BROOKHAVEN BULLETIN
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BROOKHAVEN NATIONAL LABORATORY

BNL's Alternating Gradient Synchrotron Turns 30 — Still Conquering New Frontiers in Physics

A new age in physics began at BNL at 4:13 p.m. on July 29, 1960.

At that moment, the Alternating Gradient Synchrotron (AGS) — then the world's most powerful accelerator — first reached its design energy, shooting protons through its half-mile tunnel at an energy of 30 billion electron volts (GeV).

Three decades later, the AGS is still going strong as it continues to accelerate particles for frontier high energy and nuclear physics experiments, and prepares to become the injector for BNL's proposed Relativistic Heavy Ion Collider (RHIC).

"Three Nobel Prizes have been awarded for experiments done on the AGS, and it has been one of the most productive particle accelerators ever built," observed BNL Director Nicholas Samios. "Of course, the AGS of oday is not the same as the original machine, since it has been continuously upgraded. For instance, its intensity has been increased three orders of magnitude since its inception. As evidenced by recent reviews, the research under way today at the AGS is considered to be at the forefront of physics, and we are looking forward to its additional use as an injector for RHIC."

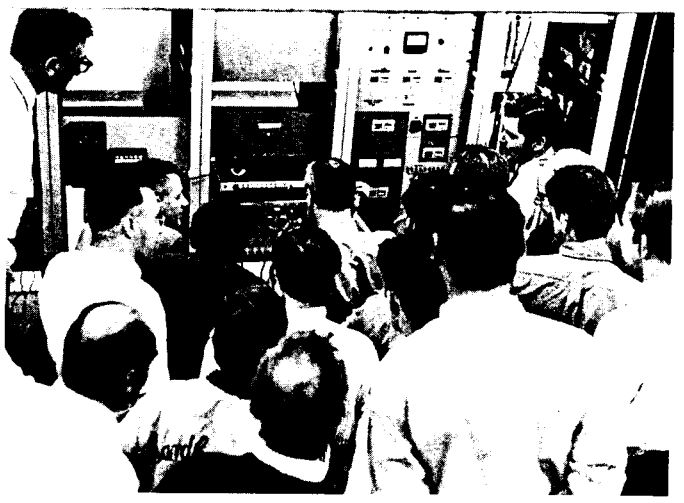
The three Nobel Prize-winning discoveries made at the 30-year-old accelerator are: The muon-neutrino, found in 1962 by a Columbia/BNL collaborative group led by Leon Lederman, Melvin Schwartz and Jack Steinberger; CP violation, discovered in 1964 by James Cronin and Val Fitch, both then of Princeton University; and the J particle, detected in 1974 by a BNL/Massachusetts Institute of Technology (MIT) collaboration headed by Samuel C.C. Ting of MIT.

Other notable achievements at the AGS have included the discovery of the Omega-minus particle in 1964 and the charmed baryon in 1975, both by BNL teams led by Samios, then head of the Physics Department's Omega Group.

While more powerful accelerators have been built since 1960, the AGS remains the most versatile accelerator in the world.

It is capable of accelerating protons up to 33 GeV and polarized protons up to 24 GeV for experiments at a total of 17 beam lines. Since 1986, when the link between the Tandem Van de Graaff accelerator and the AGS was completed, it also has been a source for heavy ion experiments.

In the main control room of the AGS on Friday, July 29, 1960, all eyes were fixed on the oscilloscope, waiting for the accelerator to reach its design energy of 30 billion electron volts. It happened at 4:13 p.m.



Ten years later, on November 18, 1970, the scene was repeated as the 200-million-electron-volt Linac came on line for the first time.

Today, diverse and promising experiments at the AGS range from nuclear physicists' search for quark-gluon plasma in heavy ion experiments to high energy physicists' quest for rare kaon (K) decays exploring the 100 trillion electron volt (Tev) virtual mass range. For these rare K-decay experiments, the AGS is the premier accelerator today because it produces more kaons per hour than any other machine worldwide.

The AGS is so named because it employs alternating gradient focusing. This concept, in which the field gradients of the accelerator's 240 magnets are successively alternated inward and outward, permits the particles to be guided with more strength and focus.

Also called strong focusing, this important principle was discovered at BNL in 1952 by Ernest Courant, M. Stanley Livingston, and Hartland Snyder. First used in 1960 to build the AGS and the Proton Synchrotron at CERN, strong focusing has been the principle upon which most new accelerators have been designed, including the Superconducting Super Collider now under development in Texas.

A BNL physicist since 1948, Courant still serves as a consultant at the Lab. "Previous to the AGS commissioning," he recalled, "BNL held the world accelerator energy record with the 3 GeV Cosmotron, which was the leader from 1952 until the Berkeley Bevatron got going in 1954.

"The story has been told many times of how Stanley Livingston led a study group aimed at improvements after the Cosmotron was finished, and how he, Hartland Snyder and I came up with the idea of strong focusing, which made it possible to get much higher energy than before," continued Courant. "The group that built the new machine has evolved into today's Accelerator Development Department.

"It is sad that many of the key players in building the AGS are no longer alive — Ken Green, Stan Livingston, Lee Haworth, Hartland Snyder, Nick Christofilos," added Courant. "Others have retired, such as John Blewett, Hildred Blewett, Marty Plotkin, Irv Polk, Sal Giordano and me."

The original AGS design has proved very adaptable, as the accelerator has been upgraded many times over its lifetime. For example, protons originally were injected into the AGS via a 50-million-electron volt (MeV) linear accelerator; in 1970, this was replaced by the current 200-MeV Linac.

And there have been other changes. "The AGS was originally designed to provide a beam of 10^{10} protons aimed

(continued on page 2)

Learning About the Lab

Roger Stoutenburgh

Robert Ketcham (second from left), Chief of Staff of the House of Representatives Science and Technology Committee, visited Brookhaven on Friday, July 20, on the eve of the committee's current hearings on the national laboratories. Introducing him to the Laboratory's plans and program were: (from left) BNL Director Nicholas Samios; Robert Hughes, President of Associated Universities, Inc.; and Martin Blume, BNL Deputy Director.

AUI Distinguished Lecture

Method's Inventor to Discuss Genetic Fingerprinting

Most Long Islanders recall the recent Robert Golub murder trial in which DNA fingerprinting was one of the important pieces of evidence on which the prosecutor built his case. This new form of biological identification has recently gained acceptance by police and the courts as a forensic tool.

Genetic fingerprinting involves examining a small sample of blood or semen to determine its unique DNA sequence. There is less than a one in a billion chance of two people having the same type of genetic fingerprint, although close relatives may have similar patterns.

Alec Jeffreys, inventor of a method for DNA fingerprinting, will offer his views on the subject at an AUI Distinguished Lecture to be held on Monday, August 6, at 4:30 p.m. His talk, to be at held at Berkner Hall, is titled "Hypervariable DNA and Genetic Fingerprinting."

Jeffreys will discuss the principles and applications of DNA profiling, and the biological properties of the highly variable and unstable minisatellite loci that form the basis of DNA fingerprinting.

A professor of genetics at the University of Leicester in England, Jeffreys is also associate editor of the *Journal of Molecular Evolution*. In addition, he serves as a board member for many scientific journals. Jeffreys invented the genetic fingerprinting technique patented in 1987 by the Lister Institute of Preventive Medicine under the title "Polynucleotide Probes."

Alec Jeffreys

After receiving his B.A. in biochemistry from Merton College, Jeffreys earned his Ph.D. from Oxford University in 1975. He also did postgraduate research at the University of Amsterdam. Jeffreys is a fellow of the Royal Society, among other prestigious insitutions.

Jeffreys' lecture will be the final one of the Lab's summer series of three AUI Distinguished Lectures. In 1965, Associated Universities, Inc., started the lecture program, which appeals to large audiences because of its well-known speakers and popular subject matter.

BERA Facts

If you're reading this, you're probably an employee or an immediate family member of an employee of either BNL, AUI, DOE or one of the Lab's permanent on-site employers.

And if that's the case, you're also a member of BERA — the Brookhaven Employees' Recreation Association.

Founded in 1948, BERA first sponsored only eight activities: a bridge club, camera club, choral group, dance & party committee, film society, rental library, tennis club and theater group. That list has since grown to 42, but as you'll see if you look over the complete listing on this page, only four of the original eight have survived the test of time.

In addition to overseeing Lab-sponsored athletic, social and cultural activities, BERA operates the Sales Office located off the lobby in Berkner Hall and open each workday from 9 a.m. to 2 p.m. Items available at the BERA Sales Office are described in the accompanying box.

BERA is run by the BERA Executive Board, whose eight members are elected by employees every March to staggered four-year terms. Recreation Supervisor M. Kay Dellimore, Personnel Division, is liaison to the BERA Board.

If you have suggestions or questions for BERA, any of the current board members or affiliates listed below will be happy to help you:

BERA Executive Board	Ext.
Haskell Frei, President	2760
Lawrence Musso, Vice Pres.	2238
Sharon Smith, Secretary	3995
Richard Backofen	2973
Michelle Cummings	2077
Elizabeth Pergan	2937
Jean Ramirez	2119
Maryann Reynolds	5241
Affiliates	
M. Kay Dellimore, Recreation Supervisor	2873
Elliot Levitt, Treasurer	2495
Pat Manzella, Recording Secretary	3336

From A to V, There's a BERA Club for You

If you're in search of others to share your interests, there's probably a BERA club that's just right for you. In fact, 42 groups catering to a wide variety of tastes are included on this list of current BERA activities. For more information, call the contact indicated or the Recreation Office, Ext. 2873.

Activity	Description	Contact Name	Contact Phone
Aerobic Dance Club	Aerobic dance classes held twice a week; stretch classes held once a week.	Pat Campbell	3483
Afro-American Culture Club	Meets regularly to promote cultural awareness and encourage intercultural exchange.	Bill Sells	3277
Amateur Radio Club	Maintains amateur radio station in Recreation Bldg.; conducts FCC amateur radio license course; meets last Thursday of month.	Andy Feldman	3264
Antique & Classic Motoring Club	Shares and promotes interest in preservation and enjoyment of antique/classic motor vehicles through monthly meetings and other activities.	Ken Sutter	4514/3508
Archery Club	Uses outdoor range year-round; gives free instruction to beginners.	Louis Cannizzo	4220/5385
Art Society	Organizes professional and employees' exhibits.	Robert Chrien	3903
Astronomy Club	Shares interest in the skies through observation and lectures.	Keith Power	7222
Aviation Club	Meets monthly to promote understanding, safety, enjoyment of flying; all are welcome.	Susan Norton	3492
Badminton Club	Plays year-round; holds winter tournaments in gym.	William Love	3996
Basketball League	Teams compete once a week in gym, December-March.	Robert Rowley	4986/3354
Boomerang Club	Members share techniques of throwing boomerangs.	Robert Litzke	2502
Bowling League	Leagues bowl at local alleys, September-April.	Edward Sperry IV	2697
Camera Club	Meets monthly; uses club's darkroom facilities for black & white and color processing; sponsors photo exhibit in Cafeteria.	Lew Jacobson	5193
Camping Club	Organizes campouts year-round, at Lab and off site.	Robert Tallon	4847
Chess Club	Meets to play on an irregular basis.	Carl Dover	3791
Choral Group	Rehearses four-part harmony, particularly November-December, for annual Christmas concert.	John Weeks	2617
Commodore Users Club	Members share information and techniques on the Commodore computer.	Henry Diaz	5110
Concert Committee	Organizes series of chamber music concerts at Berkner Hall	Ben Magurno	5207
Cricket Club	Plays occasionally at BERA fields, spring through fall.	David Cox	3818
Exercise & Body Building Club	Holds informal workouts during noontime and evenings.	James Alduino	4696
Fly Tyers Club	Fresh-water fans meet weekly, October-April.	Kurt Jellet	4698
Golf League	Teams compete weekly; hold tournaments at local courses, May-June.	Ronald Webster	2845
Handball Club	Plays daily at noontime on court east of warehouses; all welcome.	Gerald Bennett	7590
Microcomputer Club	Meets twice monthly, September-June, to discuss microcomputer technology.	Frank Salzano	4458
Motorcycle Club	Plans lunchtime outings; meets informally.	Erno Ostheimer	2697
Mountain & Canoe Club	Plans year-round outdoor activities; meets as necessary.	Richard Casella	7975
Nursery School Committee	Operates classes for three- and four-year-old children of Lab employees, September-June.	Carolyn Roberts	874-2992
Quilting Club	Meets monthly in evenings at members' homes to learn and work.	Jane Shero	286-0925
Racquetball Club	Uses Royal and Unique Racquetball courts located off site.	Richard Horwitz	4134
R/C Model Aircraft Club	Flies radio-controlled model planes during scheduled weekends, April-October.	Dan Wilson	7518
Rifle & Pistol Club	Holds shoots year-round at BNL range and elsewhere.	Otto Jacobi	3471
Runners Club	Schedules meets spring and fall; holds meetings as necessary.	Skip Medeiros	3806/3044
Soccer League	Plays Mondays & Fridays, 5:30 p.m., at BERA field; plays in gym during winter.	Enrique Abola	4383
Social Club	Holds meetings, parties and arranges group trips.	Doris Terry	7610
Softball League	Leagues play May-August on BERA fields.	Marty Leach	3813
Special Events Committee	Organizes events, including picnics, dinner-theaters and contemporary entertainment.	Rosalie Piccione	3160
Swim Club	Meets September-May, every Thursday at the pool for coaching and practice; competes on weekends in metro-area Masters meets.	Ron Wittlock	4112
Table Tennis Club	Plays at noontime in Recreation Bldg.	Upendra Rohatgi	2475
Tennis Committee	Sets rules for court use; organizes tournaments.	Eena-Mae Franz	7103
Theater Group	Meets for readings and presentations of plays and shows.	Robert Kinsey	5096
Touch Football League	Plays on BERA fields, September and October.	John Blydenburgh	2310
Volleyball League	Plays in gym twice weekly, October-April.	Kathi Barkigia	7661

Softball

Standings as of July 20

League I		League II and III
Ravens	8-1	Standings not available.
Cool 'n Gang	6-3	
Blue Jays	6-3	
Phoubars	4-5	
Light Source	4-5	
Cutting Edge	3-6	
Magnuts	3-6	
Six Pax	2-7	

League IV		League V	
Snakebites	6-1	What's on 2nd	7-2
Brewers	5-2	Cosmic Debris	5-2
Simply Awesome	5-3	Turkeys	4-3
Fielders' Choice	4-3	Sandboxers	4-3
Survivors	3-4	Underalls	4-4
Kids R Us	2-6	Mudville Sluggers	3-5
Source	0-8	Foul Ups	0-8

BROOKHAVEN BULLETIN

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At the BERA Sale Office

The BERA Sales Office, located off the lobby in Berkner Hall, is open each workday between 9 a.m. and 2 p.m. There, you can find:

- **Merchandise** — Photo processing services supplied by Employee Photo Service of Totawa, New Jersey; film; an attractive selection of Majestic and Gordon Fraser greeting cards; Long Island postcards; T-shirts, $7 each; sweatshirts, $13 each; assorted balloons, $1.50 each; and BNL postcards and mugs.
- **Tickets** — Magic Kingdom Membership cards for Disney World, Epcot Center, Disneyland and MGM at no cost to the employee; Great Adventure discount tickets, $18 each ($5 less than if purchased at the park); Multiplex Theater discount tickets, $4.50 each.
- **Handouts** — Twofers for some Broadway shows; travel brochures and flyers; Wholesale Club information and brochures; information on various magazine discount subscriptions; copies of *East End Art News*.
- **Participation Awards** — The Sales Office is the official redemption center for BERA Participation Awards.

For more information about the Sales Office, call Louisa Barone, Ext. 3347.

Corrections

In last week's Bulletin:

- Janet P. Soper was included in the list of departures. Soper is still very much with the Supply & Materiel Division.
- The prices of the "New Age of Discovery" BNL T-shirts and sweatshirts were incorrect: T-shirts are $7 each; sweatshirts $13 each.

The deadline for ordering has been extended through August 17, but no more mail orders will be accepted. Cash or money orders, payable to "T-shirts," may be brought to the order desk in Bldg. 179 from 10 to 11:30 a.m. or from 1 to 3 p.m. daily. Order forms are available at the order desk and must be completely filled out.

On the Menu

Monday, July 30	
Soup: Cream of tomato	.75/.95
Entree: Oven-broiled fish w/1 veg.	3.10
Entree: Stuffed shells w/1 veg.	3.10
Fitness: Chef's special	3.10
Carvery: Hot pastrami sandwich	2.85
Tuesday, July 31	
Soup: Navy bean	.75/.95
Entree: Chicken Parmesan w/1 veg.	3.10
Entree: Moussaka w/1 veg.	3.10
Fitness: Pork-fried rice w/1 veg.	3.10
Carvery: Hot roast beef sandwich	2.85
Wednesday, August 1	
Soup: Potato chowder	.75/.95
Entree: Ham rolls w/broccoli & 1 veg.	3.10
Entree: Taco salad	3.10
Fitness: Chef's choice	3.10
Carvery: Hot Black Forest ham	2.85
Thursday, August 2	
Soup: Cream of cauliflower	.75/.95
Entree: London broil w/mushroom gravy & 1 veg.	3.10
Entree: Turkey tetrazzini w/1 veg.	3.10
Fitness: Kielbasa & sauerkraut w/1 veg.	3.10
Carvery: Hot corned beef sandwich	2.85
Friday, August 3	
Soup: Cheddar cheese	.75/.95
Entree: Fish fillets w/1 veg.	3.10
Entree: Fried chicken w/1 veg.	3.10
Fitness: Macaroni & cheese w/1 veg.	3.10
Carvery: Hot turkey sandwich	2.85

Note to Employees:

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

Patrol Officer Sanniola Is Mr. Atlantic States 1990

Under the regulation uniform of mild-mannered Patrol Officer Richard Sanniola is the well-built, muscular body of Mr. Atlantic States 1990.

A member of the third platoon of BNL's Police Group, Safeguards & Security Division, Sanniola captured first place in the lightweight class of the 1990 Bev Francis Atlantic State Body Building Championships, held at Hofstra University on July 7.

But he didn't stop there: Sanniola also outclassed the winners of the bantam, middleweight, light-heavyweight and heavyweight classes to win the overall title — an unusual feat for a lightweight.

"I've been working out for my health and appearance since I was 11 years old," explains the 30-year-old, 150-pound champion. "Bodybuilding is an individual sport, so what you put into it is what you get out of it — I've always known what to put in, but this time I actually did it."

To do it, even with 19 years of physical preparation behind him, Sanniola first had to find mental concentration.

"After so many years of lifting, I do have good proportions and mature muscle mass," Sanniola says. "But in aiming for competitions before, I lacked focus. So I would cheat, especially on my diet."

What gave him the strength to train and diet as a champion was "the birth of my daughter Krista," explains Sanniola. A first-time father, he was with his wife Suzanne during her April 23 delivery.

"Witnessing the labor and delivery of my daughter really inspired me," recalls Sanniola. "So I thought, 'If my wife can be good with her diet and endure the changes in her body for nine months of pregnancy plus withstand all the pain of birthing a baby, then I can sacrifice ten weeks of my life to prepare for a contest because it is nothing compared to what she went through.' "

With the encouragement of Suzanne, his former lifting parter, Sanniola went on a high protein, low fat, moderate carbohydrate diet. He aimed to reduce his body fat from its usual 9 percent to a lean 3 percent. In the process, he had to lose 20 pounds of fat but without losing any muscle mass.

"Diet has always been the hardest part for me," he admits. "In the past, pasta was my weakness. This time, I drank lots of water, took my vitamins and amino acids, and ate a lot of tuna fish."

While still spending almost two hours a day lifting, the number of days that he worked out increased: Instead of training three days on, one day off, two days on, one day off, Sanniola lifted three days for every one day rest.

And the type of lifting that he did changed as well. "For better muscle definition, to reduce the fat between the muscle, I did a lot more repetitions — 12 to 20 — before the contest versus the 5 to 8 that I usually do during the off season," Sanniolla explains.

In addition to working out with weights at World's Gym in Medford, Sanniola put in an hour of aerobics three times a week with members of his platoon. Half an hour was dedicated to climbing the stair machine or riding the stationary bicycle, while the other half an hour was occupied with "waist work — abdominal crunches, back kicks, leg raises."

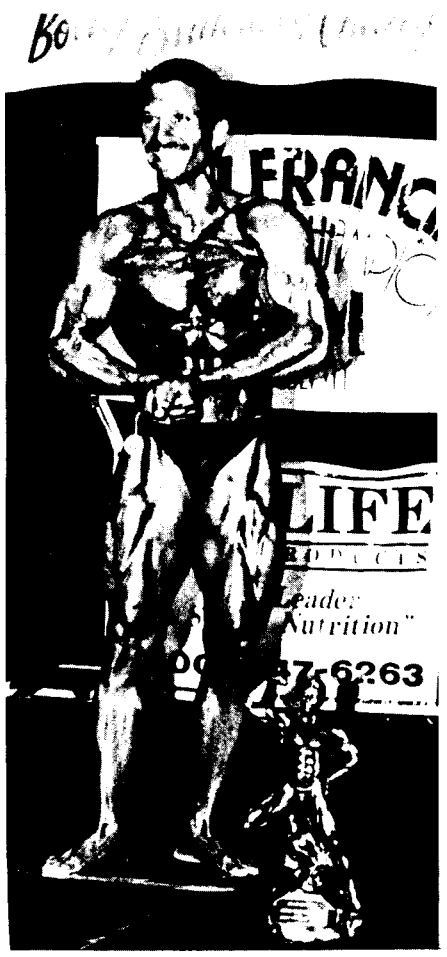
"We saw Richie's intensity, we knew that the motivation and dedication were there, and we are very proud of him," says Sanniola's Lieutenant Rex Garcia, who along with fellow patrol officers Nicholas Spinella and Ralph Vega cheered their platoon buddy on to the Mr. Atlantic States title.

Tanned, well-groomed and poised, "I was very confident, really positive, because I knew I was in shape and it was a good feeling," says Sanniola.

At 2 p.m. the Saturday of the contest, Sanniola was prejudged in his weight class on seven of nine mandatory body-builder's poses. At 7:30 p.m., he performed his 1½-minute, choreographed posing routine "to somebody else's music — but, luckily, it worked out anyway."

After being named first in his class, he waited around for the pose down among the winners of all the classes for the overall Atlantic States title. Says Sanniola, "I was hungry — I didn't eat much all day to keep my stomach down — but I knew this time was different from the past, so I was psyched."

After Sanniola was chosen overall winner and presented with his trophy by Miss Olympia contender Bev Francis, "I thought about the nationals — the desire and the sacrifice first to qualify and then to go — and I hope I can get it together again this year." — Marsha Belford



Richard Sanniola strikes his most muscular pose after winning the Mr. Atlantic States title earlier this month.

AGS Turns 30 (cont'd)

at an internal target," explained AGS Department Chairman Derek Lowenstein. "Over the past 30 years, AGS intensity has climbed to 1.9 x 10^{13} protons per pulse [p/p], and has expanded to include polarized, or spin aligned protons and ions as heavy as silicon, which has an atomic mass of 28. The internal targets have been replaced with three different beam extraction modes and the experimental areas have grown from a handful of beam lines serving bubble chambers to 17 spigots serving state-of-the-art detectors that are capable of observing processes that occur as infrequently as once in every 10^{10} interactions."

Since 1986, the focus of the AGS Department has been on the Booster, an accelerator about one-quarter the size of the AGS that will further enhance its power and versatility. The Booster is now about 80 percent complete, and when it is commissioned in 1991, another new age in physics experimentation will dawn at the AGS.

The Booster will accomplish three objectives for the AGS: First, it will increase proton intensity to 5-6 x 10^{13} p/p to satisfy the demand for beam time for rare K decay and other experiments. Second, it will increase polarized proton intensity by a factor of 20, to 10^{12} p/p, for spin physics and multi-target operation. And third, it will allow the AGS to accelerate heavy ions up to the atomic mass of gold, 197, for heavy ion experiments and for future injection into RHIC.

In RHIC, for which construction funds are included in the President's proposed 1991 budget, heavy ions will collide at combined energies of 200 GeV per nucleon, in other words, 20 TeV for atomic mass = 200. RHIC will open the door for a look at the conditions that existed in the universe instants after the Big Bang.

To ready the AGS for the Booster and RHIC, an upgrading program has been in progress since 1984. Among the modifications under way are an improvement in the vacuum from 10^{-7} to 10^{-9} Torr. A radiofrequency quadrupole preaccelerator, a fast beam chopper and a high-frequency dilution cavity have been installed, and a new, enlarged control room has been built.

With the near completion of the Booster and the start of RHIC construction, the AGS enters its fourth decade with great promise.

The next 30 years at the AGS are expected to be equally as exciting as the past 30," said Lowenstein. "With RHIC and the high intensity fixed-target capabilities at the AGS, we have a facility that will be productive well into the twenty-first century.

Concluded Lowenstein, "Our research program — past, present and future — is only possible thanks to the efforts of the accelerator physicists, engineers, technicians and support staff that make the machines operate so that the discoveries can be made and the prizes won." — Diane Greenberg

The 30-year-old Alternating Gradient Synchrotron is the hub of this photo. At the upper left of the 1.5-mile ring is the AGS injector, the 200-MeV Linac; at the upper right is a portion of the tunnel for BNL's proposed Relativistic Heavy Ion Collider, for which the AGS will be the injector; and in the foreground is Bldg. 911, which houses the AGS Department and main control room. During the Lab's 40th anniversary celebration in 1987, the entire AGS complex was dedicated to the memory of Leland J. Haworth, BNL's second Director.

In Memoriam

Francis T. Green, who retired from the Central Shops Division in 1979, died on July 3 after a long illness. He was 73 years old.

Green's 25 years at BNL began in October 1954, when he joined the Lab as a machinist. He was named an experimental machinist in 1956 and became a senior standards inspector in 1961. It was in this capacity that he became known to his BNL friends as "Red-Tag" Green, because if an item didn't pass his inspection, he would label it with a red tag.

Green was a resident of Riverhead. He is survived by his wife Frances, who retired from the Medical Department in 1978; his daughter Catherine L. Green of Moriches, who works in the Department of Nuclear Energy; two sons, Thomas F. Green, East Patchogue, and Robert A. Green, Bellport; eight grandchildren and four great-grandchildren.

Fox Family Bluegrass

Friday, August 3

8 p.m., Berkner Hall

Tickets cost $6 each.

Summer Bluegrass Concert

Buy tickets at the BERA Sales Office, 9 a.m.-2 p.m., or the Recreation Office, Bldg. 185, after 2 p.m., or from Rick Backofen, Bldg. 197B; Michelle Cummings, Bldg. 459; Elizabeth Pergan, Bldg. 179A; Jean Ramirez, Bldg. 197C; Maryann Reynolds, Bldg. 703; Sharon Smith, Bldg. 510A.

Scoop of the Week

SCOOP of the Week

The scoop for summer week number six goes to Rex Garcia, Safeguards & Security Division, for informing the Bulletin that Richard Sanniola is Mr. Atlantic States 1990.

Throughout the summer, the Bulletin will be trading hot tips for scoops of frozen yogurt. To enter the third annual Scoop of the Week contest, rush your news and feature scoops to the Bulletin, Bldg. 134, or call Ext. 5053. If you scoop the Bulletin's informed sources and a story based on your idea is published, you'll win an official certificate, which may be redeemed for soft-serve, frozen yogurt at the Cafeteria.

Arrivals & Departures

Arrivals

Steven A. Bugros .....Reactor
Robert J. Petricek .....Reactor
John G. Skora .....Chemistry
Xianliang Zhou .....DAS

Departures

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

Eric H. Paffrath .....Central Shops

Classified Advertisements

Placement Notices

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

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

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

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

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

LABORATORY RECRUITMENT - Opportunities for Laboratory employees only.

4289. FACILITIES OFFICE ASSISTANT - Responsibilities will include preparing and maintaining records, reports, work orders and files; performing computations; and typing correspondence and reports. Typing skills and previous office experience required. Plant Engineering Division.

4290. SECRETARIAL POSITION - Requires AAS in secretarial science or equivalent, and a thorough knowledge of Laboratory policies and procedures. Previous IBM PC experience, preferably WordPerfect 5.1, and excellent communication skills also required. Will perform complex secretarial duties for Accident Analysis Group. Responsibilities will include preparation of technical reports, and foreign and domestic travel and correspondence, some of which may be confidential. Department of Nuclear Energy.

OPEN RECRUITMENT - Opportunities for Laboratory employees and outside applicants.

4291. PROJECT MANAGER, REMEDIAL INVESTIGATION/FEASIBILITY STUDY - Requires an MS, technical background in environmental areas, demonstrated abilities in project management, including having brought projects in on time and within budget, and substantial senior-level skills. Responsibilities will include managing all activities pertaining to the Interagency Agreement for the Laboratory, overseeing the work of others, coordinating activities in other Laboratory department/divisions that must be completed to meet the schedules agreed to in the IAG, and interfacing with DOE, EPA and New York State. Reports to the Associate Director for Reactor, Safety and Security. Director's Office.

4292. SAFETY POSITION - Requires a bachelor's degree in science or engineering, several years' progressive experience in managing and operating industrial safety programs, and a background in analysis of injuries and safety incidents. Must have excellent analytical and communication skills in dealing with the Laboratory population and outside regulatory agencies. Will be responsible for implementing a "lessons-learned" program for incident investigations, conducting occupational injury/illness investigations, and reporting lessons learned from BNL and DOE safety incidents. Must be able to obtain and maintain a security clearance. Safety and Environmental Protection Division.

4293. ENVIRONMENTAL TECHNICIAN - Requires an AAS in environmental science or equivalent and a minimum of two years' experience in an environmental laboratory. Experience in preparing environmental samples for radiological and non-radiological analysis, and maintaining records is also required. Safety and Environmental Protection Division.

4294. INDUSTRIAL HYGIENE TRAINING POSITION - Requires a BS, MS preferred, significant experience developing and conducting industrial hygiene training, and familiarity with appropriate OSHA regulations. Experience conducting health-physics training is highly desirable. Will develop and conduct industrial hygiene training, principally the Laboratory-wide Hazard Communication Program and Laboratory Standard Program. Safety and Environmental Protection Division.

4295. HEALTH PHYSICS TRAINING POSITION - Requires a BS, MS preferred, in health physics, and experience developing and conducting training preferably at a power reactor. Familiarity with DOE Order 5480.11 highly desirable. Safety and Environmental Protection Division.

4296. QUALITY ASSURANCE POSITION - Requires a BS in environmental science or engineering with a minimum of 2-3 years' experience in QA/QC procedures as applied to a laboratory and areas of environmental protection. Knowledge and/or experience in conducting QA/QC audits is highly desirable. Safety and Environmental Protection Division.

4297. QUALITY ASSURANCE ENGINEER - Requires a BS in a scientific/engineering discipline and several years' QA experience. Will serve as the Division's Quality Assurance Representative, and coordinate and supervise QA activities for the Division. Responsibilities will include auditing, design review, procedure writing, training, and oversight for QA requirements. Familiarity with ANSI/ASME NQA-1 standards, and experience with environmental, safety and health programs highly desirable. Safety and Environmental Protection Division.

4298. ENGINEERING POSITION - Requires BS/MS in mechanical/electrical engineering or related field and 5-10 years' experience in design, testing and operation of nuclear power plants. Must have knowledge of plant systems, and equipment test and maintenance. Duties will include research and technical assistance in the areas of equipment aging, manufacturing, systems design and operations. Knowledge of PRA and reliability practices desirable. Department of Nuclear Energy.

Motor Vehicles & Supplies

88 CHEVY CORISCA - a/t, p/s, p/b, am/fm radio, 19k mi., excel. cond., $6,500 or best offer. Ext. 5471 or 924-9466.

87 BRONCO II XLT - 5-spd., ac, p/w, p/l, cruise, 30k mi., extended warranty, visor, running boards, alarm, more, excel. cond. Richard, Ext. 2231.

87 MAZDA 626-LX - 4-dr., gray, a/t, ac, p/b, p/s, cass. stereo, all power, new tires, brakes, excel. cond., $6,300. 929-4622.

86 TOYOTA SUPRA - black, 36k mi., looks good, runs well, all service records. 589-0967.

86 CHEVY CELEBRITY - s/w, a/t, 5-spd., ac, am/fm, 84k mi., excel. cond., asking $3,900. Chen, Ext. 3369.

86 FORD AEROSTAR WINDOW VAN - 75k mi., good tires, 2 new tires, $3,700. 286-0241.

86 ISUZU PICKUP - w/cap, new brakes, exhaust, battery, long-bed, runs well, clean, $2,750. Brian, 929-8603.

85 MAXIMA SE - 5-spd., gray, all options, well-maintained, great driving car, $6,000. 281-3322.

84 HONDA AERO 125 MOTOR SCOOTER - low mi., new battery, extras, good cond., very reliable. Frank, Ext. 7519 or Vita, 277-0464.

84 CAMARO - V-6, 5-spd., T-top, am/fm cass., p/s, p/w, cruise, 49k mi., $3,400. 654-2617.

83 COROLLA TOYOTA - 4-dr., a/t, brown, v.g. cond., 582-3163 after 7 p.m.

83 BUICK REGAL - 6-cyl., 4-dr., ac, p/b, p/s, am/fm, 102k mi., new brakes & battery, good cond., asking $2,000. Dov, Ext. 4389 or 282-3129.

82 CUTLASS - V-6, a/t, p/s, p/b, ac, 2-dr., 94k mi., body excel. cond. Renee, 732-8124.

82 TOYOTA TERCEL - 4-dr., s/t, 93k mi., asking $1,000. Kate, 286-0534 or 286-0818.

81 HONDA HAWK MOTORCYCLE - 400cc, 8k m., new tires, excel. cond., $900. 744-7406 eves.

80 CORVETTE - cream, 52k mi., T-top, a/t, new shocks, brakes, mufflers, good cond., $9,000. Phil, Ext. 4030.

80 FORD LTD WAGON - p/s, p/b, ac, runs well, new brakes & tires. Ext. 4030.

79 FORD LTD II - dark blue, excel. body, needs work, asking $150. Chen, Ext. 5232.

79 AMC CONCORD - 102k mi, runs well, reliable, moving, must sell, $400. Youwen, Ext. 7735.

79 JEEP CHEROKEE 4x4 - class III hitch, good tires, $1,450 neg. John, Ext. 3302 or 924-0651.

78 OLDS DELTA 88 - 4-dr., a/t, p/b, p/s, dependable, $300 neg. Maryanne, Ext. 2420 or 5849.

WHEELS - alum. mags, 5-lug w/B.F. Goodrich radial sport truck T/A tires, 31x10.50R15LT, $100. Al, Ext. 2795.

Boats & Marine Supplies

28' CHRIS CRAFT - fly bridge, T/screw, 2-283 Chev. eng., full canvas, camper back, galley, head, sleeps 4, $3,000 neg. Connie, 281-5776.

25' WELLCRAFT NOVA - VHF, CB, DF, very clean, runs well, $8,200. Jack, 281-4008.

24' TYLERCRAFT SAILBOAT - new motor, 5 sails, needs boom & TLC, $2,000 firm. 281-2208 eves. or wknds. 281-2208.

22' FIBERFORM SEDAN CRUISER - dual controls, fly bridge, new motor o.d., excel. cond., 1977, 185-h.p., $7,500. 878-2452.

17' O'DAY - day sailer, good cond., w/4-h.p. Evinrude eng. & trailer, asking $1,800. Dick, Ext. 2881 or 286-3372.

13' BANSHEE SAILBOAT - w/trailer, excel. cond., $750. 878-2452.

12½' AMF PUFFER - 1982, complete w/full sails & trailer, v.g. cond., $900. Louise, 598-1783.

POWER WINCH - Model 712A, lift capacity 2,000 lbs. or boat weight 6,000 lbs., 17'-23', excel. cond., $100. 744-7406.

OUTBOARD - 30-h.p. Chrysler engine, $375; radio direction finder, new Aquameter, $225. 281-2208 eves. or wknds.

Furnishings & Appliances

SOFA BED - wide, double bed, good cond., $35. Ernesto, Ext. 3869 or 821-4210.

REFRIGERATOR - good for garage. 289-8212.

DEN FURNITURE - 3 loveseats, 4 chairs, Naugahyde, 4 tables w/formica tops, neg. 475-8658.

DISHWASHER - Sears, 18", $100; wall oven, Hotpoint, s/s, $25. 878-9369 after 6 p.m.

CHINA CLOSET - pecan finish, w/sliding glass, 1 door, 3 drawers, 36" wide, v.g. cond., $45. Gene Rohde, Ext. 5230.

BED - queen-size, $140; rollaway bed, $40; bookshelves, cane & wood, $30; office desk, $25. Kan, Ext. 3731.

WASHING MACHINE - heavy duty, works well, $80; TV w/remote, $100; queen-size mattress, $20; food processor, $15; mixer, $5. Ext. 3136.

BEDROOM SET - 5-piece, fruitwood, good cond., $100. Ernie, Ext. 3357 or 281-7873.

BEDROOM SET - wood dresser, chest, headboard, mirror, $100; sofa, $80; desk, $80. Zhang, Ext. 4357 or 345-5362.

FIREPLACE ENCLOSURE - glass, brand-new, black & brass, fits 29-37" wide, 28½-36" high, $55. Lenny, 472-3254.

KITCHEN SINK - cabinets & fittings, 5' long, $350; port. dishwasher, $45. Bill, Ext. 2378 or 758-3284.

MICROWAVE - Kenmore, large capacity, 700 watt, 1½ yr. old, excel. cond., $120 neg. Fred, Ext. 4353 or 929-5347.

CHAIRS - rattan; corner table, good cond. Dave, Ext. 5460.

DINING ROOM - w/hutch, 4 chairs, Colonial, $275; desk, $20; lace wedding dress, size 10-12, $25. Ext. 4113.

Tools, House & Garden

LAWN MOWER - Lawn-Boy Scamp, 5 yr. old, light duty, excel., $75. John, Ext. 7671.

GAS GRILL - Arkla, double burner, old, $100; redwood table, chairs, chaises, settee, need finishing, $25. Lew, Ext. 5193 or 928-4863.

TABLE SAW - good cond., $75. 281-2208 eves & wknds.

CEMENT MIXER - non-electric, $45; trailer dolly, 2" ball, $25; 4 jackstands, like new, $15. 473-6546.

POOL - 15'x4', heavy-duty construction, all access., chemicals, used one season, $500. Ext. 4567.

FOLDING DOOR - 7 sections, brand-new, $60; wheels, axle, hitch for trailer, new, $60/all. Ext. 7699.

PIPE THREADER - Ridgid, ratchet tool for ½" to 2" pipe, assorted hinges & V belt pulleys, cheap. Bob, Ext. 4044.

LAWN TRACTOR - Sears, model LT/8, 36" cut, double blade, Diehard battery, 3-speed, runs well, $450. Ed, Ext. 7649.

Sports, Hobbies & Pets

SKIS - 170 cm, Blizzard, w/bindings, boots & poles, $80; 150 cm, w/bindings, $15; Miyata 720 bicycle, 23" frame, w/more, $200. Norm, 744-7981.

BICYCLE - girl's, 24", Ross, 3-speed, excel. cond. Ext. 4449 or 751-8403 after 6 p.m.

LOVE BIRDS - home bred, hand tamed, hand fed, 9 weeks old, 1 pied, 1 common, reasonable. Pat, 654-4306.

BIKES - 2, children's, 6-11 yr. old, 1 for 3-5 yr. old, $20/ea. Ext. 3136.

BICYCLE - Ross Piranha, BMX free style, 20", new tires & brake cables, asking $60; Body Glove wetsuit, full, used 4 times, med., $95. 744-7406.

MALTESE PUPPY - pure breed, 7 weeks old, female, $225. Linda, Ext. 4863 or 874-2675.

DIRT BIKE - 50 Suzuki, good cond., $150. Doris, Ext. 4669.

BALLET TOE SHOES - size 5½, $6; Girl Scout uniform, new, size 12, $10. Joanne, Ext. 3711.

Audio, Video & Computers

COMPUTER - Commodore 128, disk drive 1571, Thomson color monitor, almost new, in boxes, $495. Jag, Ext. 5080 or 751-1884 eves.

TURNTABLE - cassette player, radio modular system, Magnovox three-in-one, needs some work, $40 neg. Fred, Ext. 4353.

XT CLONE - IM RAM, 30M HD, math coproc., 2 5¼ drives w/monitor, $775; EGA color package, $225; w/above, $975. Norm Rohrig, 744-7981.

COMPUTER - IBM PC jr., 384k RAM, IBM pro printer, color monitor, 1 disk drive, desk, all software, $500 or best offer. Mano, Ext. 2429.

CONSOLE RADIO - R.P., S.W., Grundig, $25; large lawn sweeper, good cond., $25; maple desk or vanity, 42" x 20", $20. 878-6637.

STEREO RACK SYSTEM - Soundesign, dual cass. w/high-speed recording, turntable, tuner, graphic equalizer, $100. Kan, Ext. 3731.

ATARI SYSTEM - w/controls & 7 games incl. Bert & Ernie alpha game & control pad, $25/all. Lenny, 472-3254 after 3 p.m.

COMPUTER DESK - 46" x 28", w/2 shelves, locking storage, bookshelf, wood grain & black, like new, $50. Richie, Ext. 2175 or 734-7342.

TELEVISION - Sharp Linytron, color, 19", excel. cond., $80; monitor, monochrome, 12", Hyundai, hardly used, $50. Ext. 3102 or 3285.

TELEVISION - 12", portable, black & white, w/battery pack, electric, 3-way w/charger, $25. Albert, 727-6481.

PLOTTER - Hewlett Packard, color, $800; Macintosh Macvision Plus digitizer, b/w video camera, hardly used, $450/both. Ext. 7699 or 821-1435.

RADIO - Hallicrafter model 572, portable, 1951, best offer. O. Booker, Ext. 3082 or 727-5912.

AM/FM CASSETTE - Audiovox, $30; 40-watt booster amp, $15; pair coax speakers, $15; all for $50. Ron, Ext. 4553.

COMPUTER - Leading Edge D, PC-XT, 2 5¼" drives, 640KB RAM, MS-DOS 3.1, GW BASIC, word proc., no monitor, $200. Larry, Ext. 7759.

Miscellaneous

TABLE FAN - $10; floor fan, $30; trestle table, $50; twin size float, $10; chairs, $5; chaise lounge, $5. Tim, 744-2203.

CAR SEAT - 1 year old, $20. Ext. 3136.

CLOTHING - all kinds, children's, woman's sportswear, 2-piece skirt outfit, all brand-new, $2-$15; belts, $1/ea. Warren, 924-7552.

Lost & Found

LOST - golf ball retriever, in vicinity of Security, Bldg. 50, off Upton Rd. Paul, Ext. 4309.

Free

KITTENS - adorable, playful, all black, litter box trained, good w/dogs. Maggie, Ext. 3275 or 924-6681 after 6 p.m.

KITTEN - all black, male, 12 weeks old. Terri, Ext. 2484.

Car Pools

PLAINVIEW - Exit 43 LIE, 4th driver needed. Elliott, Ext. 2495.

Yard & Garage Sales

POQUOTT - antiques, tools, bicycles, clothing, jewelry, more, Sat., July 28, 21 Birchwood Rd. 928-0083.

Real Estate

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

For Rent

BROOKHAVEN HAMLET - top floor apt., l/r, bdrm., eik, full bath, priv. ent., quiet neighborhood, next to wildlife preserve, $750/mo. incl. all util. Dorry, 286-8689.

CALVERTON - 2-bdrm. townhouse, 1½ baths, w/w, appl., patio, deck, $690/mo. 878-0874 after 5 p.m.

EAST SETAUKET - 3-bdrm. ranch, 2 baths, 2-car gar., 5 new appl., 3VSD, $1,100/mo. + util., sec & refs. Ext. 4368 or 928-3371.

GREENPORT - 2-bdrm. apt. in renovated Victorian, water view, walk to village. 477-2814.

MIDDLE ISLAND - Artist Lake, 1-bdrm. condo, cac, washer/dryer, dishwasher, avail. Aug. 16, $650/mo. incl. heating & cooking gas. Zhang, Ext. 4357.

NORTH SHIRLEY - 2-rm. apt., furn. bdrm. w/skylight, kit., w/w, priv. ent., 1 person only, nonsmoker, no pets, 5 min to Lab & stores, $490/mo. incl. util. 281-8044.

PORT JEFFERSON VILLAGE - 4-5 bdrm. Col., cac, 2-car gar., beach, club, walk to village, harbor, excel. schools, avail. Aug. 331-3846.

RIDGE - furnished studio apt., w/w, kitchen, bath, priv. fenced-in yard, 5 min. from Lab, nonsmoker, $525/mo., avail. Sept. 1. Exit. 2673 or 744-8632.

ROCKY POINT - furn. studio apt., full kit., bath, l/r-bdrm. combo, nice area, one person, nonsmoker, $425/mo. incl. util. & cable. 744-8659.

SOUND BEACH - 2-bdrm. ranch, 1 bath, l/r, d/r, eik, bsmt., w/d, Miller Place Schools, $900/mo. + util. & sec. avail. 9/10. Ext. 3790 or 821-4553.

WADING RIVER - 3-room apt., eik, full bath, one person, no pets, nonsmoker, $500/mo. incl. all, avail. Sept. 8. Janet, Ext. 2345 or 929-3910.

HILTON HEAD, SC - 2-bdrm. condo, sleeps 6, 2 baths, tennis, golf, pool, beach, July-Sept., $425/wk, Oct & Nov. $300/wk. 689-5378.

For Sale

CORAM - Tanglewood Hills, 4-bdrm. ranch, 2 baths, 2-car gar., huge attic, gas heat, fenced, sewers, new carpet & paint, $130,000. 928-7154 after 7 p.m.

EAST MARION - beautiful 1 acre building lot, adjacent to Greenbelt. 325-0447.

JAMESPORT - ¾ acre building lot, walk to Sound, on cul-de-sac, beautiful area, price neg., terms avail. Kathy, Ext. 5312 or 929-8467.

MATTITUCK - 2 bdrm., full bsmt., gar., deck, porch, walk to beach, near marina, $178,000. Dave, Ext. 5460.

MEDFORD PINES - 2-bdrm. expandable ranch, cedar den w/cathedral ceiling, skylights, wood stove, shop, solar HW, gar., Andersen windows, ⅓ acre, 9 mi. to Lab, $120,000. 654-2617.

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

MIDDLE ISLAND - 3-bdrm. condo, 2 full baths, fenced patio, pool, tennis, wooded setting, cac, 6 min. to Lab, $104,900. 878-2604 eves.

RIDGE - 3-bdrm. townhouse, 1½ baths, cac, w/w, all appl., upstairs newly carpeted, encl. redwood patio, storage room, low monthly main., 5 min. to Lab, price reduced to $93,000. Mary, 924-4328.

SHOREHAM - 3-4 bdrm. ranch, 2½ baths, fin. bsmt., stone front, eik, l/r, d/r, 2 family rms., gar., SWR schools, low taxes, $159,000. 744-7981.

YAPHANK - Whispering Pines, 3-bdrm. townhouse, 2 baths, fp, bsmt., gar., cac, 5 min to Lab, near school, shopping & LIE. 924-2726.

Wanted

VOLUNTEERS - normal, healthy, male/female, 18-50 years old, for clinical research, 2 radioisotope tests, one week apart. $100/test. Ext. 3672.

DOG - tiny, short hair, Chihuahua or similar type. Chris, Ext. 4572, pp 0163 or 265-0163 after 5 p.m.

APARTMENT - 2-bdrm., Patchogue-Medford only, need end of Aug. Terry, Ext. 2484.

CAR COVER - outdoor cover for small car. John, Ext. 7671.

GAY WOMEN & MEN - Let's meet & socialize at the Brookhaven Center, Wed., Aug. 1, 5:30 p.m. Questions? Ellen, (718) 636-1021.

WALKMAN - am/fm w/cassette. Milan, Ext. 3046.

LAWN MOWERS - old, complete. Dan, Ext. 2012 or 698-7322.

STOVE - wood burning, airtight, w/outside air intake. Tom, Ext. 2823.

SAILBOAT PARTNER - for 30' sailboat in Mount Sinai. Ext. 7699.

PEOPLE INTERESTED - in toastmaster's group at BNL to meet, improve public speaking, provide support & feedback. Margaret Foster, Ext. 3644.

In Appreciation

We wish to express our appreciation to all the BNL staff who sent good wishes and prayers for Ed on his recent operation.

— Ed and Caryl MacDonald

I would like to thank my family at BNL for their support and help during the time of my son's death.

— Harriet Allen

Thank you to the Hospitality Committee for organizing such a nice going away party. It was good to get together one last time to say goodbye to our friends. We'll miss you!

— Ilana Berant, Pirchia Birmbaum, Pirjo-Liisa Kansikas and Barbara Wolf

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