BROOKHAVEN BULLETIN
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BROOKHAVEN NATIONAL LABORATORY

# E855's Scintillating Approach: Using $BaF_2$ Crystals for Calorimetry

If the stimulus is "crystal," the response from most leaded glass-clinking connoisseurs would be "Lenox, Steuben, Waterford." However, ask Craig Woody, a Physics Department physicist and connoisseur of crystal scintillators for high-energy calorimetry, and his answer would be "barium fluoride."

Barium fluoride ($BaF_2$) crystals are the fastest inorganic scintillators in the world and also the most radiation-resistant.

Whether crystal or plastic, a scintillator emits a flash of light when struck by a high energy particle. And the higher the energy of the particle, the more light emitted. This makes scintillators like $BaF_2$ natural calorimeters — detectors that measure particle energy.

Its fast response to particles and resistance to radiation makes barium fluoride ideal to use as a calorimeter for high energy and nuclear physics experiments — especially those looking for rare processes using beams with high intensities and high collision rates. Such beams are supposed to circulate in the proposed national Superconducting Super Collider (SSC) and BNL's proposed Relativistic Heavy Ion Collider (RHIC).

Roger Stoutenburgh

**Standing before BNL's barium fluoride calorimeter for the upcoming experiment E855 at the Alternating Gradient Synchrotron are some of the collaborators: (top, from left) William Lenz, Physics Department; Joseph Cuccia Jr., Physics; David Lissauer, Physics; Mark Tincknell, Oak Ridge National Laboratory; Craig Woody, Physics; Daniel Shapira, Oak Ridge; (front, from left) Edward Fernandez, Physics; John Sondericker, Physics; Helio Takai, Physics.**

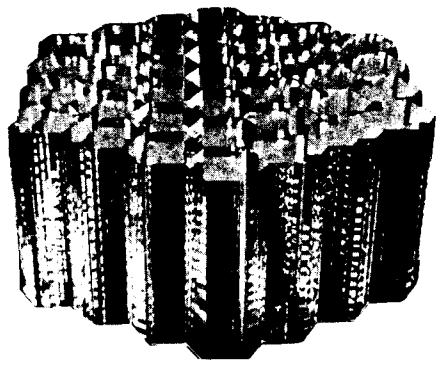
### Crystal-Clear Physics

An upcoming experiment, E855, at BNL's Alternating Gradient Synchrotron (AGS) will use $BaF_2$ crystals, along with parts of the E814 heavy-ion spectrometer, to explore present physics with a proven detector and to map out future physics and detector possibilities for RHIC.

E855 is a collaboration among BNL, Oak Ridge National Laboratory (ORNL) and CERN. The E855 research team includes David Lissauer and Thomas Ludlam, BNL; Amlam Ray, Jorge Gomez del Campo, Mark Tincknell, James Beene and Frederick Bertrand, ORNL; and Jorgen Schukraft and William Willis, CERN. Woody and Dan Shapira, ORNL, are the collaboration's cospokesmen.

E855 will use two $BaF_2$ calorimeters to detect "soft" gamma rays; that is, those with energies of only a few million electron volts. One detector, built in Brookhaven's Physics Department, consists of 38 crystals. The other, containing 19 crystals, was built by Oak Ridge.

The two detectors will be used to search for an excess of low-energy photons. These "soft" photons are produced in hadron collisions — from sources that heretofore have not been explained by theory.



Mort Rosen

**An array of barium fluoride crystals.**

In collisions of hadrons, which are particles made up of quarks and gluons, excess pairs of particles called leptons, such as electrons and positrons, have been observed as a result of the decay of so-called virtual photons.

E855 will search for a similar excess of real photons. If it exists, then the E855 collaborators want to know if the real photons are made in the same fashion as lepton pairs. If they are, then the researchers will question whether or not the same source produced both.

A thermal source is one possible theoretical explanation: It is thought that low-energy pairs of quarks and antiquarks annihilate to form real or virtual photons during hadron collisions.

During heavy-ion collisions, however, theorists believe that a much larger number of both types of photons could be produced if a quark-gluon plasma is formed. It is predicted that a quark-gluon plasma will reach the high temperature and densities that existed momentarily after the Big Bang — and BNL's proposed RHIC will be used in the search for the quark-gluon plasma.

### Fast Flash & Slow Scintillation

Following hadron or heavy-ion collisions, for every high energy particle that strikes them, $BaF_2$

(Continued on page 2)

# Consistency in HEP Computing

Roger Stoutenburgh

Arnold Peskin (standing), head of BNL's Computing & Communications Division (CCD), greets about 50 participants at the 12th international HEPVM conference, held at Brookhaven on August 14-17.

HEPVM stands for high energy physics virtual machine. Scientists in high energy physics (HEP) at laboratories around the world are among those who use IBM's computer operating system, called VM.

The HEPVM collaboration was formed in 1984 to ensure that any changes to this operating system are made at all the high energy laboratories — so that a physicist who has learned the VM system at one HEP lab will know the operating system when using the computers at any other.

The original collaborators include the European laboratory CERN; Rutherford Appleton Laboratory, United Kingdom; two French labs, IN2P3 and DPH-PE; and the Stanford Linear Accelerator Center — all of which have been major modifiers of the VM system. About three-dozen code users, including BNL, are considered satellite members of the HEPVM collaboration.

The collaborators and satellite members meet twice a year; every two years, the HEPVM conference comes to the U.S. This year's gathering was organized by Edward McFadden, CCD.

A major outcome of this conference was the announcement that the collaboration has successfully moved the HEPVM code to IBM's updated and expanded operating system, VMXA.

# *Another Live Grenade Found*

What do you do with a hand grenade?

*Nothing!*

"Don't touch it. Don't even pick it up to see if it really is a hand grenade. Don't cover it with anything. Just mark the location and call Lab security." That's the advice given by Sergeant Bruce Payton of the Suffolk County Police Department's Emergency Services Section (ESS) following the most recent finding and detonation of a live grenade on site, last Friday, August 25.

Friday's incident marked the third time in the last month and the fifth time in less than a year and a half that munitions were found on site — remnants of the days in World Wars I and II when this was Camp Upton, a U.S. Army training camp. It also marked the third time that those who found them picked up and moved what later proved to be live devices.

"You've been lucky," said Payton. "Any type of military munition that has been exposed to the elements for a long period of time would be very hazardous. The fusing system is very sensitive. If corrosion affects the safety devices that keep it from going off, it could detonate very easily."

In fact, each of the devices was detonated safely by the ESS. "If you could see one of these things go off, you'd know it's no small thing," said Roy McWilliams, Site Superintendent, Plant Engineering.

Most of the devices found at the Lab have been buried underground since the end of World War II. The three grenades found in August were all unearthed during recent excavations, the latest discovered across the street from the Central Chilled Water Facility, now under construction on Rochester Street.

"There may be more out there," acknowledged Gerald Kinne, Assistant Director for Reactor, Safety and Security, "We are looking at ways to survey these areas for any additional devices. In the meantime, we urge you to be very careful not to touch or pick up strange objects. If you're not sure what it is, call Security, and let them handle it."

*Finding a potentially live grenade or other munitions qualifies as an emergency. Security's emergency phone number is Ext. 2222.*

# A New School Year — For the 25th Time

The children taught by Renée Bloch when she first came to the Upton Nursery School as an assistant teacher in the fall of 1965 could themselves be parents now. And, if they are, they may wish they could send their children to their earliest alma mater so they could have the benefit of "Mrs. Bloch's" warmth and caring, international outlook and years of experience.

But the unique experience of the Upton Nursery School is not available to everyone: Only BNL employees and their relatives may send their three- and four-year-old children to this cooperative preschool.

Those who can be enrolled attend small classes, from 8:30 to 11:30 a.m., Monday, Tuesday and Thursday, in the Recreation Building in the apartment area on site. Parents help as teachers' assistants on a revolving basis and manage the school's business.

That's the way it's been since a group of Lab parents started forming the Nursery School in March 1965. One of their first orders of business was to find a teacher, so they placed a notice in the Bulletin Board of June 23, 1965:

**NURSERY SCHOOL TEACHERS NEEDED**

The nursery school which will start at the Lab this fall is seeking experienced teachers. Anyone who wishes to have further information and obtain application forms should write to Mrs. Moon, in care of the Medical Department, or telephone Ext. 2785.

Renée Bloch remembers, "My husband Fritz worked at the Lab, and he was one of the ones who brought the Bulletin Board home." Formerly an associate chemist in the Department of Applied Science, Fritz Bloch is now retired from BNL.

Renée Bloch, a certified teacher, had the experience the parents sought, but she also had three children, almost 3, 4 and 5. So she returned to work a bit earlier than she had planned — taking two of her children along.

They all found themselves in a most unique setting: The 41 children who enrolled that first term hailed from eight different countries — England, France, Germany, Holland, Israel, Japan, Sweden and the U.S.

As the Laboratory draws staff and visitors from all over the globe, that heterogeneity has, of course, remained a trademark of the nursery school, and, says Bloch, "We do work that into our class activities."

In May, for example, the Japanese celebrate Children's Day. On that day, Bloch lets the children try on the outgrown children's kimonos she has been given over the years by parents. And, she says, "I always try to have a Japanese helping parent that day, to do Japanese things with us."

Another custom Bloch adapted for her classroom came from Israel, where, she learned last year, a whole class makes a book for a birthday child. "We do that now," she says. "And I hear from the parents what a nice thing it is."

Though the preschool program involves no formal academics, the children are introduced to letters and numbers informally. "I write their names on their pictures," explains Bloch, "and other things if they ask me to. By the end of the year they generally recognize their names. And numbers come up all the time. I'll ask 'How many of us are here today?' or 'How many apples do we need today?' The children are constantly learning."

They learn about cooking. "One theory is that, if they make the vegetable soup, they are more likely to eat it," says Bloch. Making butter is another culinary adventure, and parents usually bring in ethnic snacks. "The children may not always eat them," concedes Bloch, "they may only lick a finger, but it's a beginning."

They learn about nature and growing things. "You offer the children what you enjoy," Bloch says, "and I enjoy planting and growing things, so we do that. The children take the seeds out of marigolds themselves and plant them. And one of the miracles is that they get the same flowers they pulled the seeds out of!"

The children also learn about playing and working together. "We have stories almost every day," Bloch says, "I play the guitar frequently, and we sing. Even the children who don't speak English sing the songs in English. We sing in other languages too — we do *Frère Jacques* in four languages."

And the children who don't speak English learn the basics. Bloch, who is also familiar with French and German, can relate to their difficulties since she had also come to the U.S. at a young age, from Belgium. Today she speaks English without an accent, but with a precision that is unusual among those born in the U.S. "I do speak clearly," she acknowledged, "and that's an advantage for children and parents learning the language."

Roger Stoutenburgh

**Upton Nursery School teacher Renée Bloch reads with three-year-old Soren Roberts, son of James Roberts, Department of Applied Science. Soren will be in Bloch's class this year.**

But mostly, Bloch's students learn that school is a good place to be. "Clearly, one of the important things for any child's future is how they feel about school, and our children love it," Bloch says. "I hear from parents how delighted they are that this was their child's first school experience."

Bloch has found her own experience to be "delightful, endlessly interesting. It never gets boring, the children are different every year." In September, she will greet her 25th group of three-year-old students, while the four-year-olds will have a new teacher: Judith Van Asselt, wife of Associate Physicist Willem Van Asselt, Alternating Gradient Synchrotron Department.

For more information on enrolling your child in the Upton Nursery School, call Valerie Condemi, 399-1258, or Kathy Hershcovitch, 331-3785.

— Anita Cohen

## $BaF_2$ Crystals (cont'd)

crystals emit two flashes of ultraviolet light. The faster scintillation has a decay time of 0.6 billionths of a second, while the slower flash decays in 620 billionths of a second.

Called the fast scintillation component, the faster flash is the useful one for high-speed calorimetry. But, when resolving particle energies, if there is a high rate of events, the slow flash gets in the way, especially because it is four times brighter than the fast flash.

At the SSC, for example, the slow component from one event would still be visible when a second event came through a $BaF_2$ calorimeter. Hence, signals would pile up within the crystal calorimeter, making identification of which signals went with what particles impossible — that is unless the second flash could be suppressed.

Techniques to suppress the slow component are being explored by a BNL group, including Woody, and Paul Levy and James Kierstead, both of the Department of Applied Science. The most promising method is the addition of trace amounts of a rare-earth element, such as lanthanum, which suppresses the slow scintillation without affecting the fast flash or the crystals' radiation hardness.

Another method to detect $BaF_2$'s fast component uses the photosensitive gas TMAE, which cannot sense the slow flash and can be used in a wire chamber.

"$BaF_2$ is the only known scintillator that can be read out directly with a wire chamber, thus giving us lots of possibilities for highly segmented calorimeters, ones that can specify exactly where in space and time particle energies were detected," explains Woody.

**Scintillating Possibilities**

Recently, other alkali-halide crystals have also been found to be fast scintillators — possibilities for fast calorimetry. One is pure cesium iodide, which is not as fast as $BaF_2$, but has less of a slow flash. This material is being studied for use in large detectors at RHIC by BNL and Syracuse University collaborators because it is more available and less expensive than $BaF_2$.

As Woody concludes, "Barium fluoride is still the fastest and most radiation-hard scintillator around. It does a superb job as a detector in many experiments, such as our own E855. However, there are probably lots more new and interesting scintillators for fast calorimetry — and we're always looking for them."

— Marsha Belford

## Coming Up

**David Thouless, University of Washington Professor of Physics, will return to BNL in mid-September, for his third visit as Haworth Distinguished Scientist in the Physics Department. He will present a lecture of Lab-wide interest on Tuesday, September 12. His talk on "Physics, Mathematics and Mathematical Physics" will begin at 4 p.m. in Berkner Hall. A reception for attendees will follow the lecture.**

•

**The North Shore Pro Musica, an ensemble of well-known musicians who are local residents, will present a concert at in Berkner Hall on Thursday, September 14, at 8:30 p.m. On the program will be chamber music by Brahms, Haydn, Hindemith and Rachmaninoff. Tickets, at $6 each, may be purchased at the door the night of the performance.**

## Service Awards

**Thirty-Five Years**

**Marilyn McKeown**.....Physics

**Thirty Years**

**Joseph Bauernfeind**.....AGS

**Twenty-Five Years**

**Robert Bergoffen**.....Reactor
**Charles E. Botts**.....Plant Eng.
**Michael Carroll II**.....S&EP
**John R. Doscinski**.....Staff Serv.
**Pierre Grand**.....Nuc. Energy
**Darrel D. Joel**.....Medical
**Roman J. Nawrocky**.....NSLS
**George A. Taylor**.....CCD

**Twenty Years**

**Ruth Faine**.....CCD
**Kenneth P. Mohring**.....Medical
**Barbara R. Nichols**.....Physics

**Ten Years**

**Enrique E. Abola**.....Chemistry
**Rodulfo A. Alforque**.....NSLS
**Phylis A. Bates**.....Sup. & Mat'l
**Donald P. Becker**.....App. Science
**Nichole M. Bernholc**.....S&EP
**Edward F. Gaudet Jr.**.....NSLS
**Christian T. Neuberger**.....CCD
**Frederick T. Reinert**.....Cent. Shops
**Thomas J. Romano**.....NSLS
**Pranab K. Samanta**.....Nuc. Energy
**Yung K. Wang**.....Nuc. Energy

## Inside Info

**Russel J. Reaver** has joined the Safeguards & Security Division as the manager of the Police Group.

Recently retired as a colonel, Reaver served in the U.S. Air Force for 26 years as a pilot, intelligence officer and commander of several large security police units, among other positions. During his hitch, he gained experience as the on-the-scene commander during several crises, including public demonstrations, explosions and plane crashes.

Reaver is a graduate of the University of Missouri and received an MBA degree from Webster College.

•

**Leon Green** and **Arthur J. Waligura**, Department of Nuclear Energy, were each named winners of the 1989 Distinguished Service Award given by the Institute of Nuclear Materials Management (INMM) at its 30th Annual Meeting, held in Orlando, Florida, in July.

The INMM's Distinguished Service Award is given for high level of accomplishment in and service to the nuclear materials safeguards and management profession. Green and Waligura were specifically cited as follows:

• **Leon Green** — In recognition of outstanding contributions for over 30 years in nuclear-related fields covering experimental reactor concepts, the International Atomic Energy Agency (IAEA), and the leadership of the Technical Support Organization and the International Safeguards Project Office.

• **Arthur J. Waligura** — In recognition of relentless effort and outstanding contributions for over two decades to international safeguards as administered by the IAEA and the International Safeguards Project Office.

With some 900 members, the INMM bestows awards on members and professional associates to provide them with tangible evidence that their efforts to promote the nuclear materials safeguards and management profession are recognized and appreciated by their peers.

**Today:**
**BNL Blood Drive**
**Berkner Hall**
**9:30 a.m to 3 p.m.**
***Walk-ins welcome!***

## Stockroom Closings

All Supply & Materiel Division (SMD) stockrooms will be closed for inventory on Thursday and Friday, September 14 and 15. Please make all necessary withdrawals of stock prior to 3 p.m., Wednesday, September 13. This will give SMD sufficient time to prepare for the inventory.

Emergency requirements should be processed through John Scharpeger, Ext. 2974.

## Football Sign-Up

The BNL Touch Football League Committee announces that play will begin in September and extend to the end of October. Games will be played at the BERA Recreation park on Monday and Thursday evenings at 5:20 p.m.

Entry blanks and game rules are available at the BERA Sales Office, weekdays from 9 a.m. to 2 p.m. New teams are welcome. A players' pool will accommodate those who are not yet included on an organized team's roster.

For more information, contact league chairman John Blydenburgh, Ext. 2310.

***Get Your Tickets Now***

## BERA Special Event

A gala evening of fashion, dining, dancing and theater lies ahead for all those attending the BERA Special Event on Saturday, October 21 in Berkner Hall.

For just $27.50 per person, you can see a fashion show at 6.30 p.m., dine on your choice of chicken cordon bleu or prime rib at 7:30 p.m.; watch musical numbers and skits by members of the Theater Group and others from 9 p.m., enjoy dessert from the Viennese table, with coffee or tea, afterwards — and then dance till 2 a.m. to an oldies band in the Cafeteria, or to dee-jay music in Rooms A and B. All evening, a cash bar will be open.

Tickets are now on sale from 11 a.m. to 1 p.m., Thursdays and Fridays in the Cafeteria. Only 350 tickets are available, to be sold on a first-come, first-served basis. More information can be obtained from BERA Special Events Committee chair Rosalie Piccione, Ext. 3160, or member Betty Pergan, Ext. 2937.

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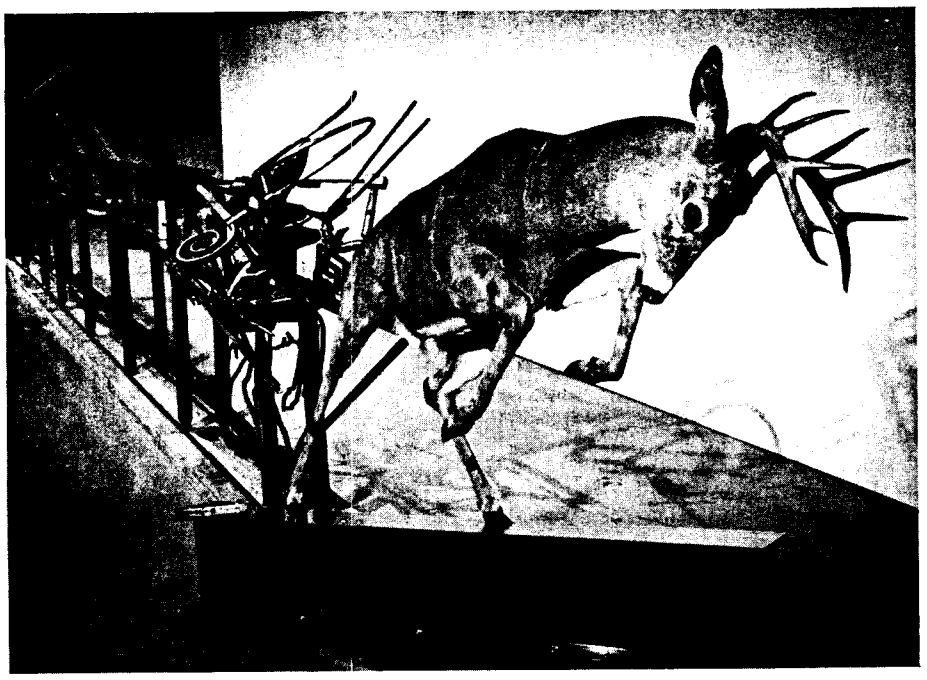
# *The Standard Model (abandoned)*



Roger Stoutenburgh

**What is a deer doing in the Collider Center? It's part of the 40-foot-long sculptural installation, *The Standard Model (abandoned),* which is now on view there. Artist Stephen Rueckert searched widely among taxidermists to find a creature that would effectively complete his sculpture. He believes he has found it in this deer, one killed by an automobile but preserved in a fighting posture. You can judge the sculpture for yourself by visiting the Collider Center on Wednesdays, Thursdays and Fridays through September 15, from 11 a.m. to 2 p.m. Additionally, the exhibit will be open two Saturdays, September 9 and 16, from 11 a.m. to 4 p.m.**

## Aerobic Dance & Stretch Classes to Start

It's September — time to think about getting back to class — with the Aerobic Dance Club. Instructor Pat Campbell will lead the classes on the fall program:

- **Stretch** — Classes involve a choreographed program of exercises that concentrate on stretching and strengthening various muscle groups.
- **Aerobic Dance** — Classes emphasize cardiovascular improvement through vigorous, choreographed exercise.

Classes in aerobic dance will be held on Tuesdays and Thursdays, while stretch classes will be held on Mondays. All classes run from 5:15 to 6:15 p.m. Participants may take any or all of these classes. Mats are recommended for floor exercises.

The fee for each ten-week session (M, T or Th) is $30, payable at registration, which will precede the first classes:

- **Stretch** — Monday, September 11.
- **Aerobic Dance** — Tuesday, September 12, and Thursday, September 14.

For location, please call one of the following people before the first classes: Bill Leonhardt, Ext. 2378; Elinor Norton, Ext. 4355; or Janet Sillas, Ext. 2345.

## New Season At Swimming Pool

Tickets for a new four-month season will be sold at the pool starting Tuesday, September 5.

Summer season tickets are valid through today, Friday, September 1.

The pool will be closed over Labor Day weekend: Saturday, Sunday and Monday, September 2-4.

**Schedule, starting 9/5:**

**Monday through Friday**

| | |
|---|---|
| 11 a.m.-1:30 p.m. | employees only |
| 1:30 p.m.-2 p.m. | reserved for speed swimming and training |
| 5 p.m. to 9 p.m. | employees, families and guests* |

**Saturday and Sunday**

| | |
|---|---|
| 1 p.m.-5 p.m. | employees, families and guests* |

**Fees for new season:**

**Season tickets** (fees not prorated)

| | |
|---|---|
| Individual membership | $30.00 |
| Family membership | $40.00 |

**Daily Admissions**

| | |
|---|---|
| employee or family member** | $1.50 |
| guest* | $2.00 |

* **Guest ruling:** One guest per employee is permitted. Advance arrangements for more guests, up to a maximum of five at any one time, must be made at the Recreation Office in Personnel.

**Must live in the employee's household.

## Fall Softball

The Softball League is trying to set up a fall schedule for anyone interested in playing modified mixed-league rules on either Tuesday or Wednesday evenings, beginning at 5:20 p.m. Play will begin the week of September 11.

Those interested should contact Mickey Haller, Ext. 7908, Denise Miesell, Ext. 4962, or Marty Leach, Ext. 3813, no later than Friday, September 8.

## Hospitality News

Ina Holl works at the Max Planck Institute of Art in Munich, Germany, but she is a frequent visitor to BNL. Here now, she will be the guest speaker — on "Silk Paintings" — at the Hospitality Committee's next get-together, on Tuesday, September 12, at 9:30 a.m., in the Brookhaven Center. If you would like to try your hand at this art, bring a watercolor brush; Holl will furnish the other needed materials.

Spouses of Laboratory employees and guests are welcome. Refreshments will be served, and free baby-sitting will be provided, so bring the children.

**Want to Be a Guest Speaker?**

The Hospitality Committee is looking for people who would like to be guest speakers at future get-togethers. Such topics as the customs and cultures of other countries are always interesting. Anyone interested should come to the next get-together or call Milica Stevanovic, 821-6916.

## Arrivals & Departures

### Arrivals

**Betsy J. Schwartz** . . . . . Instrum.

### Departures

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

**Roger L. Tanner** . . . . . App. Science
**Jerry Cooperstein** . . . . . Physics
**Satinder S. Sidhu** . . . . . NSLS
**Valerie A. Yantsos** . . . . . Biology
**Denise Guerra** . . . . . Medical
**William P. Koncelik** . . . . Con. & Proc.
**Pamela Gibbs** . . . . . Biology

## Metropolitan Opera Ticket Sale

Family-circle tickets for certain performance of the 1989-90 Metropolitan Opera season will go on sale on Wednesday, September 5, at the BERA Sales Office in Berkner Hall, which is open weekdays, 9 a.m. to 2 p.m. Employees may purchase as many pairs of tickets as they wish. All sales are final; no refunds or exchanges.

**Ticket prices:**

| | |
|---|---|
| Tuesday evening | $18.50 |
| Friday & Saturday evenings | $19.50 |

**Schedule:**

| | |
|---|---|
| Tuesday, Sept. 26 | *Il Trittico* |
| Friday, Sept. 29 | *Il Trittico* |
| Saturday, Oct. 14 | *Il Trittico* |
| Tuesday, Oct. 31 | *La Traviata* |
| Saturday, Nov. 4 | *La Bohème* |
| Friday, Nov. 24 | *Die Frau ohne Schatten* |
| Saturday, Dec. 16 | *Aida* |
| Tuesday, Dec. 19 | *Les Contes d'Hoffman* |
| Friday, Dec. 29 | *Wozzeck* |
| Saturday, Dec. 30 | *Die Fledermaus* |
| Tuesday, Jan. 2 | *Wozzeck* |
| Saturday, Jan. 20 | *Der Fliegerde Hollander* |
| Friday, Jan. 26 | *Cosi Fan Tutte* |
| Tuesday, Jan. 30 | *La Gioconda* |
| Saturday, Feb. 10 | *Faust* |
| Tuesday, Feb. 13 | *Faust* |
| Friday, Feb. 16 | *Faust* |
| Saturday, Feb. 17 | *Rigoletto* |
| Saturday, Mar. 3 | *Samson et Dalila* |
| Tuesday, Mar. 6 | *Manon Lescaut* |
| Friday, Mar. 9 | *Otello* |
| Friday, Mar. 23 | *Manon Lescaut* |
| Friday, Apr. 6 | *La Bohème* |
| Tuesday, Apr. 10 | *Die Fledermaus* |
| Friday, Apr. 20 | *Don Giovanni* |
| Saturday, Apr. 21 | *Il Barbiere di Siviglia* |

## Gym Reopening

The gymnasium will reopen on weekends beginning Saturday, September 9.

## Note to Diners

The Laboratory will be closed on Monday, September 4, for the Labor Day holiday, and food services will be affected as follows:

- **Cafeteria** — Snack bar will be open from 9 a.m. to 2 p.m. on Saturday, Sunday and Monday, September 2-4.
- **Brookhaven Center** — The Tap Room will be closed Saturday through Monday, but will reopen at 5 p.m. on Tuesday, September 5.
- **Vended Food Service, Bldg. 912** — Will be in operation throughout the holiday weekend.

## Cafeteria Menu

| | | |
|---|---|---|
| **Monday, September 4** | | |
| Soup: Chicken noodle | (cup) | .75 |
| | (bowl) | .95 |
| Yankee pot roast w/pot. or veg. | | 3.10 |
| Roast turkey w/giblet gravy & pot. or veg. | | 3.10 |
| Lite-line: Broiled turkey w/pot. or veg. | | 3.10 |
| Hot deli: Tuna-melt burger | | 3.10 |
| **Tuesday, September 5** | | |
| Soup: Minestrone | (cup) | .75 |
| | (bowl) | .95 |
| Spaghetti & meatballs w/garlic bread | | 3.10 |
| Chicken cordon bleu w/pot. or veg. | | 3.10 |
| Lite-line: Ambrosia salad w/melon | | 3.10 |
| Hot deli: Open roast beef sandwich | | 3.10 |
| **Wednesday, September 6** | | |
| Soup: Navy bean | (cup) | .75 |
| | (bowl) | .95 |
| Beef teriyaki w/pot. or veg. | | 3.10 |
| Turkey chimichangas w/rice | | 3.10 |
| Lite-line: Pasta salad | | 2.85 |
| Hot deli: Veal Parmesan hero | | 3.10 |
| **Thursday, September 7** | | |
| Soup: Cream of mushroom | (cup) | .75 |
| | (bowl) | .95 |
| Broiled chicken w/pot. or veg. | | 3.10 |
| Meat loaf w/pot. or veg. | | 3.10 |
| Lite-line: Ham salad plate | | 2.85 |
| Hot deli: Hero by the inch | (inch) | 1.35 |
| **Friday, September 8** | | |
| Soup: Fish chowder | (cup) | .75 |
| | (bowl) | .95 |
| Tricolor pasta w/beef | | 3.10 |
| Fillet of fish Florentine w/pot. | | 3.10 |
| Lite-line: Broiled whitefish w/pot. or veg. | | 3.10 |
| Hot deli: Fish on a bun | | 2.85 |

# Classified Advertisements

## Placement Notices

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

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

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

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

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

**LABORATORY RECRUITMENT-** Opportunities for Laboratory employees only.

4099. SECRETARIAL POSITION - Requires AAS in secretarial science or equivalent and a thorough knowledge of Laboratory policies and procedures. Excellent communication skills and well-developed interpersonal skills also required. Word processing required; IBM PC WordPerfect preferred. Will perform diverse secretarial duties for Safety and Risk Evaluation Division Head including preparation of reports and correspondence, some of which may be confidential. Additional responsibilities will include arranging and processing travel and coordinating the activities of support staff. Department of Nuclear Energy.

4100. ENGINEERING POSITION - Requires BS/MS in chemical or nuclear engineering and a minimum of 10 years' experience in hazardous-waste management. Strong background in project management required; experience in health physics is very desirable. Responsibilities include oversight for the Laboratory's waste minimization program, facility decommissioning planning and coordination of various waste-management and environmental restoration projects. Familiarity with environmental regulations and QA is highly desirable. Safety & Environmental Protection Division.

4101. COMPUTER POSITION - Requires MS in computer science and three years' experience, preferably with VAX VMS systems. Experience working with and interfacing to large commercial packages as well as participation in the development and maintenance of large in-house codes required. Experience with FORTRAN, ASSEMBLER and PASCAL required; "C" and ADA useful. Experience in designing and documenting systems important. Will be involved in data base, code, and systems management; networking, graphics and technical support. Physics Department.

## Motor Vehicles & Supplies

79 BUICK LESABRE - 8-cyl., a/t, asking $1,000; '80 Ford Pinto, a/t, asking $650; '80 VW Rabbit, diesel, s/t, parting out. 654-4661 eves. & wknds.

79 PONTIAC BONNEVILLE STATION WAGON - 8-cyl., p/s, p/b, a/c, p/w, o/c, 107k mi., good cond., $1,000. Ronny, Ext. 2963 or 3103 after 6 p.m.

79 HONDA CIVIC - good transportation, new tires, brakes, water pump, timing belt, s/t, 95k mi., $500. Bill, Ext. 3369 or 929-6442.

79 CHEVY CAPRICE - a/t, p/s, p/b, a/c, 4-dr., 87k mi., good cond., runs well, $900. Ohta, Ext. 4392 or 3098,.

78 CHEVY NOVA - a/t, p/s, radio, good cond., orig. owner, $850. Sandy, Ext. 3369 or 286-1022.

77 OLDS CUTLASS - p/s, p/b, a/t, a/c, runs well, $575. Ext. 4192.

77 CHEVY CAPRICE CLASSIC - 49k mi., good cond., $1,100. 929-6646.

77 VW RABBIT - 4-dr., high mi., needs work, $50. Yu, Ext. 5012.

77 PONTIAC GRAN PRIX - good cond., needs rear end installed, all parts included, $325; '77 Buick Century, any parts, very cheap. Ext. 3783.

76 AMC PACER - 86k orig. mi., must-see cond., great little car. Camille, 325-1756.

76 CORDOBA - like new, 15.5k mi., 2-dr., p/s, p/b, p/w, a/c, a/t, V-8. Bob or Nick, 584-5717 after 5 p.m.

73 BRONCO - 302 V-8, a/t, everything works. 563-9346.

TIRES - 1 yr. old, low mi., still mounted, 5, 175/70R13 Goodyear Arrivas, fit Datsun, all for $125. Joe, Ext. 2214/4500 or pager, 0942.

TOYOTA MOTOR — 20R, 1978, out of car, runs well, will deliver, $350. Ext. 2021 or 288-2080.

TIRES - 2, Dunlop Gold-Seal, belted, P215/75B15, very good cond., $20; Volvo rims, 2, 15", $20. Bill, Ext. 3369 or 929-6442.

TIRE - new Firestone 721, 235/75R15, Eldo rim, $40. Ernie, 588-4987.

TIRES - 5, 185/70R14 on Toyota rims, very good cond., $125 takes all. Chas, Ext. 2021 or 288-2080.

NISSAN AIR FLOW BOX - brand-new, for fuel injected cars, paid $450, will neg. Janet, Ext. 2345.

88 HYUNDAI EL GL - h/b, 3-dr., red, 5-spd., p/w, sunroof, am/fm cass., 15,700 mi., very good cond., $5,000. Ext. 4629 or 744-5432.

87 FORD F250 - a/t, 4x4, a/c, am/fm, 16k mi., 33" tires, chrome rims, bedliner, vinyl bedcover, mint, $12,500. 467-1117 or 588-1233 eves.

86 FORD ESCORT - 2-dr., 36k mi., ps/, p/b, a/c, a/t, excel. cond. Ext. 2343 or 563-2889.

81 BUICK SKYLARK - 80k mi., 4-dr., runs well, good cond., must sell, asking $1,600 or best offer. Ramesh, Ext. 4410/7684 or 924-0443.

81 RELIANT WAGON - clean, reliable transportation, $950. Dick, Ext. 3273.

80 DATSUN 210 - h/b, 4-spd., good transportation, sunroof, blue, asking $500. Chris, Ext. 7189.

79 HONDA CIVIC - new tires, brakes, water pump, timing belt, s/t, good transporation, $450. Bill, Ext. 3369 or 929-6442.

79 CHEVY CAPRICE - 305 V-8, a/t, p/s, p/b, air shocks, body good, runs well, $1,095. Ed, Ext. 3466.

79 CHEVROLET MONTE CARLO - rebuilt engine, tranny, new shocks, brakes, a/c, carefully maintained, $1,700. Ext. 4965 or 475-8242.

79 FORD LTD - 8-cyl., 81k mi., a/t, p/s, p/b, a/c, clean in & out, asking $1,000. Lee, Ext. 3104.

77 PLYMOUTH GRAN FURY WAGON - high mi., many new parts, 4 new Michelin tires, $750. 744-1194.

76 FORD GRANADA - runs well, $555. Michael, Ext. 3790.

75 F250 PICKUP - 4wd, rebuilt a/t, clean, best offer; '76 Saab for parts; '68 Ford pickup & plow. Dave, 369-0517.

74 JEEP - w/homemade pickup truck bed, needs finishing work, runs o.k., 4wd, asking $300. Ext. 3783.

73 FORD WAGON - registered & running, 429 cu. in. John, Ext. 4632 or 298-4608.

73 DODGE POLARA - 4-dr., 8-cyl., 135k mi., reliable, runs well, $350. 924-8213.

71 BUICK CENTURION CONVERTIBLE - needs restoration, 0 mi. on rebuilt 455 cu. in. turbo 400 trans., $550. 472-4228.

67 FIREBIRD CONVERTIBLE - 4.1 liter, rebuilt engine & transmission, interior mint, needs paint, $4,000 neg. 874-2818 after 5 p.m., leave message.

50 DESOTO SEDAN - 65k mi., nice cond., $3,750. Ext. 3783.

TRAILER - 5'x8', enclosed, $300. 345-5738.

TIRES - 2 snow tires & rims, Goodyear 7.00-14, fits Chrysler or Ford, $35 for both. Bill, Ext. 4986 or 563-1940.

TIRE - new Firestone Supreme P205/75R15, '75-'89 Chevy van rim, $65; windshield, tinted, '76-76 Dusteer/Demon, $25. 727-3608.

RIMS - chrome to fit Nissan pickup, set of 4, 14", $50. Frank, Ext. 3499 or 736-2575.

RIMS - 4, Ford Ranger pickup, rally wheels, 14x5.5, complete w/lugs, good cond., $60. 727-3600.

MOPED - 600 miles, $250. Ext. 4399.

## Boats & Marine Supplies

25' CHRIS CRAFT - 1975, sleeps 4, Loran, D.F., hot & cold, swim platform, many extras, $5,500. 475-8162 eves.

21' FOUR WINNS - 1983, fiberglass Liberator, 185-h.p. I/O, F.W.C., power steering, cuddy cabin, full canvas, will demo, $6,900. Jutta, 331-3256.

18' FIBER FORM - 1977, 120-h.p. OMC I/O, new top, trailer, good cond., $2,500. Ext. 4547.

17' BAYLINER - 1988, cuddy cabin, 85-h.p. Force o.b., low hrs., like new, must sell, $8,600 neg. 286-5620.

17' ARISTROCRAFT - fiberglass, 60-h.p. Merc cruiser I/O, recently rebuilt, w/trailer, ready to go, $1,575. Mark, Ext. 2599.

AMF SUNFISH - 1974, sail, booms, mast, rudder & daggerboard, new in 1985, used 1 season, $800. 286-1097.

CLAM BOAT - rakes, etc., reasonable offer. Ext. 2259.

JET SKI - 1987, Kawasaki 550, pole spring, 1987 trailer, less than 30 hrs. use, excel. cond., $2,900. 395-1554 eves.

OUTBOARD MOTOR - 1985, 110-h.p. Johnson, new powerhead in '88, power t/t, oil injection, s.s. prop., excel. cond., $2,500. 589-3072.

## Miscellaneous

CRAFTS - decorated hats, photo albums, frames, brooms, wall hangings, etc., made to order. Karen, Ext. 3513 or Lois, Ext. 4904/929-4753.

TICKET - American Airlines, Islip to Dallas, non-stop, Sept. 13/89, $50. 286-1097.

BABY STROLLER - Cosmos brand w/carriage feature, $30. Ext. 4985 or 331-8459.

HANDBAGS - leather handbags at wholesale prices, new shipments every week. Jodi, 928-9136 after 6 p.m.

LAWN SPREADER - $9; bottle capper, $10; 4 golf clubs, $10; cherry seeder, $12. 878-6637.

## Furnishings & Appliances

HANGING LAMP FIXTURE - $20; walnut chair, $20; end table, $20; twin bed, $20; chair, $10. Kathy, 744-2203.

WARDROBE CABINETS - 2, metal, 24"x20"x64", brown, $45/each. Bill, Ext. 4986 or 563-1940.

REFRIGERATOR - average size, works well, not self-defrost, $100. 924-6751.

FLATWARE - gold electroplate, never used, service for 8, rose pattern, $25; deacon's bench, $30. Gerry, 281-8538.

BATHROOM VANITY - 21"x36", dark wood, good cond., $50. Jerry, Ext. 7427.

LIGHTING FIXTURE - wagon wheel, approx. 2' dia., 4 hurricane lights w/horse weather vane decoration in middle, $50. 589-6803.

REFRIGERATOR - Westinghouse, side-by-side, 25 cu. ft., excel. cond., $200. Lenny, Ext. 4467.

## Tools, House & Garden

FOREVER DOOR - white, crossbuck, $75; wood front door, 6 lights, crossbuck, $75; slider window, 3'x4', w/storm & blind, $30. 399-1868.

SOLAR COLL. & TANK - 22" clam rake, w/short handle, make offer. Ron, Ext. 4702 or 289-1003.

PUMPS - Carter, 5, model P4594, high pressure race pumps, $65/each. Sharon, Ext. 2493.

RADIATORS - cast iron, several sizes. 878-1805.

GENERATOR - 4kW, from BNL purchase, w/muffler, $400 or best offer. Ext. 7505 or 689-8605.

ARC WELDER - Sears, 35-230 w/many accessories, orig. $440, asking $285. Bill, Ext. 4986 or 563-1940.

SNOW PLOW - 8', power angle, fits 73-79 Ford, asking $500; Sears kerosene heater, 22,000 Btu, used twice, asking $75, must sell both. 474-5715.

CIRCULATOR PUMP - Grundfos UP25-64SF, stainless steel, $40. Joe, Pager 0925 or 728-1859 eves.

## Sports, Hobbies & Pets

BIKE - 26", woman's, $25; punching bag, balloon type/mount, $15; bunk bed, $10. Ext. 2259.

VIOLINS - ¾ size, German, $270; ⅛ size, Suzuki, $100, both very good cond. Peter, Ext. 7687 or 744-1112.

BICYCLE - boy's, 10 speed, ¾ size, $45. G. Williams, 286-3863 eves.

ROWING MACHINE - Dynaflow, $35. Sue, Ext. 2888.

SPINET PIANO - Wurlitzer, needs tuning, asking $600. Ext. 3488 or 924-0942 after 5 p.m.

CHESAPEAKE PUPPIES - 7 weeks old, ch. sire & dam, 5 males, 1 female, OFA. Tony, Ext. 7518.

CRAFTS - 1 crewel, 1 needlepoint, 4 counted cross-stitch, $36.50/all. Cathy, Ext. 2063.

BICYCLE BASKET - metal, 21"l x 14½"w x 9"d, D9, good cond., $10. 727-3608.

ZOOM LENS - for Canon cameras. Henry, Ext. 3817 or 874-2775.

IBM TYPEWRITER - model 12, electric, new ribbon, just serviced, $50; Chinon Bellami camera, 35mm, compact, w/flash, $85. Joann, 472-6742.

## Audio, Video & Computers

ATARI 800XL - w/printer, tape drive & many game cartridges, etc., $100. Ext. 4399.

DUAL DISK DRIVE - 8" General Data, $20. Victor, Ext. 2395.

COLOR TV - RCA, 13", excel. cond., $90. Julie, Ext. 2963/7938 or Pierre, Ext. 3097 eves.

COLOR TV - Sharp Linytron, 19", 1 year old, $185; Miele vacuum S2341 w/turbo brush, $180; platform bed w/futon, $165. P. Vincent, Ext. 2752.

TELEVISION - b&w, 13", $20; nylon carpet, orange, 11'x10', $25. Bill, Ext. 3369.

COMPACT DISC PLAYER - JVC model 220, single disc, remote capabilities, etc. Frank, Ext. 3120.

VIDEO CAMERA - needs VCR deck, 10 to 1 zoom, excel. cond., orig. $1,800, sell for $325. Ron, Ext. 5305.

WORD PROCESSOR - Brother, portable, 2 years old, built-in Word Spell, quality daisy wheel printer, 64k memory, $1,300. Ext. 5158.

STEREO - SONY, am/fm cass., 2 detachable speakers. Wendy, Ext. 3206.

PROJECTION TV - Quasar, 60", $100; Quasar 36" rear projection stereo TV, needs some work, $50. Frank, 281-1457.

## Free

KITTENS - 4, BNL born, very cute, 1 calico, 3 gray w/tiger stripes. Lemar, Ext. 2332 or 2333.

KITTENS - 1 male, 1 female, need homes, 5 weeks old, raised with dogs & kids. Ron, 286-3386.

## Yard Sales

BELLPORT - Sept. 2 & 3, 8 Brookside Ave. Ext. 2377.

ROCKY POINT - 2-family, pre-move sale, 53 Aloma, Sept. 2, 9-2, rain date, Sunday, Sept 3. 821-3925.

SHIRLEY - furniture, bric-a-brac, toys, air conditioners, kerosene heaters, dryer, moped, weight bench, pool table, etc. 399-1868.

WADING RIVER - basement sale, electric contour bed, $100; occasional chairs, sewing machine, VW car rack, $15, good bargains, 929-4688, for appt.

## 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

BELLPORT - 3-bdrm. ranch, furnished, l/r, d/r, eik, 2 baths, den, garage, full bsmt., avail. immed., $1,100/mo. + util., 1 mo. sec. Fred, Ext. 3155.

BELLPORT VILLAGE - 2 bdrms., sleeping loft, 2 full baths, outside hot tub, decks, totally secluded, steps to golf & tennis, $1,200/mo. + util. Susan, Ext. 2888 or 286-0422.

CENTER MORICHES - 2-bdrm. apt., recently renovated, prof. couple, $650/mo. + util. Ext. 4547 or 878-1178.

MASTIC BEACH - 3-rm. apt., close to Lab & beach, $600/mo. includes util. 281-8357 after 5:30.

RIDGE - furnished studio apt w/fenced-in yard, kitch., priv. ent., nonsmoker, 5 min. from Lab., $450/mo. 744-8632.

ROCKY POINT - 1-bdrm. apt., d/w, a/c, 12 min. to Lab, very quiet, $625/mo. + elec. flex. lease. 821-3618 after 6 p.m. or weekends.

ROCKY POINT - 3-bdrm. ranch w/large fenced yard, eik, partial bsmt., 3 blocks to beach, $950/mo. + util. 821-3925.

RONKONKOMA - Nob Hill, 2 bdrm. condo, all appl., w/w, patio, a/c, pool, tennis courts, clubhouse, avail. October, $900/mo. refs. & sec. req. Ext. 4525 or 981-4696 after 6 p.m.

NORTH SHIRLEY - unfurnished, 1-bdrm. apt., full bath l/r-kitch. combo, w/w, 3 miles to Lab, $600/mo. incl. util. & cable. 395-9112.

SHIRLEY - 4-bdrm. Colonial, $1,500/mo. or $450/bdrm. 399-1869, see "FOR SALE."

SHIRLEY - 1-bdrm. apt., l/r, eik, full bath, w/w, no pets, single working adult, $575/mo. + sec., incl. utils., avail. 10/1, 281-1840 after 6 p.m.

## For Sale

CENTER MORICHES - 3-bdrm. ranch, gar., shed, excellent location, near bay, city water, $142,900. 878-0175.

MASTIC - 3-bdrm. ranch, ¼ acre, 1½ baths, den, fin. bsmt., deck, appl., house fan, 3 ceiling fans, shed, fence, near school, shopping, 15 min. to Lab, ask. $115,000. 265-2366 after 6 p.m. wknds.

MASTIC BEACH - 3-bdrm. ranch w/detached gar., Florida rm., f/p, 80'x100', low taxes, alum. siding, full financing avail. Sue, Ext. 7235 or 395-3529.

MASTIC BEACH - 3-bdrm., eik, l/r, d/r, f/p, w/w, 5 appl., waterview, beach, marina, $105,000. Ext. 3867/3525 or 399-1249 eves./wkends.

MIDDLE ISLAND - Lake Pointe, 2-bdrm., cac, gas heat, w/d, l/r, d/r, wood deck off master bdrm., tennis, pool, clubhouse, asking $81,000, neg. Bob, 924-7316.

MIDDLE ISLAND - Coventry Manor, 3-bdrm. townhouse, 2 baths, kit., l/r, d/r, laundry rm., 5 app., cac, pool, tennis, encl. patio, $106,000. Rosalie, Ext. 3160 or 289-5704 after 5:30 p.m.

PORT JEFFERSON - 4-bdrm. Colonial, full bsmt., 2-car gar., 2 baths, cac, all oak floors, walk to harbor, village, mint cond., priced to sell. 474-1482 eves.

ROCKY POINT - 3-bdrm. high ranch, l/r w/brick fp, cath. ceiling, d/r, large kit., 2 baths, bsmt., cac, deck, 2-car gar. w/elec. doors, beach rights, 0.34 acre, $162,900. Kochman, 744-1057.

ROCKY POINT - Pickwick Cape, 4 bdrms., den, 2½ baths, eik, ⅓ fenced-acre, new appl., deeded priv. beach, $154,000. 821-2375.

SELDEN - high ranch, 3-bdrms. upstairs w/eik, l/r, d/r, deck, legal one-bdrm. apt. downstairs w/priv. ent., $144,500. Ext. 5177 or 698-6120.

SHIRLEY - 4-bdrm. Colonial, igp, decks, 2 fam. rms., fdr, l/r, eik, gar., bsmt., Andersens, one block to schools, shopping, 9 mi. to Lab, $175,000, Oct. 1 occupancy, no money down. 399-1868.

SOUTHAMPTON - Wildwood area, custom-built, 3-4 bdrms., 2 baths, large l/r, den, 2 levels, pie-shaped lot, large priv. yard, $138,000 neg. 727-0499.

## Car Pool

BOHEMIA-OAKDALE—SAYVILLE - need 2 more drivers for car pool, also can meet at Exit 59 LI Expressway. Frank, Ext. 2314.

PLAINVIEW - N. State Exit 37 or LIE Exit 45, easy off/on/park, have 3, need 1. Howard, Ext. 3766.

## Wanted

STUDIO APT. - to rent within 10 mi. from BNL for 1-2 years. Ext. 3583.

ENGINE - Ford, 351W, good cond. Mark, Ext. 2599 or 261-7250 eves.

HOUSEMATE - to share 3 bdrm. furn. house in Mastic Beach, w/absent tenant, 15 min. from Lab, $550. Daniel, 281-4372.

HOUSEMATE - Mastic Beach, 115 min. to Lab, share 4-bdrm. house, $500/mo. Maria, Ext. 3341 or 399-3127 after 6 p.m.

TRAINS - Lionel & American Flyer & accessories, top dollar paid. Carole, Ext. 7100.

CANOE - fiberglass, 16'-18'. Andy, Ext. 3953 or 281-8274.

HOUSEMATE - Ridge, waterfront, male or female, nonsmoker, $450/mo. incls. all. Carol, 929-4593 or 694-0334, leave message.

BICYCLE RIDERS - noon time, training rides, AA pace or approx. 12 mi., meet at Bldg. 701 parking lot. Joe, Ext. 5131.

DEHUMIDIFER - in good cond., at least 12 pint, drain hose preferred, approx. cost $100. Jim, Ext. 3537.

BOILER - for home use, good cond. Frank, 281-1457.

COLOR TV - less than $100. Marco, Ext. 3964.

RABBIT HUTCH - small, bunny optional. John Nagy, Ext. 2667 or 924-8160

BILLIARD PLAYERS - to form BERA club, both male and female. Ext. 7874.

## Services

*Services are listed in the first **Bulletin** of every month as a courtesy to BNL employees. They are neither screened nor recommended by the Bulletin. Services forms are available in the Bulletin lobby, Bldg. 134.*

CHILD CARE - mature woman, my home, playmates, Shirley area, reasonable rates, references. 399-6120.

BRICKWORK - patios, walks, swimming pools, retaining walls, landscaping ties, Belgian blocks, 20 years exper., Lab discount. Tony, 698-9274.

PAINTING - interior/exterior, Lab discount, reasonable rates. Pat, 924-2298 eves.

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

KAYAK LESSONS - Sea Kayak, river playboats, $70 for 5 hours, equipment supplied; Intro to kayaks, $25 for 2 hours. Ernie, 281-7873.

SOLAR NAILS - $30; manicures, $5, certified technician. Sue, 399-5099.

RENT-A-TENT - party tents for rent, we setup and take down. Fred Kuehl, 588-2268.

CARPET & UPHOLSTERY CLEANERS - dry foam extraction, estimates, Lab discount. 471-3846.

FLUTE LESSONS - beginners welcome, will come to your home, reliability experience and convenience only, $14 a lesson. Terrie, 821-9117.

FLOOR REFINISHING - oak floors, stains, bleaching, sanding, finishing. Frank, 395-4974 after 6 p.m.

TREE STUMP GRINDING - free estimates. Bob, 727-2346.

LAWN SPRINKLERS - automatic, free estimates and appraisals, installations and repairs, spring startup and fall winterizing avail. Lou, 928-7042.

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