BROOKHAVEN BULLETIN
Vol. 42 - No. 21 May 27, 1988
BROOKHAVEN NATIONAL LABORATORY

Dedication Marks Commissioning Of Neutral Beam Test Facility

Less than two years after the ceremonial ground breaking that marked the start of its construction, the Neutral Beam Test Facility (NBTF) was dedicated on Tuesday, May 24.

About 100 people were on hand to watch General James Abrahamson, United States Air Force, and Laboratory Director Nicholas Samios cut the ribbon at the entrance to the brand-new building housing the NBTF. It will be used in the developing and testing of components for the national Strategic Defense Initiative (SDI).

Other dignitaries on hand for the dedication were Jack Hammond, head of the Directed Energy Weapons Program of the SDI Organization (SDIO), Colonel James Head, who guided the project for the Air Force Weapons Laboratory before becoming chairman of the Physics Department at the U.S. Air Force Academy; Colonel Warren Higgins, SDIO, responsible for Neutral Particle Beam Programs; Michael Lavan, U.S. Army Strategic Defense Command, Director, Directed Energy Weapons Directorate; and Kenneth Rogers, Commissioner of the Nuclear Regulatory Commission.

Abrahamson, who is the Director of the SDIO, said "I am here very simply to say 'thank you,' for the outstanding work you have done to this point and, in advance, for what we are going to do with this facility. . . . It will be amazing and important science, but that's the tradition of this Laboratory."

Of that tradition, Samios observed, "One of Brookhaven's primary missions is to respond to national needs . . . . We also look at it as a long-range research endeavor . . . . This is a technologically difficult endeavor, but both the science and technology involved, we believe, are exciting and important."

The just-completed Neutral Beam Test Facility makes use of excess negative hydrogen (H^-) ions shooting down the 200-million-electron-volt (MeV) accelerator known as the linac, which is primarily the injector for BNL's Alternating Gradient Synchrotron (AGS). When the H^- beam is diverted to the NBTF, it will be used to develop and test such SDI components as neutralizers and neutral beam sensing and control devices.

Both the NBTF and BNL's Radiation Effects Facility, which is used to test the effects of particle beams on different materials, are available part of the time for outside users to do non-SDI research. The projects are part of the Neutral Particle Beam Program headed by Pierre Grand in the Department of Nuclear Energy.

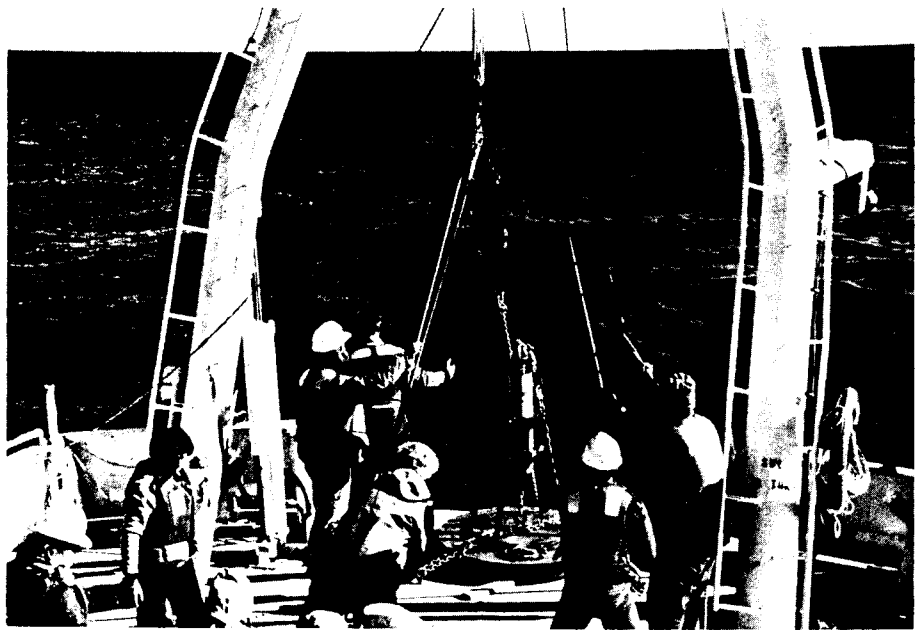
Though the dedication formally initiated the work of the NBTF, H^- beam from the linac has already been received at the facility several times. Now, Grand said, "We will do a difficult experiment before we lose the beam in June [when the AGS shuts down for summer maintenance]: We will try measuring the divergence distribution of a foil neutralizer at 200 MeV."

Grand acknowledged that this is possible thanks to "the technicans, support staff and secretaries who spent the last three years putting up with the idiosyncracies of putting this together."

General James Abrahamson (left) and Laboratory Director Nicholas Samios cut the ribbon at the entrance to the Neutral Beam Test Facility.

Peter Horton

The Plankton That Bloom in the Spring



Scientists from BNL and Lamont-Doherty Geological Observatory team with the crew of the research vessel *Endeavor* to deploy fluorometers, current meters and sediment traps.

According to Gilbert and Sullivan, "The flowers that bloom in the spring have nothing to do with the case," — no great surprise in the case of most oceanographic studies.

However, phytoplankton, single-celled plants that drift near the surface of oceans and use sunlight for photosynthesis, produce 40 percent of their yearly growth off the coast of the northeast U.S. between February and April. Their "spring bloom," to use the technical name, has a great deal to do with the case of the Shelf Edge Exchange Project (SEEP).

SEEP is a large project conducted by the Oceanographic Sciences Division (OSD), headed by Paul Falkowski, in the Department of Applied Science. The multidisciplinary research group at BNL, including physical oceanographers, chemists and biologists experienced in marine food-chain dynamics, most recently spent two weeks in March measuring photoplankton and other concentrations on the mid-Atlantic continental shelf.

Plankton on the Shelves

"We are investigating the extent to which materials produced on continental shelves are exported to the central oceans," said Falkowski. "And we've found that in spring, a great quantity stays on the shelf."

Continued Falkowski, "We view data from two sides: On one hand, do pollutants such as radionuclides leak into the deep ocean and affect global biochemical patterns? On the other hand, what is the pathway of energy-related pollutants back to man?"

Falkowski explained that 90 percent of the seafood eaten by man is fished from continental shelves, which occupy less than ten percent of the ocean surface. Materials produced on the shelves adsorb energy-related pollutants from rivers or the atmosphere. If the materials are not then rapidly exported into the deep ocean, they can be concentrated in the food chain leading to man via shellfish and larger fish.

Go With the Flow

To find out whether the food chain is endangered, the SEEP researchers, in collaboration with the Lamont-Doherty Geological Observatory, the Woods Hole Oceanographic Institute, North Carolina State and the University of South Florida, gather data on the composition and flux of particulate materials.

Among the particulates are phytoplankton, which are minute plants; zooplankton, minute animals; and bacterioplankton, minute bacteria. The Greek word "plankton," meaning "that which drifts with the current," is appropriate, since plankton only go where the water takes them. Though many plankton can move vertically, that is, they can sink or float, they are unable to move against the current.

Over the past decade, OSD research has shown that, off the coast of Long Island, phytoplankton levels are kept stable from May through September by zooplankton. These small animals

(Continued on page 2)

Swarthmore to Grant Courant Honorary Degree

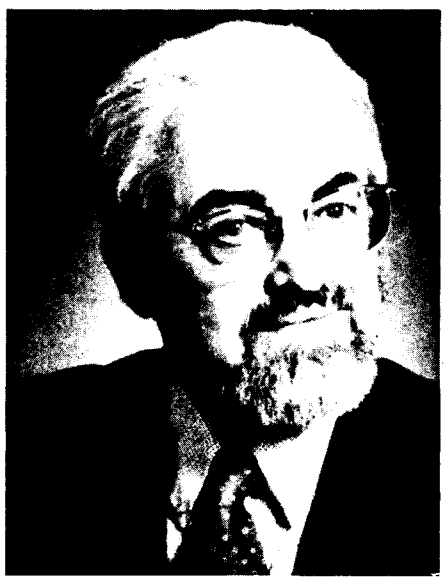
Senior Physicist Ernest Courant, a 1940 graduate of Swarthmore College, will receive an honorary Doctor of Science degree from his alma mater at the College's 116th commencement on Monday, May 30.

An authority on the physics of accelerating charged particles, Courant is well-known for his role in the invention of the principle of alternating gradient focusing. This principle is behind the design of virtually all high energy accelerators — including the proposed national accelerator, the Superconducting Super Collider (SSC), BNL's proposed Relativistic Heavy Ion Collider (RHIC) and BNL's existing Alternating Gradient Synchrotron.

For his contributions to accelerator physics, Courant was awarded the 1987 Robert Wilson Award of the American Physical Society, the 1986 Enrico Fermi Award by the Department of Energy and the 1979 Boris Pregel Award for Applied Science and Technology from the New York Academy of Science.

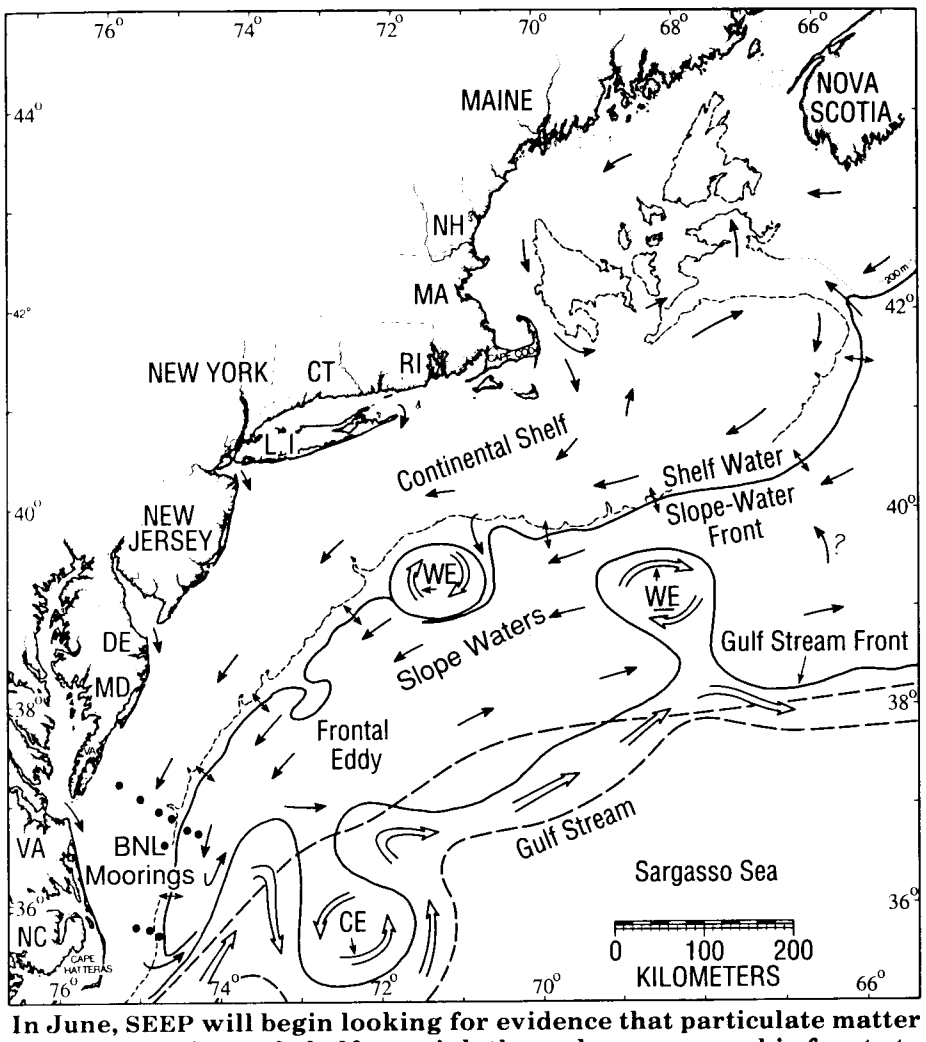
A member of the National Academy of Sciences, Courant recently served on a committee appointed by the National Academies of Sciences and Engineering to evaluate the proposed locations for the SSC.

After majoring in physics and receiving his B.A. from Swarthmore, Courant went on to the University of Rochester, from which he earned his Ph.D. in physics in 1943. He came to Brookhaven in 1947 as a summer visitor from Cornell University, to work on the theory of the Cosmotron, BNL's first proton synchrotron. Courant joined the BNL staff in 1948.



Ernest Courant

Plankton (Cont'd)



In June, SEEP will begin looking for evidence that particulate matter from the continental shelf can sink through oceanographic fronts to become trapped in the ocean. One of the fronts is the boundary between the fresh, cold waters of the continental shelf and the warm, saline waters of the continental slope. Another front exists where the meandering Gulf Stream pinches off eddies containing either cold slope water (CE) or warm Gulf Stream water (WE). Each year, there are typically six such warm eddies, which can interact strongly with the shelf, drawing in large amounts of shelf water, and, perhaps, the particulate matter there.

graze on the phytoplankton and, in turn, are eaten by fish. During the spring bloom, however, as much as 60 percent of the phytoplankton is not eaten by the zooplankton.

A Fluorometer First

In 1984, to track what happens to this 60 percent, the SEEP team developed the first moored fluorometers to run automatically. Using ordinary D-cell batteries, the fluorometers log data in the ocean every ten minutes for up to six months.

The fluorometers work by exciting the chlorophyll, unique to phytoplankton, with a strong, blue light. The plant cells emit red light, the intensity of which is proportional to the concentration of chlorophyll in the water. It was found that only about 10 to 20 percent of the phytoplankton produced on the shelf is transported to the deep ocean. Mostly, the phytoplankton seem to sink, forming dense clouds, which slowly move southwest with the current.

Because the cloud of phytoplankton is so dense and deep below the surface, individual plants get little light. Their respiration exceeds their ability to photosynthesize, and they die and decompose, aided by bacterioplankton.

Long Shelf Life

Is this happening in other parts of the mid-Atlantic area — which extends from about Cape Cod, Massachusetts, to Cape Hatteras, North Carolina?

"That's what we investigated in March," said Falkowski. With fluorometers, sediment traps, oxygen sensors and other highly sensitive measuring equipment, data were collected to a depth of about 1,500 meters across the coastal shelf from Maryland to Virginia.

Said Falkowski, "Our initial analysis shows that there's a tremendous amount of phytoplankton right over the sea floor, especially in the canyons, such as the Baltimore canyon, which run across the shelf. Many of these particulates, including pollutants, appear to remain on the shelf throughout the spring. You might say that the spring bloom has a long shelf life!"

Sediment Concentrations

Data were not taken on phytoplankton alone. Equally important was evidence for natural and energy-related pollutants being adsorbed by the organic phytoplankton and other, inorganic particles in the sediment.

For example, radon gas, emitted from rocks on the land, produces lead-210 in the atmosphere. The lead-210 falls out onto the ocean surface and is adsorbed onto living organisms, such as phytoplankton.

When the organism dies, the lead is freed in the water in a soluble form. Some of it will be reabsorbed by other living particles, but much joins the inorganic matter in the sediment. Thus the lead content of the sediment rises.

"We need to know to what extent lead-210 or analogues of it, such as plutonium and other energy-related radionuclides, are concentrated in the particulate material," said Falkowski.

"Also, we believe that there are areas where particulates sink through oceanographic fronts," he continued. Fronts are found where the colder shelf waters meet the warmer water from the central oceans. If the particles sink through the front, they are trapped and become a source for the deep ocean.

Falkowski added, "We'll be looking at these aspects on future research voyages, starting in June."

— Liz Seubert

Reports Available

The following reports are now available to the Laboratory staff and to affiliates of the DOE, AUI and NRC. Others may purchase the reports from the National Technical Information Service, U.S. Dept. of Commerce, 5285 Port Royal Rd., Springfield, VA 22161. Staff members should call the designated contact at the extention listed.

BNL-52103
Contact: P. Esposito, Ext. 4303
Abstracts for New Opportunities in Chemistry: An International Symposium on the Uses of Synchrotron Radiation in Chemistry. Held at BNL Nov. 4-6, 1987.

NUREG/CR-5037
BNL-NUREG-52106
Contact: J. Danko, Ext. 7125
Fire Environment Determination in the Lasalle Nuclear Power Plant Control Room. J.L. Usher et al.

BNL-52068, Vol. 1 & 2
Contact: S. Zuhoski, Ext. 3359
Proceedings of the 1987 International Symposium on Condensing Heat Exchangers. Battelle Columbus Labs.

BNL-52075
Contact: G. Searles, Ext. 4464
Level of Evidence for Reasonable Assurance Guides to Prediction. D. G. Schweitzer et al.

BNL-52081
Contact: N. Nelson, Ext. 2383
Immobilization of Sodium Nitrate Waste With Polymers. Topical Report. E. M. Franz et al.

BNL-52102
Contact: L. Conroy, Ext. 7918
Impact of Burner Design Features on Sooting in Residential Oil Fired Systems. T. Butcher et al.

NUREG/CR-4405
BNL-NUREG-51931
Contact: C. Conrad, Ext. 2272
Probabilistic Risk Assessment (PRA) Insights. R. Fitzpatrick et al.

NUREG/CR-4688
BNL-NUREG-52008 Vol. 2
Contact: D. Faivre, Ext. 2276
Quantification and Uncertainty Analysis of Source Terms for Severe Accidents in Light Water Reactors (QUASAR). Part II - Sensitivity Analysis Techniques. M. Khatib-Rahbar et al.

NUREG/CR-5000
BNL-NUREG-52119
Contact: M. McGrath, Ext. 2815
Methodology for Uncertainty Estimated in NUREG-1105 (Draft): Conclusions of a Review Panel. H. Kouts et al.

NUREG/CR-4939
BNL-NUREG-52031
Vol. 1, 2, 3
Contact: A. Fort, Ext. 2114
Improving Motor Reliability in Nuclear Power Plants.

Vol 1: Performance Evaluation and Maintenance Practices. M. Subudhi et al.

Vol 2: Functional Indicator Tests on a Small Electric Motor Subjected to Accelerated Aging. M. Subudhi et al.

Vol 3: Failure Analysis and Diagnostic Tests on a Naturally Aged Large Electric Motor. M. Subudhi et al.

AACC Dinner Dance

The Afro-American Culture Club (AACC) will hold its annual Installation/Dwight C. Brown Memorial Scholarship Award Dinner Dance on Saturday, June 4, in the Brookhaven Center from 7:30 p.m. to 2 a.m.

The ticket price of $25 includes a cocktail hour from 7:30 to 8:30, dinner and music by ET.

For ticket information, contact Mary Durham, Ext. 7143; April Donegain, Ext. 2459; Fran Ligon, Ext. 3709; Bruce Penn, Ext. 7213; or Deidre Seymore, Ext. 5037.

AA Meetings

Alcoholics Anonymous (AA) meetings are being held at the Lab every Tuesday at 5:30 p.m. All employees, others with current BNL identification cards and their spouses are invited to participate. To find out the location of the meetings, call the Employee Assistance Program, Ext. 2733. As participation in AA is confidential, you will not be asked to identify yourself when making the inquiry.

Roger Stoutenburgh

Workshop Goal: Dedicated IRFEL Facility

Checking plans for the infrared free electron laser (IRFEL) facility, which is to be constructed at BNL at the Center for Accelerator Physics (CAP), are: (from left) Gwyn Williams, National Synchrotron Light Source (NSLS); Terje Skotheim, Applied Science (DAS); Claudio Pellegrini, CAP; Samuel Krinsky, NSLS; and Allen Goland, DAS. These five were also the organizing committee for a one-day workshop, held at the Lab on May 4, on using IRFEL to study phenomena in nonlinear optics, medicine and surface science.

The initial IRFEL facility will be available to general users for only a fraction of its operating time. Therefore, the 20 workshop participants met to form a consortium and formulate a proposal to fund a dedicated IRFEL facility at BNL, for the use of the broader chemistry and materials science community. As envisioned, the unique capabilities of the facility would include a picosecond pulsed source, tunable over a large range and with peak power in the 30-100 megawatt range.

Tour Guides Gather for Thank-You Luncheon

Peter Horton

When college and professional groups tour the Lab during the work week, they are escorted by BNL's volunteer tour guides. On May 19, these women and men were the guests of honor at the annual luncheon held to thank them for their assistance. If you are interested in becoming a volunteer tour guide, contact the Tour Program, Ext. 4049.

Tour guides pictured are: (front, from left) Craig Diaz, Eugene Kaplan, Frances Scheffel, Thelma Dawson, Linda DiPierro, Violet Bezler, Donna Earley, Juanita Turner, Lucy Sanchez, Evelyn Ritter, Graham Smith, Sue Monteleone; (middle) James Reilly, Gerry Van Derlaske, George Taylor, Don David, Doug Sweely, Ron Clipperton, Betty Pergan, Peter Mendolia, Nelson Tyler, Richard Thomas; (rear) Victor Guiterrez, Janet Sillas, Gary Barnett, Arlene Clay, Gerhard Redelberger, Al Campbell, Mark Walker, Barry Karlin, Janet Tempel (Tour Program Head), Andy Feldman, Peter Kohut, Richard Seebeck, Audrey Bangel, Vinnie LoDestro, Rosemary Cohen and Dave Comstock.

Not pictured: Mulki Bhat, Mark Culp, Tom Dickinson, Victor Gonzalez, Garfield Hawthorne, Betty Ivero, Janice Lamb, Jackie Larrie, Vincent Lettieri, Elaine Lowenstein (Tour Program), Denise Miesell, Elizabeth Mogavero, Rich Sautkulis, Jean Stafford and Elaine Zukowski.

Patent Awarded

U.S. Patent No. 4,687,570 has been awarded to **Muthu Sundaram** and **Meyer Steinberg,** both of the Department of Applied Science, for inventing a process for converting solid carbonaceous material, such as coal, to liquid and gaseous hydrocarbons, using methane. The material to be liquefied can be natural, such as coal and wood, or man-made, such as tar or heavy hydrocarbon residues from other processing systems.

The main reason to liquefy coal is to obtain a more efficient, cleaner-burning fuel that is easier and less costly to transport. In the basic process, coal, slurried in a mixture with solvent, is rapidly heated for an hour or more. To date, all existing direct processes have had to use molecular hydrogen, which is expensive, accounting for one-third of the total cost. This has been a considerable drawback to commercial application of the technology.

The present, new process eliminates the need for molecular hydrogen. Instead, methane, in the form of natural gas, is heated with the coal, wood, or other material, to a lower temperature than is required by hydrogen, without significantly decreasing product yield. Also, by using alkylation reactions rather than hydrogenation, the new process reduces unwanted light hydrocarbon gas byproducts and improves the quality of the higher liquid content end product. The final result of this coal liquefaction process is thus more efficient and more cost effective than previous methods.

Tennis

Court Reservations

Two tennis-court reservation systems will go into effect on Monday, June 6, with sign-up on Friday, June 3. The rules for court use are posted at courtside and in the BERA Sales Office, Berkner Hall.

Under the **advance reservation system** (A), three of the courts may be reserved for weekday play the day before play; for Monday play, the courts may be reserved on Friday. If two players are not on court within ten minutes of the reserved time, the court reservation is forfeited.

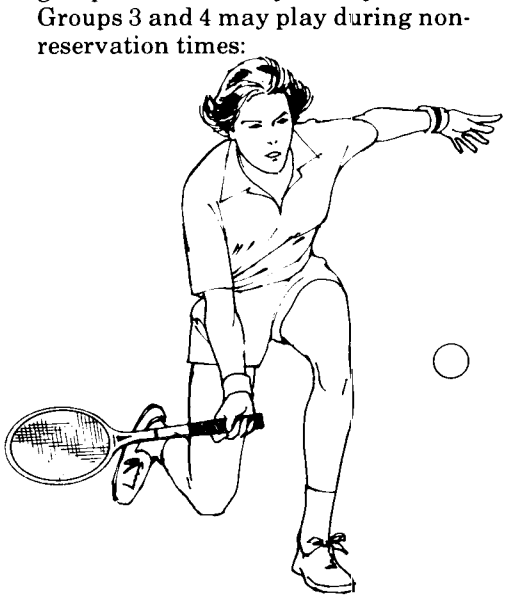
The **on-court scheduling sysem** (B) offers the three remaining courts on a first-come, first-served basis to players who sign the blackboard at courtside at time of play.

For lunchtime play, 11:30-1:30, court time is limited to one hour for both singles and doubles. For evening hours, beginning at 4:30, court time is limited to one and a half hours for singles, two hours for doubles.

At all times, players must yield the court after one and a half hours for singles, two hours for doubles if there are players waiting.

Reservation sheets for system A are held at the BERA Sales Office from noon to 1:30 on the day preceding the play. The sign-up must be done by one of the players *in person.* Reservation sheets for the day's play will be posted at courtside in the morning, where players may reserve any courts that remain open.

Only group 1 from the priority players list below may use system A. Only groups 1 and 2 may use system B. Groups 3 and 4 may play during non-reservation times:



1. Laboratory employees (including visiting and guest appointees and BNL retirees).
2. Laboratory employees playing with family members or personal guests.
3. Immediate family members of Laboratory employees.
4. Personal guests of Laboratory employees.

Annual Tournament

The tournament will get under way on Saturday, July 30, and players can sign up at the BERA Sales Office beginning Friday, June 24. Further details will be given in a later issue of the Bulletin. Tournament play will take precedence during the weekends of the tournament.

Tennis Ladder

There will be no ladder play this year.

Trip to U.S. Open

There are a few seats left on the bus for this trip. Sign up at the BERA Sales Office.

Tennis Committee

Tennis committee members are Eena-Mai Franz (chair), Gerry Bunce, Nick Combatti, Ed Gill, Marilyn McKeown, Ken Perkins, Carol Roberts, Steve Shapiro, Om Singh and Neal Tempel.

Travel Note

BNL has entered into an agreement with Citicorp Diners Club to provide a Diners Club Corporate Credit Card to all employees whom it is anticipated will take a business trip during the coming year.

Application forms, which will be available through department chairmen and division heads by June 1, must be completed by June 8 so credit cards can be distributed by the plan's projected effective date of July 1.

While the corporate credit card may be used for both business and personal expenses incurred while on official travel, the card holder is responsible for paying the credit card bill in full when received. There are no interest charges, but a late fee will be charged if the account is past due.

Other advantages to the traveler include: $150,000 automatic flight insurance, $1,250 lost baggage insurance, and personal check cashing at hotels and motels in the U.S. and at Citibank branches worldwide.

Since most travel expenses can be charged to the Diners Club card, the Lab will limit cash advances to $50 per travel day, also effective July 1.

Full details about the plan will be distributed to all employees shortly.

A Fair to Remember

Peter Horton

Over 300 science projects from 74 Suffolk County Schools were entered in the 1988 BNL Elementary School Science Fair run by the Tour Program, on May 21. Teams of Brookhaven scientists and local elementary school teachers judged the various demonstrations, charts and collections for their scientific thought, creativity, thoroughness and clarity.

First prize winners pictured on stage with Janet Tempel, Tour Program Head, are (from left): kindergarten, Nicole Bender, Wading River Elementary School, "Big Bubbles and Little Bubbles"; first grade, Nicholas Martino, Bellerose Avenue School, East Northport, "Microwave Seeds"; second grade, Jennifer Milian, Verne Critz School, East Patchogue, "A Salty Stream"; third grade, Jessica Smith, Andrew Muller Primary School, Miller Place, "The Powerful Power of Suggestion."

Also winning first prizes were: fourth grade, Craig Pruzan, Bellerose Avenue School, East Northport, "How Clean is Water?"; fifth grade, Gregory Pugliani, The Pines School, Hauppauge, "Does Weather Affect Bird Feeding Habits?"; and sixth grade, Andy DeStephano, Sound Beach School, Miller Place, "Murder in the Garden."

They Also Biked The 5 Boroughs

Two more BNL'ers who participated in the 12th annual Five Boro Bike Tour on May 1 have been identified: They are: Betty Roche, Medical, who has taken the 36-mile bike ride for seven years, and Barbara Boerjes, Supply & Material, for whom this was year number three.

BROOKHAVEN BULLETIN

Published weekly
by the Public Affairs Office
for the employees of
BROOKHAVEN NATIONAL LABORATORY

ANITA COHEN, Editor
MARSHA BELFORD, Assistant Editor
LIZ SEUBERT, Reporter

35 Brookhaven Ave., Upton, N.Y. 11973
(516)282-2345

Arrivals & Departures

Arrivals

Brenda V. Daniels ..... Physics
Jeffrey P. Davis ..... Plant Eng.
Jeffrey G. Tabacco ..... Plant Eng.

Departures

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

Torsten Freltoft ..... Physics

Pool & Gym Schedule

The pool and gym will close for the Memorial Day holiday on Friday, May 27, at 9 p.m. and reopen on Tuesday, May 31.

From May 28 through September 6, the gym will be closed on Saturdays and Sundays. The new hours at the pool are:

- Monday-Friday, 5 p.m.- 9 p.m.
- Saturdays and Sundays, 1 p.m. 5:30 p.m.

Mountain Club Canoe Trip

The Mountain Club will meet in the Berkner Hall lobby on Wednesday, June 1, at noon, to make plans for canoeing on the Delaware River, Saturday and Sunday, June 11 & 12. Nonmembers are invited to join us. If you can't attend the meeting, or need further information, call Don David, Ext. 4821, or 286-2267, evenings.

Softball

Week of May 16

League II
Scrambled Legs 13 - Moles 8

League III
Hounds & Foxes 8 - Source 7
Simply Awesome 13 - Farm Team 9

League IV
Underalls 8 - Turkeys 7
Spacekadets (won) - Seventh Inning Stretch (forfeited)

Note to Diners

The Brookhaven Center will be closed on May 29, the Sunday preceding Memorial Day, and reopen Tuesday evening, May 31.

The Cafeteria will be open from 9 a.m. to 2 p.m., Saturday through Monday, May 28-30.

Vended food service in Building 912 will be in continuous operation throughout the Memorial Day weekend.

Cafeteria Menu

Week of May 30

Memorial Day
Snack Bar Service - 9 a.m. to 2 p.m.

Tuesday, May 31

Beef noodle soup	(cup)	.75
	(bowl)	.95
Veal steak Italian-style w/1 veg.		2.95
Chicken pot pie w/1 veg.		2.90
Stuffed tomato cold plate (lite-weight)		2.25
Hot deli: Roast turkey breast	(bread)	2.75
	(roll)	2.85
	(hero)	2.95

Wednesday, June 1

Garden vegetable soup	(cup)	.75
	(bowl)	.95
Sauerbraten w/potato pancake		3.05
Baked fish supreme w/1 veg. (lite-weight)		2.85
Hot deli: Chicken patty on a bun		2.75

Thursday, June 2

Minestrone	(cup)	.75
	(bowl)	.95
Chicken breast supreme w/1 veg.		2.95
Italian lasagna w/meat sauce & garlic toast		2.90
Triple-scoop salad plate (lite-weight)		2.35
Hot deli: Baked ham	(bread)	2.75
	(roll)	2.85
	(hero)	2.95

Friday, March 25

Manhattan clam chowder	(cup)	.75
	(bowl)	.95
Beef stroganoff over noodles		2.95
Fish New Brunswick w/1 veg.		2.90
Baked fresh fish w/1 veg. (lite-weight)		2.85
Hot deli: Pastrami	(bread)	2.75
	(roll)	2.85
	(hero)	2.95

Classified Advertisements

Placement Notices

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

Each week, the Personnel Office lists new personnel placement requisitions. The purpose of these listings is, first, to provide open placement information on all non-scientific staff positions; second, to give employees an opportunity to request consideration for themselves through Personnel; and, finally, for general recruiting purposes. Because of the priority preference policy stated above, each listing does not necessarily represent an opportunity for all candidates. As a guide to readers, the listings are grouped according to the anticipated area of recruitment.

Except when operational needs require otherwise, positions will remain open for one week following publication date.

For further information regarding a placement listing, contact the Employment Manager, Ext. 2882.

LABORATORY RECRUITMENT - Opportunities for Laboratory employees only.

2864. ASST. GENERAL SUPERVISOR, OPERATIONS - Requires BS degree in an engineering discipline and minimum of five years' directly related experience. Will assist the General Supervisor, Operations in the control and efficient operation of all mechanical operations and utilities, including: refrigeration & air conditioning, steam production, and water and sewage treatment. Coordinates the tasks of multi-disciplined mechanical functions through first-line supervisors. Provides assistance to supervisors and acts as replacement in a supervisor's absence. Plant Engineering Division

2865. OFFICE SERVICES POSITION - Requires a working knowledge of PCs, i.e. spread sheets, data bases. Previous data entry experience with IPAP, J-CARS necessary. Demonstrated ability to perform detail work and to reconcile detail to control reports essential. Additional responsibilities to include typing, filing and IBM DisplayWriter word processing. Plant Engineering Division.

OPEN RECRUITMENT - Opportunities for Laboratory employees and outside applicants.

2866. PROGRAMMING/ANALYST POSITION - Requires BS/MS in computer science and 2-3 years' experience, or BS in physics with 3-4 years computer-related experience. Knowledge of "C", UNIX and LISP desirable. Duties involve all aspects of software projects, including interfacing, designing, coding, debugging, test and documentation. Will work in Controls Group on Apollo workstations. Accelerator Development Department.

2867. P&GA CLERICAL POSITION (temporary) - Under general supervision, will perform complex and diversified clerical functions. Requires two years' post high school training or equivalent plus relevant work experience at an advanced clerical level. Photography & Graphic Arts Division (Reposting of Job #2816.)

Autos & Auto Supplies

86 FIERO GT - V6, 4 speed, all options, 24k mi., garaged, mint cond., $10,000. 821-0735 after 4 p.m., leave message.

84 CHEVETTE - am/fm cass., a/t, new tires, excel. cond., $2,500. 878-0874 after 5 p.m.

84 CAVALIERE - 4 dr., a/t, a/c, cruise, p/s, p/b, very clean, runs well. 265-4715 after 6 p.m.

84 FORD MUSTANG - console, am/fm tape, p/s, p/b, a/c, sunroof, alum. wheels, excel. cond., $4,500. Ext. 4846 or 363-6940.

84 CAMARO - blue, 5 speed, V6 2.8 liter engine, 61k mi., sunroof, excel. cond., asking $5,500. Fred, Ext. 7947 or 588-2268 after 5 p.m.

83 TOYOTA COROLLA SR5 - a/t, a/c, 77k mi., silver grey, $3,500. Ext. 4510 or 473-7017 eves.

83 BUICK REGAL - a/c, p/s, am/fm, beige landau top, excel. cond., $5,600 neg. Ext. 2964.

82 VOLVO DL - beige, a/t, a/c, stereo, new exhaust, brakes, Pirelli tires, garaged, excel. in/out, $5,700. Ext. 2830 or 543-0487 eves.

82 KAWASAKI 440 LTD - belt drive, must sell, asking $250. 475-6797 after 5 p.m.

81 FORD ESCORT - wagon, body damaged. 589-9103.

81 FORD FAIRMONT - wagon, 6 cyl., p/s, p/b, a/c, am/fm cass., $1,800; '80 Ford Fairmont, 4 dr., rebuilt 6 cyl., $1,800. 736-2494.

80 CITATION - p/s, p/b, am/fm, a/c, a/t, runs well, many new parts, $850. Peter, Ext. 4791 or 3118.

80 FORD FAIRMONT - 4 dr., rebuilt 6 cyl., $1,800. 736-2494.

80 DATSUN 210 - 5 speed, a/c, new tires, new exhaust, needs some work. Ext. 7268 or 821-1721.

79 DATSUN 810 - station wagon, a/c, am/fm, cruise, 4 speed, $925. 928-4863.

79 COUGAR XR7 - fully loaded, am/fm cass., a/c, burgundy, $800. Tony, 698-9274.

79 FORD PINTO - wagon, 4 speed, reliable, new exhaust, am/fm, good cond., $600. Graham, Ext. 4253 or 331-4171.

78 DATSUN B210-GX - 125k mi., 5 speed, am/fm cass., new tires, runs well, $900. Jim, Ext. 2432 or 821-9178.

77 PEUGEOT 604 - needs some work, $1,500, will consider partial trade for VW 412 or Bug. Dave, 878-8541.

77 CHEVY CAMARO - 350, 8 cyl., blue, a/t, p/s, a/c, am/fm cass., asking $2,000. Ext. 5141.

77 DODGE ASPEN - $350. 744-2203.

76 SUZUKI 250GL - low miles, very good cond., $275; 2 extra wheels w/tires, $40. Ext. 7699 or 821-1435.

74 CHEVY VEGA - for parts, good engine. Ext. 2214.

74 TOYOTA CELICA - for parts. $100. 744-2203.

72 CHEVY VAN CAMPER - fiberglass top, sink, cabinets, body poor, engine not running, $850. Bill, Ext. 4988.

72 PINTO - $100. 744-2203.

72 CADILLAC SEDAN - clean in/out, many new parts, best offer. John, Ext. 4988.

70 C50 CHEVY TRUCK - mint, 35k mi. 589-9103.

TIRES - 4, General All-Terrain, P235-15" on Ford rims, $275. Ken, Ext. 2350 or 588-2389.

DOLBY CAR STEREO - high-comp, am/fm cass., auto rev., clock, 4 speakers, orig. $400, asking $225. Jeff, 689-7963.

TIRE - Good Year trailer-sized w/rim, new, 20.5X8.0-10, make offer. Ext. 2214.

ATV - h/d pipe frame, running gear, very good cond., needs engine, w/tow bar, asking $200. Ext. 4561.

HONDA CIVIC MANUAL - $10; 77 Buick manual, $12; Fairlane manual, $4. Ext. 4848.

Boats & Marine Supplies

27' TARTAN - 9 sails, VHF-fm, df/rdf, refinished top, many extras. 669-9202 after 6 p.m.

22 SEAFARER SAILBOAT - 1974, 3 sails, Volvo outboard, full keel, season mooring, must sell, asking $3,500. Fred, Ext. 4407/4435 or 499-1214.

20' GLASTON CVX - 225 Merc., trailer, 60+ mph, fully functional, best offer. Clif, Ext. 3536 or 472-2193.

19½' CORINTHIAN SAILBOAT - fiberglass w/full keel, sleeps 2, OB, etc., $3,995. Ext. 4637 or 692-8569 after 6 p.m.

19' THOMPSON LAPSTRAKE - 50 h.p. Evinrude, cuddy, cabin, $800. 325-0567.

18' GLASSPAR - OB, 2-bunk cabin, motor needs work, asking $750. Hugh, Ext. 4773 or 286-9257.

ROD & REELS - marine hardware; 40' mooring chain; 5 antique OB motors; 2-man rubber raft w/paddles; 2 anchors; more. Charles, 924-3082.

Miscellaneous

JAPANESE RED MAPLE TREES - 2' to 4', $10-$35; F&W deep well pump, 3-stage, w/tank, $150; white cast iron kitchen sink, 22x24, $20. Ext. 2214.

12-SPEED BIKE - Myata, excel. cond., used one season, $100. Ext. 4120 or 588-8492.

BOY'S BICYCLES - $10, $20, & $40. 744-2275.

WEIGHT LIFTING BENCH - good cond., $35; stereo/tv console, wood, good cond., $35. Ernie, Ext. 3357.

POOL TABLE - professional size, w/many accessories, $300. Ady, Ext. 4531 or 331-3785.

COUCH & CHAIR - table, lamps, reasonable. 928-6930.

TRESTLE TABLE - w/2 leaves & 6 chairs. Gary, Ext. 2350 or 567-9617 after 5 p.m.

ANTIQUE TABLES - & chairs. 924-3082.

DINING ROOM SET - Temple Stuart, dark maple, 2 leaves, 4 side chairs, 2 arm chairs, excel. cond., $1,900. 584-7970.

SOFA - loveseat, chair, Colonial, need covers, $75. John, Ext. 5152 or 281-2471.

WINDING STAIRWAY - 5 steps, 90°, solid oak, brand-new, $100. 475-1844.

SCREENS & STORM WINDOWS - wood, 9 each, good cond., $35. Cliff, Ext. 3794.

BRIGGS LAWN MOWER - 3½ h.p., 20" cut, excel. cond., $50. Dan, Ext. 4987 or 698-7322.

AIR CONDITIONER - almost new, high efficiency, 9.0 EER, 6200 Btu, carrier, Siesta, $220. Ext. 2610 or 924-5272 eves.

26" COLOR TV - 1986 Sharp, moniter, remote, cable-ready. Ext. 3744.

NINTENDO 'GOTCHA' TAPE - purchased 4/88, orig. $42, asking $25. Ext. 7795 or 589-8331.

REAL ESTATE COURSE - Dotto cash flow course & Lowry foreclosure & investment course, orig. $1,350, now $550. 473-5343 after 5:30 p.m.

WATER PUMP - & tank, 1 h.p. 878-8814 eves & wknds.

SOFTWARE - Microsoft Basic for McIntosh, $45; Tutorial Peachtext IBM-PC, $40; printer, OKI ML82, parallel w/IBM cable, 924-6712 after 6 p.m.

LINCOLN PORTABLE WELDER - gas, 2 cyl., 225 amps, like new, $1,500. John, 884-3228.

EGGS - brown & white, $1.00/dozen. Whitey, Ext. 2913.

GOLF CLUBS - Ping Rep., $175; classic Forged, $160; custom-made metals woods, $40. 924-2384.

SLEEPER SOFA - full size, very good cond., brown/rust/beige plaid, $125. Ben, 289-1605.

PEDESTAL TABLE - antique walnut, w/2 leaves & 4 chairs; walnut end tables. 878-4214 eves.

BAMBOO STAKES - cut your own, $1.00/four. 363-7032.

POOL - 28'd, stainless, filter, alum. deck, you take down, excel. cond., $100. Ext. 3536 or 472-2854.

CARPENTER'S POWER TOOLS - fishing rods. Helen, 399-0969.

PC JR. CARTRIDGE - Basic, brand-new, $35; internal modem w/software, $35. Bernie, Ext. 4842.

MOUTON LAMB FUR JACKET - size 14-16, excel. cond., $60. 475-1826 after 6 p.m.

KITTENS - cute & cuddly, need homes, grey, all black, black & white. Ext. 4422.

BABY ITEMS - new born-size car seat, changing table, other items. 744-9677.

MEN'S SUIT JACKET - light grey/blue plaid; winter zip jacket, both like new, size 40, $15/each. 727-0499.

GRANDFATHER CLOCK - moving moon dial, triple chime movement, $400. Joe, Ext. 2898.

Free

BLACK LAB - five-year-old, w/papers, spayed female, friendly, good w/children. Ext. 7527.

SIMMONS HIDE-A-BED - needs slipcover, you haul it. Ext. 2249 or 286-1396.

Yard Sales

EASTPORT - Tuttle Avenue, May 28-29, housewares, furniture, washer/dryer, camper, camping equipt., quality items.

SHOREHAM VILLAGE - Ashley Lane, May 28-29, moving, all must go. 821-0840.

Car Pools

BELLPORT - 5th person wanted for established car pool. Liz, Ext. 2346 or Ed, 286-7539 after 6 p.m.

BELLPORT - student needs ride, will split gas fare. Ophelia, Ext. 3138.

BOHEMIA/OAKDALE/SAYVILLE - 2 drivers needed. Frank, Ext. 2314.

PATCHOGUE - seat open. Ext. 4669, leave name & number.

WEST ISLIP/BAYSHORE - looking to join car pool, 8:30 a.m.-5:00 p.m. Mike, Ext. 2705 or 2214.

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

BELLPORT - 4 br, 3½ baths, Jacuzzi, in walking distance of bay and village. 286-0269 eves.

BELLPORT - 1 bdrm. apt., large, near S. Country, garage, walk to golf & village, $600/mo. incl. util. Webster, Ext. 2525.

BROOKHAVEN HAMLET - 4 bdrm. house, 2 baths, share w/two other professionals, ¾ acre, $350 includes all. Sydney Stafford, 286-4028.

CALVERTON - 2 bdrm. townhouse, 5 appliances, f/p, cac, w/w, fenced patio, upper deck. 878-0874 after 5 p.m.

EAST QUOGUE - near Hamptons, share a summer house, 20 min to Lab. Leon, Ext. 3761 or (718) 646-8598.

SHIRLEY - 2 bdrms., large kitchen, l/r, 1st floor, walk to beach, security, references, $675/mo. incl. util. 744-2821.

SHIRLEY - studio apt., private entrance and driveway, working single person, 10 min. from Lab. 399-0969.

SMITHTOWN - priv. studio apt., eik, full bath, a/c, cable, dishwasher, no pets, beautiful, near highways, $500/mo. incl. all. Ext. 2830 or 543-0487.

SOUND BEACH - new 1 bdrm. apt., priv. ent., single, non-smoker, $550/mo. incl. all. Ext. 7918 or 744-3068.

STONY BROOK - 1 bdrm. upstairs apt., priv. ent., furn./unfurn., excel. area. Ext. 4120 or 689-7863.

GILBOA, NY - 2 bdrm. chalet, on top of mountain, views, deck, very clean, near Hunter summer festivals, excel. fishing, will rent for week or wknd., $250/week, $185/wknd. Ted, 928-1445 eves.

LAKE PLACID - modern 2 bdrm. A-frame, loft, sleeps 8, full furn., near swimming, boating, golf, tennis, hiking, more. 757-1775 after 3 p.m.

HILTON HEAD, S.C. - 2 bdrm. condo, sleeps 6, beach, pool, golf, tennis. May-Sept $420/wk. 585-9149.

N. MYRTLE BEACH, S.C. - 1 bdrm. ocean-front condo, sleeps 4, near golf, piers, fishing, amusements, $375/wk. Bill, Ext. 2377 or 399-6168.

For Sale

EASTPORT - 2 bdrm., l/r, kit., bath, full bsmt., 100x120 property, good loc., close to school & shopping, beautifully landscaped, $115,000, firm. Ext. 2232 or 325-0835.

EAST QUOGUE - l/r w/fp, d/r, eik, 2 baths, finished bsmt., 2-car garage, in-ground pool, 20x40 deck & patios, ½ acre. Ext. 4470.

MILLER PLACE - Scotts Beach, 4 bdrm. ranch, ½ acre plus, private beach community, sunroom, spa, pool, city water, $190,000. Judy, 473-6631 after 5 p.m.

PORT JEFFERSON - Harbor Hills, 3 bdrm. Colonial, l/r w/fp, d/r, eik, 2½ baths, all appliances, lovely yard, village amenities, mint cond., asking $197,500. 473-4668.

RIDGE - 3 bdrm. ranch, new bath, full bsmt., ⅓ acre, pool/deck, many extras, asking $130,000. Ext. 7772 or 744-8581.

RIVERHEAD - 4 bdrm. 2-level ranch, 2 baths, possible M/D, ⅔ acre, large l/r, den, deeded beach rights, quiet neighborhood, 5 appliances, $150,000. 727-0499.

STONY BROOK - 6 bdrm., "S" section expanded farm ranch, 2 kitchens, in-ground pool, $228,000. 689-7254.

YAPHANK - 3 bdrm. townhouse, end unit, brick front, full bsmt., attached garage, central a/c, w/w, 5 appliances, pools, tennis, clubhouse, many extras, $129,000. 924-0612.

WADING RIVER - 3 bdrm. ranch, l/r, d/r, eik, new bath w/skylight, solar panels, energy efficient construction. 929-3207 after 6 p.m.

ROCKLEDGE, FL. - block & stucco, 2 bdrm., 2 bath, fam. rm. 11x25 porch, carpet, shades, some drapes, extras, good loc., $64,500. 305-631-2840.

Wanted

TRIATHLON TRAINING PARTNERS - Quan, 744-8386 or Anh, Ext. 2024.

HONDA ACCORD - 82 or 83. 718-456-8474.

APT. IN PT. JEFF/MT. SINAI AREA - ground floor accessible, garage. Janet, Ext. 2345 or 929-3910.

HOUSE OR APT. - to rent, 3/4 bdrms., 1½ baths, l/r, d/r, kit., w/d, family neighborhood, June. (914) 245-0907.

SHALLOW WELL WATER PUMP - 868-4214 eves.

TENNIS PARTNER - to play at lunch time, intermediate player. Leon, Ext. 3761.

HOUSE TO SIT - free, any duration, June-Sept., experienced, caring, reliable. Jack Allentuck, Ext. 2412.

MUSIC STAND - & laying hens. 363-7032.

72 OLDS DELTA 88 - front of body (header). Ext. 2500 or 661-6078.

BABY ITEMS - good cond., high chair, stroller, car seat, etc. Ext. 7192.

LAWN MOWERS - complete only. Dan, Ext. 4987 or 698-7322.

HOUSEMATE - non-smoker, m/f, share 3 bdrm. hi-ranch, all appliances. Sam, Ext. 4023/5211 or 929-3721.

HOUSEMATE - share house in Middle Island, cable, own bath, $350/incl. all. Ext. 3744.

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