BROOKHAVEN BULLETIN
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BROOKHAVEN NATIONAL LABORATORY

Arthur Schwarzschild, Former Physics Chairman, Dies

Former Physics Department Chairman Arthur Schwarzschild died at home on August 13 after a courageous bout with cancer. He was 57 years old.

During his 36-year-long association with the Lab, Schwarzschild went from summer student to Physics Department Chairman. He was a nuclear physicist, whose research interests included nuclear structure and nuclear reactions. Much of his experimental work was done on the Tandem Van de Graaff accelerator. Schwarzschild was instrumental in designing the Tandem's experimental areas, in establishing its reputation as a world-class facility and in creating its innovative outside users program.

In 1986, relativistic heavy ion research became a reality at BNL, with the completion of the transfer line that brings heavy ions from the Tandem to the Alternating Gradient Synchrotron (AGS). Suggested by Schwarzschild, the transfer line also paves the way for the Lab's proposed Relativistic Heavy Ion Collider (RHIC).

Laboratory Director Nicholas Samios noted many of Schwarzschild's accomplishments in the eulogy he delivered at the funeral services held August 14. "I feel privileged to have known Arthur, this extraordinary individual, for over 30 years, as a fellow student, colleague and friend," he said. "His forte was that he was an original thinker and loved to tinker with his hands. On any given problem you could always count on Arthur to come up with a novel or unusual approach — he was unorthodox.

"His research interests were broad," Samios continued, "the weak decays of light nuclei — helium-6, for example; the level structure of heavy nuclei; the search for quarks; the dynamics of collisions of all nuclei, from protons to gold. . . . [As Physics Department Chairman,] Arthur's insight, fundamental physics judgment and persuasive powers were key in establishing a long-range, exciting program at BNL in nuclear physics. . . . He will be missed, but remembered with admiration and affection."

Peter Bond, to whom Schwarzschild turned over the Physics Department chairmanship on July 20, said, "Arthur was a dynamic force in the Physics Department, both before and during his tenure as Chairman. One of his proudest accomplishments as Chairman was his role in converting the essentially defunct nuclear physics program at the Tandem into BNL's burgeoning relativistic heavy ion program. All of us in the Physics Department will miss him, his incisive comments and his remarkable instinct for physics."

Another Tandem colleague, Senior Physicist Chellis Chasman, recalling Schwarzschild's many scientific accomplishments, said, "Arthur's work was characterized by his unfailing intuition for where important discovery could be uncovered, by his deep faith that a simple explanation could be found, and by his dedication in acquiring the skills and technology required to illuminate it."

Arthur Schwarzschild

Arthur Schwarzschild first came to BNL in 1951 as a summer student in the Physics Department, after earning his A.B. from Columbia College. He completed his M.A. in 1956 and his Ph.D. in Physics in 1957, both at Columbia University, where he remained as a Research Associate until 1958.

In 1958, Schwarzschild returned to BNL's Physics Department as a Research Associate. He was promoted to Assistant Physicist in 1960, Associate Physicist in 1961, Physicist in 1963, Physicist with tenure in 1964 and Senior Physicist in 1970.

Schwarzschild was named Associate Group Leader of the Tandem Research Group in 1971 and then Deputy Chairman of the Physics Department, responsible for nuclear physics, in 1978. He assumed the Chairmanship in 1981.

His Laboratory committee responsibilities included serving on the Brookhaven Council from 1969-72; chairing the Program Advisory Committee of the Tandem Outside Users Group from 1973-84; and chairing the Search Committee for Laboratory Director during the fall of 1981.

From 1979-80, as head of what came to be known as the Schwarzschild Committee, which examined the Lab's salary and wage structure for non-scientific staff, he made a lasting contribution to the welfare of all Lab employees. The committee's in-depth analysis resulted in a new salary structure, as well as the creation of two new avenues for the resolution of employees' work-related problems: the position of Employee Relations Counselor and the Employee Relations Committee.

In addition to his activities at BNL, Schwarzschild was a lecturer at the State University of New York at Stony Brook, from 1962-63, and a consultant

(Continued on page 2)

Visitors' View

Physicists Martin Lee and Scott Clearwater

Your accelerator is down with a bad case of residual gas atoms. Instead of soundly accelerating a beam smoothly around its intestine, all your accelerator does is moan and groan as its particle beam thrashes about and crashes in the belly of the beast. Your accelerator needs a doctor.

"I am an accelerator doctor," explained Martin Lee, in all seriousness. "When an accelerator gets sick, I make it well again."

Lee, an accelerator theorist at the Stanford Linear Accelerator Center (SLAC) was one of the keynote speakers at the Workshop on Model-Based Accelerator Controls, held at the Lab August 17-18.

The workshop was held in response to the increasing need to better understand, control and predict accelerator behavior and to the growing interest in using expert systems and modeling-based control. About 45 accelerator physicists and computer scientists, half of whom came from other laboratories and universities, attended.

As his patients can't come to him, Lee is one doctor who is sick and tired of making house calls. "After doctoring accelerators so many times, you get bored with it — it becomes routine, and I'd rather be doing something, anything else," he said.

So he and Scott Clearwater, a Los Alamos National Laboratory experimental particle physicist who also addressed the Workshop, are doing something: They are in the process of replacing Lee and other accelerator physicists with GOLD.

That acronym stands for Generic Orbit and Lattice Debugger, an automated, computer-control system for accelerators. As an accelerator physicist does, GOLD analyzes and interprets data from an accelerator to get it started, make it run better or bring it back up after the machine goes down.

No conventional computer program, GOLD is an artificial intelligence system known as an "expert system," one that can reason and give expert-level advice normally available only from human experts.

As these computer programs are new, expert systems have so far been applied to a limited number of fields. Some have been devised for medical diagnosis of human disease, for example. But this is the first time an expert system has been assembled to control an accelerator — and diagnose what can go wrong with it and then right it. It is also one of the first expert systems incorporating a mathematical model, instead of just a compilation of facts.

Lee and Clearwater first demonstrated GOLD in the SLAC control room on August 14, just before coming to the workshop. "What normally takes me several hours to diagnose, GOLD does in a few minutes," said Lee. As beam time is expensive and limited, both users and accelerator physicists wish to bring a downed accelerator back up to speed as quickly as possible.

Clearwater, who is now stationed at Stanford University's Knowledge Systems Laboratory, introduced himself to Lee about five years ago, while the former was a Stanford graduate student at SLAC. "Martin was deliver-

(Continued on page 2)

Mort Rosen

At the Workshop on Model-Based Accelerator Controls, are: (from left) keynote speaker Martin Lee, Stanford Linear Accelerator Center; workshop organizer Dennis Weygand, Applied Mathematics Department, BNL; workshop organizer and keynote speaker Eva Bozoki, National Synchrotron Light Source Department, BNL; workshop organizer Satinder Sidhu, Alternating Gradient Synchrotron Department, BNL; and workshop speaker Scott Clearwater, Los Alamos National Laboratory.

Patent Awarded

U.S. Patent No. 4,654,183 has been awarded to **Ady Hershcovitch**, Alternating Gradient Synchrotron Department, for inventing a way to produce an intense, negative hydrogen (H^-) ion beam with spin polarized protons.

For some years, these beams have been increasingly in demand for high energy physics experimental research. Until now, though, they could only be made in several steps. First a neutral hydrogen (H^0) ion beam had to be produced, then polarized and then converted to H^-, a process that was cumbersome and inefficient, since much of the beam's intensity was lost during the conversion.

The new method uses a laser light beam to intersect an H^- ion beam, while a uniform magnetic field is provided around the intersection. The H^- ions in the magnetic field can be divided into two groups, depending on their proton spin alignment with or opposite to the magnetic field. The laser light neutralizes only one group and leaves intact H^- ions whose proton spin is in the opposite direction. The H^- ions are then guided by magnet away from the H^0 atoms and can be directed toward a predetermined objective.

This direct, one-step method of producing an H^- ion spin-polarized beam can provide order of magnitude higher intensities, since the photodetachment process is essentially 100% efficient and since multi-ampere H^- ion beams have been produced.

Note: Ady Hershcovitch is involved with a possible experiment at CERN for which an 1 kW cw Nd-glass YAG laser is needed. Please call Ext. 4531 if you have any helpful information on this.

Baseball Gives Physicist a Turn at Bat

Robert Adair is in the midst of an accomplished life inside physics: Now Associate Director for High Energy and Nuclear Physics, he came to BNL 38 years ago as a graduate student. Since 1949, Adair has experimented here at the Lab, taught at Yale University and been Chairman of the Physics Department at Yale. In addition to his ongoing duties at BNL and Yale, he chairs the Physics Section of the National Academy of Science.

What more could be added? As of July 23, Adair was designated Physicist to baseball's National League (NL).

"I am having fun with this," said Adair, who accepted the position on a volunteer basis. "Bart Giamatti [President of the NL] is an old friend, and he realized that there are some areas of the game where an understanding of underlying physical principles can help a little."

Giamatti, who moved from the presidency of Yale to the presidency of the NL last year, designated Adair "Physicist to the League" and asked his former Yale colleague to assess the physics of corked and aluminum bats. Adair has already delivered one paper, titled "Of Corks and Bats," to the NL president.

Currently, Adair is preparing his report on aluminum bats. He also recently received a ball from the president's office, which, in this season of rampant home run hitting, will be tested for liveliness.

To make a corked bat, which is illegal in baseball, a player drills a hole in the hitting end of the bat. The hole, which is about an inch wide, runs about six inches deep, as measured from the end of the bat. The hole is filled with cork or cork balls and then plugged with a new piece of wood.

To hide the modification the bat head is resanded and revarnished. Tobacco juice, once a common commodity in dugouts, is also used to discolor and hide the plug.

Once the modifications are complete, the corked bat is indistinguishable from a legal bat unless it is cut open (the old league practice) or x-rayed (the new league practice).

With respect to the impact of corked bats, Adair summarized his duties this way, "The question is: Is the illegal thing really dangerous — does it really affect the integrity of the game — or is it fundamentally innocuous?"

Professional ball players say if you can hit a ball to the outfield wall with a legal bat, you can hit the ball over the wall with a corked bat.

Adair agrees that a corked bat does change the way a batter can hit the ball, but he concluded the changes do not threaten the integrity of baseball. Adair came to this conclusion by studying the physics of bats and looking at what happens when a bat hits a baseball.

Just before the collision between a major league pitch and a good hard swing, the ball and bat are the same size, about two-and-a-half inches in diameter. Once the bat makes contact, the ball is squashed to about one half its original diameter. As it leaves the bat, the ball springs back into shape and begins traveling towards a fielder's mitt, or the outfield grass or parking lot beyond the fence.

Mort Rosen

Robert Adair

Meanwhile, back at home plate, the bat has been deformed too, but only slightly. In the area of contact with the ball, the wood of the bat crushes about 1/32 of an inch. The center of the bat is not involved in the hit, because the core, cork or wood, does not "feel" it.

According to Adair, the real effect of corking is to create a lighter bat. "You could choke up or use a slightly lighter bat and really get about the same effect," said Adair.

To prove his point that a corked bat is a light bat, Adair analyzed the properties of a typical wooden bat, corked and uncorked. "I had a devil of a time finding a wooden bat. I went to about four sporting stores, and all they had were rows of aluminum bats," he said.

Adair compared six parameters of the corked bat and other legal bats. In his paper to Giamatti, Adair concluded, "The advantages of the corked bat over the original bat (and disadvantages) are just those of a lighter bat."

Adair discussed in conversation the effect of bat weight when a ball is hit. If a player could swing a light bat at the same speed as a heavy bat, then, "the heavier the bat, the further you hit 'em," said Adair. Unfortunately, heavier bats are harder to swing and are harder to control than lighter bats.

As an example, Adair, who researched his project in both physics journals and sports writing, related a 1961 "test" in which Roger Marris hit with five bats, light to heavy.

Marris, who had hit a record 61 home runs that year, hit with his own 33-ounce bat, as the lightest, and with a copy of Babe Ruth's old record-setting bat, which, at 47 ounces, was the heaviest.

In this test, the heavier bat drove balls further. "But Marris still went back to his 33-ounce bat for hostile pitching," Adair noted.

What is most important is matching bats to players, and for this there is no science, only players who know the correct feel.

As a kid, Adair listened to baseball games on the radio, which were played by players who had that touch, "I think the first team I really rooted for was the St. Louis Cardinals and the old gashouse gang: Paul and Dizzy Dean, Ducky Medwick, Franklin Frish, Leo Durocher and Collins at first base," remembered Adair.

These days, who does Adair root for? "My wife is from Boston, and so I am forced to be a Red Sox fan. But if you really want to know, I have a soft spot for football's Green Bay Packers." — Ric Lewit

Visitors' View (Cont'd)

ing the beam — however he did it, I didn't care at the time, just so long as I had it for my experiments," explained Clearwater. "When I got to know Martin, I got interested in the problems that occur in trying to deliver that beam."

Solving problems of beam delivery using artificial intelligence and expert systems birthed a collaboration between Clearwater and Lee. Commented Lee, "We changed roles: Now I am the impatient user and Scott has to deliver me a program. Give me a program and I'll give you your beam."

"I am the expert that Scott wants to simulate," added Lee. Knowledge obtained from human experts, such as Lee, is represented in expert systems by rules of thumb, which the computer uses to make reasoned decisions.

Unlike an expert system, a conventional program is inflexible and therefore limited to solving only the problems that the programmer anticipated.

An expert system, on the other hand, tells the computer what information it needs to know to solve almost any problem within its field. The computer first obtains the needed information and then uses that knowledge to make a decision. Because it can reason and not just recite a memorized solution as a conventional program would, an expert system can solve problems that were not predicted when the program was written.

In addition to the accelerator expert's rules and reasoning ability, GOLD is composed of a mathematical model of an accelerator and its beam. In solving accelerator control problems, GOLD asks the model for the information it needs to understand the beam's behavior.

In devising the model and assembling GOLD, Lee and Clearwater have learned more about accelerator design, control and engineering. As they are considering patenting their expert system, they won't disclose what they have discovered, but "all we will say is that we call it a GOLDen rule," added Lee.

— Marsha Belford

Information Desk: N.Y. Institute Of Technology

Representatives from the New York Institute of Technology (NYIT) will be in Berkner Hall on Tuesday, August 25, from 11:30 a.m. until 2 p.m. An information desk will be located near the Cafeteria, and employees' questions about NYIT's educational programs will be welcome.

AA Meetings

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

Schwarzschild (Cont'd)

to New York University, from 1964-80. He also was a NATO Fellow from 1966-67 at the Weizmann Institute of Science in Israel.

From 1981-83, he served as a member of the Nuclear Science Advisory Committee, which advises the Department of Energy and the National Science Foundation about national policy issues in nuclear physics. In addition, he belonged to the Argonne Universities Association Committee at Argonne National Laboratory from 1981-83.

Schwarzschild was a Fellow of the American Physical Society, and he chaired the Committee on Nuclear Science Resources in its Nuclear Physics Division from 1977-78. He was also a Fellow of the New York Academy of Sciences, as well as a member of both Sigma Xi and the American Association for the Advancement of Science.

He resided in Patchogue. He is survived by his wife Liliane; his mother, Helen, of Brooklyn; a daughter, Karen Simon, of St. Louis, Missouri; two sons, Roger, of Amherst, Massachusetts, and Marc, of Highland Park, New Jersey; and three grandchildren, Daniel, Joshua and Nicole.

Contributions in memory of Arthur Schwarzschild can be made to the recently established Children's Medical Center at the University Hospital of the State University of New York at Stony Brook.

Arrivals & Departures

Arrivals

Patrice Benjamin ..... AGS
Robert L. Dorn ..... MIS
Anne Dunbar ..... AGS
Chyan-Long Lin ..... Physics
James A. Marsch ..... NSLS
John Walsh ..... Central Shops

Departures

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

Kazumichi Nakagawa ..... Chemistry
Matesh N. Varma ..... S&EP
Kurt A. Wiesenfeld ..... Physics

BNL's Fabulous Forty

The BNL we know today is the sum of thousands of events that have taken place here since 1947. This sampling shows the variety of events — from the monumental to to the minor — that have occurred during the month of August, throughout the Lab's 40-year history.

August 14 & 15, 1947 — BNL's first large-scale scientific conference attracted 138 visiting scientists who met with members of Lab staff to discuss problems of "Short Pulse Techniques and High Speed Counters."

August 13, 1948 — Construction of the Hot Laboratory, Bldg. 801, began.

August 22, 1950 — The Brookhaven Graphite Research Reactor (BGRR) began operating at 2:30 a.m. when Lyle Borst signaled for removal of the control rods, thereby starting the first chain reaction in the reactor.

August 11, 1947 — Lyle Borst manipulated the controls as ground was broken for the Brookhaven Graphite Research Reactor, the first chain-reacting "atomic pile" built specifically for peacetime research in atomic energy.

August 12, 1951 — A BNL press release described how vitamin B12, used to combat pernicious anemia, had been subjected to neutron bombardment in the BGRR and made radioactive as a research tool.

August 1, 1953 — Research with the Cosmotron had produced clear evidence for the production of neutral V-particles, it was announced in a BNL press release.

August 8-20, 1955 — BNL scientists delivered 16 papers at the international "Atoms for Peace" conference in Geneva, Switzerland.

August 8, 1957 — Paul Hunt and his Rock Candy Moutaineers provided the music for a square dance in the gym.

August 6-14, 1959 — A summer institute on nuclear engineering, hosted by BNL and sponsored by the American Society of Engineering Education, was attended by 32 people.

August 8, 1961 — The Bulletin Board invited all those interested in folk songs to "bring your guitar and banjo and share the fun" of the new Folk Song Club.

August 30, 1962 — The work of breaching the main magnet enclosure of the Alternating Gradient Synchrotron (AGS), to provide a beam channel to the 80-inch Bubble Chamber in the North Experimental Area, was completed.

August 20, 1963 — A BNL/Yale team of physicists working at the AGS announced the observation of the production a new anti-particle of matter, the anti-Xi-zero.

August 1964 — Multiturn injection was first accomplished in the AGS, resulting in higher proton intensities.

Augst 25, 1965 — The Cooking Exchange announced via the Bulletin Board that its cookbook, *The Glorious World of International Cookery*, was on sale for $2 a copy.

August 8, 1966 — The new north entry gate opened to incoming traffic.

August 31, 1967 — The Bulletin Board warned that traffic on William Floyd Parkway would be tied up for two weeks while work was done on the crossing for the "new" expressway.

August 4, 1969 — During a one-hour period, a record 2.49 inches of rain fell on BNL, causing flash flooding in many Lab areas.

August 17, 1972 — In the Brookhaven Bulletin, the Biology team of Harold Smith and Peter Carlson announced the development of parasexual hybridization — a method for growing a mature hybrid plant from the fused genetic cells of two different species, completely circumventing the normal sexual and reproductive processes.

August 26, 1973 — Jeanne C. Riley, who had the hit record "Harper Valley PTA," performed at BNL in a "concert on the green."

August 9, 1976 — About 45 people, mostly from Shirley and Mastic Beach, took refuge from Hurricane Belle in the Brookhaven Center.

August 5, 1977 — The Bulletin reported that, in the 12-month period ending June 30 — the coldest since 1967 — the Lab had burned 838,730 gallons less fuel than in 1967 when 0.4 million fewer square feet had to be heated.

August 11, 1978 — The cable winding facility for the Power Transmission Project successfully completed its trial run.

August 4 & 5, 1979 — Some 4,700 people came to tour the Lab and to visit with two special guests: a duplicate of *Star Wars* robot R2D2 and a costumed Darth Vader.

August 12, 1981 — Beam was circulated for the first time in the vacuum ultraviolet ring of the National Synchrotron Light Source (NSLS).

August 19, 1985 — The design energy of 2.5 billion electron volts was achieved for the first time in the x-ray ring of the NSLS.

August 8 & 9, 1986 — The Medical Department hosted an international conference on "Short-Term Health Effects of Reactor Accidents: Chernobyl."

Participation Awards

You can trade on your hours of practice, perspiration and performance.

If you participate in club activities sponsored by the Brookhaven Employees Recreation Association (BERA), you may be eligible for BERA Participation Awards. Most BERA clubs have established participation requirements for their activities, and members who have met those requirements are issued Participation Award cards at the end of each activity's season.

Take your Participation Award cards to the BERA Sales Office, open from 9 a.m. to 2 p.m. in Berkner Hall, where you can trade them for official BERA athletic gear. To make a trade, you must have at least one card. Each card is worth $2; so if you don't have enough cards for an item, you can pay the difference. Each card is valid for five years from the date of issue.

At present, the following selection is available:

- White, blue or red gym shorts: 3 cards.
- Red scrimmage vests: 6 cards.
- Navy sweatpants: 6 cards.
- Navy, hooded, long sleeve, pullover sweatshirts: 8 cards.
- White, short sleeve, pullover sweatshirts: 7 cards.
- Burgundy, lined windbreakers: 10 cards.
- White gym bags: 5 cards.

For more information, contact Louisa Barone, at the BERA Sales Office, Ext.3347.

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IBEW Meeting

Local 2230, IBEW, will hold its regular monthly meeting on August 24, at 6 p.m., in the Knights of Columbus Hall, Railroad Avenue, Patchogue. On the agenda will be regular business, committee reports and the president's report.

Camera Club

The Camera Club meets at the Recreation Bldg. on the fourth Wednesday of each month. The next meeting will be Wednesday, August 26, at 5:30 p.m. A discussion is planned on the club's activity at the 40th Anniversary picnic. New members and visitors are always welcome. For more information on the club, contact Lew Jacobson, Ext. 5193.

Golf

The penultimate tournament of the BGA season will be held on Monday, September 14, at the Hampton Hills Golf and Country Club in Riverhead. Tee times will begin at 11:30 a.m.

For reservations, contact John Nagy, Ext. 2667, Bldg. 475. Send him the names of those for whom you are signing up, $13 greens fee for each person, in a check payable to BERA Golf Association, and your preferred tee-off time. Confirmation will be sent back to you along with your tee time and a map to the course. The sign-up deadline is Friday, August 28.

There will also be a $1 entry fee for BGA members and a $2 entry fee for non-members, payable at the first tee. Electric carts are recommended since the course is very hilly. They can be rented from the pro shop at $10 per person (no singles).

On July 30, 64 golfers played in the tournament at Rock Hill. Low gross winners in flights A to D were Doug Sweely (81), Don Cassidy and Howard Vetter (91), Mike Clancy (96) and Joe Carbonaro (94). Winners for low net by flight were Mike Losquadro (67), Bob Glasmann, (71), Bob Ritter (69) and Paul Mohn (67). Mike Clancy and Eldon Schmidt had the closest-to-pin shots. Bruce Kavan and Brant Johnson won the longest drive contests.

Afro-American Culture Club

The Afro-American Culture Club is sponsoring a trip to the annual Football Classic for the Whitney M. Young Jr. Memorial Scholarship Fund, to be held at Yankee Stadium on September 12. The football classic this year features Grambling State University, Louisiana, versus Central State University, Ohio.

Tickets are $45 each for field and loge level box seats; the price includes transportation via luxury coach and a snack en route. The bus will depart BNL at 3 p.m. and return immediately following the game. Upon returning to the Lab, an after-game celebration will be held at the Recreation Bldg.

To purchase tickets, send your check or money order by August 31 to Leon Lawrence, Bldg. 197B; for more information contact Lawrence at Ext. 2907 or at home at 698-5759.

PSI News

Professional Secretaries International (PSI), Upton Chapter, celebrated its fifth anniversary at an installation dinner on June 15. One of the guest speakers was Henrietta Acampora, Brookhaven Town Supervisor. Another was Certified Professional Secretary Carolyn S. Hayes, past International President of PSI, who spoke on "What Makes You Think You Are a Professional?"

The following officers were installed for 1987-88:

President
Geraldine Callister, DNE
Vice President
Susan Carlsen, S&EP
Recording Secretary
Nancy Griffin, S&SD
Corresponding Secretary
Deidre Seymore, Cent. Shops
Treasurer
Pat Oster, AGS

Note to Diners

The Cafeteria will be closed on Saturday, August 22. On that day, snack bar service will be available from 9 a.m. to 2 p.m. at the Brookhaven Center.

BERA Craft Exhibit Coming in October

The BERA Art Committe is organizing its first Employee Craft Exhibit since February 1984, which will be held in Berkner Hall, Room B, October 12-16. Employees and kin are invited to show their crafts and demonstrate their skills in weaving, quilting, pottery, stained glass, batik, metalsmithing, etc. Entry forms will be available in the Bulletin and at the BERA Sales Office very soon.

Cafeteria Menu

Week of August 24

Monday, August 24		
French onion soup	(cup)	.75
	(bowl)	.95
BBQ chicken w/1 veg.		2.95
Pepper steak over confetti rice		2.85
Pasta primavera salad (lite-weight)		2.25
Hot deli: Roast beef	(bread)	2.55
	(roll)	2.65
	(hero)	2.75
Tuesday, August 25		
Turkey noodle soup	(cup)	.75
	(bowl)	.95
Pork cutlet w/dressing & 1 veg.		2.95
Sweet & sour chicken over rice		2.95
Avocado half w/turkey salad (lite-weight)		2.25
Hot deli: Monte Cristo		2.55
Wednesday, August 26		
Potato & bacon chowder	(cup)	.75
	(bowl)	.95
Spaghetti w/tomato sauce & garlic bread (All-you-can-eat, no take-outs)		2.95
Tacos		.85/ea.
Hot vegetable plate (lite-weight)		2.25
Hot deli: Grilled Reuben		2.55
Thursday, August 27		
Tomato beef vegetable soup	(cup)	.75
	(bowl)	.95
Chicken stir-fry w/snow peas		2.95
Super sausage pizza		1.00/slice
Broccoli & cheese quiche (lite-weight)		2.85
Hot deli: Baked ham	(bread)	2.55
	(roll)	2.65
	(hero)	2.75
Friday, August 28		
Seafood gumbo	(cup)	.75
	(bowl)	.95
Shrimp scampi w/1 veg.		2.95
Yankee pot roast w/1 veg.		2.85
Melon & fruit plate (lite-weight)		2.25
Hot deli: Chili dogs		.95/ea.

Classified Advertisements

Placement Notices

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

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

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

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

LABORATORY RECRUITMENT - Opportunities for Laboratory employees only.

2654. CHAUFFEUR - Must have valid New York State Driver's License. Staff Services Division.

OPEN RECRUITMENT - Opportunities for Laboratory employees and outside applicants.

2655. SCIENTIFIC ASSOCIATE POSITION - Requires BS in biology, a related field, or equivalent experience. Will work with group on problems of genetic toxicology. Duties involve rodent handling, tissue sampling and preparation, extensive microscopic evaluation of various cytogenetic indicators of genotoxic damage, and computer data entry and verification. (One year appointment.) Medical Department.

2656. ENGINEERING POSITION - Requires BS in architecture and extensive experience performing a broad range of architectural activities; including the preparation of preliminary sketches, working drawings, specifications, and estimates for commercial and industrial-type buildings. Must be knowledgeable in all types of construction. CAD experience helpful. Plant Engineering Division.

2657. ELECTRICIAN A - Under minimum supervision lays out, constructs, installs, maintains, repairs and operates systems, equipment, controls and related devices. Requires minimum of five years' industrial electrician experience. Plant Engineering Division.

Autos & Auto Supplies

72 FORD VAN - long bed, heavy duty, $800. Don, Ext. 4009 or 286-0919.

81 PLYMOUTH RELIANT - 71k mi., 4 dr., white, a/t, a/c, good cond., no rust, asking $1,900., avail. 8/23. A. Bartl, Ext. 3860/3772.

73 TRIUMPH TR6 - red, convertible, 4 spd., must sell, $6,000. or best offer. 543-2835 after 6 p.m.

84 SUBARU GL - 4 cyl., 5 spd., a/c, excel. cond., $5,000. Jo Ann, Ext. 4120 or 588-8492.

75 MERCEDES 300D - lt. grey w/red int., 4 dr., all options, $3,200. 286-0065.

CARBURETOR - Holley 600CFM, 4BBL w/GM quadrajet adapter, $140; Datsun 1200, 3/$250., w/extra parts. Dave, Ext. 4636 or 475-2626.

81 HONDA CB400T - 10k mi., $650 or best offer. Ext. 5365 days, Ext. 4875 eves.

84 TOYOTA COROLLA LE - a/c, am/fm, new tires, brakes, 5 spd., 54k mi., good cond. 289-0489.

83 MERCURY LYNX - station wagon, 4 spd., a/c, am/fm stereo cass., new brakes, tires, tuned & inspected, excel., $2,900. Ext. 4153 or 732-5829.

81 HONDA ACCORD - a/t, loaded, 96k mi., asking $3,000; 78 Pinto Wagon, 4 spd., 78k mi., $500. Walter. Ext. 3499 or 757-6392.

81 PLYMOUTH RELIANT K - 73k mi., 4 cyl., 4 dr., a/t, runs well, excel. body, new battery, $2,200. Ext. 5364 days, Ext. 3131 after 6 p.m.

80 DATSUN 210 - 5 spd., a/c, many new parts, best offer. Ext. 4859.

80 CAMARO - 3 spd., p/s, p/b, new tires, a/c, T-tops, black, $2,900. Ext. 2621 or 281-0360 eves.

79 JEEP CHEROKEE - 360, 2 dr., a/t, a/c, cruise, am/fm cass., high mi., asking $3,200. Ken, Ext. 2350 or 588-2389.

78 FORD GRANADA - a/c, p/s, p/b, 89k mi., good cond., asking $1,000. Tom, Ext. 4440.

79 THUNDERBIRD - black, p/s, p/b, a/c, am/fm, excel. cond., $1,800. Jerry, Ext. 7427 or 475-5591 after 5 p.m.

78 CUTLASS SUPREME - V8, p/s, p/b, a/c, stereo, sunroof, looks good, runs well, $1,700. Ext. 5163 or 475-6964 after 6 p.m.

78 MERCURY COUGAR - p/b, p/s, a/t, am/fm cass., good cond., $1,350. Ext. 4393 days, Ext. 3090 after 6 p.m.

76 PONTIAC FIREBIRD - red, 350, p/s, p/b, good cond., $2,300 neg. Robin, 581-7733 days, or 475-5591 eves.

75 JEEP WAGONEER - 4WD, tow package, $1,350. 874-3796.

74 CAPRI - decor. group, sunroof, s/t; 1977 Camaro, black w/camel int., new tires, a/t, mag wheels, well maint. 744-0725.

74 DODGE DART - many new parts, not running, towable, $25. Monika, 821-3243.

70 CHEVROLET CHEVELLE - V8, p/s, a/c, runs well, $250. 475-6797.

TRUCK CAP - for Chevy stepside, 6½' bed, good cond., $225. Steve, Ext. 5163 or 475-6964.

74 BMW 2002 - not running, could be repaired, good for parts, rusted rear suspension. C. Flagg, Ext. 3128.

TRUCK CAP - for 8' bed, w/rear door, asking $275. 473-1658 after 6 p.m.

80 DODGE ASPEN WAGON - am/fm cass., a/c, new tires, 78k mi., $800. Craig, Ext. 4028 or 938-7390 after 5 p.m.

TIRES - 5 P205R70 steel-belted Bridgestones, mounted on white wagon wheels, 2k mi., 654-5298, leave message.

KAWASAKI 650 CSR - 7k mi., garaged, must sell; Honda 750 Nighthawk, 7k mi., like new, garaged; 473-9357 after 7 p.m.

79 CAPRI - 6 cyl., am/fm stereo, a/t, a/c, p/s, p/b, hatchback, louvers, $2,000. 563-2751 after 5 p.m.

78 PINTO - runs well, new muffler, must sell, $500. Ext. 2865 days, Ext. 4873 after 6 p.m.

84 MOTOR HOME - 34' Cross Country, 6.5 gen., dual air, twin beds, microwave, more, 23k mi., Chevette to match w/hitch, $36,500. 727-2302.

81 MUSTANG - 4 cyl., T-top, runs well, great body, $2,100. neg. 277-6200 days, 654-5584 eves.

79 CAMARO LT - 350 V8, p/s, p/b, a/t, a/c, new brakes, battery, tires, muffler, carb., fuel pump, hoses, $1,800. Joe, Ext. 3464 or 281-7683.

TENT TRAILER - Apache Mesa III, sleeps 6, stove, ice box, awning, extras, $800. Greg, Ext. 3472.

TIRES - (2) 165x15 Michelin steel-belted, like new, $55. Andy, Ext. 3514 or 286-8814 after 5 p.m.

72 PLYMOUTH - station wagon, runs well, $400. or best offer. Ext. 2022 or 744-8386.

78 OLDS DELTA - diesel, good cond., $800. or best offer. 298-5515.

83 MUSTANG GT - a/c, full power, T-top, Alpine stereo, more, 61k mi., Ray, Ext. 4986 or 884-7879.

79 DATSUN 510 - wagon, runs well, $300. or best offer. Ext. 4345 or 473-9124 eves.

77 BUICK REGAL - 2 dr., a/t, p/s, p/b, sunroof, am/fm cass., a/c, $1,000. Helen, Ext. 2601.

73 DATSUN B-710 - runs well, $500. Ext. 4597 or 878-1255.

81 TOYOTA TERCEL - 4 dr., a/t, am/fm stereo radio. 289-8182 days or eves.

78 DATSUN B210 - hatchback, 4 spd., good transportation, $450. Anne, Ext. 5055 or 286-0919.

85 HONDA MAGNA 500 - 1200 mi., w/2 helmets, asking $2,100; stock rims for 1987 Mazda pickup, 14x6, $5/each. Rob, 928-1209.

75 CADILLAC ELDORADO - 75k mi., runs well, must sell, $800. Rob, 924-4262 leave message.

TIRES - for Ford truck, 10.5Lt/15, mounted on 15x7" 5-lug white spoke rims. Ext. 2075 or 473-4937 after 6 p.m.

VETTER FAIRING - Quicksilver, glass, black frame, mounted, full lighting, fits 450-750cc motorcycles, excel. Ext. 5110 or 363-2641.

77 CADILLAC SEDAN DEVILLE - white, red roof w/leather int., excel. cond., high mi., $3,000. Jim, Ext. 4040 or 289-0876.

79 AMC SPIRIT - 32k orig. mi., runs well, needs left fender, $500. Neal, 286-2435.

84 RENAULT ENCORE - hatchback, 35 mpg, am/fm cass., a/c, 4 spd., excel. cond., $2,700. 473-7460.

80 VW RABBIT - 5 dr., fuel inj., a/c, excel. cond., $1,500. Kale, Ext. 4960.

80 PONTIAC PHOENIX - 4 dr., a/t, $1,000. Doug, Ext. 2382 or 744-1760.

Boats & Marine Supplies

16' WINNER-FIBERGLASS BOWRIDER - 40 h.p. Evinrude, very clean, asking $950. 286-0065.

15' AQUAGLASS - 1971, hull design like Boston Whaler, 1976 85 h.p. Mercury O/B, 1976 Highlander trailer, good cond., $2,500. 286-1709.

27' SILVERTON - 225 FWC Chrysler, flying bridge, trim tabs, very clean, in water, $9,000. 325-0681.

22' SEARAY - 1974, hardtop, new canvas, trailer, extras, excel. cond., $8,000 firm. 369-2838 after 4:30 p.m.

25' CHRISCRAFT - 1975, sleeps 4, stand-up head, hot & cold water, $9,000. 475-8162 eves.

34' HOUSEBOAT - 1969 Nautaline, excel. cond. Charlie, 281-9138.

14'6" SEA KAYAK - 24" wide, bay & surf, good cond., Poseidon Imports, "Petrel." Ernie, Ext. 3357 or 281-7873.

25' MACHI - 1984, 260 OMC, sleeps 4, galley head, hot water, dockside, DF/VHF, $22,000 or best offer. Ext. 4345 or 473-9124 eves.

38' TRIMARAN - ketch, 6 sails, twin outboards, excel. live aboard, $18,000 or best offer. Pete, 751-4323.

15' SAILBOAT - Newport Surprise, clean, in water, new jib & cover. Andy, 286-8698.

Miscellaneous

PARAKEETS - pair of blue & green, young, w/cage, best offer. Rob, 286-1367.

SHOPSMITH MARK 2 - w/attachments, $140. Joe, Ext. 4028 or 821-3669.

SOFA - 120", velvet, coral, circular, $100. 286-0065.

RIDING HELMET - various toys, basketball game, organ, sled. Ext. 3723/3125.

ELECTRONIC TYPEWRITER - Swintec 816, memory, LCD daisy wheels, accessories, computer ready, excel. Brenda, 821-0159.

TICKETS - 4, U.S. Open, tennis, 9/3. Ext. 4771.

SPORTCOATS - 42L, beige, grey, new, $40; slacks, 32/32, navy, tan, $10. Ext. 4107.

QUARTZ HEATER - never used, $45; dehydrator for drying fruit or vegetables, $50. Ext. 4898.

REFRIGERATOR - Hotpoint, 21 cu. ft., $350; gas range, Welbuilt, $150; both for $400. Mike, Ext. 5035.

BLACK & WHITE TV - 9", portable, $25 or best offer. Ext. 2865 days, Ext. 4873 after 6 p.m.

COLOR TV - 19" RCA, electronic tuning, not cable ready, $150. 654-0924.

COLOR TV - 19" Panasonic, good cond., $75. 751-1884.

STAINLESS KITCHEN SINK - w/mount ring, $15; bicycles, 1 man's, 1 woman's, 3-speed, 26", $10/each. Victor, Ext. 2395.

ATARI 800XL - 1050 disc drive, 1027 printer, Sakata monitor, programs, computer table, $650. 878-8144.

COMPACT DISCS - Whitney Houston, Cyndi Lauper, etc. cheap. 732-5451.

TICKETS - (4) Met Opera, Elisir D'Amoure, balcony, Oct. 2, $23/each. Dave, Ext. 2694/4394 or 941-9022.

COLOR TV - 25" Zenith, console, working, $25. Mike, 736-2949.

ELECTRIC RANGE - copper Tappan, 30", w/brush chrome top, hood, clock & autotimer, $150. 878-4471.

PORTABLE CAGE - for air travel, small dog or cat, $25. Ext. 3850.

ANTIQUES - paintings, crafts, misc. items, 50 years accumulation. Polly, 744-2322.

DINETTE CHAIRS - brown navgahyde swivel, $50/each. 475-4792.

DINING ROOM SET - 6-pieces, table w/4 chairs, hutch, $500. Martha, Ext. 7655 or 584-7206.

LIVING ROOM/DEN SET - contemp. sofa, loveseat, 2 custom-made mica tables, very good cond., $300. Ext. 2494.

FIREPLACE - free-standing, "0" wall clearance, 10" SS, insulated chimney, screen & grate, complete, $400. 475-1548.

AIR CONDITIONER - Westinghouse, 6000 Btu, window or wall mounting. 473-9357 after 7 p.m.

RIDING LAWN MOWER - Craftsman, 5 h.p., runs, needs work, $100. 588-6417.

ELECTROSTATIC AIR CLEANER - Sears, replaces 16"x25" filter in forced air systems, $95. 924-5510 eves.

CASTRO SOFA - convertible bed, never used, Herculon upholstery, cost $850, asking $650. 794-8998.

CABINET - for stereo components/records, glass front & lid, like new, 17½"w x 36"h x 16"d, $50. Sue, Ext. 7235 or 395-3529 after 6 p.m.

TICKETS - Grateful Dead, Madison Square Garden, Fri., Sept. 18, floor seats, one pair, $60. Augie, Ext. 3884.

REFRIGERATOR - also, 25" color TV; bedroom set; dinette; hi-riser bed; sofa; Melville recliner. Bob, Ext. 7191.

RIDING MOWER - Craftsman, 6 h.p., 26" blade. Kevin, 286-8521 after 5 p.m.

SKI POLES - Scott Fluorescent 46", $18; rug shampoo/polisher, Hoover F4143, brand new, $50. Ext. 4727.

COLOR TV - 14" Hitachi, $60; stereo/audio cassette, Aiwa, $60; toy big pedal tractor, $25. Ext. 5364.

SPRINKLER HEADS - in-ground, rainbird pulsators, 8 heads, $50; men's 3-speed Schwinn bike, $40; boy's Huffy, $20. Walt, Ext. 7154.

BED - hi-rise frame, no mattress; head/footboard; 3 bed frames. Jerry, Ext. 7427 or 475-5591.

HAMMOND T-500 ORGAN - also, Tandy TR-801 8-track w/cass. adapter, both excel. Brenda, 821-0159.

ALUMINUM SOFFIT - white, 30¢/sq. ft. Ext. 5400 or 874-3447.

LIGHT FIXTURE RECESS - 2 mini, 1 regular, $15/each. Bill, Ext. 2047.

FIREPLACE INSERT - no reasonable offer refused. 475-2509.

LAWN MOWER - 3.5 h.p. Briggs, self-drive, 22", cut rotary, rear bagger, $90. Dan, 698-7322.

TOPSOIL - delivered, 5 yards min., $15/per yard. 924-7746 or 924-9427 after 7 p.m.

Free

ADORABLE KITTENS - long-, short-haired males and females need loving home. Lois, Ext. 2959 or 878-2910.

BOW WINDOW - 9 fixed lights w/storms, 6'x5', you pick up. 744-3289.

Car Pool

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

On-Site Services

FRIENDLY BROOKHAVEN GULF SERVICE - weekly special: lifetime warranty shocks installed, $27.95 most cars. Ext. 4034.

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

ROCKY POINT - furn. efficiency apt., priv. ent., patio, full kit. & bath, suitable for 1 person, non-smoker, $425 incls. util. & cable. 744-8659.

CORAM - 1 bdrm. apt., kit., full bath, a/c, dishwasher, heat incl., avail. Oct. 1, $650/mo. Steve, Ext. 3748 or 732-5938 eves.

SHOREHAM NORTH - 4 bdrm. Colonial, 2½ baths, family rm., formal d/r, partially furn. 744-1750.

EAST PATCHOGUE - 1 bdrm. apt., priv. ent., patio w/grill, cable, available Sept. 1, $550 incl. all. 654-0019.

BELLPORT BEACH ESTATES - beautiful, mint contemporary, 3 bdrms., 2 baths, l/r, d/r, den, f/p, w/w, many extras, garage, bike to village, golf, tennis, Great South Bay, no pets or smokers, 286-2005/698-0576 aftyer 12 p.m.

HILTON HEAD, SC - 2 bdrm. condo, sleeps 6, beach, pool, tennis, golf, taking fall rentals, $400/wk. 585-9149.

MIDDLE ISLAND - Artist Lake condo, 1 bdrm., l/r, kit., full bath, a/c, new w/w, dishwasher, redecorated, pool, heat incl., 5 min. to Lab., avail. Sept. 1, $650. Ext. 3144 or 698-5046 eves.

For Sale

HILTON HEAD, SC - 3 bdrm. condo, l/r, d/r, wet bar, full kit., 8 appli., 2 baths, adjacent Palmetto Dunes, golf course, ocean beach, 6 tennis cts., 3 pools, asking $89,000 assumable mortgage; or for rent at reas. rates. 929-8912 or 324-2832.

ROCKLEDGE, FL - beautiful block & stucco house, 2 bdrm., 2 baths, d/r, kit/. family rm., combination porch, 2-car, many extras, lot 75x115, excel. location. 305-631-2840.

PORT JEFFERSON - split level, 4 bdrm., 2½ baths, family rm., patio, basement, on ⅓ acre in quiet neighborhood, $210,000. 928-0281.

FORT MYERS, FL - approx. ½ acre w/access to Orange River, 5 mins. from I-75, 20 mins. from SW Florida Regional Airport, convenient to downtown shopping & Gulf beaches, $18,500. Ext. 4482.

MASTIC BEACH - 5 room house, 2 bdrm., totally renovated, new heat and electric service, near beach & boating, nice property, about 0.2 acre, $82,500. 744-2821.

POCONOS - 3 bdrm. chalet, l/r, d/r, family rm., w/wood burning stove, kitchen, w/w, garage, paved roads, pools, lake, clubhouse, tennis, guarded entrances, more, sacrifice for $110,000. 286-4652.

CAPE COD - 4 bdrms., 1½ baths, office, w/d, dw, elec. & propane, f/b, c/w, cable, walk to private beach on Nantucket Sound, taxes $600., asking $200,000. Ext. 4107.

MILLER PLACE - Scotts Beach Club, priv. L.I. Sound community, 4 bdrm. ranch set on ½ acre, 1½ baths, atrium room, many extras, $250,000. 744-2069.

Lost & Found

LOST - baseball glove, Rawling Dale Murphy, field 1 or 4, early July. Ext. 2621 or 281-0360 eves.

Wanted

BABYSITTER - for 3½ mo. old easy baby, part-time, on-site. 864-1684.

VENDORS - needed for craft show, Bellport Fire Dept., Sept. 19. Dorothy, 286-1572.

PERSON TO DRIVE CAR - from L.I. to California, around end of Aug. Jacob, Ext. 7176 or 360-8649.

AUTOMATIC HOSPITAL BED - 728-4998 after 6 p.m.

EEG EQUIPMENT - brain wave monitor, audio spectrum analyzer, etc. Ext. 7657 or 924-2933.

TUBE TESTER - for checking dynamic characteristics of hi-fi audio tubes. Gus, Ext. 5079.

OWNERS OF ANTIQUE & CLASSIC CARS - to meet at the tennis court parking lot, Wednesday, August 26, at noon. All are welcome.

HOUSEMATE - share new apt. at Artist Lake condo, 5 min. to Lab, $395/mo. incl. util. 924-2184.

GOOD HOME - for cocker spaniel, neutered male, affectionate & good watchdog. Ext. 2959 or 878-2910.

MINERALS - mineral collections, old mineral books, any language. Marty Plotkin, 798-2887, Wednesdays, Ext. 7974.

BABYSITTER - Commack/Huntington area, start Sept., 5 days a week, references, non-smoker. Debbie, 543-5282.

HOUSEMATE - to share large house in Setauket, 2 blocks from SUNY, $400/all. 689-3055 eves.

ELECTRONIC KEYBOARD - to borrow or rent, as soon as possible. John, Ext. 2617, or Janet, Ext. 2345.

In Appreciation

I thank you for your thoughtfulness and generosity in my time of sorrow, after the death of my son Timothy. — Sarah Ebron

Classified Ad Policy

Deadline is 4:30 p.m. Friday for publication Friday of the following week.

1. The Brookhaven Bulletin's classified section may be used only by active and retired Laboratory employees.
2. All items for sale or rent must be the advertiser's property.
3. Ads for material acquired for resale in association with a full or part-time business cannot be accepted.
4. Ads for the sale or trade of firearms will not be accepted.
5. Ads not carried because of space restrictions will be held for publication in the next issue.
6. Ads are run only once and must be resubmitted if they are to be repeated. One ad per person per week.
7. **Property for sale and rent cannot be accepted on this form. Special Real Estate Ad Forms are available at the office of the Brookhaven Bulletin, Building 134.**

☐ For Sale: Autos & Auto Supplies ☐ For Sale: Miscellaneous ☐ Lost & Found ☐ Free
☐ For Sale: Boats & Marine Supplies ☐ Car Pools ☐ Wanted ☐ _____

Please print your ad below in 15 words or less using one word per block. Include name and phone number to call.

Note: The following must be completed for your ad to appear.

NAME (Please Print) .....

Employee's Signature ..... Life No. ..... Ext. .....

Send to: Brookhaven Bulletin, Building 134 (Ext. 2345).