BROOKHAVEN BULLETIN
Vol. 45 - No. 23 June 7, 1991
BROOKHAVEN NATIONAL LABORATORY

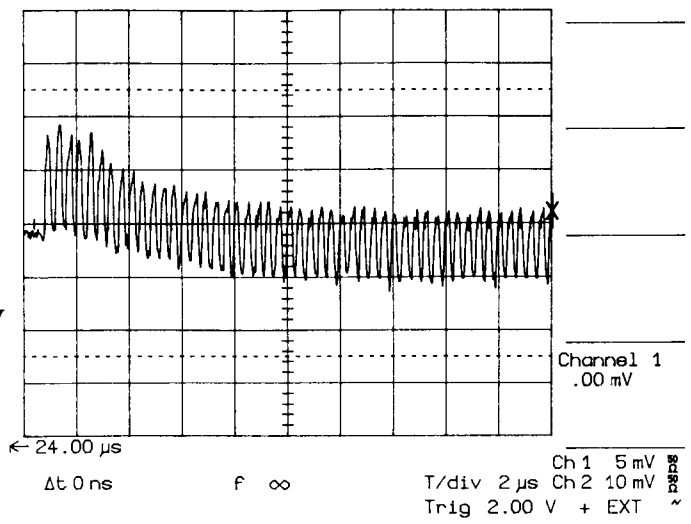
Beam Spirals Around Booster

Another major milestone on the road to the commissioning of the Booster for the Alternating Gradient Synchrotron (AGS) took place on Wednesday, May 29. At 9:30 p.m., an oscilloscope in the AGS main control room showed that a beam of protons injected from the AGS Linac had circulated through the 200-meter Booster ring for the first time (see graphic).

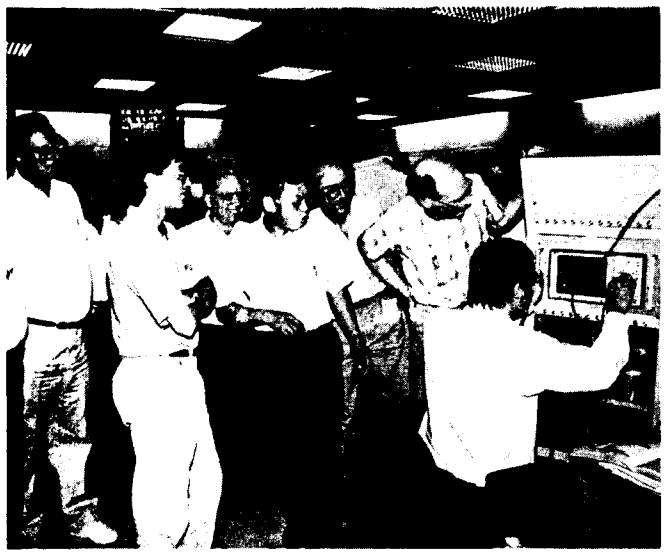
An accelerator one-quarter the size of the AGS, the Booster will increase AGS proton and polarized proton intensity, and allow the AGS to accelerate heavy ions up to the mass of gold.

With the vacuum system completed and all magnets in place, "We attempted to spiral the beam," said Kenneth Reece, assistant to Leif Ahrens, who heads the Booster commissioning effort. "Rather quickly — after one full turn with a small correction to the injection trajectory — we were able to spiral the beam for about a millisecond."

The beam that circulated around the Booster about 1,000 times that evening did so at the Linac energy of 200 million electron volts. Even at this low energy, said Reece, "We were able to measure a machine characteristic called the horizontal tune, and it was as predicted by calculations by S.Y. Lee, now with Indiana University."



Waveform from an oscilloscope in the AGS main control room, showing protons spiraling around the Booster. Only three bunches are injected from the Linac; they reappear again and again as they revolve around the ring.



Willem Van Asselt sat at the oscilloscope in the AGS main control room on May 29, when beam began circulating in the Booster for the first time. With him were: (from left) Brian Culwick, Jim Alessi, Tom Shea, Richard Witkover, Bill Weng, Ken Reece, Don Barton and Leif Ahrens.

Being able to measure the tune and circulate the beam "gives us very good confidence that the magnets and power supplies have been built as designed and that the alignment of the components of the machine is very good," said Ahrens. "Such a quick attainment of beam circulation is both a surprise and a pleasure to us all."

Also proving themselves on Wednesday were the new control room equipment and programs designed for the Booster. "They look very different from that used for the AGS," said Donald Barton, who manages the AGS Control Group, "and they give the operators an enhanced level of observation and description."

As in previous Booster milestones, the way for this one was cleared with two reviews encompassing environmental issues, electrical and fire protection, operation procedures, training and radiation safety. Major players are members of the Operational Readiness Review Committee chaired by Herbert Schulman, Safety & Environmental Protection Division: AGS Department radiation and safety experts Edward Lessard, Robert Frankel, Philip Pape, Dana Beavis and Austin McGeary, and Michael Butler and Richard Diem, of the U.S. Department of Energy's Brookhaven Area Office.

Booster proton commissioning is expected to be completed by the time the AGS shuts down for summer maintenance. Two more milestones must be passed: acceleration of the beam to near design energies and extraction of the beam from the Booster.

BNL Lecture: X-Ray Imaging With Gas Proportional Detectors

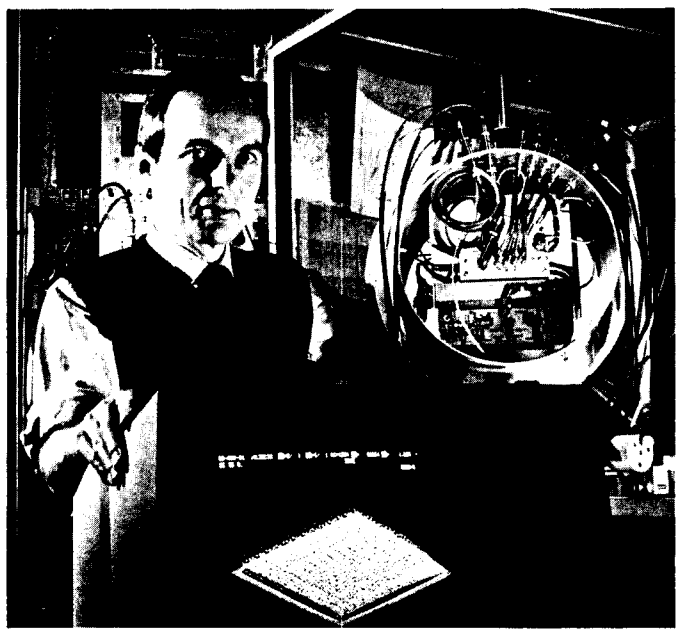
What common experience connects bones and muscles, viruses and the moon? All have been the subject of x-ray images produced with gas proportional detectors — yet none is the subject for which this type of detector was originally developed.

The multiwire adaptation of the gas proportional detector was developed in the late 1960s, for use in high energy physics experiments involving detection of ionizing particles such as protons, electrons and kaons. Today, this technology has been transferred to many other fields, including biology, medicine and materials science, for imaging with other types of radiation, such as x-rays.

"X-Ray Imaging With Today's Gas Proportional Detectors" is a chief concern of Physicist Graham Smith, Instrumentation Division, who will deliver the 271st Brookhaven Lecture on that topic. His talk on Wednesday, June 12, at 4 p.m., in Berkner Hall, will be introduced by Senior Physicist Hobart Kraner, Instrumentation.

When a particle passes through a volume of gas, such as argon, in a gas proportional detector, free electrons are created and are attracted to an array of high-voltage anode

(continued on page 2)



Graham Smith stands behind a monitor displaying test results produced by the imaging gas proportional detector to his left.

Photos at left and below by Roger Stoutenburgh.

Coming Up

Roald Sagdeev, a Soviet expert in space science who is now Distinguished Professor of Physics at the University of Maryland at College Park, will present an AUI Distinguished Lecture on "Big vs. Small in Space Science Programs." His talk will begin at 4:30 p.m. on Monday, June 17, in Berkner Hall.

Wave of Interest in Biogeochemistry in the Sea

In the ocean, biological processes regulate the fluxes of elements such as carbon, nitrogen, sulfur, oxygen, phosphorus and silicon. And oceanographers have focused increasingly on how these elements are cycled in the ocean, in addition to how the cycles affect each other and the earth's atmosphere and climate.

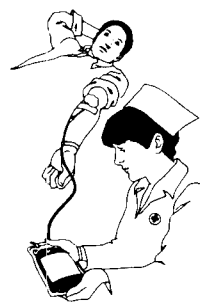
To discuss the progress in understanding the "Primary Productivity and Biogeochemical Cycles in the Sea," 200 oceanographers from all over the world gathered at BNL Symposia in Biology No. 37, held June 2 to 6.

Sponsored by the U.S. Department of Energy, the National Science Foundation, the National Aeronautics and Space Administration, the Electric Power Research Institute, the National Oceanic and Atmospheric Administration, and the U.S. Environmental Protection Agency, the symposium was dedicated to Richard Eppley (right, above), Scripps Institute of Oceanography. By his extraordinary and original work in biological oceanography, Eppley has inspired a generation of scientists to specialize in understanding biogeochemical cycles in the sea.

Topics discussed ranged from Eppley's notes on the role of phytoplankton in biogeochemical cycles to factors, such as fixed inorganic nitrogen, that limit primary productivity in the sea, to whether phytoplankton influence global climate.

Shown during a break in the proceedings are (from left) assistant coordinator Claire Lamberti, Department of Applied Science (DAS); symposium committee chair Paul Falkowski, DAS; coordinator Helen Kondratuk, Biology; committee members Avril Woodhead, Technical Information Division; Dale Kiefer, University of Southern California; Sally Chisholm, Massachusetts Institute of Technology; and Eppley. Not present were committee members Robert Bidigare, University of Hawaii, and Sharon Smith, DAS; and coordinator Trudi Neuhoff, DAS.

Circulate Your Blood



A three-day blood drive will be held on Tuesday, Wednesday and Thursday, June 18, 19 and 20, from 10 a.m. to 3 p.m. in the gymnasium. Two pledge cards have been sent to each employee so that friends or relatives may join the BNL campaign. Please sign up as soon as possible. If you need more information, call Susan Foster, Blood Drive Chair, Ext. 2888, or contact the Blood Program Captain for your department or division (see list below):

Dept.	Captain	Bldg.	Ext.	Dept.	Captain	Bldg.	Ext.
ADD	Lynnanne Conroy	1005	7918	DOE	Clare Appleton	464	3438
	Cynthia Murphy	902A	5459	Fiscal	Susan McKeon	134D	5163
AGS	Dominick Salimando	911A	4851	Instr.	Patrick Gilleeny	535B	2836
AUI	Elliott Levitt	134A	2495	Med.	Peter Heotis	490	2304
Bio.	Richard Sautkulis	463	3386	MIS	Srinivasan Iyer	459	7655
CCD	Jim Calcanes	515	4150	NSLS	Pat Powers	510E	4828
Chem.	Nancy Sautkulis	555A	4304		Judy Thompson	725C	2145
CSD	Al Campbell	903	2043	OMC	Mickey Sacker	490	3671
	Christine King	462U	5033	PE	Sarah Ebron	97	2468
	Steve Gracia	479	3498		Marilyn Gibbons	134C	2259
DAS	Pat Taylor	179A	2452		Tirre Farmer	452	3288
	Arlene Vanslyke	475	2387		Ed Miezianka	326	3082
	Arleen Lancsarics	815	4519		Chris Frosina	422	3254
	Maryann Larese	480	3508	Pers.	Marsha Kipperman	185	2871
	Judy Giordano	318	3051	P&GA	Phyllis D'Avanzo	197B	2907
	Sharon Zuhoski	318	3359	Phys.	Sandy Asselta	901A	4550
	Corinne Messana	318	2956		Liz Mogavero	510A	3940
	Maggie Marsch	426	3275	Reac.	Randi Vogt	750	4043
	Cheryl Eleazer	527	2748		Judy Spara	120	2255
DCP	Barbara Simpson	355	7187		Julie Teuber	703	2513
DNE	Cheryl Conrad	130	2272	S&EP	Len Emma	535A	3334
	Mary McGrath	197	2815		Michael Carroll	599	2351
	Linda Hanlon	475B	7517	SMD	Michael Guacci	211	2976
	Jane Hodgkinson	475C	4909	SSD	Joan Perullo	179B	2549
	Darryl Kaurin	703M	7892	S&SD	Andy Moran	50	2238
	Ali Lopez	830	5768		Kris Pahms	703	4051
DO	Janet Sillas	134	2345	TID	Arline Willsey	477A	3490

Outreach Workshop

So You're Thinking About Adopting

Many aspects of adopting a child are surrounded by misinformation and fear, so that deciding on whether or not to adopt can bring dilemma and concern into a family, raising such questions such as: Can we afford it? Do all adoptees have emotional problems? How long will it take?

These questions will be addressed by Alan Weiss, a clinical psychologist and adoptive parent, at the next Outreach Workshop to be sponsored by the Employee Assistance Program (EAP) of the Occupational Medicine Clinic. He will also give a detailed description of his family's adoption story — from the pain of infertility to the joy of adopting a healthy newborn.

Weiss, who led a January Outreach Workshop on Stress and Heart Disease, is a graduate of Adelphi University's post-doctoral program in psychotherapy and psychoanalysis and is in his twelfth year of private practice in Huntington.

The workshop, which will not be audiotaped, will be held in two parts on Tuesdays June 11 and 18, beginning at noon in Berkner Hall, Room B. To sign up, return the bottom portion of the flier sent to all employees last week to EAP Staff Psychologist Donna Friedman, Bldg. 490, before June 11. Space permitting, participants may register at the door. For more information about EAP or its Outreach series, call Ext. 4567.

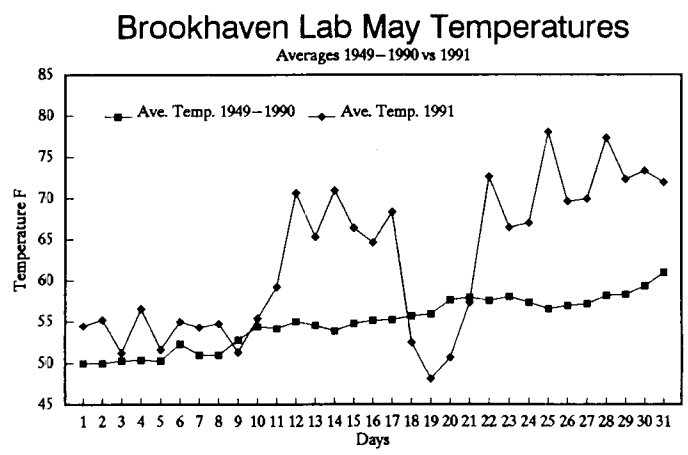
Warming Trend at BNL? It *May* Be!

With an average temperature of 62.0°F, the past month was the warmest May ever recorded at BNL, according to Meteorologist Bob Brown, Department of Applied Science. The previous record was 59.7°F set in 1975. The overall average for May since BNL began keeping records in 1949 is 55.0°F.

Several daily records were also set last month, on May 12, 14, 22 and 25. Other May records were set for heating degree days, 168, as well as for cooling degree days, 86. And while the average rainfall for May is 3.9 inches, this year saw only 2.78 inches at BNL.

Observing that the extreme May weather reflects an overall warming trend, Brown also offered these BNL weather facts:

- In all of 1990, there were 15 high and one low daily temperature records set; in less than half a year, 14 high records have been set in 1991.
- From 1949 to 1973, an average of eight high and 11 low daily temperature records were set. From 1973 to 1990, the averages changed to nine high and five low daily records.



'tsh-ee-EEEE-e-ou AH-O-oo'

If you go to the BNL woods today your ears may hum with an orchestrated whining, purring sound that is characterized by the U.S. Department of Agriculture as "tsh-ee-EEE-e-ou," lasting 15 seconds, followed by "AH-O-oo," for three seconds and repeated at two-to-five-second intervals. And maybe you will sight of some of the black-bodied, orange-winged, red-eyed performers — the periodic cicadas.

Known as 17-year locusts from their habit of emerging from the ground every 17 years to mate, the cicadas lay 400 to 600 eggs in trees before they die in about six weeks. The batch at BNL is probably part of Brood 14, last seen in this area in May 1974. But this environmental eruption poses no threat to humans, although it can cause damage to very young trees.

The Bulletin was alerted to the new arrivals by Bill Ruppert, Plant Engineering Division. Then Jim Osterlund, Accelerator Development Department, accompanied photographer Roger Stoutenburgh on a quick, site safari to catch them on camera.

BWIS Seminar

Teri Pearlstein, medical director of the Women's Treatment Program at Butler Hospital, Providence, Rhode Island, will speak on "Premenstrual Syndrome: Assessment and Treatment" at the Brookhaven Women in Science (BWIS) luncheon seminar on Wednesday, June 12, at noon in Berkner Hall, Room A.

Commonly known as PMS, premenstrual syndrome is not a new problem, but has only recently been viewed as a clinical condition. About one in 20 women aged between 13 and 50 endure PMS symptoms that can disrupt their relationships and functioning in many areas.

Pearlstein heads the premenstrual treatment program and eating disorders program at Butler Hospital and is also a clinical assistant professor of psychiatry and human behavior at Brown University. She will address the possible causes of PMS and how to diagnose and treat it. She will also present results of research trials at Butler that used group behavior therapy and anti-depressants.

All are invited to bring their lunch and any questions to this BWIS seminar. For more information, call Dorry Tooker, Ext. 2078.

Technical Seminar

LeCroy Corporation will present a technical seminar on "Understanding Digital Oscilloscopes," on Wednesday, June 12, from 9 a.m. to noon, in Berkner Hall, Room B. The seminar will help researchers get more accurate measurements from instruments they already own and to make better informed purchasing decisions, with such topics as choosing an instrument, getting enough bandwidth, detecting small details, capturing transients, determining accuracy and analyzing waveforms.

Software Demos

Lotus, Inc. will give a presentation on Lotus 1-2-3 for DOS Release 2.3, on Thursday, June 13, at 2 p.m., in the Computing & Communications Division (CCD) seminar room, Bldg. 515. This release includes interactive WYSIWIG display and presentation-quality capabilities, spreadsheet auditing tools, a file-viewing feature, and many other improvements, including interactive dialog boxes, and much better help facilities and error reporting.

•

A demonstration and talk on "SPEAKEASY: Interactive Supercomputing on a Desktop" will be given by Stanley Cohen, physicist and now president of Speakeasy Corp., in the CCD Seminar Room, Bldg. 515, at 2 p.m., on Tuesday, June 11.

Note to Employees:

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

NSLS Meeting (cont'd)

wires. Each electron multiplies more than a thousandfold in an avalanche at the wire surface. An electronically detectable signal, proportional to the radiation's energy loss, is thus created, and its position can be determined from charge induced on cathodes on either side of the array.

In adapting this technology for use with x-rays, Smith will explain, the Instrumentation Division has achieved many firsts: It was the first group in the world to achieve a position accuracy in a gas where the electron range was the limit to the resolution. It was the first to determine the limit of resolution as a function of x-ray energy. And it was the first to look at the fundamental limit to resolution by raising the gas pressure.

Combined with the development of several ingenious position-encoding principles, this type of work has helped Instrumentation build advanced x-ray imaging detectors for use at several beam lines of the NSLS and at universities. These devices are not only superior to x-ray film, but also make possible dynamic studies of samples or materials on time scales much shorter than has been possible before.

As Smith will point out, future development of these detectors — especially those intended for dynamic studies — will depend on electronic circuit development. He will discuss award-winning devices fabricated in Instrumentation to date, and the small but mighty microchips currently under development.

Graham Smith earned his B.Sc. in physics from Hatfield College of Durham University, England, in 1970. He received his Ph.D. in physics from Durham in 1974.

After obtaining his doctorate, Smith became a research associate with the Nuclear Electronics Group in the Physics Department of the University of Leicester, moving to the X-Ray Astronomy Group in 1975. He came to BNL in 1982 as an associate physicist in Instrumentation and was named physicist in 1988.

Smith is a member of the Institute of Electrical and Electronics Engineers and the Institute of Physics in England.

After the lecture, those attending are invited to join the speaker for discussion and hors d'oeuvres. To join the lecturer for dinner at a restaurant off site, call Barbara Gaer, Ext. 4231.

Tennis Anyone?

Court Reservation Systems

Two tennis-court reservation systems are now in effect, weekdays, 11:30 a.m. to 2 p.m. and 4:30 to 7 p.m. The rules for court use are posted 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. If two players are not on court within ten minutes of the reserved time, the court reservation is forfeited. For this system, lunchtime play is limited to one hour for both singles and doubles.

For system A, reservations may be made on sign-up sheets kept at the BERA Sales Office from noon to 1:30 p.m. on the day before play; Monday play may be reserved on Friday. The person who signs up must be one of the intended players.

The on-court scheduling system B offers the three remaining courts on a first-come, first-served basis to players who sign the blackboard at courtside at the time of play. Under this system, lunchtime play is limited to 1½ hours for both singles and doubles.

For system B, reservation sheets will be posted courtside each morning, where players may reserve any open courts.

System A can be used only by group 1 of the priority players listed below. System B may be used only by groups 1 and 2. Groups 3 and 4 may play during non-reservation times only:

Group 1 — Lab employees, including those with visiting and guest appointments, and BNL retirees.
Group 2 — Lab employees playing with family members or personal guests.
Group 3 — Immediate family members of Lab employees.
Group 4 — Personal guests of Lab employees.

Tennis Fun Day

All Lab employees and family members and summer visitors are invited to participate in the Tennis Fun Day, which will be held June 15, at 9 a.m. The rain date is June 16, but call 928-2994 for confirmation.

Sign-up is preferred, but not mandatory. To sign up, call Om Singh, Ext. 5332, or Neal Tempel, Ext. 3418. Bring a can of balls and join the fun.

Annual Tournament

The tournament will get under way on Saturday, July 20, and players can sign up at the BERA Sales Office beginning Friday, June 14. More details will appear in a later Bulletin.

Tournament play will take precedence during the weekends of the tournament. If there is enough interest, a tennis ladder will be run again this year. For more information, contact a Tennis Committee member.

Tennis Committee

Tennis committee members this year are: Rudy Alforque, Ext. 4733; Nick Combatti, Ext. 3389; Eena-Mai Franz, Ext. 7103; Ed Gill, Ext. 7207; Rita Kito, treasurer & secretary, Ext. 3320; Ruth Ann Lutz, Ext. 7774; Ken Perkins, Ext. 2147; Steve Shapiro, Ext. 3822; Om Singh, chairman, Ext. 5332; and Neal Tempel, Ext. 3418.

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

Don't let June's rose-colored glasses blind you to others' need —

A Food Drive is A Food Drive is A Food Drive!

There's a special June request: More peanut butter and jelly, please.

Arrivals & Departures

Arrivals

Timothy Anderson.....Plant Eng.
Karen L. Cordaro.....Medical
King P. Leung.....NSLS
Charles T. Murray.....Accel. Dev.

Departures

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

Margaret D. Alexoff.....Cen. Shops
Richard L. Fuka.....P&GA
Igor Jan Malik.....Chemistry
John J. Mazzeo.....Accel. Dev.
Virginia Pond.....Biology
Kevin M. Reilly.....DAS

The Good Times capped their good times with the championship of the White League. Shown here are (left) Andy Warkentien and Ken Riker. Missing is the other half of this mixed league team, Lynn Warkentien and Gerrie Riker.

Get Serious got serious — and the mixed league team bowled well enough to take top honors in the Purple League: (clockwise from bottom left) Fern Simes, Elaine Zukowski, John Niemczyk and John McCarthy.

Bowling Champions

The Pinball Wizards demonstrated their magic by winning the Red/Green League title: (front, from left) Tom Prach and Richard Eggert; (back, from left) Nick Franco, Bob Jansson and George Meinken. Not pictured: John Muller and Phil Ouvrard.

photos by Stoutenburgh

Cafeteria Menu

Monday, June 10
Soup: Vegetable beef .75/.95
Entree: Pasta primavera 3.10
Entree: Chef's choice w/1 veg. 3.10
Fitness: Chinese chicken & broccoli 3.10
Carvery: Hot pastrami sandwich 2.85
Grill: Turkey club w/French fries 2.85
SPICE: See our new ice cream truck!

Tuesday, June 11
Soup: Split pea .75/.95
Entree: Roast pork loin, natural gravy 3.45
Entree: Seafood seashell Newburg 3.10
Fitness: Cheese souffle w/tomato sauce 3.10
Carvery: Hot roast beef sandwich 2.85
Grill: Meatball sub 2.85
SPICE: Old-fashioned strawberry shortcake

Wednesday, June 12
Soup: Chicken noodle .75/.95
Entree: Chili con carne w/fixins 3.10
Entree: Jambalaya w/1 veg. 3.10
Fitness: Manicotti w/1 veg. 3.10
Carvery: Hot Black Forest ham sandwich 2.85
Grill: Patty melt on rye w/French fries 2.85

Thursday, June 13
Soup: Cream of spinach .75/.95
Entree: Baked fish Creole w/1 veg. 3.10
Entree: Baked potato w/broccoli cheese sauce 1.50
Fitness: Chef's choice 3.10
Carvery: Hot corned beef sandwich 2.85
Grill: Stromboli pita w/French fries 2.85
SPICE: Overstuffed beef or pork sandwich

Friday, June 14
Soup: Manhattan clam chowder .75/.95
Entree: Fish n'chips 3.10
Entree: Pasta w/meat sauce 3.10
Fitness: Sukiyaki over rice 3.10
Carvery: Hot turkey sandwich 2.85
Grill: Grilled Reuben w/cole slaw & a pickle 2.85

Cooking Exchange Plans Gala Party

The Cooking Exchange will throw a Gala Party on Wednesday, June 19, starting at 5:30 p.m. at the Recreation Building. Employees and their spouses who live both on and off site are all invited.

A dish to accommodate 12 people will be appreciated, and a fee of $1 per child will be charged to cover the cost of the baby-sitter. Please call one of the following to let them know you're coming and what dish you will be bringing: Louise Bunicci, 744-5867; Barbara Kowalski, 744-3569; Miryam Rothenstein, Ext. 3092; and Eiko Tanaka, Ext. 3017.

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.

The vacancies listed below have been exempted by the Director's Office from the current freeze on open requisitions.

SCIENTIFIC RECRUITMENT - Candidates may apply directly to the department representatives named:

NUCLEAR ENGINEER - Position open for a Ph.D. level engineer with significant experience in structural and/or mechanical engineering, specifically the dynamic response of structures, systems and components with particular emphasis on nuclear plant safety and accident evaluation. Apply to: Morris Reich, Department of Nuclear Energy, Bldg. 129.

MECHANICAL ENGINEER - Senior position open at the NSLS for an engineer with an advanced degree and a minimum of ten years' experience in the area of particle accelerators. Knowledge of magnet design and fabrication and ultrahigh vacuum engineering is desirable. The successful candidate will be responsible for the oversight of general mechanical engineering, including the design room and staff shops within the NSLS Department. Apply to: E.B. Forsyth, Search Committee Chair, Accelerator Development Department, Bldg. 1005S.

OPEN RECRUITMENT - Opportunities for Laboratory employees and outside applicants.

LL 8812. LABORATORY TECHNICIAN POSITION - Requires a BS degree in medical technology or equivalent with relevant experience highly desirable. Registration with the American Society of Clinical Pathology or other appropriate professional societies desirable. Responsibilities include laboratory analysis in the following areas: hematology, clinical chemistry and urinalysis. Additional duties will include phlebotomy and laboratory computer input. Medical Department.

DD 6106. TECHNICAL POSITION - Requires AAS in mechanical technology or equivalent experience. A thorough knowledge of hand tools, the ability to soft solder and to assemble components are also required as is the ability to operate and maintain vacuum pumps. Experience testing and troubleshooting cryogenic systems desirable. Shift work required. Alternating Gradient Synchrotron Department.

DD 6431. OFFICE SERVICES POSITION - Requires previous experience with both computerized and manual accounts payable systems. Will prepare and process vouchers for payment and maintain records regarding payments. Additional duties will include filing, data entry and processing daily mail. Fiscal Division.

DD 5070. TECHNICAL POSITION (term appointment) - Requires an AAS in an appropriate field and previous relevant experience. Also requires a high degree of proficiency in ultrahigh vacuum techniques, and knowledge and experience in the design of associated electron circuitry. Will work on the design and development of synchrotron radiation beam lines. Additional duties consist of a wide variety of complex tasks related to beam line operations such as fabrication and upgrades of equipment, design and development of new apparatus, maintenance of specialized equipment and extensive interaction with beam line users. Familiarity with computers desirable. National Synchrotron Light Source Department.

NS 0945. ENGINEERING POSITION - Requires BS/MSEE and a minimum of 10 years' experience in the design of computer-based acquisition and control systems. Proficiency with both hardware and software aspects of these systems, and a good understanding of IEEE-488 based instruction is also required. Experience with high current dc power supplies and semiconductor applications a plus. Will be responsible for the design, procurement, installation and testing of systems used in the construction and test of superconducting magnets. Magnet Division. Accelerator Development Department.

NS 0946. ENGINEERING POSITION - Requires MSEE and a minimum of 5 years' experience in the design of analog integrated circuits. Proven experience in the simulation, layout and extraction of IC designs using an integrated CAD system necessary. Responsibilities will include the design and testing of analog/digital ICs as well as the operation, programming and maintenance of the Cadence CAD system. RHIC Project. Accelerator Development Department.

Classified Ads (cont'd)

Motor Vehicles & Supplies

89 FORD PROBE GL - black, 5-spd., ac, stereo cass., 45k mi., like new, $8,700. Janene, Ext. 4660 or 369-1065.

88 HONDA CIVIC DX - 2-dr. h/b, 49k mi., a/t, ac, am/fm stereo cass., avail. Aug., $6,000. Aoki, 632-7977 or 689-5415.

87 NISSAN STANZA GXE - 4-dr., a/t, p/s, p/b, ac, loaded, 71k mi., good cond., $4,400. Ext. 2610 or 924-5272.

87 ISUZU TROOPER 4x4 - ac, luggage rack, running board, great looking, excel. cond. 399-4897 after 6 p.m.

87 DODGE DAYTONA - a/t, p/s, p/b, ac, am/fm cass., moonroof, 43k mi., mint cond., asking $5,000. 981-9351 eves. & wknds.

87 FORD RANGER 4x4 - 6-cyl., EFI, long-bed, sunroof, sliding rear window, am/fm cass., v.g. cond., $5,900. Charlie, Ext. 7749 or 325-0968.

87 YUGO - 2-dr., 4-spd., am/fm stereo cass., 28k mi.,; '84 Mazda B-2000, w/cap, runs well, good cond., asking $2,000. Joey, Ext. 2950 or 758-2938.

87 NISSAN SENTRA - white, 4-dr., a/t, p/s, p/b, new muffler, brakes, spark plugs, tires, excel. cond., $3,995. 874-4845 after 6 p.m.

87 CORVETTE - removable moonroof, loaded, 32k mi., red, asking $16,000. Scott, 475-7515.

87 HYUNDAI XL - 2-dr. h/b, 65k mi., orig. owner, excel. cond., $2,500. 654-3729.

87 HONDA ACCORD - h/b, 36k mi., ac, stereo cass., m/t, alarm, silver, excel. cond., $7,000. Julia, 468-8097.

86 ISUZU PICKUP - 4wd, 77k mi., 38k mi. on the eng., LS pkg., excel. cond., $4,800. Lloyd, Ext. 3163 or 286-1024 after 6 p.m.

86 CHEVY SPRINT - front-end damage, best offer over $500. Joe, pager 0925 or 728-1859 eves.

85 SUBARU - 4-dr. sedan, a/t, $2,400. 286-0466.

85 TRANS AM - T-top, loaded, maroon, tinted windows, all hwy. mi., gar., immac. cond., must sell, $6,500 neg. Sharon, Ext. 2689 or 698-2798.

81 TOYOTA CELICA - 5-spd., excel. body, needs major engine work, $290. Jack, Ext. 4037.

80 CHEVY MALIBU CLASSIC - V-6, p/s, p/b, rally wheels, runs well, best offer. Rich, 744-8910.

79 JEEP - 4wd, 4-dr., a/t, ac, RR mags, good cond., $1,500. 878-1178.

79 CHEVY PICKUP - V-8, 4-spd., p/s, p/b, very reliable, $1,200 neg. Joe, Ext. 5213 or 821-3328.

79 CHEVY NOVA - 6-cyl., good station car, mechanically OK, body fair, asking $450. Bruce, Ext. 7609 or 924-8680.

78 TOYOTA CELICA - 5-spd., m/t, ac, am/fm cass., 130k mi., runs well, must sell, $500 or best offer. Nelson, Ext. 3861.

78 TOYOTA COROLLA - 119k mi., 2-dr. h/b, new trans., brakes & battery, am/fm, runs well. Yannis, Ext. 5324 or 3182 after 7 p.m.

77 MGB - convertible, red, good cond, $2,100. 736-1976 after 6 p.m.

77 MARQUIS - p/s, p/b, p/w, new tires, battery, brakes, exhaust, rebuilt tranny, am/fm 8-track, V-8, runs well, $500 neg. Mike, 473-3995.

74 VW SUPER BEETLE - m/t, green, stereo & speakers, new tires, brakes & muffler, good cond., asking $1,200. Teri, Ext. 5800 or David, 586-8399.

69 CAMARO RALLY SPORT - classic car, $3,500. Jim, Ext. 3372 or 821-0250.

31 CHRYSLER MODEL B - 2-seater, rumble seat, all orig., excel. cond., must see, asking $7,500. Ext. 3160 or 289-5704 after 5 p.m.

HEADS - new Ford big block, 2 pr.; big block headers, 1 pr.; flywheels, lifters, new T.R.W., V-6, Ford lifters, small block, more. Wayne, Ext. 3084.

CAMPER - 23', sleeps 5, separate bdrms., full bath, refrig., stove/oven, awning, new 30 lb. gas tanks, more. Steven, Ext. 4612 or 281-2976.

Boats & Marine Supplies

25' AQUASPORT - 1987, 200-h.p. Merc. w/9.9-h.p. kicker, new canvas, Loran, more, sleeps 3, in water, immac., $20,000. 878-0480, eves.

22' CATALINA SAILBOAT - 6-h.p. Johnson, new mainsail & tiller, trailer, $4,250. Barbara, 929-8912.

22' GLASTRON AVENTURA 225 - 1981, 185-h.p. Merc. i/o, FWC, low hrs., VHF, DF, swim platform, fully equipped, $5,900. Ed, Ext. 7943.

19' RINKER - 1986, cuddy, 120-h.p. i/o, camper, canvas, low hrs., extras, w/trailer. Kathy, Ext. 2223 or 929-6421.

17' CHRIS CRAFT - 60-h.p. Evinrude, Gator tilt trailer, power winch, CB radio, v.g. cond., asking $1,800. Bill, Ext. 3859 or 286-1712.

16' BOWRIDER - 65-h.p. Evinrude, tilt trailer, p/winch, $2,000. Jim, Ext. 3372 or 821-0250.

14' HOBIE CATAMARAN - roller reefing jib, trailer, v.g. cond., $1,600 or best offer. Ext. 7657 or 298-9560.

13' TRI HULL - fiberglass, lake boat w/trailer, Minn Kota 36 lb. thrust electric motor w/battery, asking $1,000. Joey, Ext. 2950 or 758-2938.

Furnishings & Appliances

AIR CONDITIONER - GE, electric, 6,000 Btu, brought 7/90, used very seldom, $225. Ext. 2267 or 395-6520.

RECLINER CHAIR - good cond., $50 or best offer. O. Booker, Ext. 3082 or 727-5912.

COUCH - living room or family room, v.g. cond., best offer. Ext. 2610 or 924-5272.

DESK - almost new, $40; coffee table, $20. Georgia, Ext. 3182.

DINING ROOM - Queen Anne, cherry, breakfront, table w/extra leaf, 4 chairs, great cond., asking $850. Jean, Ext. 4938.

DRAPES - & curtains, assorted, 3 pairs, Priscilla, Laura Ashley fabric, custom-made, extra long. 286-4639.

GAS RANGE - & oven, 20" wide, v.g. cond. Tony, 698-9274.

LOVE SEATS - 2, contemporary, $100 or best offer. Donna, Ext. 4103 or 821-2874.

MEDICINE CABINET - 30" mirrored triple-door, brand-new, make offer. Ext. 2345.

SOFA - modular, 6 pieces, chocolate brown, good cond., make offer. Keith, 924-5062.

Tools, House & Garden

LADDER - alum., 20' extension, good cond. 325-0447 after 6 p.m.

PARLOR STOVE - antique, wood burning, nickel-plated trim, best offer. John, 744-4386.

WOOD-BURNING STOVE - Heritage, 24"d x 30"w, w/all pipes, good cond., asking $500. Evelyn, 698-3414.

CABLE - stainless steel, 5/16" dia., 9,000 lb. cap., 50¢/per foot. 281-4871 after 6 p.m.

DEAD BOLT - double lock, brass, $10 or best offer. Dave or Harriet, 941-9022.

LAWN MOWERS - Sears Craftsman, 21", self-drive, $150; 2 Snappers, re-cond., no bags, $125/ea. Dan, Ext. 4987 nights or 698-7322 days.

TABLE SAW - Shopsmith Mark V, drill press, lathe, disc sander, excel. cond., great bargain, many other access. Tom, Ext. 5350.

Sports, Hobbies & Pets

CLARINET - Signet, wood, excel. tone, $250. Jim, Ext. 3372 or 821-0250.

TOTAL GYM - West Bend, complete body workout, excel. cond., orig. $350, sell for $100. Carol, Ext. 3325 or 3312.

BIKE - Ross, woman's, 3-spd., good cond., $25. Juan, Ext. 3354.

DOG CRATE - v.g. cond., $30. George, 472-1479.

FINCHES - Zebra, Society, Gouldans, Spice, Cordon Blue, Green Singers, Orange Breasted Weavers, some w/cages. Kelly, 744-3069.

LOUNGE CHAIR - for pool, floats, like new. Sue, 395-3529.

ROTTWEILERS - AKC, champion bred, born May 9. 654-1146.

ROWING MACHINE - $50; skis, poles, size 8½ boots, $50; toboggan, $30; convection oven, $30. 399-4897.

SOLAR FLEX - $250. Artie or Marie, 399-3401.

TENNIS RACKET - Prince Graphite Pro 110, Prince topspin strings, $50. Vishwas, Ext. 3372.

VIBRA HARP - w/working motor, $500 or best offer. Janet, Ext. 2345.

WEIGHT BENCH - adjusts to incline, v.g. cond.; assorted weights. Kathy, Ext. 2267 or 395-6520.

Audio, Video & Computers

SPEAKERS - Hartke 210 Bass, $250; GK-410B, $325; two EV 150-watt floor monitors, 12", $300/both. Henry, Ext. 5110 or 399-6947.

AMPLIFIER - NAD, high power; Bang & Olufsen Featherlight turntable, both new, in cartons, make offer. Ext. 2679 or 472-6922.

COMPUTER - IBM PC, two 5¼ disc drives, monitor, keyboard, math coprocessor, good for beginner, $300. Bob, Ext. 5010 or 289-2986.

COMPUTER - Commodore 64, modem 300, 14" color monitor, 1541-II, Excelerator Plus floppy disc drive, more. $600 neg. Ext. 2877 or 289-8428.

SCANNER - 400-channel programmable, covers all bands including 800 MHz, 110 Vac or 12 Vdc, mint, $200. JGS, Ext. 4379.

TV - 13", b&w, good cond., best offer; Gemenheardt closed-hole flute, good cond., $50. Ext. 2267 or 395-6520.

Miscellaneous

GLASS MICROWAVE SET - new, $20; antique hand plow, $50; water skis, $20; antique brass lamp, $50; new flag, $18. Kathy, 744-2203.

TICKETS - 2, NY Mets vs. Phillies, Sun., June 30, first row, loge E, reserved section 22, $25/both. Dick, Ext. 2911.

Free

PARAKEETS - blue & green w/cage. Yang, Ext. 2341.

PUPPY - mixed breed, male, fawn, collie-type, 12 lb., affectionate, needs home. Alburger, 286-0377.

Car Pools

BROOKHAVEN/BELLPORT - need ride, now until Aug. 15. Christina, Ext. 7065 or 286-9708.

HOLBROOK - Biology summer student looking for car pool. Brian, Ext. 3350 or 585-8381.

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

BAYSIDE - 1-bdrm. co-op, breakfast nook, kit., bath, Cal. closet, tennis, pool, 1st class shops, rent/lease/option to buy. Julia, 718-468-8097.

BELLPORT VILLAGE - 4-bdrm. house, 2 baths, large l/r, new kit., d/r, 2-car gar., oil heat, fp, all appl., furn., nonsmoker, no pets, Sept.-Jan. $1,000/mo. Ext. 4332 or 286-2114.

BROOKHAVEN HAMLET - 3-bdrm. house, 2 baths, large kit., $900/mo. + sec. & util. 286-0204.

CENTER MORICHES - 2-bdrm. house, eik, l/r, full bath, $650/mo. + util., sec., refs. Ext. 7796 or 878-1115.

CENTER MORICHES - 2-bdrm. apt., lg. rooms, new appl., w/w, $650/mo. + util. 878-1178.

EAST MORICHES - 2-bdrm. apt., ground floor of Victorian house, bath, kitchen, d/r, l/r, large yard, 3 blocks to bay, shops, school, $680/mo. plus util. Mona, Ext. 5056 or 878-9384 eves.

EAST PATCHOGUE - 3-4 bdrm. house, furn., 1 year sabbatical (end of Aug., '91-'92), nice garden, woods, badminton court, 1 acre, fp, piano, walk to Bellport, $850/mo. + util. Vera, 286-3903.

HOLBROOK - 3-bdrm. ranch, large eik, den, solar-assisted heating, all appl., 1/3 acre, underground utilities, Sachem 5 SD, $975/mo. + util. Ext. 2679 or 472-0392/6922.

NORTH SHIRLEY - studio apt., full kit., large bath, priv. ent. w/own deck & cable, $450/mo. includes all + 1 mo. sec., single working person only. John, 924-4268.

PORT JEFFERSON - 4-bdrm. ranch, eik, l/r, d/r, fam. rm. w/fp, all appl., fin. bsmt., 2-car gar., avail. Sept., 2-yr. lease, no pets, $1,100/mo. Ext. 2920 or 473-5092 after 6 p.m.

PORT JEFFERSON STATION - 3-bdrm. ranch, l/r, d/r, eik, bath, sunroom, treed, fenced yard, all appl., nice neighborhood, avail. 7/15, $875/mo. + util. 698-5298.

SHIRLEY - quiet, 2½-rm. apt., employed mature person, nonsmoker pref., 10 min. from Lab., $450/mo. all. 281-6263.

SHIRLEY - 1-bdrm. apt., like new, l/r, eik, $575/mo. incl. util., avail. immed., 281-1840 after 4 p.m.

YAPHANK - 4-bdrm. restored Victorian, lg. treed prop., patio, 5 mi,. from Lab., recently remodeled, avail. now, 924-5219, 924-4872 or 924-3066.

ATLANTIC CITY, NJ - Radisson Flagship Condo Hotel, efficiency for 2, w/cable TV, microwave, etc., pool, exercise room, July 5-7, $150/3 nights. Ext. 2683 or 751-2469.

HILTON HEAD, SC - 2-bdrm. condo, sleeps six, two baths, pool, beach, tennis, golf course, May-Sept. $450/wk. Guy, Ext. 3147 or 689-5378.

For Sale

BELLE TERRE - 1-acre bldg. lot, English Tudor section, Village 24-hr. police, beach, children's programs, golf, tennis, $245,000, terms. 928-1020.

CORAM - Strathmore East, 4-bdrm. ranch, 2 baths, cathedral l/r, 2-car gar., gas heat, fenced corner lot, $120,000. Ext. 3791 or 928-7154.

EAST MARION - beautiful 1 acre bldg. lot, adjacent to Greenbelt, walk to Sound. 325-0447.

MEDFORD - Blue Ridge, 3-bdrm. condo, l/r, d/r, galley kit., util. rm., 1½ baths, rec., in/out pool, tennis, golf, price neg. Ext. 4853 or 698-4372.

MEDFORD - 12 Pines, 4-bdrm. expansion ranch, 1/3 acre, pub. water, 1-car gar., 2 baths. 286-8849.

MIDDLE ISLAND - Coventry Manor, 3-bdrm. townhouse, 2 baths, kit., l/r, d/r, laun. rm., cac, 5 appl., enc. patio, carpet, more, ask. $102,000. Rosalie, Ext. 3160 or 289-5704 after 5 p.m.

SHIRLEY - 3-bdrm. ranch, designer bath w/skylight, d/r, l/r, full bsmt. w/laundry rm., all oak floors, sec. lights, fully fenced on ¼ acre, $115,000. Frank, Ext. 3531 or 281-7578.

SHIRLEY - Smith Point, Cape Cod, det. gar., city water, low taxes, fenced, full bsmt., oil heat. 399-4897.

SHOREHAM - 3-bdrm. brick Cape, eik, den, playroom, gar., full bsmt., 1½ baths, remodeled, conven. loc., SWR SD, $140,000. Carol, Ext. 3315 or 744-7493; or Janet, Ext. 2345 or 929-3910.

SHOREHAM - 3-bdrm. ranch, 2 baths, den w/fp, eik, l/.r, d/r, bsmt., cac, ig sprinklers, 1/3 acre, Andersen windows, Longwood School, 7 min. to BNL. 744-5285 after 4 p.m.

SOUND BEACH - 3-bdrm. ranch, 2 baths, l/r, d/r, eik, fin. bsmt., gar., deck, pool, $145,000. Ext. 7918 or 821-1271.

SPEONK - 2-bdrm. 1987 mobile home, 14x60, shed, w/d, refrig. incl., bay windows in l/r, $42,000. Dave, Ext. 5460.

YAPHANK - Colonial Woods, 2-bdrm. condo, 1½ baths, fin. bsmt., wet bar, pool, tennis, rec., facil., 5 min. to Lab., red. to $100,000. Monica, 924-3846.

WHITESTONE/QUEENS - 2-bdrm. att. brick home/gar., 2 baths, eik, l/r, bsmt., yard, excel. neighborhood, must sell to settle estate, best offer over $175,000. Frank, Ext. 4273.

Wanted

CHILD CARE - our home, 1 mi. from Lab, M-F, 9-5:30. Susan, Ext. 3405.

FILMS - Super 8 suitable for 12 yr. old., has projector, wants films, comedies, travel, nature, etc. preferred. Dave or Harriet, 941-9022.

HOUSE TO SIT - free, exp., reliable, any period after June 7. J. Allentuck, Ext. 2412.

MOTORCYCLIST — for boat ride, Marcus Dairy, roadside picnic & Gillette Castle tour, June 23rd. Kevin, Ext. 4843, or Frank, Ext. 2022.

SOLAR COVER - for 18' round pool, reasonable. Ext. 7238.

STUDIO OR APT. - priv. bath & kit., for clean nonsmoking person, approx. $475/all. Ext. 2136.

WET SAW - for cutting bricks, rent or buy. Tony, 698-9274.

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

About the Services Ads

The classified ads for Services are intended for employees or members of their immediate family living within the same household to advertise work that they are willing and qualified to do. Of course, this work must not be offered in association with a regular business or commercial enterprise.

The Bulletin recognizes that people often want to earn some extra money. The Services ads help these people two ways: by introducing the Lab community to their services, and by helping them keep more of their extra earnings, without having to spend them to advertise.

The Bulletin believes that people who are running a regular business should pay for their own business expenses, which include advertising. And, if people are working for a regular business or commercial enterprise, it is up to their employers to advertise.

Services ads, like all Bulletin classified ads, are offered as a free service to employees, within the policy established by the Bulletin (call Ext. 2345 for a copy). The Bulletin attempts to ensure that all ads that are printed adhere to the policy. Please do not abuse this free service.

Services

*Services are listed in the first **Bulletin** of every month as a courtesy to BNL employees. They are neither screened nor recommended by the **Bulletin**. Services forms are available in the **Bulletin** lobby, Bldg. 134.*

ALTERATIONS - men's & women's clothes, call for estimate. Theresa, 289-0898.

ART INSTRUCTION - drawing, oils, watercolor, more, certified art teacher & gallery painter, children & adults. Vincent Nasta, 345-6520.

AUTOMATIC LAWN SPRINKLERS - free estimates, prof. layouts, repairs, alterations & additions, prompt, courteous service. Lou, 928-7042.

BABY-SITTING - experienced baby-sitter & mother of 2 months will take care of your child, on site. Ext. 3028.

BALLOON - arches, centerpieces, more, specializing in weddings, engagements, showers, special grad. pkg., Lab discount. Linda, 821-3009.

BEAUTY ADVICE - learn to put your best face forward for the summer, free summer skin care & glamour workshops. Alice, 751-0345.

BRICKWORK - masonry, patios, walks, swimming pools, retaining walls, landscaping ties, Belgian block, 25 yrs. exp., Lab disc. Tony, 698-9274.

CARPET/UPHOLSTERY CLEANING - spot, pet stains, odor removal, auto interior, fabric protector, free est., Lab discount. Jerry, 924-6019, days.

COUNSELING - exp., licensed, MSW, individual, marital & family, substance abuse specialist, reasonable,. Linda 929-5945.

DEEP CLEANING FACIALS - for proms, graduation, wedding, party, any occasion to look your best, men & women, great gift, $10. 399-1868.

CERAMIC TILE INSTALLATION - baths, kitchens, foyers, etc., quality work, reasonable, all types of tile. Patrick, 475-8504.

CHILD CARE - I will care for your infant, toddler or school age child in my Mastic home, $2/hr. Pam, 281-1540.

CHILD CARE - mom, teacher, will babysit while you work, my home. 475-2509.

FINANCIAL - retirement planning, personalized seminars through June. Rich, 744-4816.

HANDYMAN - all phases of home improvement, licensed/insured. Ed, 928-7539.

HANDYMAN - specializing in painting, wallpapering, window cleaning, sheetrocking, spackling, small jobs or repairs, quality work. 929-3407.

HOME IMPROVEMENT - complete carpentry service, roofing, siding, decks, windows, extentions, licensed & insured. 399-0828.

HOME IMPROVEMENT - all phases of carpentry specializing in decks, free estimates for Lab employees. 821-2875.

KAYAK LESSONS - touring, river playboats, $70 for 5 hrs., equip. supplied, intro to Kayaks, 2 hrs/$25. Ernie, 281-7873.

LAND CLEARING - using excel. rake on 450 loader, $70/hr. w/operator. Tom, 878-1060.

LANDSCAPING - professional lawn & shrub care, 20 yrs. exp., reasonable, reliable service, licensed & insured, western Suffolk. P.J. 277-9528.

LANDSCAPE/CONSTRUCTION - cleanups, tree work, decking, RR tie walls, complete masonry, driveways, more, free est. Dennis, 395-6055.

LAWNS MOWED - I provide mower & fuel, you decide when it's necessary, reliable adult. Rick, 588-7989 eves.

LAWNS MOWED - Center Moriches area, youth, reliable, neat & caring. 878-1178.

LAWN MOWERS - and riding mowers, small tractor repairs. Dan, 698-7322.

LOCKSMITH - sales & service, 10% Lab discount, keys cut during lunch. Pete, 399-2813 after 5 p.m.

PAINTING - interior, exterior, spackling, wallpapering, power washing, insured. James, 399-4912.

PARTIES - make all your parties special events, every detail covered, all size parties, any occasion including weddings, etc. Rosalie, 289-5704.

PARTY TENT - 20'x30' w/side curtains, we set up & take down, $250/38 hr. 321-2889.

PARTY TENTS - we set up & take down. Fred Kuehl, 588-2268.

PLUMBING & HEATING - alterations & repair work by Jim Morris, ret. BNL emp. 473-1205.

ROTOTILLING - Troybilt, custom service, lawns & gardens. Bob, 732-9517.

SHEETROCKING & SPACKLING - free estimate. Kevin, 563-9855.

SKIN CARE - free glamour workshops, learn about the plastic wrap theory, free introductory facials. Joann, 472-6742.

SKYLIGHTS - complete, professional-style service, cleaning, preventive maint., installations. Joseph, 924-6019.

SPRING CLEANUP - landscaping, shrubs moved, general cleanup, reasonable. Ernie, 698-9274.

TREE SERVICE - removal, trimming, stump grinding. Bob, 727-2346.

WINDOW CLEANING - all work squeaky clean. 928-3189 after 4 p.m.