BROOKHAVEN BULLETIN
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BROOKHAVEN NATIONAL LABORATORY

Courant and Livingston Win 1986 Fermi Awards

The Enrico Fermi Award is the highest scientific award given by the U.S. Department of Energy. Earlier this week, Energy Secretary John Herrington announced that the 1986 Fermi Award recipients are two men whose scientific careers have been closely associated with Brookhaven: BNL Senior Physicist Ernest Courant and the late M. Stanley Livingston, who led the Lab's first accelerator project.

Herrington will make the formal presentation of the award, which includes a presidential citation, a gold medal and $100,000 for each recipient, at a special ceremony in Washington, D.C., on December 18. Lois Livingston will accept the posthumous award for her late husband, who died in August.

Enrico Fermi was the leader of the scientists who achieved the first self-sustained, controlled nuclear reaction. Established in 1954 to honor his memory, the Fermi Award recognizes exceptional and altogether outstanding scientific and technical achievement in the development, use or control of atomic energy. The achievements for which Courant and Livingston are being honored are their contributions to the physics and design of particle accelerators, including discoveries that have been of critical importance to the development of advanced accelerators throughout the world.

The presidential citation Courant will receive reads: "For his many contributions over more than three decades to the physics of acceleration of charged particles, including his role in the invention of alternating gradient focusing, which is the essential mechanism of strong focusing now used in accelerators of the highest energies, and for his many studies of beam interactions and instabilities that have been of critical importance in accelerator design."

Peter Horton

Upon learning that he will receive the 1986 Enrico Fermi Award, Ernest Courant (seated, right) is congratulated by (seated, left) Laboratory Director Nicholas Samios, (standing, from left) Herb Kinney, Special Assistant to the Director, and Deputy Director Martin Blume.

And Livingston's reads, "For his leadership contributions to the development of nuclear accelerators over a half-century, from his involvement in the designing of the first cyclotrons to his role in the discovery of strong (alternating gradient) focusing, now used throughout the world for the design of nuclear accelerators and particle beams of the highest energies."

Alternating gradient focusing, for which both Courant and Livingston are cited, was discovered at BNL in 1952. Both physicists had been involved with the Lab's first accelerator, the Cosmotron. Livingston had come to head the project in 1946, and Courant began working on theoretical aspects of the Cosmotron shortly after starting at BNL in 1947. Livingston began teaching at the Massachusetts Institute of Technology (MIT) in 1948, but he remained a consultant to BNL until 1958.

As a visiting scientist at BNL during the summer of 1952, Livingston began looking for ways in which a new accelerator might be made better than the Cosmotron and naturally turned to Courant for help in calculating the effect of alternating gradients. Livingston believed this would permit higher magnetic fields; Courant showed that alternating gradients of even larger magnitude could be used to form a new and much stronger beam focusing system. Hartland Snyder, who died in 1962, also contributed to the discovery, which led to magnets of smaller cross-sectional size and, therefore, of much lower cost.

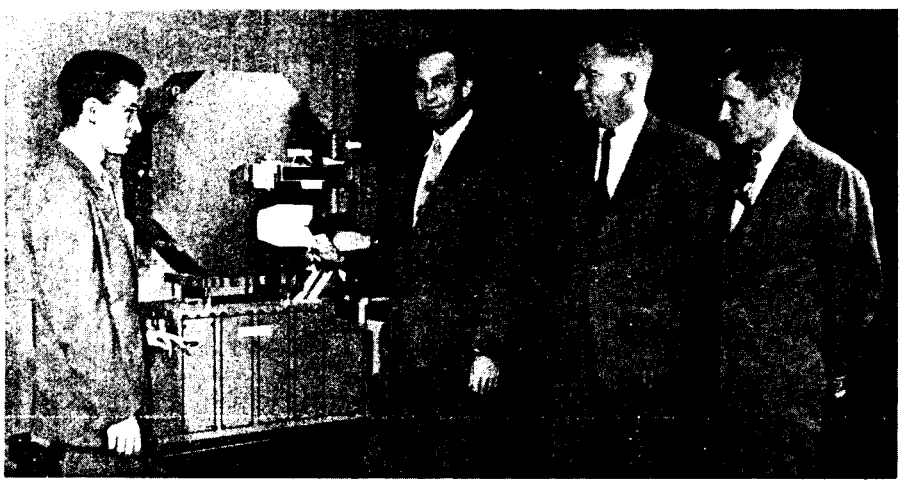
Among the first applications of this new idea was BNL's 33-billion-electron-volt proton accelerator — the Alternating Gradient Synchrotron (AGS). And strong focusing has been one of the guiding principles for all accelerators since then — including the proposed national accelerator, the 20-trillion-electron-volt Superconducting Super Collider (SSC). Courant and Livingston were previously honored for this discovery at the 1985 Summer School on Particle Accelerators, where they received awards for outstanding accomplishments in accelerator physics.

After their discovery, both Courant and Livingston continued working with particle accelerators. Though Livingston maintained a professorship at MIT until 1970, he was director of the Cambridge Electron Accelerator at Harvard, from 1956 to 1967, then associate director of the new National Accelerator Laboratory (Fermilab) from 1967 to 1970, when he retired.

For Courant, BNL has continued to be home base, though he has spent part of his career teaching. From 1967 to 1985, he was on the faculty of the State University of New York at Stony Brook. He has also taught at Yale and Princeton Universities and at Cambridge, England. Between these activities and his informal teaching of staff and visiting researchers at BNL, he has left a long trail of protégés.

As always, Courant is now engaged in many projects. He has participated in the design of the AGS Booster, now under construction, as well as the design for a possible stretcher ring for the AGS. One of his most important current efforts is helping in the design of the Relativistic Heavy Ion Collider at BNL, a proposed accelerator at the cutting edge of science. He is also involved in SSC design and in general studies of accelerator physics.

Courant, who received his Ph.D. in Physics from the University of Rochester in 1943, is currently a member of the American Physical Society, the American Association for the Advancement of Science, the National Academy of Sciences and Sigma Xi. He also belongs to the New York Academy of Sciences, which, in 1979, awarded him its Boris Pregel Award for Applied Science and Technology. Courant and his wife Sara live in Bayport.



In this 1952 photo, the scientists who discovered alternating gradient focusing at BNL gathered around a quarter-scale model of the Cosmotron magnet: (from left) Ernest Courant, Stan Livingston and Hartland Snyder. Livingston is holding a cardboard cutout of a quarter-scale strong focusing magnet, to illustrate the great reduction in size made possible by the discovery. At right is John Blewett, who, shortly after the discovery, extended the principle to linear accelerators.

New Controls for New Physics

A central feature of the Tandem/AGS Heavy Ion Project is that it draws on two existing accelerators — the Tandem Van de Graaff and the Alternating Gradient Synchrotron (AGS) — to produce totally new physics at BNL. But making it all work together called for some common control. As experimenters enjoyed the first run of heavy ions in the AGS earlier this fall, it was evident that the AGS Controls Section had satisfied that requirement.

Experimenting with heavy ions involves generating and accelerating them in the Tandem, then speeding them down the heavy ion transfer line to the AGS. There, they circumnavigate the AGS ring many times before dashing down experimental beam lines to crash into targets and form other particles, which scatter in many directions.

Some parts of this process, such as circulating through the AGS, are essentially the same whether the circulating particles are protons or heavy ions, and the existing control system can do the job. But other parts, such as traveling down the transfer line and handing the heavy ions over to the AGS's acceleration system, are completely new and needed new controls.

Accordingly, in November 1984, the AGS Controls Section, under the direction of Alan Stevens, began work on the control system for the heavy ion transfer line. About a year and a half later, the "distributed-intelligence" control system became operational for the transportation, injection and acceleration of heavy ions.

In addition, this system is the prototype of what is envisioned for the high energy and heavy ion physics accelerator complex at BNL. It will ultimately assume all AGS operations, as well as those for the Booster, which is under construction, and the proposed Relativistic Heavy Ion Collider, if it is approved.

In the first phase of this changeover, all AGS systems will be transferred to the new control system, and

(Continued on page 2)

Mort Rosen

One console in the AGS main control room is now dedicated to the new control system being used for the transportation, injection and acceleration of heavy ions. At the console, Tom Clifford, the head of systems software in the AGS Controls Section, sits before the keyboard for the Apollo workstation that governs the system. Clifford and Alan Stevens, who heads the Controls Section, look at the four black and white monitors to the left of the Apollo for information about how the run is going.

Controls (Cont'd)

the present system will be phased out. Though this piecemeal process could take about 100 man-years, the 30 members of the Controls Section expect to combine their talents to shorten that to about six years. "Most of the group are now working on converting such AGS features as the vacuum system, the proton RF system and the pickup electrodes for making corrections to the closed orbit." Stevens said, "There's a lot of experienced people in the group, and we think the conversion will go very rapidly."

The new control system has several distinguishing features that make it quite different from the one that now guides the AGS. The old system, which dates back to the early 1970's, is tied into one central mainframe computer. "The problem with a centralized system," said Stevens, "is that there's too much for the mainframe to do. You either have to rewrite the software, or replace it."

With the new control system, this is not likely to happen. Instead of a mainframe, the system centers on Apollo workstations. Stevens described these as being "like super PCs. They're intelligent and have multitasking operating systems, just like mainframes. Workstations also show rapid year-to-year increases in computing power per dollar. So, assuming that compatibility continues as it has, we have built in the capacity for expansion from the beginning."

One Apollo sits in the AGS main control room, another is located in the control room at the Tandem, and ten more are scattered throughout the Control Section's domain on the third floor of Bldg. 911. These workstations constitute the top level of the control system's three-layer architecture. Information flows to and from the Apollos via the local area network, RELWAY. RELWAY, which stands for RELiable process data highWAY, was created at BNL using components commercially available from the cable TV industry, originally for the ISABELLE Project. Because it is a broadband system with several channels, it has an enormous capacity for carrying information.

RELWAY hooks the Apollos to "watchdog" stations that form the second level and serve as intermediaries between the Apollo workstations and device controllers (DC), the third and final level. DCs do exactly what their name implies: They control devices, such as power supplies. Commands flow from the DC to the device; the device sends back information about how well it obeyed the command. Once a second or two, the watchdog stations poll the the DCs for their status. If something is wrong, the station notifies the Apollos.

The information residing in the DC represents a feature unique to this control system — "logical devices," which are fundamental and prescribed ways to structure data that is entered into the system. This means that any information being relayed to the Apollos via a DC must be written in a standardized format. While it might be more efficient for the person who installs a power supply or valve to code data in his or her own way, Stevens said, "We sacrificed efficiency for comprehensibility of the system as whole. Someone can find out what's wrong with a device without knowing anything about it. Also, if you understand the types of logical devices, in some sense, you understand the whole control system."

In addition to projects such as the transfer of AGS systems to the new control system, the Controls Section commits about 20% of its resources to advanced development. The rest of the group is involved with operations support, which includes assisting control room operators as they learn the ins and outs of the new system and preparing the documentation. Members of the Controls Section, as well as people concerned with AGS and Tandem operations, and device specialists, form the Operations Aspects Study Group, which aids Stevens and deputy section head Bob Frankel in making far-reaching decisions about what is designed into the control system. — Anita Cohen

Your Blood Counts!

Giving blood seems impossibly alarming to many people. Perhaps that's why only 2.8% of the Greater New York population donates blood. As a result, 40% percent of the blood used for transfusion has to be imported.

Twice yearly, BNL employees help to re-stock the blood bank of the Greater New York Blood Program. The next drive is on December 16 and 17. If you're one who has been afraid to donate in the past, concerned that it will hurt, or that you may faint, or that you will feel weak afterwards, please read on and then decide.

Experienced blood donors say that the only discomfort in giving blood is a slight pinching at the start — and balanced against saving a life, it's worth it. Few people ever feel faint, but a nurse is always present. The whole procedure is completely sterile.

As for feeling weak afterwards — the classic reassurance remains the example of George Willig who in 1977 gave blood and, within 24 hours, climbed to the top of the World Trade Center! History does not relate whether he had cookies and jelly beans after giving blood, but donors at BNL Blood Drives do.

Can you expect other people to give you what you refuse them? Some of last summer's donors have shared their reasons for giving, and continuing to give, their blood.

Ann Tebbutt, Biology, explained "There is always such a shortage of blood, and it's painless, easy to do, and may save a life."

Judy Bonaduce, Department of Applied Science, joked, "It's the only time I get to pig out' on goodies and not feel guilty!"

Robert Bergoffen, Reactor Division, remembered, "One time my wife needed three pints of type A negative blood, and there were only three in all of Suffolk and Nassau counties. It made me realize how critical a shortage can be. That's why I give."

Mike Carroll, Physics, said "It's an easy way to lose a pound. But seriously, I have seen a man who had a blood pressure of 40/0 from a ruptured spleen getting whole blood in both arms simultaneously. He made it OK after the surgeons removed his spleen. I have been donating since blood came in glass bottles, but this incident made a believer out of me."

"I donate blood," said **Kay Hunt**, Personnel, "because, assuredly, anyone requiring blood is in an unfortunate position. It's very satisfying to feel I've helped in some small way."

George Walczyk, Instrumentation, said his blood goes "to help others who need a dose of good 'Polish energy!' "

Eric Bernholz, Photography and Graphic Arts, thought, "It's important for every person to contribute to the common good of all humanity. Giving blood transcends racial and political barriers. It is the giving of one person's love of life to others."

Yes, your blood does count. Please sign up to donate by returning your pledge card today to Blood Drive Chair Susan Foster, Bldg. 185. If you still have questions, call her on Ext. 5126, or contact your Blood Captain, as indicated in this list:

Dept.	Bldg.	Captain	Ext.
ADD	1005	Patricia Webster	4628
	902A	Vera Mott	7108
AGS	911B	Paula Hughes	4619
AMD	515	Les Lawrence	4107
	515	George Taylor	4159
AUI	460	Carol Roberts	3325
Bio.	463	Richard Sautkulis	3386
Chem.	555A	Sophie Kostuk	4302
CSD	462A	Sheldon Martin	3354
	462U	Christine King	3352
DAS	179A	Pat Taylor	2452
DCP	355	Barbara Pringle	3238
DNE	197C	Jean Ramirez	2119
	130	Eleanor Mitchell	7328
	703M	April Donegain	4425
DO	134	Liz Seubert	2346
DOE	464	Claire Gash	3438
Fisc.	134A	Marge Stoeckel	2459
Inst.	535B	Doug Sweely	4237
Med.	490	Peter Heotis	2304
MIS	459	John Muller	3302
NSLS	510E	Kim Holschuh	2839
Pers.	185	Marsha Kipperman	2871
P&GA	197B	Terry Jones	2950
Phys.	901A	Cora Feliciano	7681
	510A	Liz Mogavero	3940
PE	134C	Bill Fleischer	3239
	452 Mech.	Martin Klein	4669
	452 Elec.	George Elias	4669
	326	Slim Blevins	3084
	422	John Mollica	3254
Reac.	750	Randi Vogt	4421
S&EP	599	Michael Carroll	2351
SMD	211	Lou Di Carlo	2302
	211	Barbara Boerjes	4956
S&SD	50	Elaine Zukowski	4177
SSD	179B	Joan Perullo	2549
	179B	William Webster	2525
TID	477A	Carol Beckner	3802

All film badges will be changed tomorrow. Please place your badge in its assigned rack space before leaving work today.

A Fair Approach to Small Business

Buyer William Birkholz (right), Division of Contracts & Procurement, explains BNL's purchasing procedures to the owners of a small machine shop.

Photos on this page by Peter Horton

BNL is a large scientific enterprise, with goals and needs that a small business owner might not ordinarily encounter. To introduce the small business community to the Laboratorty and its requirements, BNL hosted its first Small Business Opportunity Fair, in Berkner Hall, on November 20. Representatives from about 300 small businesses attended.

The fair was coordinated by Richard Chester, the Lab's Small and Small Disadvantaged Business Liaison Officer, who received extensive help from representatives of the Lab's various departments and divisions, whose information booths gave the small business community an idea of the types of goods and services each group might require. "They put forth a tremendous effort," Chester said, "using imagination and ingenuity to present displays and samples that depicted their work and, ultimately, their needs."

Throughout the year, the Division of Contracts & Procurement makes an extensive effort to reach out to the small business community, to encourage its participation in serving the Laboratory. In fiscal year 1986, for example, over 63% of BNL's procurements went to small businesses. "With events such as this fair," Chester said, "BNL hopes to attract more small businesses that may have thought the Lab was too big for them or that didn't have a good understanding of what the Lab is and what the Lab can use. This benefits BNL too. At this fair, for example, the AGS discovered that a local business could supply a need that was previously met by a company in California."

Graham Smith (center), Instrumentation Division, talks about his division's needs with representatives of small businesses.

The needs of the National Synchrotron Light Source (NSLS) Department are explained to two small business representatives by Nancy Lazarz, NSLS.

Dental Plan Enrollment Opens

During the month of December, the Laboratory is conducting an open enrollment for the AUI Dental Assistance Plan. All regular employees working 20 or more hours per week may enroll in the AUI Dental Assistance Plan. Coverage will become effective January 1, 1987.

Employees currently enrolled in the dental plan will have their coverage automatically continued unless they complete a termination form. Employees wishing to enroll must complete application and payroll deduction forms. All forms are available from Personnel Services, Bldg. 185, and completed forms must be returned there before December 29.

The AUI Dental Assistance Plan pays a maximum of $1,000 benefits per calendar year for each individual for non-orthodontic dental expenses. The plan covers three categories of dental service:

- Prevention & Diagnosis — For services including routine oral exams, cleaning and scaling, and x-rays, the plan covers expenses from the first dollar spent to a maximum stated in a payment schedule.
- Basic & Major Dentistry — After an individual pays the first $25 of covered expenses during a calendar year, restorative, endodontic, periodontic and prosthodontic dental work, and oral surgery are reimbursed according to a schedule of allowances. The maximum deductible for any family is $75 per year.
- Children's Orthodontia — Fifty percent of reasonable and customary charges for orthodontic services for dependent children are paid up to a lifetime maximum of $1,000 per child.

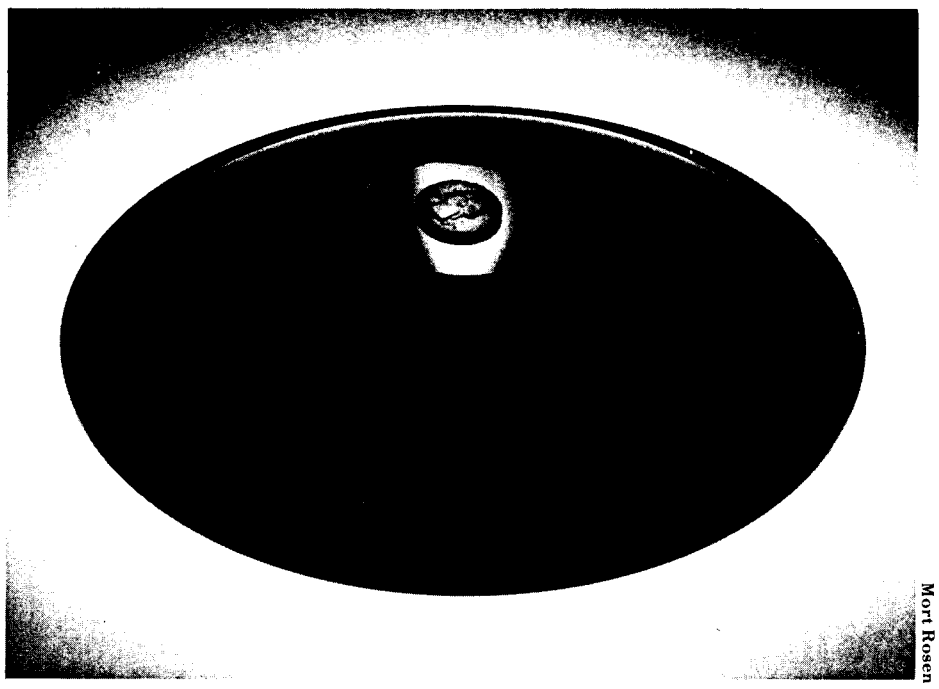
To continue this benefit while controlling increasing health care costs, the Lab is offering the dental plan as an employee option. The following are required employee premiums:

Coverage	Weekly	Monthly
Employee only	$0.92	$ 4.00
Employee & one dependent	1.85	8.00
Employee & two or more dependents	3.69	16.00

In addition, employees insured under the AUI Medical Insurance Plan will have a major medical deduction to $200 per year ($500 per family), and those enrolled in the BC/BS HMO Plan will be required to pay the difference between the current AUI Medical Insurance Plan and the plan with a $200 deductible.

Employees who sign up for the Dental Assistance Plan will be required to participate until the next enrollment period, January 1, 1989. Present eligible employees not electing coverage at this time must wait until this period to be able to participate.

For more information, call Personnel Services, Ext. 2877 or 7516.



Mort Rosen

Holiday Shoppers Invited

Is this a flying saucer with a hood ornament? Or perhaps it's a bathroom scale with a quarter placed so as to entice you to step on it? No, it's all a Mirage, as you will learn if you attend the Winter Holiday Sales at the Science Shop in the Exhibit Center.

The Mirage (quarter not included) is one of nearly 50 creative gifts available at the Science Shop this year. Prices range from 10 cents, for things like balloons and tracing rulers, to $26 for the intriguing and attractive Mirage. Most items, including Suitcase Science kits, tote bags, books, gyroscopes and lightsticks, cost less than $5 and make exellent stocking stuffers and Hanukkah gifts. Some items are limited.

So . . . head to the Science Shop on the west side of Bldg. 701. You can do this from 10 a.m. to 3 p.m. today, as well as on December 12 and 19. Please park in the north parking lot. For more information call Ext. 4016 or Ext. 4049.

In Memoriam

Roberta (Bobbie) J. Samaritter, an illustrator in the Photography & Graphic Arts Division (P&GA), died on November 22, at the age of 50, as a result of injuries she sustained in an automobile accident on September 22. She had been with P&GA since coming to the Lab in 1963. She was a resident of Port Jefferson and is survived by her husband Walter.

Coming Up

Lawrence Kukacka, a chemical engineer in the Department of Applied Science, will give the next Brookhaven Lecture, on Wednesday, December 17, at 4:30 p.m., in Berkner Hall. His topic will be, "Tapping the Earth's Geothermal Resources — Hydrothermal Today, Magma Tomorrow."

Social Club

Openings are still available for the January ski trip to the Poconos (Montage, Jack Frost, Elk) on January 16-18, 1987. Costs are: four per room, $119; three per room $135; two per room $145. A $50 deposit is due now. Price includes transportation, food and other extras. Everyone is welcome; you do not need to be a member of the club. Call Doris Terry, Ext. 2228, for reservations and with any questions.

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PSI Annual Social

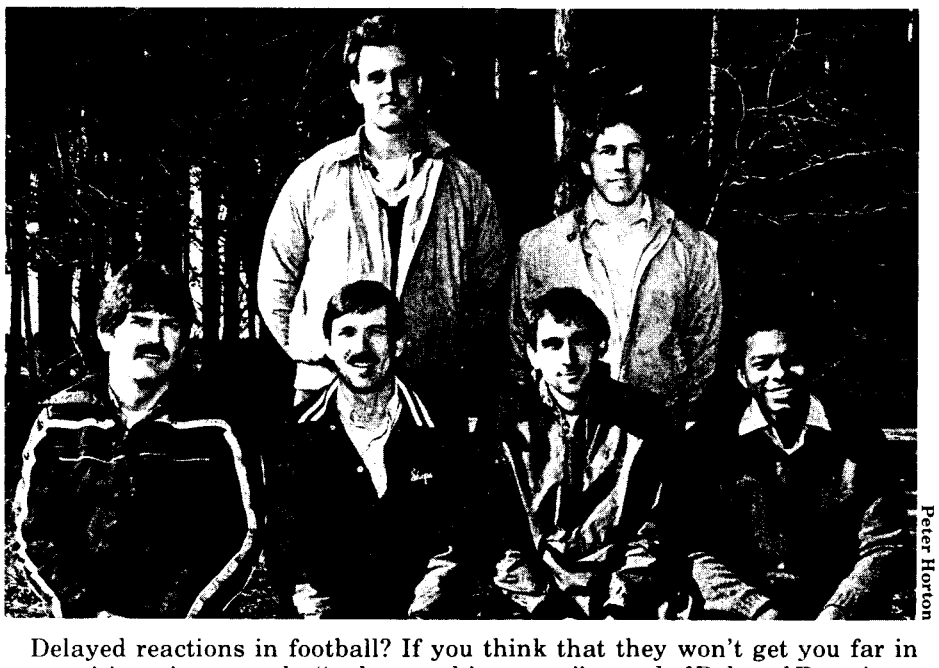
The Upton Chapter of Professional Secretaries International invites you to meet with secretaries and other professionals at our Annual Wine and Cheese Social, on Thursday, December 11, from 5:30 to 8 p.m. at the Recreation Hall. A guest speaker from the 3M Corporation will talk about "The Care and Handling of Diskettes."

The cost of the social is $3.50, and everyone is welcome. For more information, call Pat Towey, Ext. 3445.

Astronomical Society

The open observatory night this month is scheduled for tonight, beginning about 6 p.m. Admission is $1 for non-members and will be collected at the observatory. Those interested in attending should call Bob Mills, Ext. 5043, or Rick Jackimowicz, Ext. 3803, during the afternoon of the scheduled date.

Touch Football Champs



Peter Horton

Delayed reactions in football? If you think that they won't get you far in competitions, just note the "unbeaten this season" record of Delayed Reactions, the winning team in the BERA Touch Football League this year. Looking forward to next year's games are (standing from left) Pete Ratzke, Gerry Shepherd, (seated from left) Wayne Rambo, Mike Anerella, Ed Meier and Wayne Cummings. Not pictured are Rich Biscardi, Rich Domenech and Gordon Smith.

Nursery School

New Class to Start

The Upton Nursery School is accepting registration forms for enrollment in a new class for three year olds. Preparations are under way to begin this additional class in January 1987. Registration applications are also available for enrollment in the current class for four year olds. For information and forms, call Enrollment Chairperson Marietta Veligdan, 874-3447.

Cooking Exchange

On Wednesday, December 10, members of the Cooking Exchange will demonstrate a menu of international Christmas recipes.

Meetings are normally held on the second and fourth Wednesdays of each month from 12:30 to 2:30 p.m. in the Recreation Bldg. Babysitting is available at a cost of 50¢ for each child.

Call Elzbieta Marstin, Ext. 3126, for more information.

Runners Corner

Several members of the BERA Runners Club ran marathons this fall:

Albany	
Ed Gill	4:09 1st marathon
Boston Peace	
Skip Medeiros	3:18
Dennis Nordstrom	3:26
Ocean State	
Dennis Nordstrom	3:12 personal best
Philadelphia	
Ed Gallagher	2:55 personal best
Twin Cities	
Ed Meier	3:01 1st marathon

A BNL team also won the Open Division of the 4th Annual Arthur Ashe Ten-Kilometer Run, in Amityville, on October 5. Times for the Lab team were:

Peter Boni	32:17
Trevor Sears	32:48
John Ferrero	34:23
Skip Medeiros	40:24
Gus Prince	42:36

Anyone wishing information about running routes, training partners, upcoming races or the Running Club, may contact Skip Medeiros, Ext. 2665.

Swim & Stay Fit

By the end of November, a total of 693 miles had been swum by 56 participants in the American Red Cross Swim & Stay Fit program. Sponsored by the Swim Club, the object of the program is for swimmers to complete 50 miles at their own pace, in quarter-mile multiples each time they go to the pool. Twenty-four people have reached at least one of the ten-mile marks, and two individuals have stroked 50 miles.

Those who have passed one or more milestones may pick up certificates acknowledging their accomplishments at the lifeguards' desk. Swim Club members may get their certificates at any Thursday meeting. For more information, contact Peter Heotis, Ext. 2304.

Swim Club

The Swim Club will meet for an interval practice on Thursday, December 11, at 5:15 p.m. at the BNL pool. All those who can swim two laps of the pool without stopping using the crawl stroke are invited. For more information, call Marsha Belford, Ext. 5053, or Peter Heotis, Ext. 2304.

Gym Closing

Due to the Blood Drive, which is held in the gymnasium, the building will be closed to all recreation activities from Monday, December 15 (all day), to 5 p.m. Friday, December 19.

Arrivals & Departures

Arrivals

Stephen H. Bryant ..... Chemistry
Donald C. Murray ..... Physics
Anthony Mercer ..... Plant. Eng.
Kazumichi Nakagawa ..... Chemistry
Frank A. Toldo ..... AGS

Departures

Howard H. Hwang ..... DNE
David Levesque ..... Reactor
Edward E. Rogers ..... Plant Eng.
Michael H. Schwarz ..... NSLS
Jennifer M. Slater ..... DAS
Yihua Xia ..... S&EP
Kent R. Williams ..... AGS

Bowling

Purple League

Denise Monteleone bowled a 221, Jeannette Thiede 219, Lee Barberich 192/184/181, Fern Coyle 192, Carol Beckner 182, Pat Oster 180, Millie Connelly 180, Joe Mayeski 235/622 scratch, Tony Natoli 233/209/205, Rich Larsen 217/200, Gene Hassell 212, Jim Marsch 211, Ben Belligan 204.

Pink League

Maryann Reynolds rolled a 198, Ellie Adams 173, Joanna Hanz 151 (63 pins over average).

White League

Vito Manzella had a 232, Ed Sperry III 212, Bob Malachowsky 211, Skelly Frei 203, Gerry Riker 193/181, Pat Manzella 186, Donna Riendeau 185/183, Sharon Smith 181.

Red/Green League

Tom Prach had a 246, Harold Marshall 215/213, Ken Riker 205, Jim Morris 203, Bob Jones 201.

Note to Diners

The cafeteria will be closed on Saturday, December 6. On that day, Snack Bar Service will be available from 9 a.m. to 2 p.m. at the Brookhaven Center.

Holiday Hams

Holiday hams weighing from 18 to 20 pounds each may be ordered through the cafeteria, for $2.10 per pound, plus tax. Orders will be taken through December 19, and pick-up dates will be December 22 and 23.

Cafeteria Menu

Week of December 8

Monday, December 8

French onion soup	(cup)	.70
	(bowl)	.90
Veal Parmesan w/ 1 veg.		2.75
Pepper steak over confetti rice		2.65
Hot vegetable plate (lite-weight)		2.20
Hot deli: Corned beef	(bread)	2.45
	(roll)	2.55
	(hero)	2.65

Tuesday, December 9

Turkey noodle soup	(cup)	.70
	(bowl)	.90
Baked ziti w/ garlic bread		2.65
Sweet & sour pork w/ 1 veg.		2.65
Half avocado stuffed w/ chicken salad (lite-weight)		2.25
Hot deli: Monte Cristo		2.45

Wednesday, December 10

Cream of broccoli soup	(cup)	.70
	(bowl)	.90
Beef stew w/ biscuit		2.55
Spinach soufflé w/ 1 veg. (lite-weight)		2.55
Hot deli: French dip		2.55

Thursday, December 11

Tomato-beef vegetable soup	(cup)	.70
	(bowl)	.90
Chicken stir-fry w/ snow peas		2.65
Salisbury steak w/ 1 veg.		2.55
Hot vegetable plate (lite-weight)		2.25
Hot deli: Boneless pork rib sandwich	(bread)	2.45
	(roll)	2.55
	(hero)	2.65

Friday, December 12

Seafood gumbo	(cup)	.70
	(bowl)	.90
Shrimp scampi over rice (lite-weight)		2.75
Meatloaf w/ mushroom gravy & 1 veg.		2.65
Hot deli: Pastrami	(bread)	2.45
	(roll)	2.55
	(hero)	2.65

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.

OPEN RECRUITMENT - Opportunities for Laboratory and outside applicants.

2500. AUDITING POSITION - Requires bachelor's degree in a relevant field or equivalent experience (an appropriate advanced degree is desirable). Will be responsible for the accurate completion of audit programs, procedures and other assignments and for bringing to the attention of supervision all matters or considerations for modification or extension of audit programs and procedures. Associated Universities, Inc.

2501. TECHNICAL POSITION - Requires AAS in electrical technology or equivalent and minimum of five years' experience with analog and digital circuits. Thorough knowledge of construction, diagnostic and modification techniques, as well as proficiency using a wide range of test equipment is necessary. Alternating Gradient Synchrotron Department.

2502. TECHNICAL POSITION - Requires AAS in electronics technology or equivalent, plus experience with solid state electronics devices. Must be able to work from schematics and interact with engineers in the construction and test of systems required to sustain the effort of the Experimental Support Section. Will also be expected to maintain and repair existing equipment and safety interlock system. National Synchrotron Light Source Department.

2503. TECHNICAL POSITION - Requires AAS in a scientific or technical field or equivalent capabilities and at least four years' experience in ultra high vacuum and a good knowledge of mass spectrometry. Must be able to take data independently during diverse vacuum and desorption experiments, both in the laboratory and on the dedicated beam line. National Synchrotron Light Source Department.

2504. ENGINEERING POSITION - Requires BS in electrical engineering with three years' experience in analog circuit design and analysis. Experience in multi-kilowatt converter power supplies, fast pulsed power techniques and design of feedback control systems is desirable. Alternating Gradient Synchrotron Department.

2505. ENGINEERING POSITION - Requires BS in electrical engineering and broad experience in sophisticated instrumentation, low-level high-noise immunity circuit design, timing and controls. Duties will include designing and developing instrumentation for charged particle beams used in the AGS machine. Knowledge of interfacing to computer control systems is desirable. Alternating Gradient Synchrotron Department.

Autos & Auto Supplies

76 VW RABBIT - 4 dr., 4 spd., 97k mi., orig. owner, needs work, but eng. good, $400 or best offer. Carol, 924-5533.

84 MERCURY - Marquis Brougham, 52k mi., luxurious car w/auto. overdrive, loaded, $5,395. Ext. 5400 or 874-3447.

TIRES - (8) 13" 4 w/rims, $10 ea.; 2 snow, 14", $10 ea.; 4 Chevy rims, 6 hole. Steve, Ext. 2314.

78 CORVETTE - white/red leather interior, glass T-tops, prof. recond., in/out, mint, flawless, $12,000. 589-7496.

VW ENGINE - air cooled, 60 h.p., good running cond., $175. Ext. 7518 or 589-5490.

TRUCK TIRES - (4) brand-new, Tackoffs, size, 6T215/85R16C w/rims, $350. Ext. 4312.

78 CAMARO - a/t, p/s, p/b, 6 cyl., orig. owner, rebuilt eng., excel. running, clean, $2,000. Danny, Ext. 3042 or 736-6441, eves.

76 DODGE ASPEN SE - slant 6, runs fine, some rust spots; tires, 6 A/T 15", used but in top shape. 286-9197.

85 BUICK REGAL - Somerset, 14k mi., beautiful, all pwr., 3.0 l, multi-port fuel injections, good buy, $8,500. 281-5532.

76 FIAT 131 - 4 dr. sedan, 5 spd., runs well, asking $500. Paul, Ext. 7644 or 929-4295.

78 COUGAR XR7 - 351, excel. cond., blue, am/fm cass., a/c, new tires, $2,300. Bert, Ext. 2050.

85 OLDSMOBILE - Royale Brougham, 25k mi., most options, mint cond., must be seen, $9,700. Ext. 2981 or 473-7809.

84 DODGE 600ES - orig. owner, 40k mi., 4 dr., immac., fully loaded, garaged, $6,500. 924-3236.

83 HONDA ACCORD - htchbk, blue, great cond., $5,500; 76 Olds, 350, a/c, p/s, 4 dr. sedan, good cond., asking $1,200. Kevin, 563-1189.

78 HONDA CIVIC - 4 spd., good mpg, runs well, asking $500. Sherie, Ext. 4478 or 475-3838.

82 FORD TRUCK - F150, 4WD, 4 spd., fiberglass cap, p/s, p/b, am/fm cass., good cond., $5,000. 878-9141.

81 MERCURY CAPRI - htchbk, 5 spd., overdrive, sunroof, louvers, foglights, garaged, $3,200. George, Ext. 4100.

75 FORD ELITE - new a/t, a/c, p/b, p/s, am/fm, reliable transp., $500. Ext. 7901 or 821-9328.

80 SKYLARK - good cond., a/t, a/c, new tires, battery. Ext. 3036 or 427-0768, eves.

74 VW - 412, new eng., trans., 52k mi., recent tune-up, 2 new tires, $900 or best offer. Ext. 3926.

TIRES - (1) E78-14, (2) D70-14, snows, all mounted on Chevy rims, $5 ea. Walt, Ext. 4798.

84 CHEVROLET - Caprice Classic, low mi., all options, $7,700. Ed, Ext. 7943.

80 OLDSMOBILE - Toronado, red, V8, diesel, all pwr, orig. owner, clean, $2,200 neg. Ext. 3794.

64 VW BUG - running, $250. Jim, 286-9190, eves.

RIMS - (4) 14" Chevy, new, $15 ea. 924-3756.

Boats & Marine Supplies

23' SLOOP - European crafted, f/g, sleeps 4, 6 h.p. Ev., 3 sails, hd galley & dinette, extras in wet stg., offers considered. Walter, Ext. 4605 or 938-8353.

28' OWENS - 1965, V8, inboard, glass/f-b, twin stations, new cushions, dual-door ice box, dinette, full canvas. Ray, Ext. 3536 or 289-7615.

28' OWENS - 1963, wood, tight hull, engine needs work, forced to sell, $500. Bert, Ext. 2050.

Miscellaneous

KEROSENE CAN - 5 gal., $4; tire & rims, $15; flashlights, $1 ea. Joe, Ext. 2898.

MOVIE CAMERA - sound, Kodak Ektasound, $80; kerosene heater w/5 gal. drum, $45. Ext. 2091 or 422-2416.

COCKER SPANIEL - 3 yrs. old, honey colored, even tempered, good w/children, $50. Lew, Ext. 5193 or 928-4863.

POINSETTIAS - red, several sizes, low prices, locally grown, delivered around Dec. 10th. 727-6818 after 3:15 p.m.

KITCHEN CHAIRS - (4), $40; coach carriage, clean, $35; play pens, (2); 8mm camera & projector, excel. cond., $40. 924-8143.

BEDROOM SET - Basset, 5 drawers, chest, nightstand, bookcases, desk, chair, good cond., $300. Mark, Ext. 2957.

HAM RADIO PACKET - mint, AEA Pk-80, for the price of a MFJ, $125. 744-9677.

SLIDING DOOR - wood, 6'x80", $15; Beta VCR, Toshiba portable color camera, excel. cond., $650; 20 gal. fish tank w/access., $20. 727-4859.

MOVIE CAMERA - super 8mm, and movie editor, regular 8mm, best offer. Mark, Ext. 5350.

FURNITURE - twin bed, $20; dresser, $15; small TV table, $10; 2 big bookcases, $90 ea.; 2 chairs, $10 ea.; 3 spd. bike, $20. Ext. 7162 or 928-0001.

STOVE - Godin, coal, $175. Jim, 286-9190, eves.

FREEZER - G.E. upright, power spray, carpet, cleaner; 8" bench saw; range hood, new, 42". 924-6582.

DEN SET - Col., solid pine, good cond., $350 neg; drum set, 5 piece Swinderland, 1 cymbal, hi-hat, stool, sparkle red, $265 neg. 928-7042 after 5 p.m.

ELECTRONIC MUSICAL INSTRUMENT - Casiotone, 4-oct., 20-preset sounds, 10-rhythms, auto-accomp., memory play, $100. Jane, Ext. 5406.

HOLIDAY CRAFT FAIR - 12/7, 10 a.m.-3 p.m., handmade jewelry, poinsettias, pict. w/Santa, S. Ocean C/Moriches Elem. School, rain/shine.

TICKETS - Billy Joel, reasonable, Dec. 21, Nassau Col., Ext. 5384.

UNICEF X-MAS CARDS - & gifts, for catalogs/info./orders. Ann, Ext. 2022 or 744-8386.

WREATH - beautifully decorated, Boy Scout, $8.50. Ext. 2543.

CHRISTMAS TREE - polyethylene, long needle pine, 7½'. Craig, Ext. 2760 or 395-1084.

GENERATOR - 2 kW, needs work, $40. Ext. 3711.

CABBAGE PATCH DOLLS - original, buy early for X-mas, lg. selection, w/teeth or pacifiers, $19.95. 929-4198.

ACOUSTIC GUITAR - 12-string, Giannini, new strings, $100; Fender bassman piggyback, $250 firm. Jim P. Ext. 3084 or 265-5479.

TERMINALS - 6-DEC, VT-52, need repair, Hazeltine, Model #1-ADDS, Selecterm Consul980, make offer. Pat Odom, 924-5533, Ext. 206.

DEHUMIDIFER - Fedder, like new, $50. Ext. 2368.

Car Pools

MASTIC - need ride to/from Lab., 8:30-5:00 p.m. shift, will pay. Jody, Ext. 2907 or 395-3963 after 6 p.m.

N. BABYLON - Belmont Lake area. Lenny, Ext. 2091 or 422-2416.

Lost & Found

LOST - Man's goldtone watch in Gym, Mon., 11/17. Cheryl, Ext. 3586.

Free

HAMSTER - female, 1½ yrs., w/cage, water bottle, doesn't bite, guaranteed not pregnant. Carol, 924-5533.

WATER TANK - w/motor, fiberglass lines, 6' high, E. Patchogue. 475-1844.

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

S. JAMESPORT - cozy cottage, 1 bdrm., l/r, eik, bath, porch, furn., suit couple, walk to beach, 20 mi. from Lab. (no children/pets), $400/mo. + util. Walt, Ext. 2907 or 698-0576.

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

SETAUKET - family home, quiet street, lg. yard, 3 bdrms., 2 baths, f/r, fp, newly painted, $975/mo. 689-7487, eves.

HILTON HEAD, S.C. - 2 bdrm. condo, sleeps 6, many extras, golf, tennis and plenty of sunshine, $300/wk. 585-9149.

SHIRLEY - 7 mi. to Lab., 1 bdrm., eik, l/r, full bath, pvt. yard, deck, appliances, w/w, city water, walk to stores & town pool, working single or couple, ref., sec., $525 + gas for stove and hotwater. Ext. 3198.

CORAM - new Bretton Woods condo, 2 bdrm., 2 bath, l/r, d/r, eik, w/w carpeting, 5 appl., golf, tennis, clubhouse, no pets, $800/mo. + util., 1 mo. sec. 289-0413.

MASTIC BEACH - 5 room house, adults only, no pets, $650 w/heat, 281-8538 after 4 p.m.

SOUND BEACH - newly renovated, cozy, 4 bdrm., 2 bath, l/r, eik, house, avail. on or about 12/15/86, no pets, $1,100 + util. 744-3284 after 6 p.m.

SETAUKET - 3V schools, 3 bdrm., cont. Colonial, 2½ baths, huge l/r, d/r, f/r, eik, 2 car garage, fenced in ½ + acre, solar hw. Ext. 4157 or 698-6103, eves.

COMMACK - furn. studio, light cooking, bath, cable & phone hookups, pvt. ent., sec., $450/mo. all, 499-0532.

For Sale

POCONOS - Chalet, 3 bdrms., l/r, d/r, f/r, kit. w/woodburning stove, w/w carpet, garage w/electric door opener, circular drive, paved roads, pools, lake, clubhouse, tennis, all entrances guarded 24 hrs. $115,000 neg. 286-4652.

DELRAY BEACH, FL - 2 bdrm. condo, 2 bath, appl., enclosed porch, many improvements, semi-attached, near water, clubhouse, sauna, pool, sports, mature adults. Ext. 4192 or 751-7787.

ROCKLEDGE, FL - beautiful stucco house, 2 bdrm., 2 bath, d/r, kit., f/r, combination porch-2 car garage, many extras, lot 75'x115', excel. location. 305-631-2840.

SHOREHAM NORTH - 4 bdrm. Colonial, 2½ baths, den/fp, bsmt, fenced, patio, formal d/r. 744-1750.

BROOKHAVEN HAMLET - 4 bdrm. Colonial, ½ acre, cul-de-sac, Florida room, country kit., in-ground pool, full bsmt., mint, $180,000. Walter, Ext. 4605 or 286-1959.

Wanted

BANJO - six-string, good cond. for beginner. Fred Kuehl, Ext. 7947, 4823 or 588-2268.

STORAGE SHED - for multi-bicycle family in apt., reasonable. 362-1844, eves.

TRAINS - Lionel, American Flyer, accessories, any cond. brings good price. Carole, Ext. 3352 or 924-4097, eves.

BABYSITTER - Pt. Jeff vacinity, Tues. & Thurs, 11 a.m. to 12:30 p.m., 2½-yr.-old girl. Linda, 744-0722.

HAND TRUCK - appliance type, also smaller model needed. John, Ext. 4243 or 924-3492.

STUFFED ANIMAL - Curious George. Ed, Ext. 7786.

ENGINEER - to solve smoking fireplace problem. 698-1362, leave message.

VW BEETLE - for BNL experiment, only engine and rear axle need to function. Dave, Ext. 4019.

KIDS CONTROLLER - for Atari 2600, Sesame Street games. Maria, Ext. 2905 or 924-3756.

MAYO JARS - or others, jewelry, perfume, lipstick, nail polish, marbles, cars, small items to donate for fair. Ext. 2267.

17' CANOE - alum. or fiberglass. John, Ext. 7671.

DOCK SPACE - private residential, 20' I/O, Spring '87, fresh water, Shirley, Mastic, Moriches, Bellport, Patchogue. Tony, 924-5248.

Services

Services are listed as a courtesy to BNL employees. They are neither screened nor recommended by the Bulletin.

TUNE-UP - and winterizing, reasonable. Tim, Ext. 3496 or 281-7873 after 7:00 p.m.

PAINTING - interior, reasonable rates, BNL references. Pat, 924-7723, eves.

CARPENTRY - reasonable rates, 369-2838 after 5:30 p.m.

CERAMIC TILE - professionally installed, free estimate. Tony, 585-0178.

BABYSITTING - my home, Bellport, experienced, references. Maryann, 286-2435.

BRICKWORK - walks, patios, Belgium blocks, swim pools, landscape ties. Tony, 698-9274.

FIRESIDE CHIMNEY SWEEP - fireplaces, wood, coal & oil flues, stainless steel relining, caps, Lab. discount. 821-9690.

HOME MOVIES - transferred to video tape, call for details. Ray, 467-8297 after 6 p.m.

SEAMSTRESS - clothes made and altered, reasonable prices. Donna, Ext. 4430 or 369-2332 after 6 p.m.

ELECTROLYSIS - permanent hair removal, physician trained, licensed, free consultation, eyebrow shaping, by appoint. 331-4768.

SHEETROCK - and spackling, free estimate. Kevin, 563-1189.

PIANO - & classical guitar lessons from exper. qualified teacher, your home or mine. Ext. 7107 or 282-3192 after 7 p.m.

MAGICIAN - children's parties, Lab. dis., sculptured balloons, book early. 395-3963 after 6 p.m.

GUITAR LESSONS - beginner, 10-14 yrs. old, inexpensive hobby for kids, skilled musician, group rates, your home. Jim, 366-3195.

DISC JOCKEY - for Xmas or dance parties, big band to disco. George, 589-0819 or Otto, 588-2200.

In Appreciation

The family of Edward E. Shelton wishes to thank all of Ed's friends for their kind expressions of sympathy and for the contributions made to the Multiple Sclerosis Society in his memory.

— Edna Shelton and Family.

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

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