BROOKHAVEN BULLETIN
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BROOKHAVEN NATIONAL LABORATORY

# RHIC's Sleuths to Take on 'The Case of the Colliding Ions'

Though not a physicist, fictional detective Sherlock Holmes has something in common with scientists at BNL's Relativistic Heavy Ion Collider (RHIC): a mission to detect the unusual using only the slightest of clues. And, as Holmes often said to Watson, "It's elementary!" for both.

Elementary particles, that is.

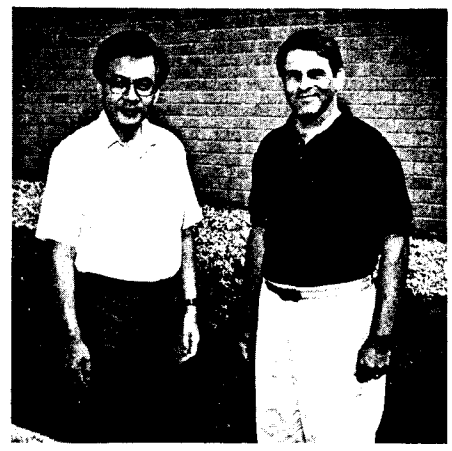
But instead of Holmes' magnifying glass, RHIC scientists will need to use sophisticated detectors to shed some light on the products of heavy-ion collisions and deduce exactly what happens in the collisions.

With any luck, the large devices will also detect the presence of the quark-gluon plasma, a unique state of matter which physicists believe previously occurred only a microsecond after the universe's birth.

**Members of the large international collaborations to design and build PHENIX and STAR, two large particle detectors to be installed at BNL's Relativistic Heavy Ion Collider, met on site this week.**

**At right: PHENIX Project Head Samuel Aronson (right), BNL, and PHENIX Spokesman Shoji Nagamiya, Columbia University.**

Photos by Peter Horton



**Shown at the STAR meeting are (from left): Thomas Ludlam, RHIC Associate Project Head for Detectors and Experiment Support; Edward Platner, STAR Co-Deputy Spokesman, BNL; John Harris, STAR Spokesman, Lawrence Berkeley Laboratory (LBL); Jay Marx, STAR Technical Director, LBL; and Tim Hallman, STAR Co-Deputy Spokesman, University of California, Los Angeles.**

### A Dynamic Duo

The two largest detector experiments are called STAR, for Solenoidal Tracker At RHIC, and PHENIX, for Pioneering High Energy Nuclear Interaction Experiment. Both are beginning the construction phase, having been designed and reviewed over several years by collaborations of hundreds of scientists in dozens of universities and laboratories in the U.S. and abroad.

Members of the STAR collaboration met at BNL all this week to discuss its progress and to plan for the future. Meanwhile, part of the PHENIX collaboration group met at the Lab early this week as part of ongoing work preceding a cost and schedule review in November.

Each detector will cost around $45 million to build, and both will be ready by the time RHIC comes on-line later this decade. But that's where the similarities end, says Thomas Ludlam, RHIC Associate Project Head for Detectors and Experiment Support.

"The two detectors are orthogonal in approach," Ludlam explained. "STAR will get the first look at what is going on globally, the large-angle view of all that's coming out of the collision. If there's something spectacular, this will be the survey instrument that charts the new territory."

On the other hand, he continued, "PHENIX can measure the messages from the deep interior of the collision. This is a different kind of measurement which is in some respects harder, but it is sensitive to what goes on in the early stages of a collision. Each has the potential for quick new discoveries and enough in common that each can affirm the results of the other."

### A STAR is Born

The STAR experiment is designed to detect the presence of up to a third of the wide range of collision products, including protons, mesons and other hadrons produced in the cooling stages of a collision, as well as particles containing rare quarks produced in tiny numbers at high energies.

"By looking at the momentum and angles of the particles, and using time-of-flight and energy loss to identify the particle species, we can get a complete snapshot of most of the collision," said Edward Platner, BNL Senior Physicist and Co-Deputy Spokesman for STAR.

The gas-filled tracking chamber in which they will do this collects electrons that are ripped off the gas atoms as particles speed out of the collision's core. The mosaic of pads covering the chamber's end plates registers the "hit" from such electrons, producing a three-dimensional collision profile.

Aside from this time-projection chamber, STAR will also include a silicon drift vertex tracker, invented by BNL Physicist Pavel Rehak, which uses thin slabs of silicon to collect ionization information even more precisely.

"In previous heavy-ion experiments, scientists have been limited to a partial picture of the collision," said Tim Hallman, a University of California, Los Angeles, research physicist and Co-Deputy Spokesman for STAR. "The main focus here is to measure as many observables as possible in a single event and correlate them."

### A PHENIX Rises

While STAR, at the 6 o'clock position in RHIC's ring, will mostly go after hadrons, PHENIX, at the 8 o'clock spot, is primarily designed to look for the electromagnetically interacting offshoots of heavy-ion collisions: electrons, photons and muons, as well as some hadrons. These particles, which can make it out of the center of a collision without being changed, are like messengers from the core, carrying a missive about the interior by the way they move.

PHENIX, said its Project Director, BNL Senior Physicist Samuel Aronson, is an "inside out" approach compared to STAR, with the magnets on the inside and the detectors on the outside. This way, Aronson said, the three spectrometers (two perpendicular to the beam direction, one along it) that comprise PHENIX will be able to make more precise measurement of the momentum, time of flight and energy of particles as they travel their trajectory out of the beam line.

(continued on page 2)

## Coming Up

**Jack Ritchie, an assistant professor in the Physics Department at the University of Texas at Austin and co-spokesman for Experiment 871 at BNL's Alternating Gradient Synchrotron (AGS), will deliver the second Sambamurti Memorial Lecture. Students are particularly welcome to attend Ritchie's talk on "Rare Kaon Decays at the AGS," which will be held on Tuesday, July 27, at 1:30 p.m., in the Large Seminar Room in the Physics Department, Bldg. 510.**

# For Your Information: TID Isn't Just Books

As the over 200 people who checked out the Research Library during its housewarming on June 23 can attest, the renewed and improved library is not just a building housing books and journals.

In living up to its middle name, the Technical Information Division has turned the library into a place where people and information can be brought together — whether or not Research Library users come to Bldg. 477 itself. This change in philosophy and resources was brought about over the last three years, as TID implemented the suggestions of the Research Library Advisory Committee, which is chaired by Gwyn Williams of the National Synchrotron Light Source Department.

In fact, the most popular demonstrations during the open house were the new services that allow patrons to access the library's holdings and information elsewhere via computer. Library browsers were most interested in learning how to use INFORM. As the library's database, it not only includes the library's catalog, but also offers Internet gateways, Current Contents and more.

Interest was also expressed in the ongoing development of an interactive multimedia approach to introducing library services and improvements. To be completed by this fall, this computer-based system will invoke sound, graphics, text and the like in mapping out the library for a user.

The renewed library also showed off improvements to its physical plant, such as its expanded book stacks, its reorganized current periodical room, its enlarged bound-journal stacks, the enclosed photocopying area, etc. These were made possible with the help of the Plant Engineering Division.

Those who missed the open house are invited anytime to learn about TID's services. For more information, call Ext. 3483 or 3487.

Roger Stoutenburgh

**During the Research Library's open house, patrons sampled information from the 17 databases available on CD-ROM. Helping users seated at the CD-ROM terminals in the optical technology room are TID staffers: (from left, standing) Marylin Banks, Linda Thompson, Doris Alkes, Betsy Schwartz (seated), and Joann Totans.**

# Congratulations to BNL's Graduates

*To encourage employees to improve their knowledge and abilities, the Lab offers a tuition-refund program. Regular full-time or eligible part-time employees may apply for this refund for courses that are pertinent to present or future work that the employee might be expected to perform. Refunds will be received on the successful completion of the course or courses.*

*To apply, obtain a request form from the Tuition Refund Office in Personnel and present it to your supervisor and department or division management for approval. Then, submit it back to the Tuition Refund Office. Once the request is approved, you may start your classes.*

*BNL reimburses 75 percent of tuition costs for undergraduate courses, and 100 percent for graduate courses. For more information, contact the Tuition Refund Office, Ext. 7631.*

This spring, the Lab congratulates eight employees who benefited from the Tuition Refund Program to graduate with a variety of degrees. Among these hardworking and successful candidates are the following:

• **Caroline Kramer**, Department of Applied Science (DAS), achieved a master's degree in health sciences from the State University of New York at Stony Brook. A community health associate with DAS's Injury Prevention and Analysis Group, Kramer said, "It took about two and a half years, at six credits a semester and 12 independent credits during the summer for a total of 38 credits.

"My thesis dealt with the adequacy of death certificate and hospital discharge data for determining trauma mortality and morbidity patterns," continued Kramer. "I hope to expand on this topic for my eventual doctoral thesis. It's been extremely interesting work, but it would have been difficult to afford tuition without the Lab's refund program."

• **Sarah Ebron**, Plant Engineering Division, completed her associate's degree in business administration at Suffolk Community College.

Said Ebron, who works as an office assistant in the Maintenance Management Center (MMC), "I always tell coworkers in our division, no matter how long you've been out of school — you can go back. I was helped by BNL's tuition-refund program and the many people who assisted me when I needed extra help. A special THANK YOU goes to co-workers in Accounts Payable, Meteorology, Advanced Technology, Technical Information and MMC, not only for their help, but also, for their encouragement. It's finally done — and no nervous breakdown!"

• A year after joining BNL in 1982 with an associate's degree (AS) as in electric technology from the then State University of New York Agricultural and Technical College at Farmingdale, **Anthony Kuczewski**, Physics Department, started night classes for an AS in engineering science. Then, with two AS degrees, he transferred to Polytechnic University for a bachelor's degree in electrical engineering, which he received this June.

"It's an ongoing process," said Kuczewski, who works with the physics experiment team at the National Synchrotron Light Source (NSLS) known as LEGS. "The work I'm doing with the LEGS group has made me want to know more so that I can make a significant contribution to the project, so I've decided to begin working on an MS in electro-physics. Meeting all the costs involved would be difficult, so I appreciate the tuition-refund program."

Roger Stoutenburgh

**Relaxing after their successful efforts are: (from left) Anthony Kuczewski, Physics Department; Sarah Ebron, Plant Engineering Division; Richard Stoner, National Synchrotron Light Source Department; Caroline Kramer, Department of Applied Science; and Melvin LeBlanc, Safety & Environmental Protection Division, who are among the 1993 graduates under BNL's Tuition Refund Program.**

• **Melvin LeBlanc**, of the Safety & Environmental Protection Division (SEP), graduated with distinction from the New York Institute of Technology, with a master's degree. LeBlanc, who joined BNL as an SEP staff engineer in April 1991, works as an accident investigator for the Lab site. He decided to start attending classes for his master's in September of his first year here.

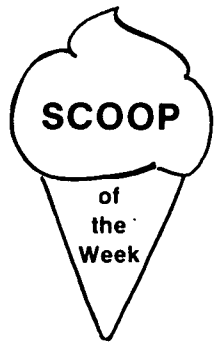
"I wanted to complete this degree for the knowledge and the academic challenge," he said. "The Lab's tuition-refund program took care of the financial worries, and the academics were my responsibility. Also, I'm sure my wife's encouragement and prayers kept me on the right track."

• **Richard Stoner**, National Synchrotron Light Source Department, achieved his bachelor's degree in mathematical and natural sciences from Dowling College.

"In 1991, when I'd been here for two years, I decided to go for a full four-year degree," Stoner explained. "At that time, I did shift work as a safety coordinator, making it easy to fit in classes. Then I was switched to regular hours, troubleshooting and helping build devices with the Beam-line Technical Support Group, so it was quite a challenge to go to class at night. But I hung in there, and I'm very happy I did it, as it will eventually give me better career opportunities, and I plan to go on for my master's. Financial obstacles were a problem, therefore the Lab's refund program was a very important factor for me."

— Liz Seubert

# Scoop of the Week




The second Scoop of the Week this summer goes to Renée Flack, Office of Educational Programs, for suggesting the story on employees who were graduated under BNL's Tuition Refund program.

During the summer, if you can scoop all the of the Bulletin's informed sources and if the Bulletin publishes a story based on your idea, then you too may win a Scoop of the Week, an official certificate for a free frozen dessert of your choice at the Cafeteria, compliments of Service America Corporation.

To enter the Scoop of the Week contest, send your hot tips to the Brookhaven Bulletin, Bldg. 134, or call Ext. 5053.

## RHIC (cont'd)

Aronson stressed that the electromagnetic and hadronic detection goals of the 1,000-ton, 40-foot PHENIX are wide enough to please subscribers to different theories of quark-gluon plasma. "Many experimentalists like that latitude, in order to find the best way of seeing the plasma," he said. "We're not out to confirm some precise theory. We're there to see what's out there."

### One Goal: Quark-Gluon Plasma

Although they will go about it differently, RHIC "detectives" on both detector projects hope to pick up the same thing with their high-tech "magnifying glasses": the presence of quark-gluon plasma, or QGP.

This rare, excited soup, made of free versions of the usually bound quark and gluon particles that make up much matter, is theorized to cool very quickly after being formed. As it does, the separated quarks and gluons should recombine to form hadrons, as theoreticians think they did shortly after the Big Bang.

No one is quite sure what kind of signals QGP's formation or cooling will send out, but the physicists working on the STAR and PHENIX experiments hope that their careful planning will cover as many bases as possible.

And, even if the QGP remains elusive for some time, Platner and Hallman said they anticipate exciting findings about extremely hot, dense matter. "When you stray so far away from things that have been explored, the chances of finding something new are high," Platner said.

Although both detectors are only beginning to near reality, Ludlam already foresees their future and that of other, smaller detectors to be installed along RHIC's giant ring.

"Detectors are evolutionary," he said. "We plan that, over approximately five years, the STAR and PHENIX detectors will complete their jobs and be upgraded to new capabilities. But, in those first few years, we hope to make the discoveries that will open up a whole new generation of experiments." — Kara Villamil

# Inside Info

**BNL physicists** are among the most cited of all scientists at the nation's eight largest U.S. Department of Energy-funded laboratories, according to a recent survey. An average of 9.44 researchers cited each of the 759 general physics publications by the Lab's Physicists between 1988 and 1992 — the highest average among the labs and well above national averages for citations-per-paper. Between 1981 and 1992, the average citation rate was a lab-leading 17.37 for each of the 1,951 papers published by BNL physicists.

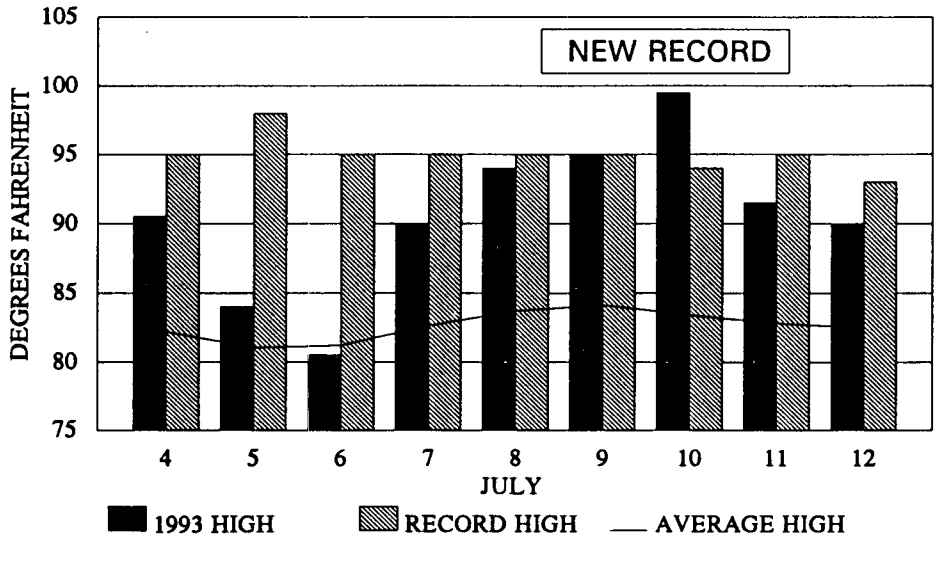
The survey, conducted by the Institute for Scientific Information (ISI), reviewed citations of national laboratory research published in journals indexed by ISI and divided publication topics into nine categories.

BNL scientists' work was also cited at above-average rates in the fields of applied and condensed-matter physics (1988-1992, 1981-1992); physical chemistry/chemical physics (1988-1992, 1981-1992); analytical, inorganic and nuclear chemistry (1988-1992, 1981-1992); nuclear engineering (1988-1992); and experimental biology/medicine (1981-1992).

Although BNL did not have the largest number of articles in any category, its overall strong ranking in the number of citations indicates a significant impact on the scientific community.

Labs were ranked only in categories in which their researchers published more than 100 papers. Results of the survey originally appeared in the ISI newsletter, and were recently reported in *The Scientist*.

# The Heat Wave of '93 at BNL




**The high temperature of 99.5°F on site this past Saturday, July 10, was a record high for that date, beating the old record of 94°F set in 1988. Also note that the high temperature for Friday, July 9, tied the record set in 1981. And high temperatures at BNL were well above the average high during the recent heat wave, officially July 7-12, according to BNL meteorologist Victor Cassella. The Lab started maintaining weather records in 1949, and, looking quickly over the past 43 years, Cassella says that July is usually hotter in the second half of the month. Are we in store for more? Let's hope not!**

# Software Demo

Tom Dillon and Bill Chu from Fluid Dynamics International, Inc., will be in the CCD Seminar Room, Bldg. 515, on Wednesday, July 21, from 9 to 11:30 a.m., to demonstrate the fluid-dynamics analysis package FIDAP 7.0, one of the leading computational programs in the field. For more information and reservations, contact Lin Jia, Ext. 3977.

# Choose Right, Choose Light: Choose Fitness Fare at Cafeteria

If you eat in the Berkner Hall Cafeteria, you might have noticed that some of the food there seems a little healthier for you lately. You might also have spotted a red-and-white jogger logo, and a board where the vital nutritional statistics of some dishes are posted.

What's going on?

Service America, the food service contractor to BNL and 2,200 other locations nationwide, has revamped its Fitness Fare program, adding 150 new recipes and increasing its visibility.

And, if you're not careful, you may wind up eating foods that are healthy, tasty and attractive.

"If you feel good about what you're eating, you enjoy it more," said Christopher Gagnon, Chef and Cafeteria Manager. He emphasized that the Fitness Fare foods, which range from breakfast and lunch entrees to desserts, have been adapted from, and are offered in addition to, the regular bill of fare.

"This is not a controlled diet program; it's just to inform you of the ingredients so that, if you are following a guideline, you can make your own choices," he said.

Roger Stoutenburgh

**Eating right at the cafeteria has become easier with its Fitness Fare. Here, Health Promotion Specialist Mary Wood and Chef Christopher Gagnon flank the board listing the day's Fitness Fare dishes and their nutritional information.**

In other words, if you want to eat healthy foods but need some help, choose Fitness Fare and you can't go wrong.

Mary Wood, Health Promotion Specialist at the BNL Occupational Medicine Clinic, applauded the renovation. "The Cafeteria has always had a good variety of food," she said, "but it's now getting into the healthy choices. People, such as those in the Weight Watchers program, can fit these choices into their food programs." In addition to healthy food choices, Wood also mentioned exercise as an important part of personal wellness.

Under Service America guidelines, Fitness Fare entree portions can contain no more than 400 calories, 15 grams of fat, 100 milligrams of cholesterol and 600 milligrams of sodium. Of course, many have much less of one or most of those, making Fitness Fare choices a healthy way to enjoy fitness. — Kara Villamil

## Tennis News

Employees who purchased round-trip bus transportation and U.S. Open tennis tickets for the September 7 matches can pick up their tickets at the BERA Sales Office.

## Travels With BERA

*The Brookhaven Employees Recreation Association (BERA) has three upcoming trips for which seats remain. Sign up with Carolann Zebrowski at the BERA Sales Office in Berkner Hall, weekdays, 9 a.m. to 1:30 p.m. For more information, call Zebrowski, Ext. 3347, or Kay Dellimore, Ext. 2873.*

### Atlantic City

This one-day bus trip to Trump Castle Hotel & Casino on the marina in Atlantic City is set for Saturday, August 7. The initial cost will be $20, but the hotel-casino will give a $7.50 coin return and a $5 deferred-return voucher.

### Broadway: *Crazy For You*

Rescheduled for Saturday, September 25, this one-day bus trip to New York City costs $125 per person and includes: round-trip transportation, a brief stop on Fifth Avenue, orchestra seats for a matinee performance of *Crazy for You* and a full-course dinner at Cafe 44.

### Weekend in Connecticut

The new dates for this two-day bus trip to Mystic and New London, Connecticut are October 9 & 10. For $125 per person, based on double occupancy, the overnight package includes: round-trip transportation, deluxe accommodations at the Radisson Hotel in New London, American breakfast, Foxwood Casino rebate, shuttle to casino, and guided tour of Mystic Aquarium, Old Mystic Village, Mystic Seaport, U.S.S. Nautilus Museum, etc. A $50 deposit per person is due when reservations are made.

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## BWIS Meeting

Deborah O'Neill, Director of BNL's Child Development Center (CDC), will be the guest speaker at the next meeting of Brookhaven Women in Science (BWIS). She will give an "Overview of the CDC" on Thursday, July 22, at noon, in Room B, Berkner Hall.

O'Neill has been CDC Director since the center opened in September 1991. Before that, she had spent nine years at the Just Kids Early Childhood Learning Center in Middle Island, where she taught preschool classes, instructed kindergarten, developed an enrichment program and supervised the infant center.

In presenting an overview of the CDC program, O'Neill will explain the goals and activities for specific age groups. She will also discuss the center's waiting list and policies.

All are invited. Please bring your lunch; coffee and tea will be served.

## More Pledges Needed For Swimarathon'93

It is not too late to make a tax-deductible contribution to the American Cancer Society by pledging to sponsor swimmers in tomorrow's Swimarathon'93.

From 9 a.m. to 9 p.m. at the BNL pool, individual and team swimmers will be putting in as many laps as they can for this good cause in the second BNL Swimarathon sponsored by BERA.

Even if you can't make it to the pool to swim, help out or watch the event, you can still make either a per-lap pledge or a flat contribution by calling Kathy Ratto, Ext. 7250.

## Speakers Bureau

The following speakers have given talks on behalf of the Laboratory:

**James Brower,** DO: Harborfields High School Career Day, "Careers in Science," January 12.

**Gregory Slovik,** DNE: Seaford Middle School Career Day, "Careers in Science," January 13.

**R.C. Anderson,** DO, retired, Jericho-Brookville Lions Club, "BNL in General," February 9.

**Donald Gardner,** Phys.: Harborfields High School Career Day, "Careers in Engineering," February 10.

**Robert Brown,** Med.: African '93 Tour Committee, "Paradise Lost: The Marshall Islands Saga," February 21.

**Robert Brown,** Med.; **Sydell Lamb,** Bio.: Friendship Baptist Church Black History Month, "Tracing DNA to Prehistoric Woman," February 24.

**Anthony Ryan,** RHIC: Professional Engineering Conference, Stony Brook University/Polytechnic Institute, "Particle Accelerators," February 27.

**Daryl Kaurin,** DNE: Half Hollow Hills Chemistry Class, "Radiation Is All Around You," March 22.

**James Powell,** DNE: Icon Science Fiction Conference at State University of New York at Stony Brook, "Rockets," April 16-18.

**Anthony Fresco,** DNE: Half Hollow Hills High School East, "Careers in Engineering and Math," April 28.

**Robert Brown,** Med.; **Frances Ligon,** DO; **Hue-Anh Pham,** RHIC; **Liz Rosa,** DOE; **William Sells,** SEP: Riverhead Middle School Multicultural Awareness Day, "High School, College & Business Experience," April 30.

**Edward Stein,** RHIC; **Kim Stein,** DOE: 7th Annual Career Day at East Islip High School, "Careers and Opportunities at BNL," May 12.

**Robert Brugger,** Med.: Westhampton Rotary Club, "Boron Neutron Capture Therapy," May 18.

**Note to Employees:**

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

## Splish Splash Special

If it is a hot summer day on Saturday, August 7, what better way to cool off but to join the BNL Swim Club at Splish Splash — Long Island's coolest water park.

For that day, the Swim Club is organizing a discount-ticket group trip to Splish Splash, which is located in Riverhead off LIE Exit 72.

The park boasts three new attractions this year: the Barrier Reef pipeline water ride, the Kiddie Car Wash, and Discovery Cove in which sea lions Sammy, Seymour and Sadie reside. In addition, the park continues to offer unlimited schusses down many fast and fun flumes, the Lazy River for the more sedate, several kiddie pools, acres of beach chairs, sun and shade, concession stands, and much more.

The Swim Club has reserved 200 discounted-admission tickets for $11 each — a saving of $7.40 for adults and children 48 inches tall and over, and $3.05 for children under 48 inches. Children under two enter free. Parking is an additional $3 per car, to be paid to the lot attendant.

Paid reservations are being taken first come, first served by Marsha Belford, club president, Bldg. 134, Ext. 5053. Tickets will be distributed in the Splish Splash parking lot at 9:30 a.m. sharp on the day of the trip. The rain date is Sunday, August 8.

## Cafeteria Menu

**Monday, July 19**

| | |
|---|---|
| Soup: Split pea | .80/1.10 |
| Entree: Honey-dipped chicken | 3.35 |
| Fitness Fare: Pasta w/steamed vegs. | 3.35 |
| Carvery: Sliced pastrami sandwich | 2.95 |
| Grill: Reuben platter | 2.95 |
| Fitness Salad: Avocado & tuna | |

**Tuesday, July 20**

| | |
|---|---|
| Soup: Beef & mushroom barley | .80/1.10 |
| Entree: Italian sausage hero sandwich | 3.25 |
| Fitness Fare: Pita pizza | 2.35 |
| Carvery: Hot roast beef sandwich au jus | 2.95 |
| Grill: Chicken teriyaki w/white rice | 3.35 |
| Fitness Salad: Chef's bowl w/tuna | |

**Wednesday, July 21**

| | |
|---|---|
| Soup: Cream of broccoli | .80/1.10 |
| Entree: Yankee pot roast w/veg. | 3.35 |
| Fitness Fare: Baked lemon chicken | 3.45 |
| Carvery: Baked Virginia ham sandwich | 2.95 |
| Grill: Mone Cristo platter | 2.95 |
| Fitness Salad: Fresh fruit | |

**Thursday, July 22**

| | |
|---|---|
| Soup: New Orleans chicken gumbo | .80/1.10 |
| Entree: Breaded veal Parmesan w/veg. | 3.35 |
| Fitness Fare: Turkey taco | 3.25 |
| Carvery: Sliced corned beef sandwich | 2.95 |
| Grill: Philly cheese steak platter | 2.95 |
| Fitness Salad: Turkey Waldorf platter | |

**Friday, July 23**

| | |
|---|---|
| Soup: Manhattan clam chowder | .80/1.10 |
| Entree: Catch of the day w/veg. | 3.50 |
| Fitness Fare: Display cooking special entree | |
| Carvery: Hot roast turkey sandwich | 2.95 |
| Grill: Tuna melt sandwich platter | 2.95 |
| Fitness Salad: Chef's salad | |

*Burger, Deli & Taster's Bar specials daily.*

## Nursery School Year Ends

**The three- and four-year-old children of the Upton Nursery School celebrated the end of their school year with teachers Linda Draycott-Plofker (left) and Alane Fleming. For more information or to register a child for the fall term, call Sue Ellen Gerchman, 929-3722.**

# Special Invitation To Summer Visitors

Students and other summer visitors are invited to enjoy a special trip to Six Flags Great Adventure amusement park on Saturday, July 31. The modest cost of $25 includes bus transportation on a luxury air-conditioned coach, on-board breakfast and admission to the park for six hours of fun.

Sponsored by the Office of Educational Programs, the bus will leave the Brookhaven Center promptly at 7 a.m. Seats are limited and will be allotted first-come, first-served. To reserve your seat, bring $25 — cash only — to Renée Flack, Science Education Center, Bldg. 438, Ext. 3316, no later than Friday, July 23.

# Arrivals & Departures

### Arrivals

**Elke Brauer**.....Saf. & Env. Prot.
**Patricia A. O'Connor**.....CCD
**George Rakowsky**.....NSLS

### Departures

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

**Meyer Garber**.....RHIC
**James A. Marsch**.....NSLS

# 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.

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

POSTDOCTORAL RESEARCH ASSOCIATE - Trained in materials science or solid state physics, with experience in electrical, magnetic and microstructural characterization of materials, to study fundamental aspects of microstructure-sensitive properties of advanced permanent-magnet materials. Contact: David Welch, Department of Applied Science.

POSTDOCTORAL RESEARCH ASSOCIATE - Trained in biological oceanography or biology, with experience in photobiology/photophysics of phytoplankton photosynthesis, to integrate *in situ* data with satellite ocean color data in the development of biophysically robust algorithms for calculating primary productivity from remotely sensed variables. Knowledge of remote sensing, optics and management of large computer databases is desirable. Contact: Paul Falkowski, Department of Applied Science.

POSTDOCTORAL POSITION - For individual with experience in biochemical and biophysical techniques applied to photosynthesis research, to explore the enzymology and physiology of xanthophyll interconversions and state transitions in chromophyte algae. Work will be done at BNL and in shipboard facilities. Knowledge of phytoplankton culture, membrane isolation and fluorimetric methodologies is desirable. Contact: Geoffrey Hind, Biology Department.

POSTDOCTORAL POSITION - For individual trained in nuclear engineering. Specialty areas must include reactor safety, thermal hydraulics, core physics and reactivity transients, with emphasis on analysis as accomplished by use of reactor-analysis codes such as RELAP5. Experimental experience in these areas is desirable. Contact: Upendra Rohatgi or Lewis Snead, Department of Advanced Technology.

**OPEN RECRUITMENT** - Opportunities for Laboratory employees and outside candidates.

NS 2375. ENGINEERING POSITION - Requires BS in chemical engineering, MS preferred, and a minimum of 3-5 years' process engineering, development or process-related research experience. Background in waste-treatment processing including materials handling, pretreatment, volume reduction and drying technologies preferred. Familiarity with personal computers and data acquisition, spreadsheet, word processing and presentation software required. Experience in polymer processing and knowledge of QA procedures and documentation desirable. Department of Advanced Technology.

DD 2929. BIOLOGY ASSOCIATE POSITION - Requires BA/MS in plant biology, strong relevant training and experience in plant physiology/protein chemistry. Will assist the FACE Program conducting $CO_2$ enrichment field experiments at several sites in the U.S. and abroad. The ability to accept assignments of several months' duration at field sites is required. Department of Applied Science.

DD 0784. TECHNICAL POSITION - Requires BS in science or engineering or equivalent experience in a related field. Responsibilities will include maintaining the nuclear material auditing and physical inventory program, including conducting special physical inventories, the internal material control and accountability (MC&A) scale and balance program, and the accountable waste system. Additional duties include writing and updating procedures, and maintaining the nuclear material database. Excellent oral and written communication skills, and the ability to obtain and maintain a DOE security clearance required. Safeguards and Security Division.

DD 3285. PROGRAMMING POSITION - Requires BS in computer science and extensive FORTRAN knowledge. Will provide support to several scientists in projects concerning pollutants in the atmosphere. Responsibilities will include working with extensive FORTRAN codes to streamline and make more efficient for both running and maintenance, and designing and building the databases and analysis procedures to support the emissions inventory work. Experience with UNIX platforms and VAX/VMS desirable. Department of Applied Science.

## Motor Vehicles & Supplies

92 GEO STORM - blue, 6-cyl., a/t, p/s, abs, ac, am/fm cass., sunroof, 11k mi., must sell, asking $10,000. Mike, 467-4975.

91 MERCURY TRACER LTS - 10k mi., 4-dr., a/t, ac, 1991 *Road & Track* 10 best list, excel. cond., $9,000. Eric, Ext. 5875.

90 TIOGA MOTOR HOME - 23', loaded, 8k mi., mint cond., $23,000 or best offer. Pat, Ext. 7705.

89 CHEVY S10 BLAZER - sport pkg., 78k mi., $9,200. 924-3414.

89 NISSAN 4x4 PICKUP - king cab, 52k mi., cap, am/fm cass., ac, fog lights, pushbar, must see, mint cond., $8,395. Joann, 472-6742.

89 BUICK SKYHAWK, 2-dr., ac, p/l, sunroof, fwd, well maint., $5,400. Jane, Ext. 4909.

89 HONDA CIVIC WAGON - 4-dr., 5-spd., ac, excel. cond., asking $6,000. 862-0341.

88 VW JETTA - black, 5-spd., am/fm cass., p/s, p/b, 100k mi., orig. owner, excel. cond., $3,000 firm. Ext. 2828 or 758-8221.

86 FORD LTD - new brakes, heater, radiator, tires, starter, been in accident, still runs, needs body work. Smart, Ext. 2425.

86 MITSUBISHI MIRAGE - Model L, 5-spd. h/b, am/fm stereo cass., sunroof, engine needs work, $450 neg. Ajit, 331-9849.

86 CAMARO - electric blue, T-top, 8-cyl., p/w, 69k mi., am/fm stereo cass., clean, $3,150. Pam, 698-0596.

85 FORD LTD WAGON - 88k mi., ac, radials, p/s, p/b, good cond. Janet, Ext. 2345 or 929-3910.

85 PLYMOUTH VOYAGER - new tires, ask. $2,800; '84 Dodge Daytona, 5-spd., turbo, ask. $1,500. Bob, Ext. 2309, or Elisa, 821-3306 eves.

84 HONDA ACCORD LX - all power, ac, new digital stereo cass., 140k mi., runs well, $900. Culwick, Ext. 4930.

84 C30 RACK TRUCK - 57k mi., excel. cond., $6,500; trailer, 6½'x10', encl., good cond., $1,250. Dennis, Ext. 4612 or 924-3316 after 5 p.m.

84 VW VAN - 125k mi., new tires; '83 Cutlass Supreme, 125k mi., 4-dr., ac, new tires; both good transportation. Chu, Ext. 2389.

83 FORD 150 TRUCK - w/locking back cap, low mi., new brakes, runs well, must see, asking $1,500 neg. Danny, 288-9233.

82 FORD ECONOLINE LUXURY VAN F-150 - many new parts, recent paint, capt. chairs & sofa, 127k hwy. mi., asking $2,900. Tirre, Ext. 3288.

78 FORD PICKUP - 2wd, 6-cyl., m/t, cap, body rough, engine solid, $800. Don, Ext. 7145.

70 COUGAR - body good, needs engine nose; '76 Ford pickup engine; '70 Ford Cleveland. 727-0082 after 6 p.m.

MOTOR - all high perf., 355 cid turbo 400 tranny 4500-5000 stall, new Ford 9" for Chevy 5.13 gears, all fresh. Al, Ext. 2350 or 736-7306.

RACKS - for 8' bed truck, custom made of heavy gauge steel by prof. welder, freshly painted, excel. cond., $400. 589-2338.

YAMAHA YZ 125 - mint cond., asking $600. Mike, 878-1617 after 4 p.m.

## Boats & Marine Supplies

17'2" SAILING CANOE - Old Town Tripper, w/Old Town sailing rig, complete w/mast, sails, rudder, leeboards, $600. Bob, 261-3890.

RAFT - Switlik 6-man Search & Rescue, meets offshore req., class A, EPIRB, survival & signal equip., FG Cont., s/s cradle, $1,800. 732-9118.

CONTROLS - Mercury Morse, top mount, like new, $125. Mike, 878-1617 after 4 p.m.

SUNFISH - sailboat & trailer, equipped for pleasure sailing or racing, $800; windsurfer, Mistral Maui, two sails, extras, $500. Scott, Ext. 3856.

JET SKI - '87, Kawasaki 300, excel. cond., $1,100. Ryan, 878-1178.

## Free

BOWLING TROPHIES - for donation to any non-profit organization, mixed variety of styles & sizes. Denise, Ext. 3406.

COMPUTER - TRS80, w/printer, disc drives, manuals, software, excel. cond. Pat, Ext. 7635.

DOG - black & brown, long-haired male, fixed, 8 mos. old, to good home, loves kids & other animals. Rick, Ext. 4149.

DOG - silky terrier, female, 2 yrs. old, excel. w/children, needs fenced yard. 585-3952 after 5.

PATIO DOORS - 71"x80", 2 sets double glazed; 1 set single glazed w/screen. 744-5422.

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

## Yard & Garage Sales

PATCHOGUE - July 23, 24, 25, 9 a.m.-4 p.m., 20 East, 5th street off Waverly Ave., furniture, bric-a-brac, tools, books, video, tapes, classical.

SHIRLEY - July 17-18, 9 a.m.-5 p.m., 452 River Road, books, freezer, desk, vacuum, crafts, much more, bargains galore. Phil, 924-6790.

SOUND BEACH - July 17, group sale, N. Country Road, furniture, fish tanks, exercisers, and stuff. 744-5036 for directions.

## Car Pools

STONY BROOK/RT. 347/NICHOLS RD. AREA - on time, seek 2 or 3 drivers. Ext. 5080.

## Lost & Found

FOUND - reel of computer tape labeled SJ 6432. Call computer security office at Ext. 7955.

FOUND - white hubcap in parking lot by Bldg. 120. Tracy, Ext. 5864.

## Real Estate

*Real Estate advertised for sale or rent is available without regard for the race, color, creed, sex or national origin of the applicant.*

## For Rent

BAITING HOLLOW - beach cottage, priv. beach, playground, fishing, sleeps 4, fully furn., kit., close to Splish Splash, Hamptons, golf, BNL, $400/wk., June-Oct. Mike, Ext. 7861 or 331-7812 eves.

BROOKHAVEN HAMLET - restored 1738 2-bdrm. cottage, hand-hewn beams, 2 baths, fp in d/r, greenhouse off kit., country setting, $1,100/mo. + sec. & util. Sue, Ext. 2888 or 286-0422.

CORAM - furn. room, kitchen, INP, priv., 10 min. to Lab, immaculate, avail. immed., $325/mo. Ext. 7462 before 2 p.m. or 698-1971 after 3 p.m.

HOLBROOK - 3 bdrm., eik, full bath, l/r, d/r, cable, $850/mo., incl. all. Ext. 3562 or 737-4082.

MIDDLE ISLAND - 2-bdrm. apt., clean, Lake Pointe at Artist Lake, 5 mi. from Lab, w/w, 1½ bath, l/r, 2nd floor corner unit, quiet area, good view, $705/mo. Lee, Ext. 4705 or 345-0751.

N. PATCHOGUE - very secluded, small cottage, screened, porch, fence yard, gar., low maint., $650/mo. + sec. 475-4199.

PATCHOGUE - 1 bdrm., l/r, eik, private ent., single working preferred, no pets, $640/all, sec. 289-0967 after 6 p.m.

PORT JEFFERSON STATION - 3-bdrms., l/r, d/r, eik, d/r, screened in porch, all appliances, incl. d/w, W&D, fenced yard, nice neighborhood, $875/mo. Rick, 698-5298.

RIDGE - 3-bdrm. ranch, 1½ baths, country kitchen, w/w, all appliances, fenced yard, 3 mi. from Lab, $950/mo., option to buy. Carol, Ext. 2673 or 744-8632.

RIDGE - 1-bdrm. cottage, full bath, 2 mi. from BNL, single, no pets, non-smoker, $525/mo. Casper, Ext. 3469 or 385-0970.

ROCKY POINT - 2-bdrm. apt., l/r, eik, large, new carpet, priv. ent., fenced yard, cable, city water, quiet, $490/mo. Khalid, Ext. 7597 or 744-5895.

ROCKY POINT - 3-bdrm Cape, 1 story, newly redecorated, landscaped, eik, large l/r, w&d, $850/mo. Donald, 473-6570.

SELDEN - studio apt., eik, priv. ent., patio, cable, $500/util. incl. 732-6313.

SHIRLEY - house to share, own bedrm. & l/r, $350/single, $450/double includes all. Rob, Ext. 4661 or 395-4521.

WADING RIVER - 2-bdrm. house, 1½ bath, refrig., stove, storage, bsmt., access to priv. beach, SWRSD, no pets, $800/mo., plus util. Ext. 2906.

WADING RIVER - 2-bdrm., 1 bath, f/p, l/r, priv. ent., priv. drive, priv. beach, 10 min. to Lab, $700/incl. all. John, Ext. 4028.

MT. DESERT ISLAND, MAINE - lakefront, full furn., 1 rm. cottage w/sleeping loft, kitchenette, bath, fp, deck on Echo Lake, Acadia Nat. Park, 6/26-10/16, $450/wk. Bob, Ext. 2514.

MANHATTAN - newly renovated spacious studio in Chelsea area, 10th floor, kit., bath, ac, 24-hr. doorman, near NYU & FIT, $850/mo. 751-5868.

LAKE GEORGE, NY - lakefront cottage, swimming 15' from door, fishing, boat docking, fully equipped kitchen, sleeps 4-5, 4 hrs. from NYC. (518) 747-7821 or (518) 499-2581.

LAKE PLEASANT, NY - 2-bdrm., Adirondack camp, boat, canoe, Oxbow lake rights, fully equipped, summer rental, week or month. Al Ravenhall, (518) 548-5468.

HILTON HEAD, SC - 2-bdrm. condo. sleeps 6, fully furn., 2 baths, tennis, beach, golf nearby, Oct-Dec. $350/wk. for BNL employees and family members. Guy, Ext. 3147 or 689-5378.

N. MYRTLE BEACH, SC - 1 bdrm. condo, sleeps 5 adults, surround 3 golf courses, golf package, $55/for all you can play per wk., near beach, $300/wk. Joann, 472-6742.

## For Sale

BAYPORT - 2-story Col., 1.2 acres, 3-bdrms., OHWH, d/r, 2 baths, large country kit., Bayport-Blue Point SD, near schools, $125,000. 472-3332.

BELLPORT VILLAGE - 2 bdrm., 1 w/sleeping loft, 2 full baths, lots of French doors & decks, outdoor Jacuzzi, ⅔ acre, s. of S. County Rd., $229,000. Sue, Ext. 2888 or 286-0422 after 6 p.m.

BROOKHAVEN HAMLET - 4-bdrm. Col., 2½ baths, l/r, d/r, fam. rm. w/fp, eik, laundry rm., 2-car gar., full bsmt., lg. screened porch, on cul-de-sac, $229,000. Ext. 2881 or 286-3372.

BROOKHAVEN HAMLET - 3-bdrm. ranch, 2 baths, l/r w/fp, d/r, eik, laundry, full bsmt., city water, 2-car gar., security system 0.7 acre wooded, cul-de-sac, $215,000. 286-1290 eves.

CALVERTON - 2-bdrm. townhouse, 5 appl., carpeted, cac, fp, patio, upper deck, assum. mortg., neg. Ext. 3558.

CENTER MORICHES - Main St. comm. project, 3 rental units, 3500 sq. ft., owner hold 2nd mortgage. 878-1178.

CENTER MORICHES - 9-rm. Col., 4 bdrms., lg. l/r w/fp, attached gar., town water, pub. dock, quiet, 100'x150', $165,000, 10 min. to Lab. Marilyn, Ext. 2259.

EAST SETAUKET - 3-bdrm. ranch, full bath, kit., d/r, d/r, full cellar, enclosed deck, nice area, $200,000 neg. 689-9204.

EAST SETAUKET - 4-bdrm. Worthington Colonial, 0.51 acre wooded land, 2½ baths, 2-car gar., bsmt., oak floors, new siding & roof, appl. incl., 3VSD. Lee, Ext. 2248 or 689-8548.

EAST SETAUKET - 4-bdrm., 2½ baths, split, 3VSD, den, fin. bsmt., fully landscaped, $172,000 by owner. 473-5376.

HOLBROOK - M/D, 6 rm., eik, full bath, l/r, d/r, fenced in yard, 2nd flor deck, walk to stores, $140,000. Armand, Ext. 3562 or 737-4082.

MANORVILLE - 2¼ wooded acres, $45,000. 345-3490 after 6 p.m.

MIDDLE ISLAND - Fairview at Artist Lake condo, 2 bdrm., 1½ baths, cac, gas heat, all appl., pool, tennis, etc., 5 min. to Lab, $79,900. 751-8351.

MIDDLE ISLAND - 3-bdrm ranch, l/r, d/r, eik, gar., full bsmt., new appl., new boiler, refin. oak floors, fenced yard, custom swingset, pool, deck, dead end, move in cond., $114,900. Mary, 924-6235.

MIDDLE ISLAND - Fairview at Artist Lake, 2-bdrm condo, 1½ baths, cac, GE appl., French doors, landscaped, etc., 5 min. from Lab, Mark, 924-1561.

N. SHIRLEY - settle estate, 3-bdrm. ranch, 1½ baths, new vinyl siding, OHWH, new cesspools, 50'x218', fp, wood stove, Wm. Floyd SD, low taxes, $69,900. Joe, Ext. 4786 or 281-7683.

PATCHOGUE - old house, 2 story, 3 bdrms., 2 baths, 2-car gar., new vinyl siding, interior needs work, low taxes, $115,000. 475-4382.

PORT JEFFERSON - 4-bdrm. 3½ baths, fin. daylight bsmt., 2-car gar., wooded setting, village beaches, golf course. 331-4768.

PORT JEFFERSON STA. - 3-bdrm ranch, 3 baths, gar., new appli., new roof, ideal M/D, fenced yard, quiet corner, $130,000. 473-1456.

ROCKY POINT - 3-bdrm. custom Cape, lg. l/r, eik, laundry, fenced corner lot, landscaped, redecorated, $96,969. Donald or Suzanne, 473-6570.

ROCKY POINT - 2-bdrm ranch, l/r, d/r, full bsmt., wood stove, fenced yard, new kit., move right in, asking $95,000. 744-7549, leave message.

ROCKY POINT - 4-bdrm. Col., 2½ baths, gas heat, cac, l/r, d/r, eik, den, fin. bsmt., low taxes, ask. $131,990. Don, Ext. 7237 or 744-2921.

SHIRLEY - 2-family house, low taxes, residenial. Phil, 567-8645 after 6 p.m.

SOUTHAVEN/SHIRLEY - California ranch, fieldstone, fp, cathedral ceilings, 3 bdrm., 2 baths, laundry rm., 2-car gar., indoor BBQ, fences, landscaped, $109,990 neg. Keith, 924-5062.

WADING RIVER - 3-bdrm., 2 baths, den w/fp, d/r, full bsmt., SWRSD, walk to beach, ask. $160,000. Angel, 929-3852.

WADING RIVER - 3-bdrm. Cape, new kit., painted, sunporch, 1 bath, new furnace, wooden floors, brick patio, wooded 1+ acre, beach rights, RHSD, ask. $139,900. 929-5797.

YAPHANK - 4-bdrm Cape, 1 bath, ⅓ acre, oak floors, full bsmt., new roof, new paint, OHWH, low taxes, 5 mi. to Lab, $114,900. Sheila, Ext. 3144.

LEESBURG, FL - 40'x24' mobile home in park on Rt. 44 between Eustis and Leesburg, all furn., ask. $10,000. 924-6172.

LAKE PLEASANT, NY - 1-bdrm. Adirondack summer & winter camp, deeded rights to Oxbow lake, boating, fishing, swimming, snow mobiles, skiing, etc. Al Ravenhall, (518) 548-5468.

## Wanted

APARTMENT - furnished, for month of Sept., Port Jeff/Miller Place vicinity, retired couple. Nancy, Ext. 7996.

BABY-SITTER - Port Jeff/Harbor Hills, 3:30-5:30, Sept.-June. Nancy, Ext. 7996.

BLUE-JEAN SCRAPS - from ready-for-garbage to legs from cut-offs. Any blue denim. Doreen, Ext. 2470.

DRESSMAKER'S FORM - reas. Elke, Ext. 2238.

GOLF CLUBS - used, right-handed, for beginner golfer. Laura, Ext. 3807.

HOUSE TO RENT - 2 or 3 bdrms., or roomy apt., prefer plentiful storage, w/d. Morris, Ext. 4192.

IRONING BOARD - old, sturdy. Marsha, Ext. 5053.

LAWN MOWER - in good working condition. Janko, Ext. 2707 or 821-6916.

MALTED MILK MACHINE - classic soda fountain style w/stainless steel mixing cup. John, Ext. 7671 or 765-1299.

NAME & NUMBER - of the person that called me regarding the foam boards. David, Ext. 5211.

NORDIC TRACK - any model, good cond. John, Ext. 5181.

RECORDS - 33⅓ or 45 rpm, polkas any year, rock & roll, '55-'65. Frank, Ext. 3120 or 727-5096.

RIDE - summer student needs ride to and from Brookhaven Lab from Syosset-Woodbury area, willing to pay. Siva Venkat, 496-8637.

SHAVER - Schick or Lady Remington electric razor, no Epiladys please. Frank, Ext. 2353.

SUNFISH OR LASER - used. Ben, Ext. 4299.

WETSUIT - for 9 yr. old child, 4'3" tall, 73 lbs., good cond. please. Bill, Ext. 2350.

## In Appreciation

My sincere appreciation to all of my coworkers and friends for their expressions of sympathy following the loss of my mother.

— Frank Chandler & family

To all my friends and coworkers who gave me an unforgettable retirement party — Thank you very much. I'll miss you. — A.L. Viotto

I thank all those at BNL who sent condolences regarding the passing of my son, Scott, in Japan. Special thanks to Dr. Eugene Cronkite, Medical Department, who, while lecturing at the Yokohama University Hospital, took time to visit Scott and consult with his doctors. We will always be indebted to him for his kindness.

— Wes Ripperger & family

**Ads left out of this issue due to lack of space need not be resubmitted to appear in the next issue.**