BROOKHAVEN BULLETIN
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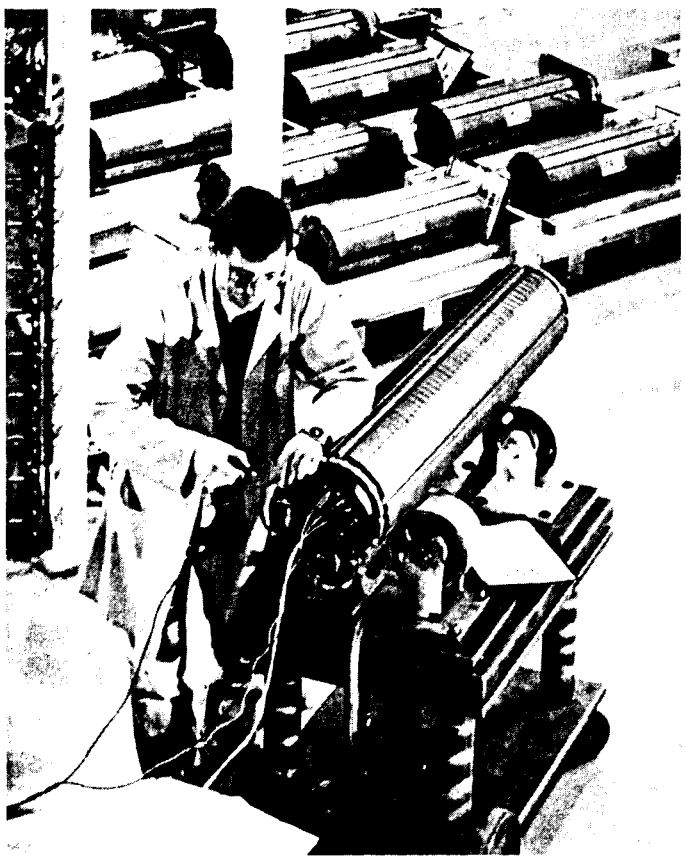
BROOKHAVEN NATIONAL LABORATORY

Milestones at Three of Brookhaven's 'Big Machines'



In the magnet testing area of Bldg. 902, Rich Meier makes the final checks on the first industry-built quadrupole for RHIC, before mounting it for testing at very low temperatures.

Photos on this page by Roger Stoutenburgh

Relativistic Heavy Ion Collider

Successful Grumman-BNL Partnership Produces First Industrial RHIC Quadrupole

Friday, April 8, marked an important milestone in the construction of the Lab's Relativistic Heavy Ion Collider (RHIC) — Grumman Aerospace Corporation delivered RHIC's first quadrupole magnet to be made by industry.

The quadrupole, which was the first superconducting accelerator magnet Grumman has built, is also the first of 432 such magnets that the company will produce for RHIC.

Once at BNL, the quadrupole underwent a series of tests, culminating in a successful two-day test at its operating temperature of 4.35 kelvins, 4.35 degrees above absolute zero. Not only did the magnet operate successfully at its design current of 5 thousand amperes (kA), but it also had a reserve of over 50 percent before it quenched — lost its superconductivity and became resistant to electricity.

In addition, the total field strength of the quadrupole and its non-quadrupole components, measured over the full operating range of 0.5 kA to 5 kA, proved suitable for RHIC.

"The tests show that this magnet's performance has exceeded our expectations," said Satoshi Ozaki, RHIC Project Head. "Congratulations are due to Grumman for hitting the bull's-eye on their very first magnet."

Although a RHIC quadrupole is only 1.2 meters (not quite 4 feet) long, with an outside diameter of 26.7 centimeters (10.5 inches), it weighs 355 kilograms (782 pounds). When the magnet is operating, a magnetic field in its 8-centimeter bore focuses the beam particles as they speed to the next magnet in the ring.

The magnet was designed and developed by RHIC's Magnet Division, with eight prototypes being constructed at BNL about a year ago. In 1992, Grumman won a $6-million contract to build 432 quadrupoles for RHIC, and, since then, a considerable technology-transfer effort has been ongoing between Grumman and the Lab.

"Part of the transfer was physical — BNL supplied the superconducting cable, the computer-driven magnet-coil winder and some other items," said Douglas Fisher, RHIC's project manager for the Grumman contracts. "The rest was to train Grumman engineers and technicians in the magnet-construction technology we've built up at BNL over the past decade." This task was handled by Michael Anerella, RHIC project engineer and the principal point of contact between BNL and Grumman.

To smooth the transition process, Grumman staff visited BNL to observe

(continued on page 2)

Alternating Gradient Synchrotron

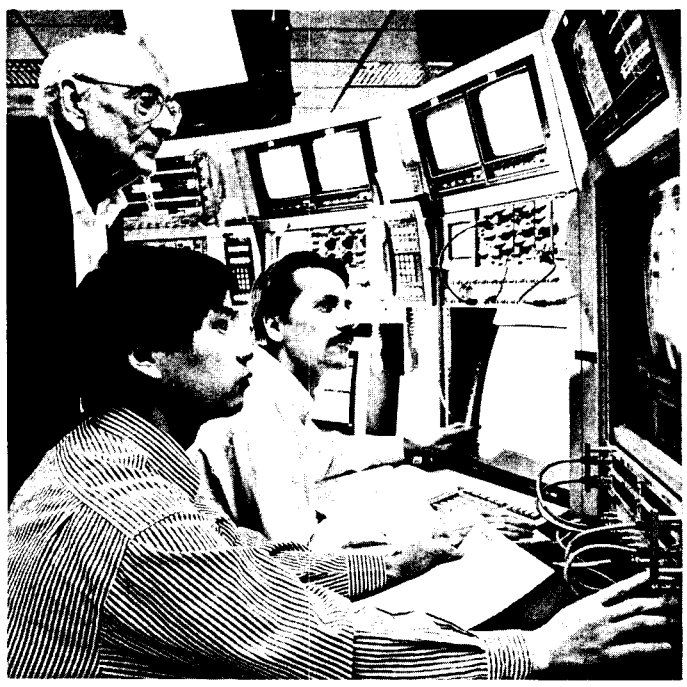
Siberian Snakes Rescue Polarized Protons

In 1984, polarized protons — all spinning in the same direction — first began circulating in BNL's Alternating Gradient Synchrotron (AGS). Since then, to maintain this uniform polarization, an elaborate and labor-intensive series of adjustments has been required for each polarized proton run.

But that fine-tuning became obsolete as of April 4, with the first test of a partial "Siberian snake" installed at the AGS. With this large magnet in place, the polarized proton beam was accelerated to an energy of 12 billion electron volts (GeV) with no depolarization. Without the snake, however, no polarization survived.

Invented by Siberian scientists Y.S. Derbenev and A. M. Kondratenko, and aptly named by AUI Distinguished Scientist emeritus Ernest Courant, Siberian snakes cause a polarized pro-

(continued on page 3)



In the Alternating Gradient Synchrotron (AGS) control room, Haixin Huang (left, seated) from Indiana University joins Thomas Roser (right, seated) and Larry Ratner, both from the AGS Department, to adjust the current for a test of the partial Siberian snake.

National Synchrotron Light Source

Structural Biology Extension Now Under Construction

For structural biology researchers who study the molecules of life using x-rays at the National Synchrotron Light Source (NSLS), time is of the essence. The crystals they grow are temperamental things, often with short life spans and a tendency to break down soon after the high-intensity probes hit them.

Right now, those crystals are prepared in labs in Bldg. 463, then transported to the NSLS with great care. But, by this fall, BNL and guest researchers will not have to make that risky trip. Construction began April 14 on a project that will add laboratory and office space to the NSLS, Bldg. 725.

The structural biology addition, which will wrap around the building from Technology Street to Brookhaven Avenue and span beam lines X6 to X12, will house eight labs and a conference room for structural biologists who use NSLS beam lines. The project's contractors, Bass & D'Alessandro of Hicksville, expect to complete the 6,300-square-foot addition, which was designed by Ehasz Giacalone Associates of Garden City, by the end of October.

"This addition will allow us to build on the strengths of our structural biology programs, both within the Laboratory and in the user community," commented BNL Deputy Director Martin Blume. "It is especially important to have this kind of extra laboratory space for the structural biology beam lines because of the necessity to create some samples immediately before they are studied."

The construction of the facility is

(continued on page 2)

As NSLS users look on at the April 14 groundbreaking, ceremonial shovels get broken in by: (left to right) Ove Dyling, Plant Engineering Division; NSLS Users Executive Committee Chairman Johnny Kirkland, Naval Research Laboratory; Denis McWhan, Chairman, NSLS Department; BNL Deputy Director Martin Blume; William Studier, Chairman, Biology Department; and Robert J. Bass, Bass & D'Alessandro.

AUI Scholarships Are Sweet for 16 Seniors

In the 29th year of the program, 16 sons and daughters of BNL employees have been awarded AUI Trustee Scholarships. Each AUI Scholar is a high school senior who will receive $2,500 per year for up to four years of study at the college or university of his or her choice.

The winners were chosen from among 60 applicants. Selection was done by an independent committee appointed by the College Scholarship Service of Princeton, New Jersey, which administers the program for Associated Universities, Inc. (AUI).

Alan Abola, son of Agnes Abola, Alternating Gradient Synchrotron Department, and Enrique Abola, Chemistry Department, lives in Middle Island and goes to Longwood High School. He will major in physics, engineering or computational science at Harvard University or Stanford University.

Felisa Brunschwig is the daughter of Bruce Brunschwig, Chemistry Department. She lives in Bellport and attends Bellport High School. Accepted by Brandeis University, Occidental College, the University of Rochester and Tufts University, she is as yet undecided on her major.

Alan Feng, son of N. Inan Feng, Biology Department, is a resident of Stony Brook. A senior at Ward Melville High School, he has been admitted to Cornell University, Georgetown University and the Massachusetts Institute of Technology. He will probably major in mathematics.

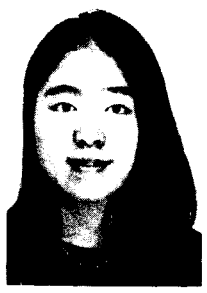
Narendra Ghosh is the son of Vinita Ghosh, Department of Applied Science, and Arup Ghosh, Relativistic Heavy Ion Collider Project. Attending Shoreham-Wading River High School, he lives in Shoreham. He will study computer science at Harvard University or the Massachusetts Institute of Technology.

Marsha Harris is the daughter of Vincent Harris, Relativistic Heavy Ion Collider Project. To undertake a premedical course of study, she plans to attend New York University, Syracuse University or the University of Massachusetts. A resident of Jamaica, Queens, she is a senior at the August Martin High School.

Carolyn Lee, daughter of Tom Lee, Department of Applied Science, is a resident of Bayside, Queens, and she goes to Stuyvesant High School, Manhattan. She will probably major in biological science at either Yale University or the Massachusetts Institute of Technology.

Dennis Lee is the son of Yin-Nan Lee, Department of Applied Science. He has been accepted at Cornell University and Brown University, and he will probably major in engineering. A resident of East Setauket, he attends the Ward Melville High School.

Angela Lu is the daughter of Ming-Shih Lu, Department of Advanced Technology. Currently living in Miller Place, she will be graduated from Miller Place High School. To study the biological sciences, she will attend The Johns Hopkins University.



Yizhi Meng, daughter of Wuzheng Meng, Alternating Gradient Synchrotron Department, lives in Setauket and goes to Ward Melville High School. She will major in mathematics at Cornell University, the University of Chicago or the State University of New York at Binghamton.

Channie Neymotin is the daughter of Lev Neymotin, Department of Advanced Technology. Residing in Plainview, she will graduate from the Torah Academy of Suffolk County, Commack. She will attend Harvard University or Yale University, to major in religious studies and liberal arts or science.

Raman Ramakrishnan, son of Venki Ramakrishnan, Biology Department, has been accepted at Harvard University, the Massachusetts Institute of Technology and Yale University, and he plans to major in the physical sciences or music. Living in East Patchogue, he goes to Bellport High School.

Erin Ross is the daughter of Tony Ross, Plant Engineering Division. A senior at Connetquot High School, she resides in Ronkonkoma. She has decided to attend Boston College, where she plans to major in psychology.

Rakesh Singh is the son of Om Singh, National Synchrotron Light Source Department. He lives in Coram and goes to St. Anthony's High School in Huntington. To be a pediatrician, he will major in biological science at Cornell University, Columbia University or Tufts University.

Karen Swyler, daughter of Karl Swyler, Office of Educational Programs, lives in Sound Beach and attends Miller Place High School. To pursue her dual interests of arts and science, she will major in ceramics, with a strong minor in biology, at the New York State College of Ceramics at Alfred University.

Joane Taneus is the daughter of Roger Taneus, Reactor Division, and she will probably major in marketing at the University of Virginia or Yale University, after her graduation from St. Anthony's High School in Huntington. She is a resident of Coram.

George Williams, son of Gwyn Williams, National Synchrotron Light Source Department, lives in Port Jefferson and attends the Earl L. Vandermeulen High School. He will study computer science at Cardiff University, Wales; Imperial College, England; or Pennsylvania State University.

Weight Management Group Forming to Meet on Site

A group for employees interested in managing their weight using nutritional and behavior-modification principles is being formed. Sponsored by the Health Promotion Program of the Occupational Medicine Clinic, the group will be run by registered dietitian Lydia Genovese, who holds a master's of science in nutrition from Hunter College and is an adjunct instructor in the diet technician program of Suffolk Community College.

The group will focus on losing weight and body fat without being on a diet, by examining lifestyles, targeting goals, improving nutrition and acquiring healthier eating habits gradually. Exercise will also be an important component of the program.

The group will meet for six Mondays, noon to 1 p.m., starting May 9, and it is limited to 12 people. The cost per person is $90, payable at the first session. To register, first-come, first-served, contact Health Promotion Specialist Mary Wood, Ext. 5923, as soon as possible.

Technology Teachers To Convene at BNL

About 300 technology teachers from all over the state will gather to talk shop at BNL during the 31st annual spring conference of the New York State Technology Education Association, April 28-30.

"We're hosting this conference for the first time to help promote the importance of technology education and the conference theme, which is making connections between technology, science and math," said Karl Swyler, manager of BNL's Office of Educational Programs (OEP). "With supervisory concurrence and if space permits, Lab employees may attend any of the conference workshops and stop by the vendor displays."

Fifty workshops will be offered in subjects as diverse as "Model Rocket Building — Solid Rocket Fuel and Carbon Dioxide" and "Computer Graphics and Multimedia."

Almost 30 vendors will be on hand to demonstrate the latest in technology — from wind tunnels to robotics — from noon to 4:30 p.m. on April 28, and from 9 a.m. to noon on April 29. A shuttle bus will run from Berkner Hall to the exhibits in the Brookhaven Center.

Employees who eat at the Cafeteria should note that conferees will be dining there for breakfast each conference day, and for lunch on Friday, April 29, beginning at 1:15 p.m.

For workshop and other information, call OEP at Ext. 5849.

Aerial View of Eclipse

To view the upcoming solar eclipse, the Brookhaven Flying Club plans a trip tentatively scheduled for mid-day on Tuesday, May 10. Weather permitting, club members will fly one or more aircraft approximately 100 miles north to view the eclipse's totality.

Since seats may be available for nonmembers, those interested in an aerial view may contact Dave Adler, Ext. 2686, or E-mail adler@bnl.gov.

NSLS Addition (cont'd)

expected to cost $1.8 million, funds appropriated from the U.S. Department of Energy's (DOE) Office of Health and Environmental Research budget.

Blume commented that the NSLS project is just one part of long-term plans to expand the structural biology program. "It will help us serve anticipated new users as well as our existing community, who use not only the Light Source but also the High Flux Beam Reactor and BNL's electron microscope facilities, as well as contributing to the Protein Data Bank," he added. — Kara Villamil

RHIC Magnet (cont'd)

the construction of the final RHIC research and development magnets. And, since last November, a total of 44 RHIC Magnet Division staff members have made 168 trips to Grumman's Bethpage facility to assist in the training for this effort and a much larger companion effort to build 373 dipole magnets each 9.7 meters long.

"This success is the fruit of the technical competetence we have at Brookhaven," Ozaki observed.

Bernie Cody, Grumman's project manager for the quadrupole, agreed that the key to this success has been the combination of two areas of expertise — BNL's magnet design and development, and Grumman's long experience in the techniques of mass production. "The result is an excellent working partnership," said Fisher.

— Liz Seubert

Siberian Snake (cont'd)

ton beam to wriggle like a snake. A partial snake makes a polarized proton beam easier to achieve at the AGS, while a group of full snakes opens up new possibilities for experiments involving polarized proton collisions at BNL's Relativistic Heavy Ion Collider (RHIC), now under construction

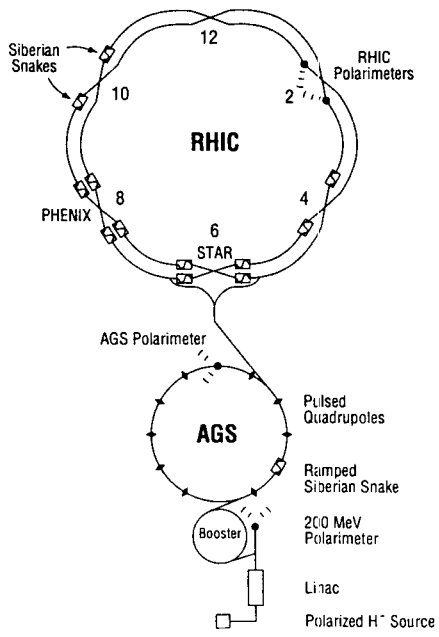
Polarized-proton experiments measure spin effects in high-energy reactions. But, at the AGS, to keep the protons polarized, 94 small dipole magnets in the accelerator's ring have had to be adjusted 40 times during a one-second acceleration period. Otherwise, the protons were kicked off their vertical axis by an accumulation of horizontal magnetic fields.

From Theory to Practice

The theory of using a partial Siberian snake to overcome the problem of depolarization at the AGS was first published by Thomas Roser, AGS Department, in 1988. Larry Ratner, AGS, together with S. Y. Lee of Indiana University, made the initial proposal to try it out. That resulted in this month's test of a partial snake by a collaboration of researchers from BNL, Indiana and Argonne National Laboratory.

The partial snake is a 2.5 meter-long solenoid, an electrically energized coil of insulated copper wire that produces a magnetic field of almost 2 tesla's, pointing along the beam of polarized protons.

"Using a polarimeter designed by George Mahler, from the RHIC Project, and our collaborators from Argonne, we were able to measure polarization



very accurately, and we found that the partial snake did its job well," said Roser. "We are planning additional tests at higher energies, and our ultimate goal is to test the snake at the full operational energy of 25 GeV by January 1995."

Roser added, "I'd like to thank all my collaborators for making this test a success, in particular, James Alessi and Ahovi Kponou, both from the AGS, who ran the polarized ion sources at the Linac; Yousef Makdisi, RHIC Project, who helped to operate the polarimeter; Haixin Huang, Indiana, and Leif Ahrens and Gerry Bunce, AGS, who helped make the test go smoothly."

How the Snake Works

"When hit by a horizontal magnetic

Polarized protons start with hydrogen gas stripped of its electrons in BNL's polarized negative hydrogen (H-) source. The particles are accelerated through progressively larger accelerators — the Linac, the Booster, the Alternating Gradient Synchrotron and, by the end of the decade, the Relativistic Heavy Ion Collider (RHIC). The ramped Siberian snake at the AGS keeps the protons polarized, as will the four snakes in RHIC at the 4 o'clock and 10 o'clock positions. The S's at RHIC's detectors PHENIX and STAR represent spin rotators.

force, the polarized protons precess, or wobble, similar to the way a spinning top wobbles when it is kicked from the side," explained Roser. "When the frequency of the horizontal magnetic force is the same as the polarized protons' precessing frequency, the effect of the repeated kicks accumulates and completely depolarizes the protons. This happens 40 times during the one second it takes to accelerate the polarized protons to 25 GeV, and, until now, has required 40 adjustments."

To overcome this, the partial snake performs a clever trick: It rotates the spin of the polarized protons by nine degrees away from the vertical axis at each revolution around the AGS, so the kicks on one turn cannot accumulate with the kicks on the next turn. In fact, after 20 turns around the accelerator, the kicks cancel themselves.

Explained Roser, "It is as though the top were kicked from opposite directions — the force from one kick cancels the other, keeping it stable."

For RHIC experiments, polarized protons will be accelerated at the AGS before moving on to RHIC's two rings, where they will accelerate up to 250 GeV per beam, colliding at an energy of 500 GeV. When RHIC is completed before the end of the decade, it will be the only high-energy accelerator in the world in which polarized protons will be able to collide.

In RHIC's 3.8-kilmometer circular tunnel, the effect of the horizontal magnetic fields will be much stronger than in the AGS. To counteract this, two Siberian snakes will be installed in each of the two accelerator rings of the collider to prevent depolarization.

"These full Siberian snakes will flip the polarized protons' vertical axis a complete 180 degrees at each turn around RHIC," said Roser, "and the horizontal magnetic forces will cancel themselves at every other turn."

The RHIC Siberian snakes are being designed in the Magnet Division of the RHIC Project, with input from Ernest Courant, RHIC; Alfredo Luccio, AGS; and Yuri Shatunov, from the Budker Institute of Nuclear Physics, Novosibirsk, Russia.

With the snakes in place in RHIC, an international team of physicists, including BNL researchers, plans to probe the spin structure of polarized protons and investigate the fundamental forces that affect elementary particles when they collide.

Thus, the team hopes to gain greater insight into quantum chromodynamics, the theory that explains the interactions of quarks and gluons — the elementary particles from which polarized protons are formed.

— Diane Greenberg

Professional Secretaries Week* — April 24-30
Professional Secretaries Day*— April 27

**Created by PSI in 1952 to recognize secretarial achievements and to show the tremendous potential of the secretarial career.*

IBEW Meeting

Local 2230, IBEW, will hold its regular monthly meeting on Monday, April 25, at 6 p.m. in the Knights of Columbus Hall, Railroad Avenue, Patchogue.

The agenda includes regular business, committee reports and the president's report.

P-CAD Users

To hear a report on the International P-CAD User Group Conference, the P-CAD User Group will meet on Wednesday, April 27, from 10 a.m. to noon, in the seminar room, Bldg. 515.

For more information, call Pam Mansfield, Ext. 7286, or E-mail pam1@bnl.gov.

Aerobic Dance

To stretch away those everyday aches and to build flexibility and cardiovascular fitness in time for softball and other summer activities, join the next 15-weeks of the Aerobic Dance Club's aerobics and/or stretch classes, starting the week of May 2 and ending the week of August 29.

The stretch class will be held every Monday in the Physics lounge, Bldg. 510, beginning May 2; the aerobic class will be held Tuesdays in the Recreation Bldg. in the on-site apartment area, starting May 3. Register at the first classes.

Each series costs $35 per person. For more information, call Pat Flood, Ext. 7886, or digital beeper 4011.

New CCD Capability: Voice Mail Form

With the Octel voice-mail system installed by the Telecom Services Section of the Computing & Communications Division (CCD) last January, the equivalent of a paper form can be completed on voice mail, using the Octelforms application feature. One example of this is the special telephone line for reporting problems with purchased goods or services, described in last week's Bulletin. CCD helped set this line up so that a call to Ext. 3200 is equivalent to completing a paper form.

For more information on this capability, call Nick Pisco, CCD, Ext. 2000.

Amateur Radio

The Amateur Radio Club will next meet on Thursday, April 28, at noon in Room D, Berkner Hall.

All Lab employees, guests and licensed amateur-radio operators are invited to attend. For more information, contact Chris Neuberger, Ext. 4160, or Nick Franco, Ext. 5467.

Let's Dance the Fox Trot and Mambo!

Sign up now for the beginners' fox trot and mambo dance lessons, which will begin on Wednesday, May 4, in the Physics lounge, Bldg. 510. Offered by the BNL Ballroom, Latin & Swing Dance Club, the class will be taught by 1993 Empire State Ballroom champions Giny Rae and Peter Sciurca.

The class will run from 6:30 to 7:30 p.m. for six to eight Wednesdays, depending on how many people sign up.

The cost is $20 per person. BNL employees, retirees and those employed by on-site contractors, plus their spouses, dance partners, family and friends are welcome — especially men. Since even numbers of men and women will be enrolled, you don't need a partner to sign up.

For more information or to register, call Marsha Belford, club president, Ext. 5053.

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Outreach Workshop
An Affair to Remember . . .

With statistics ranging upward of 50 percent, the most accurate estimates of extramarital sex say that 21 percent of men and 16 percent of women have sexual relations outside of their marriages each year. Of these, some 6 percent engage in affairs lasting three months or longer.

According to the next Outreach speaker, clinical psychologist Don-David Lusterman, a good percentage of people involved in protracted affairs are suspected or eventually found out by their marriage partners — but, if handled properly, this discovery can either lead to "a better marriage or a better divorce."

Lusterman will discuss "Marital Infidelity: The Affair as Crisis and Opportunity" during the next Outreach workshop, on Tuesday, April 26, from noon to 1 p.m. in Berkner Hall. All are invited, and an audiotape of the talk will be available afterwards in the Research Library.

Before an affair, Lusterman will show, a marriage is usually anything but perfect, despite what the offended party may believe. According to the speaker, the key factor absent from marriages in which one or both partners stray is the couple's ability to solve problems together.

As the speaker will explain, the discovery that one's spouse is having an affair is a traumatic experience, and the person making the discovery feels like a victim. If the victim's rage is not acknowledged by the infidel, then the couple can never get beyond blaming each other — and winds up with an angry marriage or messy divorce.

Lusterman will also discuss such issues as the "other" man or woman and side-taking by family and friends.

Returning to BNL by popular demand, Don-David Lusterman, Ph.D., is a fellow of the American Psychological Association and the American Association of Marriage & Family Therapists. Having published widely on the subject of extramarital affairs, he is now coauthoring a book on the topic, and he has testified in court as an expert witness in the field.

In Addition . . .

In last week's story about "A Whole Lotta Changes at Housing," credit should have also been given to several groups in the Plant Engineering Division: the Electrical Operations and Maintenance Group, which detected the wiring problems that triggered extensive upgrades and renovations to the entire apartment area; the Electrical Design Group; the In-House Energy Management Group; and the Construction Field Inspection Group.

Arrivals & Departures

Arrivals

Manuel J. Abad ..... Plant Eng.
John R. Skaritka ..... NSLS

Departures

None

Bowling

Red/Green League

R. Mackinnon bowled a 257/202/623 scratch series, E. Beadle 246/234/657 scratch, F. Griswold 245, S. DiMaiuta 242/207/205/654 scratch, R. Prwivo 235/225/659 scratch, R. Mulderig 234, A. Warkentien 224/206/622 scratch, R. Raynis 222, E. Larsen 221, B. Guiliano 213, M. Palumbo 212/202, P. Ouvrard 211, R. Wiseman 206, R. Larsen 204/204, H. Arnesen 204, K. Asselta 203.

Purple League

Ray Raynis bowled a 254/221/645 scratch series, Eric Larsen 224/213/616 scratch, Doug Fisher 202, Fred Schaefer 201/216/614 scratch, George Munoz 201, Linda Farmer 171, Pat Bounauito 188, Maryann Reynolds 182. Manny Dador converted the 5/10 split twice, and Sam Logan the 5/8/10 split twice.

White League

Mike Meier had 245, Kevin Carney 215, Gerry Riker 208, Ken Riker 203/201, Lorraine Rocklein 191, Caryl MacDougall 182, Betty Jellet 174, Marilyn Picinich 172.

Basketball

April 14 - lst-Round Playoff Games

Magic 72		Scram 55	
Terrence Buck	18	Steve Nappi	15
Troy Mayo	17	Alan Jones	9
Neil Donahue	8	Tim Powers	8
Jim Garrison	8	Al Boerner	6
Mitch Williams	8	Victor Cassella	6
James Rank	5	John Duggan	6
Patrick Browne	4	John Skonieczny	4
Raymond Jackson	4	Joe Barkwill	1

Three-point shots: Mayo (2), Buck, Garrison, Nappi, Rank.

Runaways 73		Knicks 64	
Wayne Cummings	25	Rich Domenech	21
Jim Desmond	14	Chris Ingoglia	19
Ed Meier	13	Al Langhorn	7
Pete Ratzke	10	Greg Mack	7
Chris Saxen	4	Al Ratti	5
Bob Wells	4	Ed Gregory	3
Gerry Shepherd	2	Dan Delgado	2
Charlie Edwards	1		

Three-point shots: Domenech (6), Ingoglia (3), Cummings, Desmond, Meier, Ratti.

Magic vs. Runaways championship game results next week.

Cafeteria Menu

Monday, April 25	
Soup: Beef barley	.80/1.10
A la Carte: Cod w/mustard beurre blanc	3.50
Fitness: Ratatouille calzone	2.75
Deli: Pastrami sandwich	2.95
Grill: Reuben platter	2.95
Tuesday, April 26	
Soup: Chicken & rice	.80/1.10
A la Carte: Veal Parmesan	3.75
Fitness: Balsamic veggie tart	3.35
Deli: Hot Virginia ham	2.95
Grill: Lamb kabobs	2.95
Wednesday, April 27	
Soup: Cream of broccoli	.80/1.10
A la Carte: Veggie au gratin	2.95
Fitness: Fruit-stuffed pork loin	4.25
Deli: Hot roast beef sandwich	2.95
Grill: Monte Cristo	2.95
Thursday, April 28	
Soup: Black bean	.80/1.10
A la Carte: Braised short ribs	4.25
Fitness: Southwest grilled chicken	3.50
Deli: Turkey w/giblet gravy	2.95
Grill: Philly cheesesteak	2.95
Friday, April 29	
Soup: Mussel stew	.80/1.10
A la Carte: Display cooking of pasta	
Fitness: Flounder julienne	3.55
Deli: Hot corned beef sandwich	2.95
Grill: Tuna melt	2.95

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.

Motor Vehicles & Supplies

93 HYUNDAI SONATA - black, V-6, anti-lock brakes, p/sunroof, anti-theft stereo, tinted windows. Ext. 2459 or 287-3262 after 5 p.m.

93 SUZUKI GSXR750 - 2.3k mi., mint, sacrifice, $6,500. Anthony, 244-0420.

91 CHEVY CONVERSION VAN - fully loaded, TV, VCR, 64k mi., excel. cond., $12,000. Ken, 821-4535.

91 VW JETTA GL - Calypso green, 5-spd., loaded, excel. cond., $7,250 or best offer. 874-2953, leave message.

90 ACURA INTEGRA LS - ac, p/sunroof, alarm, new radials, 53k mi., excel. in & out, gar., 289-8105.

88 RELIANT - 60k mi., a/t, 2.5, mint in & out, must see, $3,800. 345-5783.

87 CHRYSLER LEBARON - beige, ac, am/fm cass., p/s, p/b, cruise, 97k mi., $2,200. Ekkard, Ext. 3759.

86 CHEVY MONTE CARLO - super sport, T-top, new brakes, tires, asking $5,000. John, Ext. 5105 or 737-9614 after 6 p.m.

86 OLDS - blue, good cond., asking $950. 722-3938, Linda, Ext. 7187.

85 KAWASAKI KX80 - low mi., new piston & rings, runs well, excel. cond., $650, Dan, Ext. 4605.

85 BUICK CENTURY - runs well, must sell before 4/29/94, returning to Europe, $1,300 or best offer. Elke, Ext. 2587 or 878-8090, leave message.

85 PORSCHE 911 CARRERA - cabriolet, white, black top, leather int., ac, p/seats, p/windows, new brakes, Yoko ZR-16 tires, 36k mi., $26,500. Jim, 289-0876.

84 NISSAN STANZA - 5-spd. h/b, 125k mi., new clutch, timing belt, excel. cond., best offer over $1,000. Ralph, Ext. 4373.

84 OLDS DELTA 88 - 2-dr., V-8, a/t, ac, p/w, beige, brown int./roof, 163k highway mi., front fender dent, reliable, looks OK, $450. Chris, Ext. 4701.

84 VW VAN - 130k mi., seats 7, m/t, new tires, good instrumentation, $1,250. Chu, Ext. 2389 or 751-1224.

84 HONDA ACCORD - 4-dr. sedan, 5-spd. m/t, 157k mi., sunroof, am/fm cass., well maint., $1,600. Tom, Ext. 4563.

84 MERCURY GRAND MARQUIS - 4-dr., all power, new tires, excel. body/mechanical cond., $2,500 neg. 475-8658 after 6 p.m.

83 GRAND PRIX - white, 8-cyl., excel. cond. in & out, $4,400. Sam, 281-5802 eves.

81 SUBARU WAGON - 4wd, $400. Paul, Ext. 7577 or 286-7127.

77 CHEVY - 305, runs well, $100; turbo 200 trans., good cond., $75 w/shift-kit, $50 without. 929-3209.

77 SHASTA CAMPER - 19', self-contained, w/roll-out awning, v.g. cond., asking $2,000. Dan, 698-7322.

TIRES - P225x75R14, 2, excel., $35 ea. 698-9274.

TIRES - 2, Pirelli, P195/70R14. Ext. 5472.

PINTO ENGINE - 2000cc, runs well, $100; Corvair engine, runs well, $150. 929-3209 after 5 p.m.

HITCH BAR - mid- or full-size car, easy installation. John, Ext. 3675 or 924-3528.

TIRES - 2, P225x75R14, excel., $35 ea. 698-9274.

RIMS - 4, Chevy & Classic 78ll steel-belted tires, P195/75B14, never used, $200. 878-1617.

TIRES - Firestone 721, w/w SR215-75-14, over 10k left on tread, good spares. 475-8658 after 6 p.m.

TOW - dolly fits full-size cars or truck, heavy-duty, $350. Rich, Ext. 4986 or 589-9103.

Boats & Marine Supplies

24' REGAL AMBASSADOR - 1985, DF, radio compass, aft cabin, galley, head, 260-h.p. Merc., $11,500. Tom, Ext. 5350.

23' GLASTRON - 1971, Volvo Penta i/o, good cond., best offer. George, 288-9086.

23' PUMA SAILBOAT - all fg, sleeps 4, galley, fixed keel, mooring, dinghy motor, sails good shape, extra sail, $3,500 or best offer. Mike, Ext. 7861 or 331-7812 eves.

19½' SEA SPRITE - 1989, cuddy cabin, low hr., 130-h.p. Merc. i/o, Shoreline trailer, DF, SS radio, excel. cond., $9,300. Phil, Ext. 4030 or 732-8124.

18' CENTURY - 1984, 120 hrs., like new, VHF-FM, DF, 170-h.p. i/o, FWC, 1986 Cox EZ-Load trailer, elec. winch, $5,300. Richie, Ext. 2175 or 734-7342.

18' MARSHALL CATBOAT - number 11 hull, trailer, 2 sets sails, 6-h.p. Evinrude ob., asking $6,000. Robin or Billy, 286-5732 eves.

14' CATAMARAN - w/trailer, race rigging, excel. cond., $1,000. George, 265-1276 or 821-7790.

Furnishings & Appliances

AIR CONDITIONER - Friedrich, ER 10, 8,000 Btu, excel. $250 neg. Ellie, Ext. 3395, or Ken, 325-1537.

BEDROOM - girl's, white wood, desk w/hutch, chair, dresser w/mirror, headboard, $150. Doug, Ext. 4661.

CHAIRS - Nova, stack set of 6, light brown, designer's, orig. $120/ea., asking $150/set. Ben, 929-6984.

DINETTE - 36"x60", glass-top, brass base, 6 camel/brass chairs, excel., $350; recliner, gray, leatherette, $100. Ext. 2876 or 345-5365.

DINING ROOM SET - light oak table, 2 leaves, 6 chairs, breakfront w/mirrored back, glass shelves, table pad, $950. 368-6115.

ELECTRIC BED - Sears, king-size, 2 controls, vibrator, 1½ yrs. old, $1,250. Tallon, 821-5801.

END TABLE - & wood floor lamp, $10/ea. Stephen, Ext. 4477 or 924-5510 eves.

HUTCH - early American, great cond., must see, will deliver. Norman, Ext. 4446 or 399-1125.

KITCHEN SET - Formica butcher block table w/leaf, 4 steel chairs w/cane seats & backing, great cond., $100. Pat, 473-8128.

DINETTE TABLE - w/6 chairs, almond Formica table, cloth chairs, excel. cond., $250. Tammy, 924-2035.

LIVING ROOM - tables, chairs, king-size bed & mattress, dishes, glass, Hoover vacuum, desk, more. 878-8090, leave message.

LOVESEAT - & easy chair, blue w/small white flowers, very comfortable, $150. 821-6856.

REFRIGERATOR - apt.-size, $100; dining room table, white Formica w/drop-in leaf, 6 light green swivel chairs, $250. Don, Ext. 7237 or 744-2921 after 5:30.

REFRIGERATOR - GE, side-by-side, 24 cu. ft., black front, $150. Ext. 7676 or 673-1959.

STOVE - 23", white, elec., excel. cond. 289-8105.

WALL OVEN - $50; lawn mower, $50. Edward, Ext. 7502.

WALL UNIT - Formica, mirror, glass, 3-piece; sofa, love seat, off-white, mirrored cocktail table; kitchen table, chairs, bedroom furniture. Irv Brown, Ext. 2827.

WALL UNIT - black & cream, 7'x11', $400; 3-seat sofa, w/2 reclining seats, blue velour, $500. Louise, Ext. 3648.

WASHER - Whirlpool, works well, almond, $75. 473-9678 after 6 p.m.

Tools, House & Garden

FLOWERS - annuals, $10/flat, $5.50/½ flat; vegetables, $1/pack, selection. Ray, 727-6818 after 4.

Miscellaneous

RING - 24k gold, pink ice w/2 diamonds, brand-new, $125. Ext. 4461.

SLEEP MACHINE - surf, rain or train sounds, timer, like new, orig. $43, now $20. Ext. 2733 or 878-8491.

STROLLER - Kiddyco Duo Deluxe, excel. cond., orig. $100, now $40. Paul, Ext. 4156.

TICKETS - *Peter and the Wolf,* Little Orchestra Society, Avery Fisher Hall, Dom DeLuise narrating, 5/7, 4 orchestra seats, $30/ea. Rick, 363-7511.

WREATHS - grapevine, wine cork, all sizes, shapes, make great gifts. Lois, Ext. 3315 or 929-4753 eves.

Free

DOG - Pepper, a black and white 3-yr.-old, male, cocker spaniel. Pam, 475-2541.

WOOD-BURNING STOVE - Sears, cast-iron, you pick up, we live on site. John, Ext. 4877.

Car Pools

BOHEMIA/E. ISLIP/OAKDALE - looking for 1 or 2 drivers for existing car pool. Frank, Ext. 2314.

Real Estate

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

For Rent

BAITING HOLLOW - beach cottage, l/r, eik, deck, priv. beach, laundry, rec. hall, near farms, Splish Splash, wineries, sleeps 4, full bath, $400/wk., multi-week discount. Mike, Ext. 7861 or 331-7812 eves.

MASTIC BEACH - share house, nonsmoker, near Smith Point, use of yard, w/d, cable, and telephone, $400/mo. + 1 mo. sec. Karen, 395-4716 after 6 p.m.

N. SHIRLEY - room for rent in ranch, use of kit., bath, storage in bsmt., 10 min. to Lab, quiet neighborhood, friendly dog, $400/all. Jerry, 28[illegible]-0839.

RIDGE - Strathmore, 2-bdrm. condo, appliances, $675/mo. + util. 474-0503 eves.

SHIRLEY - 1-bdrm. waterfront property, eik, l/r, full bath, fp, priv. ent. & parking, furn., 1 mo. sec., $650/mo. Matthew, 399-2089.

SHIRLEY - 3 bdrm., l/r, d/r, eik, laundry, new w/w, oil/hot water, fenced-in yard, 1 mi. to Smith Point Bridge, $900/mo. + util. 744-5448.

SHOREHAM - studio apt., priv. ent., beach rights, single, nonsmoker, no pets, $525/mo. incl. util. & cable, refs. req. 744-2095 after 6:30 p.m.

SOUND BEACH - 15 min. to Lab, lg. eik, l/r-bdrm. combo, priv. ent., back yard, close to beach, shopping, $600/mo. + sec. & elec. Jutta, Ext. 2671.

WADING RIVER - 1 bdrm. in a 4-bdrm., 3-bath contemp., priv. cul-de-sac, 10 min. to Lab, no smoking or pets, $400/mo. incl. all except phone & laundry. Bob, 929-3409.

WADING RIVER - 1-bdrm. apt., l/r, kit., full bath, lg. 2nd floor, priv. ent., part. furn., clean, driveway space, 10 min. to Lab, $575/mo. incl. util. & sec. avail. May 15. Rose or Mike, 929-6514.

FT. MYERS BEACH, FL - Gulf-front timeshare, Seawatch Resort, 2 bdrm., 2 baths, sleeps 6+, Gulf view, equipped kit., ac, in unit w/d, pool, Jacuzzi, 5/14-21, $450/wk. Adele, 667-8337.

KEY WEST, FL - 1-bdrm. oceanfront timeshare, Coconut Beach Resort, sleeps 4, full kit., ac, TV, deck, pool, Jacuzzi, fish, swim, nightlife, $1,050/wk. of July 23-30. Pat, Ext. 2539 or 929-3586.

KEY WEST, FL - oceanfront studio timeshare, Coconut Beach Resort, sleeps 2, refrig., microwave, ac, TV, deck, pool, Jacuzzi, fish, swim, nightlife, $700/wk of July 23-30. Ralph, Ext. 2539 or 929-3586.

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

POCONOS - timeshare, condo, sleeps 8, Jacuzzi, fp & more, indoor/outdoor activities, ask. $500/wk. 321-6674 eves.

POCONOS - Shawnee, Memorial Day getaway, 5/21-28, 2-floor townhouse, sleps 8, Jacuzzi, indoor/outdoor activities, ask. $500/wk. 321-6674 eves.

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

HILTON HEAD, SC - 2-bdrm. condo, sleeps 6, fully furn., 2 baths, pool, beach, golf nearby, April-Sept., $450/wk. Guy, Ext. 3147 or 689-5378.

For Sale

AQUEBOGUE - 3-bdrm. ranch, eik, fd/r w/hardwood floors, l/r w/fp, cath. ceilings, skylights, Jacuzzi bath, full bsmt. w/8' ceilings, fenced ¾ acre, $145,000. Sharon, Ext. 5919 or 722-3010.

BROOKHAVEN HAMLET - 3-bdrm. ranch, 9 rms., full bsmt., 20'x40' pool, hot tub, 3 skylights, full ac, fp and woodstove, 3.3 fenced wooded acres, 3 storage bldgs., mid $200's. Marty, 286-0478.

CALVERTON - 2-bdrm. condo, a/c, f/p, patio, upper deck. Ext. 7595.

CENTER MORICHES - 4-bdrm. Col., l/r w/fp, d/r, eik, full bsmt., TV/laundry, 1.5 baths, oil heat, att. gar., town water, near all, $165,000. Marilyn, Ext. 2259 or 878-0939.

FARMINGVILLE - 4-bdrm. Col., shy acre, 1½ baths, eik, den, wood-burning stove, Sachem schools, gas heat, $155,000. 732-0960.

MEDFORD - 3-bdrm., center-hall Col., 1½ baths, eik, den, l/r, d/r, gar., 0.4 acre, fenced, $117,000. 286-1571.

MEDFORD - 1-bdrm. condo, all appl., cac, lg. deck, in/outdoor pools, golf, tennis, more, priv. security, $72,500. 758-6197.

MILLER PLACE - 2 bdrm., 1 bath, 1,200 sq. ft., ¾ bsmt., 8 yrs. old, oil heat, $2,300 taxes, lot 50x150, low maint., 19x22 l/r, $132,000. 331-2306.

N. SHIRLEY - 3-bdrm. ranch, ½ acre, sunny, 7 yrs. old, Longwood SD, owner relocating, $109,900. 281-0839.

PATCHOGUE - 4-bdrm. Cape, lg. eik, d/r, l/r w/fp, 2 baths, full bsmt., oil heat, 2-car gar., refin. oak floors, decking, fenced backyard, $175,000. John, 475-8888.

PT. JEFF VILLAGE - 4-5 bdrm., wooded ½ acre, cac, 2-car gar., beach, country club, walk to village & harbor, avail. 7/1. 331-3846 eves.

RIDGE - 3-bdrm. ranch, l/r, den, eik, gar., vinyl siding, lg. fenced yard w/igs, cul-de-sac, $119,500 eves./wknds. 924-2298.

RIDGE - 3-4 bdrm., 1½ baths, full bsmt., fp, oil heat, eik, skylights, oak floors, rental cottage, 2½ acres, 3 mi. N. BNL off Wm. Floyd, $178,000. 345-5325.

RIDGE - 3-bdrm. townhouse, 1½ baths, lg. l/r, 5 min. to Lab, $69,900. 924-4734.

RIDGE - 3-bdrm. townhouse, 1.5 baths, cac, w/w, all appl., new w/d, hot water heater, attic, patio, storage rm., move-in cond., red. $63,000. Mary, 924-4328.

RIDGE - new 3 bdrm., 2 full baths, full bsmt., vaulted l/r & kit., w/w, lake rights, OHWH, 10 min. from Lab, $109,000. 582-4514, leave message.

RONKONKOMA - Lake Hills, 3-bdrm. ranch, eik, d/r, l/r, lg. fin. bsmt., new appl. $138,000. Ext. 2466 or 981-2086.

SHOREHAM - North Shore, 3+ bdrm. contemp., 2½ baths, skylights, cathedral ceilings, 2,600+ sq. ft., fenced yard, large office & fam. rooms, priv. beach, $279,000. 744-8655.

SMITHTOWN - Pines, 5-bdrm. high ranch, 3 baths, 0.7 treed acre, possible M/D, cac, new heat, roof, windows, 1 mi. from highways, 2-car gar., ask. $249,000. Ext. 2830 or 543-0487.

WADING RIVER - 3-bdrm. Col., 2½ baths, 2-car gar., custom kit., Jennair, gazebo, shed, igs, igp, deck, steam bath, satellite dish, SWRSD, 1.1 acre, $239,000. 929-8323.

WADING RIVER - 3-4 bdrm. custom ranch, 2 baths, eik, d/r, l/r w/fp, laundry, very lg. playroom, oversize 2-car gar., full acre, SWRSD, $183,000. Steve or Sue, 929-3251 or Ext. 4475.

PRINCE EDWARD ISLAND, CANADA - waterfront. 395-3914.

PORT CHARLOTTE, FL - ¼-acre bldg. lot, in developed community, ready to build, $10,900. 929-8323.

NORTH CAROLINA - 1.13 wooded acres, waterfront community, pool, clubhouse, 35' boat slip on Pamlico River, $38,000. Ken, 281-5565.

Wanted

ANTIQUE PAINTINGS - old and unusual, any cond. cash. Ron, Ext. 5371.

AQUARIUM - 20-50 gal., complete. Bill, 467-1343.

BABY-SITTER - mature woman for 2-week old boy, live-in/out, near Lab, prefer Chinese-speaking. Mei, 345-5420.

BABY-SITTER - for 9 yr. old, school days, 4-6 p.m., in my home, Coram area. Arun, 331-2027.

BOOKCASE - 30"wx72"h, oak finish; car-top carrier, X-Cargo box-type. Joe, Ext. 2989.

CAT SITTER - dorm-bound summer student needs temp. home for friendly, out/inside fixed male, 6/11-8/19, all exp. pd. Georgia, (706) 543-2655 collect.

CHILDREN'S BOOKS - hard-covered, gently read, pay by the box or book. Mary Ann, 758-0790.

HOMES - apt., condos, rooms for rent or house share, short-term rentals for guests of BNL. Marie, Ext. 4489.

HOUSE TO SIT - mature couple will sit your house, care for pets and plants. Bob, Ext. 5314.

JUNK - cars, trucks, machinery, alum. boats, will remove. Rich, Ext. 4986 or 589-9103.

LAWN MOWERS - and lawn tractors, used, complete if possible. Dan, 698-7322.

LOWER UNIT - for 115 Mercury outboard. Roger, Ext. 7518.

MOTORCYCLES - 1900-1969, bigger bikes only, any cond., foreign or domestic. Bill, 467-1343.

PARTS - for 78 Honda 750cc Super Sport. Chuck, Ext. 4688.

PARENTS OF DAYCAMPERS - interested in a discounted group rate for summer camp. Laura, Ext. 4615 or 698-4143.

PORCH SWING - bench-like, chain suspended, for 2 or 3; table, 42-48" dia., butcher block or oak on cent. pedestal. John, Ext. 7671.

SLATE OR PATIO BLOCK - to make a walk, will take away free. 331-7812 eves.

In Appreciation

Thanks to all the guys who attended my retirement party. It was really nice working with you over the years. — Phil Thomason

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

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