BROOKHAVEN BULLETIN

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BROOKHAVEN NATIONAL LABORATORY

bnl Lecture: The Mysteries of Superconducting Magnets

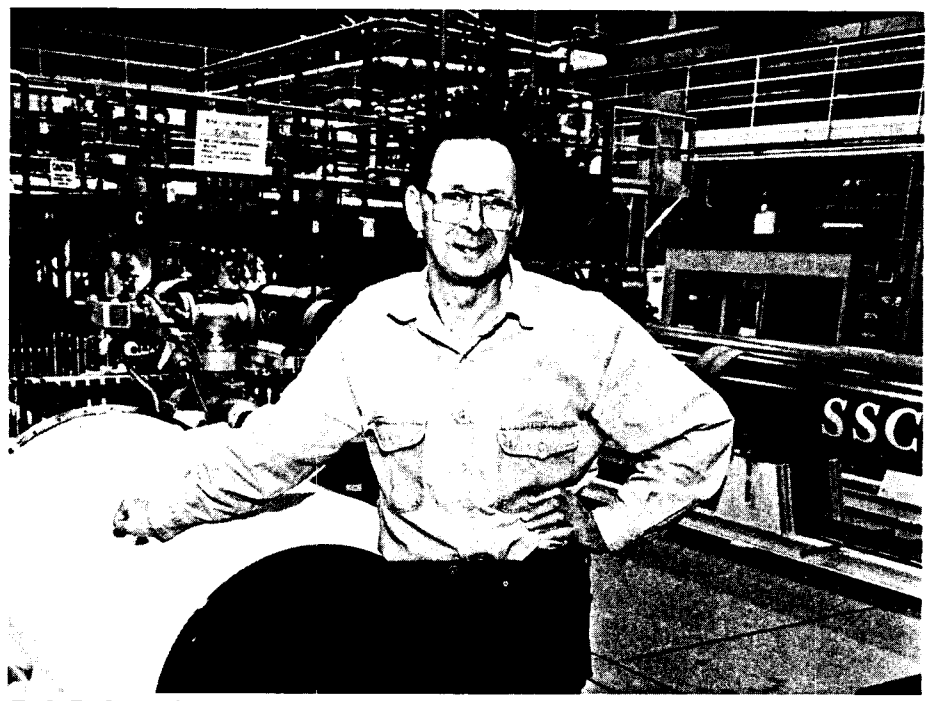
Most accelerators use magnets to guide and focus the particles that pass through them, and, today, any new accelerator is likely to be designed with superconducting magnets. Less than 20 years ago, however, fashioning magnets out of superconducting materials was a new and untested idea.

At very low temperatures, certain materials called superconductors lose all their resistance to electricity, so current can flow through them unimpeded and powerful magnetic fields can be generated using very little electricity.

In a good superconducting magnet, the magnetic field will be significantly stronger than the magnet's design field before the superconducting cable experiences what is called its first quench — makes a transition from being a superconductor to being a normally resistive material.

Why do quenches occur? This is one of the mysteries BNL's magnet "detectives" have tried to solve on their way to becoming acknowledged experts in this field. And it is one of the mysteries that will be discussed in the 287th Brookhaven Lecture.

Robert Palmer, who heads BNL's Center for Accelerator Physics (CAP), will take the audience "From ISABELLE to SSC — The Mysteries of Superconducting Magnets," on Wednesday, May 12, at 4 p.m., in Berkner Hall. His talk will be introduced by retired Senior Physicist Ronald Rau, who is now a consultant to the Lab.



Bob Palmer in the magnet assembly area, in Bldg. 902.

In 1978, BNL began construction of ISABELLE (which stood for Intersecting Storage Accelerator, with "belle" added because the concept was considered so beautiful), an accelerator in which superconducting magnets were to guide protons around a 3.8-kilometer (about 2.5-mile) ring, so they could collide at energies of 400 x 400 billion electron volts.

Superconducting magnet technology was still in its infancy, however, and by 1981, ISABELLE magnet production had developed problems. Magnets were quenching much too soon and too often — and no one knew why. To find out why, Palmer will recall how he, with a group headed by Eric Forsyth, circled the globe looking at magnet designs. Palmer incorporated their findings into a new design that quenched beyond its design field on its first try.

The success of the "Palmer magnet" led to ISABELLE's being replaced with the Colliding Beam Accelerator (CBA), but the earlier magnet problems eventually took their toll: In 1983, the High Energy Physics Advisory Panel recommended discontinuing CBA construction in favor of the national Superconducting Super Collider (SSC).

Ten years later, a lot has changed. The CBA tunnel will be the home of BNL's Relativistic Heavy Ion Collider (RHIC), now under construction. And, both RHIC and the SSC will be powered by superconducting magnet offspring of the Palmer magnet. In his talk, Palmer will recount the evolution of this superconducting magnet technology, explaining how much — and how little — is still understood.

Bob Palmer took his Ph.D. in physics at the Imperial College in London, in 1960, then came to BNL's Physics Department to join the Bubble Chamber Group, headed by Ralph Shutt. He received tenure in 1969 and was named Senior Physicist in 1974.

Palmer served as BNL's Associate Director for High Energy Physics Research, 1983-86. Returning from a one-year sabbatical in 1987, he was named CAP Head. He resumed this appointment in 1991, after a one-year leave of absence at the SSC.

Over the years, Palmer took part in several major discoveries. Earlier this year, Palmer, Shutt and BNL Director Nicholas Samios shared the 1993 W.K.H. Panofsky Prize of the American Physical Society for their 1964 discovery of the omega-minus particle. Palmer was also involved with the discovery of neutral currents at CERN, the European particle physics laboratory, in the early 1970s; the charmed baryon, BNL, 1975; and direct single photons, CERN, 1978.

His interest in accelerator physics led Palmer to his work with superconducting magnets, and to invent the inverse free electron laser in 1972, and, in 1980, the grating laser accelerator.

After the lecture, all are invited to join the speaker for discussion and refreshments. To accompany him to dinner at a restaurant off site, call Kathleen Tuohy, Ext. 3845.

Coming Up

The 1993 Annual NSLS Users' Meeting will be held on Thursday and Friday, May 20-21, in Berkner Hall.

K.C. Cole, Physics Editor of *Discover Magazine*, will deliver the meeting's keynote address on "The Ever Juicier Mystery: Science for the General Public," on Thursday at 9 a.m. The meeting will also feature a 22-vendor exhibit in Berkner Hall, which is open to all.

The meeting will be preceded on Wednesday, May 19, by five workshops on: x-ray microfocusing, scientific applications of real-time computed tomography, use of coherent x-rays for imaging and diffraction, recent advances in XAFS, and new scientific opportunities using undulator radiation from 5 to 30 electron volts.

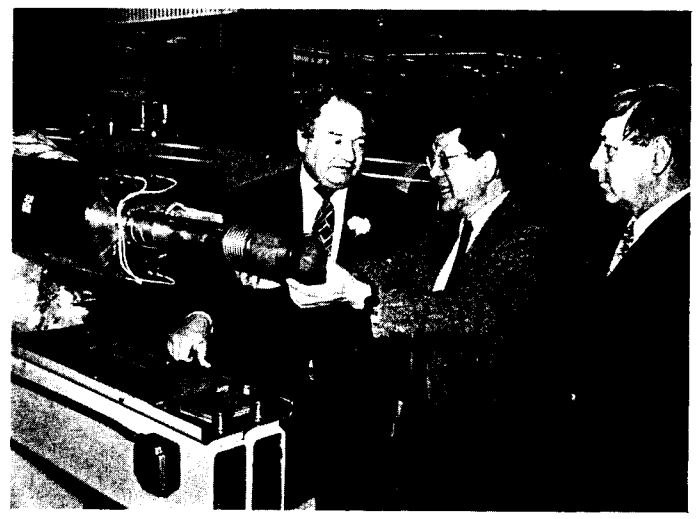
For more information, including fees and schedules, contact Linda Feierabend, Ext. 5763, Bldg. 725B.

New York Congressman Tours Brookhaven

On a recent tour of the Lab, Congressman Gary Ackerman (left), who represents New York's 5th Congressional District, is briefed on the use of superconducting magnets in particle accelerators by Satoshi Ozaki, Head of the Relativistic Heavy Ion Collider (RHIC) Project, as BNL Deputy Director Martin Blume looks on.

RHIC will require nearly 1,700 superconducting magnets to guide heavy ions during their millions of revolutions around its 3.8-kilometer circular tunnel. At this world-class accelerator, physicists will collide gold nuclei at extremely high energies to create a quark-gluon plasma — a form of hot, dense matter that was last produced at the earliest stages of the Big Bang.

In addition to the magnet-production facility in Bldg. 902, Ackerman toured the RHIC tunnel, the National Synchrotron Light Source and the Positron Emission Tomograph facility. He also met with Lab Director Nicholas Samios to discuss various issues affecting Brookhaven.



Safety in Boiling Water Reactors — BNL's Expertise Tapped by NRC

In a new organization of national laboratory roles regarding nuclear reactor safety, the U.S. Nuclear Regulatory Commission (NRC) has made each laboratory solely responsible for a particular type of reactor. With 20 years of experience in evaluating the safety of boiling water reactors, BNL's Department of Nuclear Energy (DNE) has been named to assist NRC in the area of thermal hydraulics of boiling water reactors, of both current and advanced designs.

Visiting BNL on March 31 for a meeting to announce and discuss the new program were: (seated, from left) Anthony Baretta, Pennsylvania State University; NRC's Brian Sheron, Director of the Division of System Research and (seated, far right) Louis Shotkin, Chief, Reactor and Plant Systems Branch.

The new DNE program, which will be led by Upendra Rohatgi (standing sixth from left), will provide NRC with computer codes for simulating accidents and performing accident analysis for the roughly 36 current designs for boiling water reactors, as well as all advanced designs under design certification. Some other DNE attendees at the meeting were: (standing, from left) DNE Chairman Romney Duffey; DNE Deputy Chairman Robert Bari; Hassein Nourbakhsh, David Diamond, Gregory Slovik, Rohatgi, Alexander Mallen, Hasna Khan and Hsiang-Shou Cheng, and (seated, third from left) Lewis Snead, DNE Advanced Technology Division Head.

Inside Info

Karl Swyler, who has been a scientist in the Office of Educational Programs (OEP) since 1988, has agreed to serve as OEP's Acting Manager until the conclusion of a search to replace Don Metz, who retired at the end of April.

"Karl has been heavily involved for several years with an extensive range of educational programs," said Mark Sakitt, BNL's Assistant Director for Planning & Policy. "We are fortunate to have Karl step in while the search committee for that position continues its final deliberations."

Summer Science Interns Available

Reminder: As part of the Community Summer Science Program (CSSP), BNL offers afternoon internships for students in the summer following their junior or senior year in high school.

Interns participate in BNL's research programs, under the direction of Laboratory staff members at no cost to the sponsor's department. CSSP intern applications may be reviewed through Thursday, May 13, in the Science Education Center library, Bldg. 438.

Astronomical Society

The Astronomical Society will meet on Thursday, May 13, at noon, in Room D, Berkner Hall. New members are welcome. For more information, contact Keith Power, Ext. 5355.

Arrivals & Departures

Arrivals

James Della Sala.....Ph. & G. Arts
Lee J. Kerkhof.....App. Science
Wanda Polewska.....Physics
Charles E. Price.....RHIC

Departures

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

Bernice W. Armstrong.....Medical
Elbert N. Carter.....SEP
John J. Gabusi.....AGS
Mahmoud S. Haleem.....SEP
Weifang Luo.....App. Science
George F. Martin Jr......AGS
Donald J. Metz.....Director's Office
Nancy J. Sherlock.....Biology
Denise M. Swanberg.....Plant Eng.

Science and Music: A Harmonious Mix

Alan Bieber, a scientist in the Department of Nuclear Energy, has done research at BNL since 1971, but he has been a musician even longer.

"I've played the recorder since I was 10 years old, and I learned to play the clarinet and tenor sax in junior high school. I've continued playing these instruments informally all through college and grad school," Bieber said.

Now he is a member of two very different musical groups: Measure for Measure, a three-year-old ensemble that performs instrumental and vocal music dating from the late Middle Ages to the early Renaissance (c. 1200 to 1600) and Spontaneous Combustion, a one-and-a-half-year-old band that plays traditional and original instrumental folk music.

Measure for Measure proves that science and music are extremely compatible, as five of its six band members work in scientific and technical fields at BNL.

Besides Bieber, they are Rene Holaday, a research specialist from Massachusetts Institute of Technology who works at the National Synchrotron Light Source (NSLS); Sean McCorkle, a programmer analyst in BNL's Physics Department; Jeffrey Rothman, an NSLS staff engineer; and Peter Siddons, an NSLS physicist. Eva Rothman, the only member not associated with the Lab, is a quality assurance analyst for a software company.

Each of the band's musicians plays between four and eight instruments, and, combined, they play a total of 23 — all replicas of instruments that were popular some 300 to 600 years ago.

Some of the medieval instruments, like recorders, crumhorns or shawms are available commercially, but many of them have been handmade by Rothman and Siddons. For example, they built both the rackett, a small instrument that sounds like a bass, and the cornamuse, a double-reed instrument, based on contemporary sources. The band members also taught themselves to play their unusual instruments.

"The popularity of pre-baroque music has been building over the last 25 years," said Bieber. "For instance, the Renaissance band, Calliope, was just featured in a BERA concert. Also, some rock artists, like Jethro Tull, are influenced by this early music. Simon and Garfunkel's 'Parsley, Sage, Rosemary and Thyme' is derived from Renaissance music."

Measure for Measure will perform on May 20 at the NSLS Annual Users' Meeting banquet and at the Huntington Renaissance Festival on May 29 and 30.

Bieber also noted that, over the last decade, an enthusiasm for contradancing has been growing all over the country, from Long Island to Hawaii. This form of dance, which derives from New England country dancing, is similar to square dancing, except that partners line up in two long lines, rather than in four-couple squares.

"It's a very energetic style of dancing," Bieber said, "and a wide age group is interested in it — from teenagers to retirees."

Bieber is the only BNLer in Spontaneous Combustion, a four-member band that specializes in music for contradances, playing as many as 15 instruments. In addition to favorite Irish tunes, the group's repertoire includes traditional Scottish and American music, modern pieces played in traditional style, and original compositions by members Colleen Donahue and Larry Moser. The other band member is Deborah Nuse.

Spontaneous Combustion performs in a variety of settings, from formal concerts to weddings, and they can be heard performing for the Long Island Traditional Music Association.

On May 22, the band will be featured at the Brookhaven Women in Science-sponsored contradance at the Brookhaven Center to benefit the Renate W. Chasman Scholarship Fund.

Bieber said he practices his music every day and meets for group rehearsals with the two bands a total of three times per week. "That keeps me very busy, but I'm not ready to give up any of it. I love both kinds of music," he said.

— Diane Greenberg

Measure for Measure band members (seated, front) are: Alan Bieber, Eva Rothman, (standing, from left) Peter Siddons, Rene Holaday, Sean McCorkle, and Jeffrey Rothman.

— Photos in this issue by Roger Stoutenburgh

Mini Size, Maxi Good Use

With three-cylinder engines which run on unleaded gas and get 19 kilometers per liter or 45 miles to the gallon, but top out at about 40 kilometers (25 miles) per hour (kph/mph), the 20 Mitsubishi trucks seen about site since the end of last year are truly mini.

They are being put to maximum good use, however, as each full-size vehicle taken out of service is being replaced with 1.8 mini trucks.

While one of the mini pickups has been assigned to the Relativistic Heavy Ion Collider Project and one is as yet unassigned, 18 of them were assigned to the Plant Engineering Division, for use by Operations & Maintenance.

Because they cannot get up to highway speed, the mini trucks are not legal for off-site use. Hence they each sport a triangle on the back, indicating a slow-moving vehicle. Given the Lab's speed limit of 48 kph, or 30 mph, however, the mini trucks are ideal for running around site.

Each mini pickup has a 190-centimeter (cm) or 6-foot-4-inch-long truck bed which can hold 0.225 metric tons or ¼ ton, and three are actually dump trucks. Powered by a hydraulic pump, the truck bed of the mini dumpers can be lifted horizontally 180 cm, or six feet, in the air, so the truck bed can serve as a work platform, or be tilted for dumping its contents.

With enough cab room for a driver and passenger, enough headroom for taller occupants, such as 193-cm or 6-foot-5-inch-tall Custodial Services General Supervisor Slim Blevins (pictured), and a heater for winter driving, the minis — while not luxurious — are comfortable enough.

While they will never be allowed on the sidewalks, one mini has been outfitted with wider tires so it can be driven on the grass without tearing up the turf.

Service Awards

The following employees celebrated BNL service anniversaries during April 1993:

40 Years

Thomas F. Prach.....Reactor

30 Years

David E. Cox.....Physics
Harold E. Gassner.....AGS
Werner Tramm.....AGS

25 Years

John R. Bennett.....CCD
M. Kay Dellimore.....Personnel
Michael S. Makar.....Medical
Lonnie B. Muldrow.....Plant Eng.
Milton R. Saunders.....Plant Eng.
Martin R. Van Lith.....Physics

20 Years

Suresh C. Srivastava.....Medical

10 Years

Eleanor A. Hughes....Director's Office
Antoinette A. Russo.....Budget Office
Anthony R. Spina.....Central Shops

Note to Employees:

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

Wayne Cummings on the Court

While basketball has been played at Brookhaven since the Lab's beginnings in 1947, there is one employee who, in at least recent BNL Basketball League history, not only has been a player on the most championship-winning teams, but also has the longest championship streak.

That player is Wayne Cummings, a laborer in the Plant Engineering Division, who was a starting member of this year's championship team, the Runaways (see photo and caption).

Since he came to work at Brookhaven nearly seven years ago, Cummings has been a member of six out of seven championship teams, four of which won in the last four years.

But only for the last two years has Cummings been on the same winning team — the Runaways: In 1991, he played for the Bulls; in 1990, he started for the Warriors; 1988, he captained the Knicks; and, in 1987, he was a member of the Longshots.

"While it is nice to score 30 points a game, it is even nicer to win, and winning championships is nicest of all," says the six-foot-tall power forward, who also plays point or shooting guard if need be.

In the last play-off game, Cummings scored 32 points, and, over the entire January-to-April season, he averaged 22 points a game, including

Wayne Cummings

10 rebounds and 10 assists. He was the highest scorer in six of the nine games in which he played this year and second highest in the other three. But scoring his own points is not his number one priority.

Explains Cummings, "If I have to score, I'll score; if I have to rebound, I'll rebound; if I have to pass, I'll pass; if I have to block shots, I'll block shots — I'll do whatever I have to do to make sure that my team wins, even if that means sacrificing my game for the sake of the team."

Shooting hoops since before the age of 10, Cummings learned to be a team player in sixth grade, when his Brooklyn intermediate-school basketball coach, Carl Shildkrout, took him under his wing — and made him sit his fair share on the bench.

In sitting on that bench, "I had to learn the point of the game and understand my place on the team — and, of course, I didn't like it at first," recalls Cummings.

In mentoring Cummings and enlarging his horizons, Shildkrout enabled Cummings to attend summer basketball camps at Kutshers Sports Academy in upstate New York, where he developed his talent for the game under the tutelage of such basketball legends as the late Pete Maravich.

While Cummings had hoped for the career that a number of his buddies pursued — playing pro or European basketball — he admits that peer pressure to hang out instead of work out undermined his dream. "I love the game and I feel that I have the talent and skills, so I'm sorry that I wasted the opportunity by not giving myself a fair shot at it — because then at least I could say that I tried," he says.

"When I was in my late teens and early 20s, youth was on my side — but it was definitely wasted on the young," continues the 30-year-old. "I could go to the hoop and shoot the jumper with great consistency, and, even at that age, I knew the ins and outs of the game, but I wasn't 100 percent dedicated because I took my talent for granted."

Cummings is now using the insight that he has gained in adulthood to prolong his participation as a serious recreational hoopster and to referee as a certified high-school basketball official.

Because he feels he is getting old for a B-ball player, "I'm selective about the teams that I'll play on — I make sure that I don't have to do everything for the team because, while my instincts say go for it, my aches and pains later tell me that I overdid it again."

While on what is apparently the winningest streak in BNL Basketball League history, Cummings is thinking about hanging up his basketball shoes and retiring from competitive play. Will he come back?

"Although I love the game, basketball isn't my main focus — I have my wife Michelle, my daughter Christine, a baby on the way, my house and my '69 Mustang to keep me busy — so I don't know if I'll play BNL league ball next year," says Cummings. "But that's for now — ask me next year." — Marsha Belford

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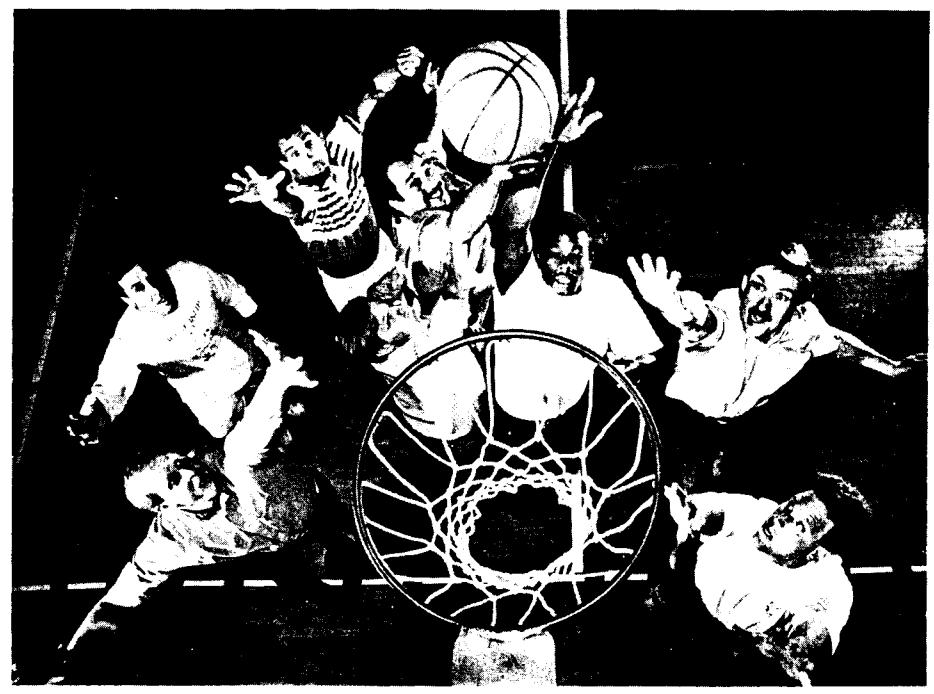
ANITA COHEN, Editor
MARSHA BELFORD, Assistant Editor

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



Basketball Champions

For the second year in a row, the Runaways ran away with the championship game, beating Magic 69 to 53 in the first play-off game, and 87 to 81 in the second. Demonstrating their championship form, the Runaways are: (front court, from left) Bob Doty, Steve McAlary, Wayne Cummings, captain Gerry Shepherd, Pete Ratzke, (back court, from left) Dan White, Ed Meier, and (between players) Jerry Gaeta.

PSI Meeting

The husband-and-wife team of Al and Donna Geraldi, both FBI-trained tactics instructors, will lecture on "Personal Safety and Home Protection Techniques," at the next meeting of the Upton Chapter of Professional Secretaries International (PSI), on Wednesday, May 12, at 6 p.m., in the Brookhaven Center's North Room.

The Geraldis instruct at the Ryukyu Kempo Kobudo Martial Arts Academy, Ronkonkoma.

Volleyball

League Champions

Open League - The Roofing Company
League I - VolleyBallAholics
League II - Monday Nite Live
League III - High Volley'em

Awards Dinner

The Volleyball awards dinner will be held at the Brookhaven Center in the North Room on Friday, May 14, from 6 to 11 p.m. Tickets purchased by May 10 will be $15, which includes a hot buffet, keg beer, cash bar and music by DJ Lou Naglieri; after May 10, tickets will cost $20. For more information, contact Terry Sullivan, Ext. 2840 or Ron Webster, Ext. 2845

Lab Mail, Yes; Chain Letters, No!

Chain letters have been circulating on site through the Lab's mail system. This is an inappropriate use of BNL's resources and time. If this distribution continues, further investigation as to its source will be conducted.

Bowling

Red/Green League

R. Mulderig bowled a 232/618 scratch series, E. Meier 221/210, S. Thompson 214, C. Scarlett 212, G. Meinken 211, R. Larsen 210, N. Parrinello 208, A. Warkentien 206, B. Erickson 201.

Purple League

Jim Goode bowled a 214/584 scratch series, Sharon Smith 211, Pete Stelmaschuk 204, John McCarthy 201, Mary Ellen Hubner 198, Lorraine Roecklein 193, John Weiner 184, Jeanne Penoyar 173, John Addessi converted the 6-7-10 split, Paul Callegari converted the 6-7 split.

White League

Mike Meier bowled a 213/576 scratch series, Jim Petro 213, Barbara McCarrick 207, Bob Geib 203/194/181/578 scratch, Ben Belligan 204, Ray Raynis 201, Tom Romano 200, Marilyn Picinich 184, Suzanne Agnetti 173.

Healthline Lecture
Becoming a Good Samaritan

Heart attacks, choking, accidents in the home or on the road — if you were the only person to happen upon the scene of a medical emergency, would you know what to do?

If you did, not only would you have an opportunity to be a good Samaritan — but you could also save a life.

To learn about "Your Role in CPR and Emergency Cardiac Care," attend the next Healthline lecture. Sponsored by the Health Promotion Program (HPP) of the Occupational Medicine Clinic, the talk will be presented on Tuesday, May 11, from noon to 1 p.m., by physician Ronald Paynter, Director of the Emergency Department of Brookhaven Memorial Hospital.

Nowadays, as Paynter will discuss, when good Samaritans turn up at medical emergencies, they can offer a lot more than hand holding — if they are properly trained. And, while life sustaining, training in cardiopulmonary resuscitation (CPR), Heimlich maneuver, first aid and the like is so basic that it does not require a degree in the medical sciences.

In addition to encouraging the audience to become more responsible for their family and neighbors' well-being by undertaking simple life-support training, Paynter will also outline how to plan for a medical emergency so as to increase the victim's survival chances.

Ronald Paynter, M.D., is a board-certified specialist in emergency medicine. In addition to his present directorship, he is on the teaching faculty of the Mount Sinai School of Medicine and the Medical School of the State University of New York at Stony Brook.

To register for this lecture, complete and return the bottom portion of the Healthline flyer recently sent to all employees before Monday, May 10, to HPP Specialist Mary Wood, Bldg. 490. For more information about HPP or its Heathline lecture series, call Ext. 5923.

Cafeteria Menu

Monday, May 10	
Soup: Chicken noodle	.80/1.10
Entree: Meatball Parmesan hero	3.20
Entree: Baked Mandarin chicken	3.35
Carvery: Hot pastrami sandwich	2.95
Grill: Monte Cristo sandwich	2.95
Taster's Bar: Stuffed baked clams	
Tuesday, May 11	
Soup: Cream of mushroom	.80/1.10
Entree: Baja pizza (pizzamore)	2.75
Entree: Shepherd's pie	3.25
Carvery: Sliced roast beef w/gravy	2.95
Grill: Teriyaki chicken w/rice	3.45
Taster's Bar: Baked buffalo wings	
Wednesday, May 12	
Soup: Beef & barley	.80/1.10
Entree: Cheese tortellini primavera	3.45
Entree: Baked chicken oreganata	3.45
Carvery: Baked Virginia ham sandwich	2.95
Grill: California burger w/French fries	2.95
Taster's Bar: French bread pizza	
Thursday, May 13	
Soup: Cream of celery	.80/1.10
Entree: Knockwurst & sauerkraut	3.45
Entree: Fish & chips	3.45
Carvery: Hot corned beef sandwich	2.95
Grill: 8-oz Club burger	3.25
Taster's Bar: Golden-fried calamari	
Friday, May 14	
Soup: New England clam chowder	.80/1.10
Entree: Baked fish jardinier	3.65
Entree: BBQ spare ribs	3.55
Carvery: Hot turkey w/cranberry sauce	2.95
Grill: Open-face tuna melt	2.45
Taster's Bar: Chicken wings	

Movie Night . . . Brookhaven Center
Wednesday, May 12 . . . 8 p.m.
free popcorn!

Classified Advertisements

Placement Notices

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

Each week, the Personnel Division lists new placement notices. The purpose of these listings is, first, to give employees an opportunity to request consideration for themselves through Personnel, and, second, for general recruiting under open recruitment. Because of the priority policy stated above, each listing does not necessarily represent an opportunity for all people.

Except when operational needs require otherwise, positions will be open for one week after publication.

For more information, contact the Employment Manager, Ext. 2882, or call the JOBLINE, Ext. 7744 (282-7744), for a complete listing of all openings.

LABORATORY RECRUITMENT - Opportunities for Laboratory employees.

NS 0783 POLICE TRAINING CAPTAIN - Requires a bachelor's degree or equivalent military/police experience and substantial teaching and/or training background. Excellent oral and written communication skills are required. Proficiency in firearms, small unit tactics and police or security procedures is mandatory. Must meet the "defensive combative" physical requirements of 10 CFR 1046, and have the ability to obtain/maintain DOE "Q" clearance. Safeguards & Security Division.

OPEN RECRUITMENT - Opportunities for Laboratory employees and outside candidates.

DD 2712. CARPENTERS - (temporary positions) Requires substantial commercial/industrial experience. Under minimum supervision will lay out, construct, modify and maintain buildings and component parts from construction drawings, rough sketches or verbal instructions. Will work with wood, wood substitutes and combination materials and flooring, roofing and wall materials. Plant Engineering Division.

DD 2711. PLUMBER A - (temporary positions) Requires substantial commercial/industrial experience. Under minimum supervision, will lay out, construct, install, repair and maintain water, sewage and gas systems, related facilities and auxiliary equipment. Plant Engineering Division.

NS 8175. TRAINER POSITION - Requires a BS in an appropriate field, or equivalent experience, approximately four years' training background and excellent writing skills. Proven ability to apply the systems approach to training to develop, implement and maintain industrial hygiene curriculum and all aspects of the Respiratory Protection Program, including fit testing, training, report writing, scheduling, etc., is required. Safety & Environmental Protection Division.

NS 8171. TRAINER POSITION - (part-time, term appointment) Requires BS or equivalent, excellent communication skills, and a minimum of three years' experience in industrial safety. Responsibilities include instructing in the following areas: general employee training, forklift, overhead crane, electrical safety and hazcom/lab standard training. Safety & Environmental Protection Division.

NS 2010. ENGINEERING POSITION (term appointment) - Requires bachelor's degree in electronics engineering (MS preferred) and substantial experience in the development, design and fabrication of large-scale detector systems for high energy and nuclear experiments. Must have experience in the use of monolithics and hybrids in system design; familiarity with CAD systems and knowledge in science, especially physics, strongly preferred. Will be responsible for the design, implementation, testing and commissioning of a complete electronics chain from front end to data-acquisition interface. Physics Department.

Motor Vehicles & Supplies

81 DODGE VAN - custom, new paint, tires, good cond., asking $2,800. Brett, 929-4753.

80 HONDA ACCORD - h/b, a/t, runs well, everything works, as is, $200. Sue, 473-6570 after 7 p.m.

79 CHEVY CAPRICE - new trans., radiator, exhaust, tires, excel. cond. Ext. 5337 or 821-4318.

78 DODGE DIPLOMAT - 318 V-8, 4-dr., a/t, 100+k mi., reblt. trans., new rad., needs rear-end work, $150. Don, Ext. 7237 or 744-2921 after 5:30 p.m.

68 MUSTANG - red, 302 V-8, rebuilt trans., battery, brakes, shocks, exhaust, am/fm cass., Clarion, must sell, $2,500. 399-2179.

62 VOLKSWAGEN BUG - new trans. & tires, green, runs well, $3,500 neg. Nick, Ext. 2000.

51 DODGE PICKUP - runs, some body work done, new glass, make offer; ramps, 2, solid alum., 12' long, $150. Guy, 758-6892.

HONDA 150 ELITE SCOOTER - 2k mi., like new, $750. Fales, 878-8294.

TRANNY & TRANSFER CASE - '72 Blazer, $150 for both. Jim, Ext. 4026 or 727-0652.

TIRES - Pirelli, P185/60HR14, low profile, v.g. cond., 3 for price of 1, ask. $80. Charles, Ext. 5211.

UTILITY TRAILER - heavy-duty, 4½'x7½', removable sides, good cond., $300 or best offer. Wayne, Ext. 2284.

OIL-CHANGING EQUIPMENT - ramps, large drip pan, filter wrench, $15. Wink, 874-2762.

ROLL BAR - black, 4-point, fits large pickups, $35. John, Ext. 4414.

92 SATURN SL2 - a/t, p/s, p/b, p/w, ac, am/fm cass., BL-GR, 11k mi., $11,500. 473-6904 after 6.

83 BUICK SKYHAWK - needs engine work or good for parts, make offer. 727-3863.

83 NOMAD TRAILER - 21', fully self-contained sleeps 6, ac, awning, excel. cond. Bill, Ext. 4140.

90 TOYOTA 4-RUNNER - V-6, ac, 5-spd., SR5 pkg. excel. cond., never driven on beach, $15,500 or best offer. Larry, Ext. 3506 or 281-2002.

89 NISSAN SENTRA - white, 80k highway mi., ac, 2-dr., new tires, battery, good cond., sell as is. Wei, Ext. 4213 or 744-5310.

87 GMC JIMMY S15 TRUCK - 4wd, V-6, 5-spd., fully loaded, p/s, p/b, ac, p/w, p/l, mag wheels, high mi., $6,900. Viorel, Ext. 7104.

84 HONDA CRX - 2-dr., recent paint, 84k mi., excel. cond., no rust, $2,450. Rick, Ext. 3069 or 821-4188.

83 CHEVY BLAZER - 6.2L diesel, p/s, p/b, p/w, p/l, ac, am/fm cass., excel. cond., $5,000. Rich, Ext. 3457 or 696-0559.

82 AMC CONCORD DELUXE - 84k mi., am/fm cass., excel. mech./exterior cond., $1,200. Gordon, 929-4173.

81 GMC VAN G-20 - 8-pass., a/t, p/b, p/s, p/w, aux. htr., new paint, tinted glass, tow pkg., $1,500. Dennis, Ext. 4218 or 929-5914.

77 GMC C-30 TOW TRUCK - w/Holmes 440 swivel head winch, Merlin wheel lift, dual batteries, more, $5,495 or best offer. 734-5592.

63 VALIANT - 40k mi., no rust, garaged for 30 yrs., excel. cond., $2,500. Ext. 5624.

CAP - custom-made for Chevy short-bed pickup, paneled, good cond.; truck rims, white spoke, 8", 5-lug, $20/4. Steve, Ext. 2496 or 475-6964.

YAMAHA YZ125 - mint cond., asking $600. Mike, 878-1617 after 4 p.m.

TIRES - two Goodyear P225/75R14, two Uniroyal P225/75R15, one Firestone P215/70 14, $30 ea. Tony, 698-9274.

COLEMAN COLONIAL XL TRAILER CAMPER - sleeps 4-6, excel. cond., $1,500. 473-3604.

Boats & Marine Supplies

24' GRADY WHITE OFFSHORE - 1986, 200-h.p. Johnson ob., trim tabs, new Bimini, swim platform, bait wells, $18,500. 473-1658 after 6:00 p.m.

23' 4 WINNS - 230-h.p. Merc. i/o, many extras, excel. cond., trailer opt., $9,900. Charlie, Ext. 2407.

23' THUNDERBIRD - 1968 fg tri-hull w/cuddy cabin, no motor(s) or trailer, excel. cond., you haul away. Kevin, Ext. 5529 or Ext. 1832, eves.

19' O'DAY MARINER SAILBOAT - 6-h.p. ob., 5 sails, fixed keel, good cond., $1,700. Walt, Ext. 2444 or 473-3295.

17' MAKO - 1981, center console, 1982 115-h.p. Evinrude, E-Z Load trailer, $3,500. Dennis, Ext. 5278.

17' MFG - fg, w/50-h.p. Mercury ob., incl. trailer, runs well, $950. Mike, 929-8443.

SUNFISH - orig. Early Alcort, white hull w/blue stripes, garage stored, $400. 751-7104.

DOCK SPACE - up to 25' space available, West Islip area. Dennis, 244-7380.

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

SUNFISH - 74 AMF hull, sail, mast, booms, c/b, rudder, all new in '89, used 1 season, v.g. cond., daggerboard dolly, $600. Ext. 4479.

CARVER - fg bottom, twin FWC, gen., sleeps 6, 12-V refrig., DF, must see, $9,000. Henry, 821-5245.

CATAMARAN - Hobie 14 turbo, roller reefing jib, trailer, excel. cond., $1,200. Ext. 7657 or 298-9560.

Tools, House & Garden

ANNUAL FLOWERS - $11/flat, $6/half flat; vegetables $1/pack, large selection. Ray, 727-6818 after 4 p.m.

BAND SAW - 12" table top, $50; bathtub, cast iron, claw legs, $25. John, Ext. 2172 or 744-4386.

DRILL PRESS - radial bench top, 3-spd., like new, $120; machinist's toolbox, 7 drawer, $50. Bill, Ext. 2043 or 563-1940.

JOINTER-PLANER - Craftsman, 4⅛", ⅝-h.p. Universal motor, cast-iron base & table, 45° in-out bevel, $85. Gerhard, Ext. 2043.

LAWN MOWER - 1992 Mastercut, electric, 19" cut, $50. 473-1658 after 6 p.m.

LAWN TRACTOR - Sears Craftsman, 11-h.p., elec. start w/snow thrower, grass catcher, spreader, best offer over $500. Dan, Ext. 4987 or 698-7322.

PLOW - 8', elec. hydraulic plow w/lights for full-size pickup, $600; band saw, Sears, 10", w/blades, $65. Guy, 758-6892.

POOL VACUUM - cleaning robot, Questa, used twice, orig. $500, asking $300. Ady, Ext. 4531 or 331-3785.

POOL - 18'x33', Sharkline w/Hayward filtering system, incl. access., covers, chemicals, good cond., $850. Pete, Ext. 7955 or 929-3847.

ROTOTILLER - 4-h.p., Montgomery Ward, $90. 941-4011.

SHREDDER - leaf, mulcher, $50; under-sink disposal, $20; 1 pt. & 1 qt. cases of ball canning jams, $5/case. Frank D., Ext. 2022.

TABLE SAW - Delta, 8", tilting arbor, Model 34-260, 1-h.p., old but in v.g. cond., some accessories, $150. 549-5935.

TABLE SAW - Craftsman, 10", cast-iron table, never used, $300. Paul, Ext. 7135.

WELL PUMP - ½-h.p., excel. cond., $75. 744-2060.

WHITE PINES - white spruces, Greek Arborvitae, nursery grown, to 3', $3 per foot. John, 744-5867.

Sport, Hobbies, & Pets

BICYCLES - Schwinn Continental 10-spd., $10; Murray 10-spd., $10; girls 20" bike, $10; girls 18" bike, $10. Paul, Ext. 7135.

CHILDREN'S BIKES - 16" w/training wheels, like new, $45; 16" no trng. wheels, $30. Zhad, Ext. 4331.

EXERCISER - pedal, $5; "Rascal" electric scooter, new battery/charger, $700. 281-7844 eves.

EXERCYCLE - Airciser exercise bicycle, like new, $60. Charlie, Ext. 2804.

PIANO - Knabe console upright, tuned & in good cond., $399. Ballard, Ext. 4751.

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

PIANO - Schumann console, high-gloss black, 4 yrs. new, tuned regularly, new $3,000, sell $1,800. Susan, Ext. 2888 or 286-0422 after 6 p.m.

PING-PONG TABLE - $20; drum set, $40. 499-8377.

RC 12 CAR - new, assembled, never used, needs transmitter, electronic speed control, custom body, ask. $120, must see. Chris, Ext. 4672.

ROLLER SKATES - boy's size 4 and girl's size 4, $15 ea. 929-5584.

Audio, Video & Computers

CASSETTES - w/Russian modern popular songs, Eng. translation provided. Anna, Ext. 3419.

COMPUTER - 486 DLC, 50 MHz dual floppy, 40 MEG HD, 0.28 DP VGA moniter, $950. 582-6241.

NINTENDO SYSTEM - $40; Power Glove, $25; 5 games, $10/ea; $100 takes all. Ext. 7505.

TV - console, 21", best offer. Rose, 698-1523.

VOLTAGE REGULATOR - for personal computers, corrects brownouts, overvoltage, like new, in box, $100. John, Ext. 2460 or 281-2471.

Miscellaneous

DESIGNER FRAGRANCES - hall off retail prices, Mother's Day special, "White Diamonds." Victor, Ext. 3357.

ELECTRIC TYPEWRITER - Olympia, excel. cond., no programming features, best offer. Ext. 2610 or 924-5272.

ENGAGEMENT RING - diamond, 14k gold, $550 or best offer. Shawn, Ext. 5741.

NURSING PUMPS - Evenflo manual, $20; Mag Mag a/c batt. pump w/adapter, new $58, sell $40, both used once, sterilized. Lorraine, 929-3910.

TICKET - Delta airlines, $800 round-trip, Tel-Aviv, open booking, not a charter, must complete travel by June 30, can swap cities. Bud, Ext. 7685.

Free

FIREPLACE - freestanding w/stone seat and chimney. Janet, Ext. 2345 or 929-3910.

POOL - 24'x4' pool, pump, filter, ladder, solar cover, needs liner, must take all. 286-6492

Yard & Garage Sales

DIX HILLS - furniture, tools, 10-4 p.m., 5/15-16, 17 Susan Lane, Deer Park Ave. & Wolf Hill Rd. 265-4572.

WADING RIVER - collectibles, some antiques, much more, call for times. Kathy, 929-8443.

Lost & Found

LOST - Boxer, brown & white male w/blue & pink collar, answers to Caleb, lost on site 4/24. Sewan Fan, Ext. 3869.

LOST - silver teardrop earring, between Post Office & Bldg. 515. Ruth, Ext. 4173.

LOST - earring, titanium spiral, west side of softball field #5 on 4/27. Sue, Ext. 3492.

LOST - ring, between Fiscal & Physics, very sentimental gift from family. Rose, Ext. 5166.

Car Pools

BOHEMIA-E. ISLIP-OAKDALE-SAYVILLE - need 1 more driver. Frank, Ext. 2314.

Wanted

AIR CONDITIONER - for on-site apartment. Elizabeth, Ext. 4331 or 1019.

AUTO - 83-86, 4-dr., med.-size, for a college student. Dave, Ext. 5740 or 924-6575.

BABY-SITTER - German-speaking. Stas, Ext. 7849.

BOAT - 15'-17' bay boat w/35-60 h.p. outboard for fishing. Jack, 286-1268.

CAT-SITTER - for outdoor cats, south Patchogue, first half of June, $5/day + supplies. Gerry, Ext. 4841 or 289-5433.

CHILD-CARE - for 5-mo.-old, 3 days a week, on or near Lab site, refs. Tony, 325-1907.

YARD SALE ITEMS - children's clothes, toys, etc. for Upton Nursery School fund-raiser, 6/5, tax-deduct. Anna, 878-6760, or Cindy, 874-3652.

HOCKEY EQUIPMENT - youth sizes, Anne, 361-6835.

HOUSE - or roomy apt. to rent, 2-3 bdrm. perferred. Morris, Ext. 4192.

HOUSE - or apt. to rent, 2-3 bdrm. from 6/1-8/30 or later, N.Shore preferred. Bill, Ext. 3698.

JUNK CARS - trucks, machinery removed free. Rich, Ext. 4986 or 589-9103.

OLD FOUNTAIN PENS - cash paid. Catherine, 744-3383.

PEOPLE TO TOUR RUSSIA - Moscow, St. Petersburg, 8 days, 6/21-28 or 8/2-9, sightseeing, museums, theaters, more. Anna, 588-1014.

RIDER TO SHARE DRIVING EXPENSES - round-trip from BNL-Pittsburgh, PA, on weekends and holidays. Bill, Ext. 3698.

SEWING MACHINE - heavy-duty for leather work. Bob, 281-2875, any time.

SHRUBS - for free, we'll dig, also excess ground cover, perennials, bulbs, cuttings, etc., no weeds/poison ivy. Marsha, Ext. 5053, or Patti, Ext. 3145.

SKYDIVING - people who are interested in skydiving Long Island for group discount rate. Sue, Ext. 4461.

SUMMER RENTAL - reliable couple seeks house or apt. for summer rental. 744-4611 after 6 p.m.

TENNIS PARTNER - for early morning on-site play/practice, int./high level. Haim, Ext. 1020.

TRAINS - Lionel & American Flyer, priv. collection, pays top $. 924-4097.

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.*

AIR CONDITIONING - installation, quality workmanship and low prices, free estimates. John, 467-5827.

ALARM INSTALLATION - wireless, home, apartment, summer rental, camper, boat, less than $1/day complete. 399-1868.

ART INSTRUCTION - certified art teacher and book illustrator, private lessons, your home or mine. Vincent Nasta, 395-6520.

ASPHALT WORK - sealing, repairs. Bob, 475-4382.

AUTO REPAIRS - reliable. Brett, 929-4753.

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

BRICKWORK - masonry, patios, walks, swimming pools, retaining walls, landscaping ties, Belgium block, Lab. disc. Tony, 698-9274.

BABY-SITTER - experienced mother will care for your child in my home, snacks provided. Lorijean, 744-5857.

CAKES - bakery-style, custom decorated, all occasions, order early for graduations, confirmations & birthdays. Millie Laster, 822-2863.

CARPENTRY - extensions, dormers, fin. bsmts., garages, windows, Sheetrock, roofs, decks, done w/excellence, free est. Dennis, 395-6055.

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

CATERING - homemade pastas of all types, also other home-cooked dishes, call for menu & prices, cater any occasion. Luisa, 395-6055.

CHIMNEY SWEEP - fireplaces, wood, coal & oil flues, stainless steel caps for all types of chimneys, Lab discounts. Mike, 821-5526.

CLEANUP - yard & lawn cleanups, mowing, trimming. Brett, 929-4753.

COUNSELING - exp., licensed, social worker will help w/individual, marital, or family problems, insurance reimbursable. Linda, 929-5860.

DJ/MC - party & dance music from 40s-90s, all occasions, music & entertainment personalized for your affair, BNL: refs. Lou, 698-8210.

DOORS & WINDOWS - installed, + all phases of carpentry work done, free est., prompt & reliable service. Philip, 369-9610.

ELECTRICIAN - service upgrades, storm repairs, high hats, appliance hookups, all phases of electrical work, lic. & insured. Gregg, 874-8631.

FLOORS - waxing, stripping, carpets & upholstery shampooed, house cleaning, windows, free est. Leo, 447-6522.

HOME IMPROVEMENTS - quality work, reas. prices, ext., dormers, decks, kit., baths, roofing, siding. For est., Chris, 286-1348.

HOME IMPROVEMENTS - superior workmanship, great rates, 100% guarantee, senior & Lab disc., lic., insured, free est., refs. Ron, 395-1325.

HOUSE CLEANING - reasonable, very efficient, refs. Marty, 399-3496 any time.

KAYAK LESSONS - 8-hr. workshop, Tues. 7-9 p.m., course starts 6/15, SUNY Stony Brook pool, equip. supplied. Ernie, 281-7873.

KITCHENS - choose from 3 different styles for under $3,000, includes cabinets, top & installation. Carl, 698-9274.

LAND CLEARING - trees, stumps, brush removed, topsoil graded & raked w/450 loader, $70/hr. Tom Muller, 878-1060.

LAWN CUTTING - Bellport, Brookhaven, E. Patchogue area, also thatching avail. 286-5962.

LAWN MOWER - and lawn tractor repairs & service, have trailer, will travel. Dan, 698-7322.

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

MAILBOXES - custom-made & installed, many styles & colors, post boxes and home boxes, free lettering, Lab disc. Mike, 821-5526.

NURSE'S ASSISTANT - Boces/State certified, avail. part-time. Lorraine, 929-3910.

PAINTING - professional painting, interior/exterior, residential, commercial condos licensed, insured. Cassella, 467-5661.

PAINTING - int./ext., taping, spackling, wallpaper, stain, polyurethane, power wash, roofing, sheetrock, refs., insured. James, 399-4912.

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

PC TRAINING - software tutoring, word processing, spreadsheets, databases, graphics, desktop publishing. Gina, 929-3649.

PLUMBING - heating, alteration & repairs, work by retired BNL employee, Jim Morris. 472-1205.

POOL TABLE RECOVERY & REPAIR - choose from 27 custom colors. Philip, 369-9610.

POWER WASHING - decks, cedar shakes, brick, driveways, pool areas, vertical cedar siding, vinyl siding, boats, more, free est. John, 727-1140.

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

SHINJITSU - self defense, situation & confrontational, rape awareness, kids, adults, certified instructor. Richard, 289-0604.

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

TAXES - prepared by tax consultant, your home or mine, reasonable, serving Lab people for over 15 years. John, 732-2472.

TRANSMISSION REPAIR - foreign, domestic, discount to BNL employee. Cesar, 744-8181.

VIDEOGRAPHER - capture those precious moments on video, will tape weddings, parties, all occasions. Larry, 281-7240.

WINDOW CLEANING - all work squeaky clean, reliable, courteous service, free est. 928-3189.

WOODWORKING - custom design, yours or mine, for entertainment centers, tables, dressers, bookshelves, etc., refs. avail. Phil, 722-3010.

WORD PROCESSING - manuscripts, resumes, database, term papers, mail lists/labels, editing, laser printer. Janice Lamb, 589-2848.

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