Nov. 5; breakfast, $50/all. Ron Yuhas, Ext. 4144 or Bob, Ext. 3299

GUITARS - acoustic & electric. Bill, 467-1343.

P.A. SYSTEM - Mark, Ext. 4986 or 821-3169.

RIDE - someone to drop my son off at the bus stop, Mastic Beach area. Karen, 395-4716.

TIRES - two, F78x14, decent cond. 924-6751.

TIRES - all weather P205/75R14, good cond. Susan, Ext. 7647.

TREADMILL - exerciser, decent cond. Ted, Ext. 2620.

WHITEWATER RAFTER - one slot left for raft trip, 9/23-25, Gauley River, W. Va. Sue, Ext. 3492.

On-Site Services

TEACHERS FEDERAL CREDIT UNION - free rate comparison on auto & home insurance from CUAIS Agency Insurance rep. M.Yutes, Tues., 9/20, 10 a.m. to 4:30 p.m., bring current policies, for on-site meeting, call Ext. 2790.

Farewell Gathering

CHARLIE BOHNENBLUSCH - Wed., 9/28, 5:15 at Brookhaven Center, $17 incl. hot buffet, coffee/tea, dessert & gift. RSVP by 9/23. Jim Alduino, Ext. 4696.

Classified Ad deadline is 4:30 p.m. Friday for publication Friday of the next week.