BROOKHAVEN BULLETIN
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BROOKHAVEN NATIONAL LABORATORY

# Removing the Elements From Alloys

As the Spanish conquistadors learned, all that glitters is not gold. When they melted down the golden objects they had looted from the Incas, a glimmering surface concealed a base metal underneath. South American metallurgists of pre-Columbian times knew how to color surfaces with a thin layer of gold by a process known as depletion gilding.

By repeatedly annealing and pickling a gold-silver-copper alloy they called tumbaga, the goldsmiths of the Andean high cultures of Chavín (800-400 B.C.), Moche (100 B.C.-A.D. 800) and Chimú (A.D. 1150-1476) selectively removed the copper and silver, leaving behind the gold on the surface of mummy masks and other ornaments. And the Incas brought the best Chimú goldsmiths to work for them.

Metallurgist Karl Sieradzki, Metallurgy & Materials Science Division, Department of Applied Science, is interested in the same process, but he calls it dealloying. Regardless of the term used, the process involves selectively removing one or more elements of a metal alloy. Sieradzki is experimenting with dealloying as a novel approach to understanding localized corrosion.

He and his colleagues have been selectively dissolving metals from alloys, such as iron from stainless steel or zinc from brass, used in such mundane things as chemical plant piping or ship fittings. In the process, Sieradzki is learning how to make long-term predictions of how these alloys will corrode while in service.

Electrochemical reactions between a metal and the environment often cause one or more elements in an alloy to dissolve. The result is an embrittled, porous, metallic structure. As a result of dealloying, a metallic structure may develop cracks and fail while in service.

**The weakened, sponge-like structure of a 75% copper and 25% gold alloy after the copper was selectively dissolved. A picture taken before the occurrence of dealloying would have shown a solid structure with no pores.**

"Corrosion studies usually look at the chemical interaction of the environment with the metal," explains Sieradzki. "Since dealloying normally occurs during the corrosion of any alloy, I thought that the composition of an alloy should determine how it corrodes."

Sieradzki is using what is called percolation theory to discover what the concentration of elements in an alloy should be in order to minimize corrosion from dealloying. "As it turns out, there is a threshold fraction, below which there is not enough contact between the atoms that dissolve for dealloying to occur," explains Sieradzki.

Over the past year, computer modeling and experiments investigating corrosion as a function of composition have born out Sieradzki's theory of selective dissolution. Computer simulations performed by Scientist Reed Corderman have shown that simple concepts based on percolation theory can reproduce porous, dealloyed structures and can explain how composition can be used to predict dealloying.

Corrosion experiments, conducted by Assistant Scientist Joung Soo Kim and Ron Li, a Queens College graduate student, have been done on single crystals of alloys. So far, they have tested brass alloys containing up to 30% zinc, copper-aluminum alloys with up to 20% aluminum and gold-silver alloys in the range of compositions.

These experiments have, for the first time, shown that sharp compositional thresholds exist, below which selective dissolution of these alloys is greatly reduced. Above these thresholds, porous, spongy, mechanically weak structures develop because of corrosion resulting from dealloying.

Mort Rosen

**(From left) Karl Sieradzki, Reed Corderman and Joung Soo Kim perform a dealloying experiment on a set of gold-silver alloys.**

Sieradzki explains further that the elements not selectively removed from the alloy complicate the threshold predictions based upon usual percolation concepts. Predictions are more complex to make because of interactions between the atoms that are removed and those that are not.

"Diffusion of the atoms that do not dissolve clearly affects the morphology of the resulting porous structure," explains Sieradzki. To further investigate pore size and spongy structure in embrittled alloys, his group will conduct more experiments on gold-silver and other alloys.

"For 3,000 years, depletion gilding has been used, but only in the last year have we begun to understand how it works," says Sieradzki. "This understanding could only have come about as a result of the development of modern physical concepts, such as percolation theory."

— Marsha Belford

# 52 Graduate from DOE Program

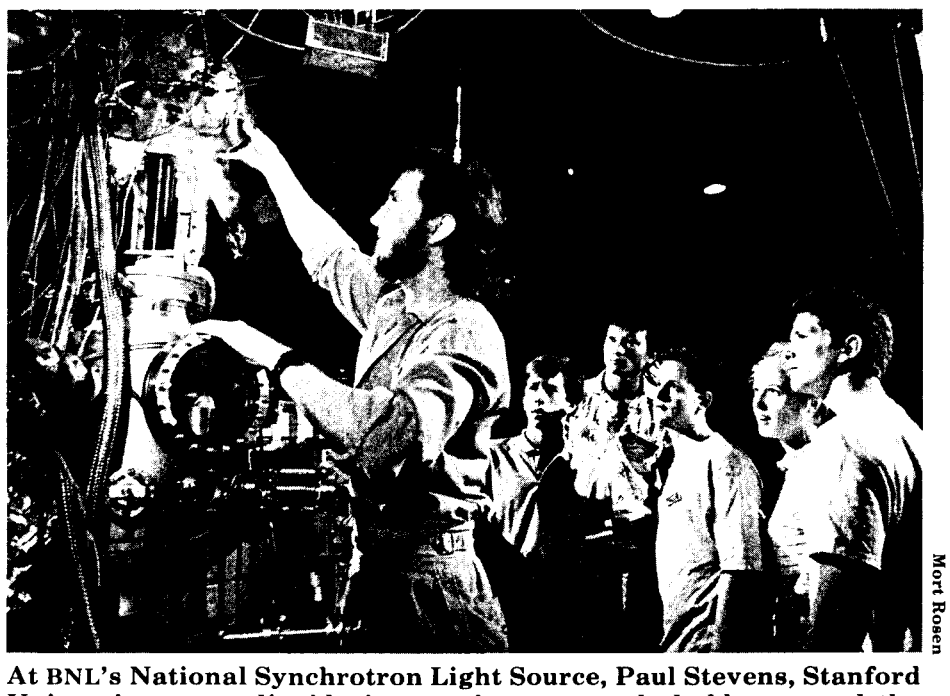
After an intense two weeks of science at Brookhaven, 52 high school students are preparing to return home. The rows of new blue bicycles that you saw around the National Synchrotron Light Source (NSLS) and Berkner Hall will soon be gone.

At a special awards ceremony and dinner this evening, students will be able to celebrate what they learned and experienced in the past few weeks. Alvin W. Trivelpiece, Director of the Office of Energy Research at the Department of Energy (DOE), will attend the dinner to present a plaque and a certificate of participation to each student.

Sponsored by the DOE, the student program encourages the development of scientific and technical talent in energy-related areas. Laboratory Director Nicholas Samios said that the program was an "excellent opportunity for BNL to make a contribution to the national effort of encouraging bright young students to pursue careers in science."

During this past week, the students used the NSLS to conduct two different experiments. A project at the vacuum ultraviolet ring involved the study of the surface properties of matter. They examined how carbon monoxide molecules bond to tungsten. At the x-ray ring, they were able to determine the composition of a substance by examining its characteristic pattern of fluorescence. They prepared reports on their experiments and conducted panel discussions about their results and conclusions.

In the first week of the program, the students attended lectures in the mornings. They learned about synchrotron radiation, the technical aspects of rings at the NSLS, and the scientific applications of synchrotron radiation. In addition, they had lectures from members of the Biology, Applied Science, Chemistry, Physics, and Medical Departments. Donald Metz, director of educational programs at BNL, explained that the purpose of the lectures was to expose the students to the broad range of BNL research. In the afternoons, they toured the NSLS and other departments.



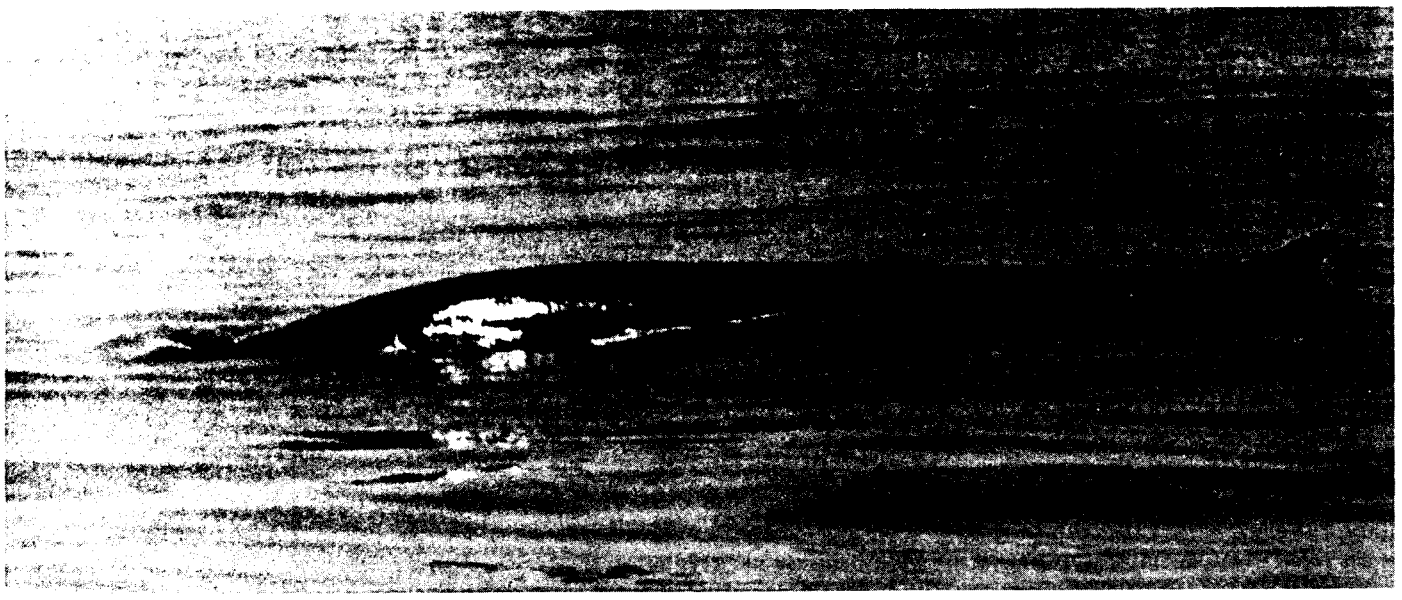
Mort Rosen

**At BNL's National Synchrotron Light Source, Paul Stevens, Stanford University, pours liquid nitrogen into a sample holder to cool the tungsten crystal sample there. Looking on are high school students (from left) Dennis Rebelo, Rhode Island; Tuyen Thanh Tran, Missouri; Zach Mainen, Maine; Suellen Hugan, Kentucky; and David Schwartz, Texas. The students did an experiment to study the orientation of small molecules on the sample's surface.**

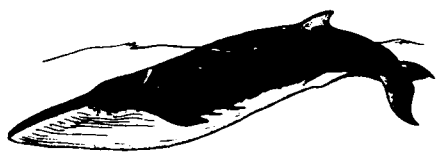
To many of the students, one of the program's best aspects was the diversity of people they met. The students, who were chosen by the governors of their states, had won state science fairs and Westinghouse competitions, and excelled in the study of science at school. They made friends from all over the country and enjoyed a meeting of the minds. They all used the Brookhaven Center as their headquarters and social center.

After the official activities for each day were finished, students presented informal lectures on their own science

(Continued on page 2)



**While whale watching, Howard Rubin photographed this finback whale surfacing for air. At this point, only the back and the fin of the whale break the water's surface, as in the sketch below.**



# Sightings at Sea

Call me Howard. Whenever there is a hot and humid July in my soul and I feel like running people over on my bicycle, I leave my job at Brookhaven National Lab and head down to the sea.

With the words of Herman Melville ringing in my ears and the promise of adventure inspiring me, I decided to join the "Brookhaven Whale Watching Expedition." This trip was my first opportunity to see a whale swimming free in the ocean and to follow the ghost of Ishmael. Instead of hunting whales with a harpoon, I planned to shoot them with my camera.

My friend David Dworkin, a summer student in Instrumentation, and I drove toward Montauk on an overcast Thursday. As apprentice seamen, we also toted along a day's supply of Dramamine and warm clothes. We sailed aboard the *Finback II*, a sleek 90-foot aluminum vessel, which carried 150 landlubbers in search of whales. Sponsored by the Okeanos Foundation, the trips provide revenue for whale research and public education.

The captain was not at all like Melville's obsessive Ahab. He didn't have a peg-leg made of whale bone, and he didn't talk like a hellfire-and-brimstone minister. But he was rather practical. As we left Montauk, he instructed his motley crew about the rules of the sea: "One hand for you, and one hand for the rail. I don't want anyone getting injured or falling overboard. . . . Never throw any garbage into the sea, but if your stomach has any presents to deposit, please do it over the side of the ship."

Everyone on board knew instinctively that something had been sighted when the ship's loud and powerful engines suddenly stopped. A leatherback sea turtle was swimming directly in front of the ship. All the passengers pushed toward the bow. A turtle lover since the age of five, I too rushed forward. Straining my neck and standing on my toes, I finally saw the top of the turtle's head break the surface of the water. He was coming up for air. Unfortunately, I could not see his body, but I imagined his powerful flippers beating rhythmically beneath the surface of the water.

Throughout the journey, I saw a number of different birds. Keeping the passengers company on the beginning of the trip were a group of seagulls, looking for food. One of them kept pace with the ship, gliding next to its upper deck. I also saw shearwaters, which skim across the waves and come to land only six weeks of the year to breed.

Birds heralded the first sighting of a whale. In the distance I saw a huge number of storm petrels circling over the water. A large number of birds in one area can mean that they have found a large school of fish near the surface. Whales are likely to be found near such schools of fish.

As the ship approached the birds, I saw my first whale swimming in the ocean. "Thar she blows!" I wanted to shout as I saw the whale's spout a few feet above the water. I imagined Ahab's ears pricking up at the sound of my words. The smooth black body of the whale quickly broke through the surface of the water. Different parts of its back glided by as it swam near the surface. Then I saw the telltale fin that gives the finback whale its name. The whale then disappeared beneath the surface of the water. Following the same pattern, it emerged a few more times, before diving down into the water again.

A short while later, the ship glided through another school of fish. The fish near the surface caught the sunlight on their scales, like hundreds of flashes of light. On the port side of the ship, I saw a giant tuna, weighing anywhere from 600 to 1,300 pounds, jumping away from us.

As we sighted more whales during the day, David and I located ourselves in the bow of the boat. The captain's enthusiasm was infectious. He kept shouting, "He's circle feeding!" or "There's a roll!" The captain was playing three parts at once. He was a scientist describing the behavior of the whale, an ocean tour guide and a man revelling in the mysterious beauty of the whale.

I watched with wonder as the whales surfaced, their black bodies gliding through the water, then disappearing into the depths of the sea. For a moment, I had a strange desire to touch a living whale. Touching would have been an act of connection, a bridge between two living creatures of different species, an affirmation of man's responsiblity to save whales from senseless slaughter and extinction.

When the ship's motors stopped on approaching a whale, I could feel the pitch and yaw of the boat. On the bow, I was swinging with the rhythm of the waves. After I went aft to take another Dramamine, I decided to stay around the middle part of the boat. Two open doors connected the port and starboard sides. As soon as a whale was sighted, I ran from one side to another, depending upon the whale's location.

On one of my starboard excursions, I saw a finback whale come within 20 feet of the boat. It was the closest a whale had come all day. I had visions of Melville's great White Whale racing through the water and destroying *The Pequod*, Ahab's ship. But this was another black finback whale, and it seemed to ignore us as it dived underneath the ship.

On the return journey, I fell into a Dramamine-induced sleep. After touching terra firma, I felt glad that my quest to see a whale had been a success. But my adventure did not leave me satisfied. Whale watching can be addictive. I yearn to go out again to observe different whales and see one jump out of the water.

To Melville, the whale was a majestic creature, mysterious and dangerous. He was its historian, scientist and poet. To the maniacal Ahab, the whale was an obsession that would destroy him, a reflection of the violence in his soul. To me, the finback whale is a fascinating mammal gliding through the seas off Montauk and a symbol of the natural world we must preserve from the Ahabs of modern society.

— Howard Rubin

## Nursery School Registration Opens

The Upton Nursery School is now registering children for the 1986-87 school year. Enrollment is open to three- and four-year-old children whose parent or relative is an employee of BNL.

The preschool is a cooperative run by parents and certified teachers, thus keeping costs affordable and still offering a high quality program. Classes are held on site in the Recreational Bldg. in the apartment area.

The three-year-olds attend twice a week, while the four-year-olds meet three times a week. The classes, though non-academic, provide a varied and stimulating program including art, music, and outdoor activities.

There is a limited number of children in each class, but there are still openings for September. For more information and enrollment forms call Marietta Veligdan at 924-4074, or Susan McCafferty at 878-1255.

**Did you know?** Some of the items offered for sale in the Bulletin Board 30 years ago included: Maytag ringer type washer, 6 yrs. old; 1949 Willys station wagon; automobile heater; 4-bedroom house in Bellport, $11,300; 1955 Studebaker sports coupe.

## Volunteers Needed For PETT Studies

Males between the ages of 20-68 years are needed for state-of-the-art imaging of the brain. If you are interested in being considered as a participant, please call Ext. 4397.

## Graduates (Cont'd)

fair projects or independent research. For example, Elizabeth Tongier from Virginia presented her work on the effects of copper sulfate on fish in reservoirs around Newport News, Virginia. Stewart Moritz, who comes from Alabama, discussed his summer work at NASA on sensitive x-ray detectors used in astronomical observations.

In the future we may hear more about the research activities of scientists who once spent an inspiring two weeks at BNL and the NSLS.

— Howard Rubin

## CREF Values

| | | | |
|---|---|---|---|
| June | 76.40 | July | 76.69 |
| August | 75.94 | September | 73.77 |
| October | 77.12 | November | 82.20 |
| December | 85.78 | January | 86.50 |
| February | 92.83 | March | 98.20 |
| April | 98.28 | May | 101.66 |

**June $103.22**

## Service Awards

The following employees received service awards during the month of July:

**Thirty-Five Years**

**David R. Christman** ..... Chemistry
**Harry R. Munkelwitz** ..... DAS

**Thirty Years**

**Clemens Auerbach** ..... DNE
**Joseph C. Balsamo Jr.** ..... S&EP
**Robert E. Mignerey** ..... Physics

**Twenty-Five Years**

**John Bunicci** ..... AGS
**Karl M. Kohler** ..... AGS
**Bernice Petersen** .... Public Relations

**Twenty Years**

**Kenneth L. Andersen** ..... Plant Eng.
**Leroy N. Blumberg** ..... NSLS
**Earle O. Dickerson** ..... Plant Eng.
**Vincent LoDestro** ..... AGS
**Frank G. Kedenburg** .... Sup. & Mater.
**John J. Sterzenbach Jr.** .... Plant Eng.
**Frank R. Winter** ..... Central Shops

**Ten Years**

**Sharon L. Atkins** ..... DCP
**Robert R. Barberich Jr.** .. Sfgrds/Sec.
**Donna M. Earley** ..... Physics
**Stanley E. Gilbert** ..... AGS
**James F. Hainfeld** ..... Biology
**Robert E. Hall** ..... DNE
**Bruce A. Lein** ..... Reactor
**Kenneth R. Perkins** ..... DNE
**Gunnar I. Senum** ..... DAS
**Chyng-Yann Shiue** ..... Chemistry
**Raymond R. Tice** ..... Medical
**Daniel Van Rooyen** ..... DNE
**Linda K. Zahra** ..... DCP

## Patent Awarded

**William A. Slegeir**, DAS; **Francis E. Healy**, Safeguards and Security; and **Richard S. Sapienza**, DAS, were granted U.S. Patent #4,561,859 for their invention of a chemical process for desulfurizing coal. Their process is especially adaptable to the treatment of coal-water slurries using titanium compounds.

It has long been known that heating coal to coking temperatures will liberate much of the contained sulfur, but with subsequent fuel losses. In the present invention, the coal is desulfurized by treatment with an aqueous solution of titanium trichloride, without coal loss. The reaction is conveniently carried out at ambient pressure, and temperatures as low as room temperature are effective.

## In Memoriam

It has been learned that Pasquale Lettieri, a former chauffeur with the Staff Services Division, died on July 11, in East Patchogue. He was 64 years old. Lettieri came to the Laboratory on June 4, 1951, and had been on long-term disability since 1982. His son, Vincent Lettieri, is a project engineer in the Reactor Division.

# It's Blatantly Unofficial

Several new blatantly unofficial BNL records were submitted to the Bulletin:

*I just might be the longest-employed female still working at the Laboratory; starting date: January 31, 1949.* — *Sophie Kostuk, Chemistry*

*Oldest operating refrigerator, a Westinghouse E-7-47, BNL #13394, located in Bldg. 510, room 2-102 — 37 years in service.* — *David Citrin, Physics*

*Most people at a small round lunch table in the cafeteria — 13.* — *Paul Moskowitz, DAS*

*Longest time for a paper "in press." Meeting held in 1981; paper published October 1985.* — *Ibid.*

*The office with more women's names starting with the letter "J," six in total: Jane, Jean, Jeannie, Joan, Jodi and Juanita — Housing, Travel and Transportation.* — *Gisella Murphy, Staff Services*

A challenge was also made, dethroning the previous record holders:

*The largest (11) all-female office on site —the Housing, Travel and Transportation Office, Bldg. 179 — beating out Public Relations (the previous record holder) by 3.* — *Gisella Murphy, Staff Services*

There was also an update:

*The largest height difference between two people in one corridor of offices (Physics 510): Fern Coyle 4'11" and Pavel Rehak 6'4"; difference, 17".* — *Fern Coyle, Physics*

Submitted with apologies to Pavel for "overlooking" him. (Ed. note: previously, Coyle claimed the record with a shorter person on her corridor, Richard Imossi, 6'3".)

Mort Rosen

**DAS Chairman Bernard Manowitz (far right) hosted a reception on June 27 for members of the Department who recently observed BNL anniversaries. The celebrants pictured above are, left to right: Bob Goodrich, Larry Kukacka, Larry Kleinman, Frank Thomsen, Carl Klamut, Vinod Mubayi, Jim Reilly, Lore Barbier, Ken Novak, Meyer Garber, Pat Taylor, Ed Kaplan, Walt Tremel, Jack Scrofani, Mike Bonner and Francine Donnelly. Absent from the picture are Cleveland Dodge, Paul Falkowski, Barry Calen and Andy Kydes.**

# Speaking Out

**Reporter: Howard Rubin**
**Photographer: Peter Horton**

Summer is often the best time to catch up on all those great books you haven't had a chance to read. This inquiring reporter braved the hungry crowds entering Berkner Hall to find out what books people had most enjoyed reading recently or within the past few years. With tastes in literary classics, science fiction and humor, BNL employees show they are an eclectic bunch of literati!

**Larry Turf** (ADD) - I am currently reading Robert Ludlum's *The Bourne Supremacy*, which is the sequel to *The Bourne Identity*. In these novels, Ludlum shows he is a master of intrigue.

**Vonda Brokopp** (summer student, Medical) - *Madame Bovary* by Flaubert was always my favorite. It's the story of a woman's liberation from the conventions of her day. I first read it when I was a freshman in college.

**Paul Stein** (AGS) - I just finished Ray Bradbury's *Martian Chronicles*, a well-written story, which makes you think about what it possibly could have been like on Mars before we landed there. His story was so suspenseful I didn't want to put it down

**Richie Jones** (summer student, Affirmative Action) - *1984*. The book raised a lot of disturbing questions about our right to privacy. Some of the things that happened in it made me more aware of things that are happening in our own society.

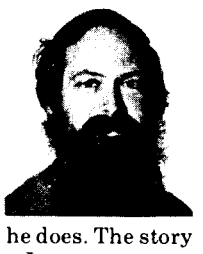
**Enrique Abola** (Chemistry) - *Surely You're Joking Mr. Feinman* was a great book. It was very funny, yet filled with insight into all kinds of things, like the production of textbooks for grade schoolers.

**Stephanie Davidoff** (Biology) - A really appealing book was *Contact* by Carl Sagan. It was a good story with a fast-paced plot. It was fascinating to imagine how people would deal with making contact with an extraterrestrial civilization.

**Carrie Grimshaw** (DAS) - *A Town like Alice* by Nevile Shute. It's a story that portrays the treatment of women war prisoners in the Far East, and their courage and determination to live through it. The novel, which is told through the eyes of one woman, is based on fact, intermingled with romance.

**Steve Albert** (summer student, NSLS) - *To the Lighthouse* by Virginia Woolf. It was one of the best books I ever read. Her technique of telling you what everyone's thinking is really interesting. I read it for a course in college, and it was great relief from a semester of epic poetry. The symbolism in the book was also fascinating.

**Valerie Miller** (Medical) - *The Clan of the Cavebear* trilogy by Jean Auyl — a really good collection of novels. The author has a wonderful ability to tell the story so that it is enjoyable. She picked an interesting topic, but I don't think that all her history was quite right.



**Michael Creutz** (Physics) - I just finished a great science fiction story by Robert Heinlein called "The Unpleasant Profession of Jonathan Hoag." The main character would come home from work and not remember what job he does. The story made great light reading. It was suspenseful because you never knew what was going on.

**Eugene Premuzic** (DAS) - I prefer humorous writings. George Mikes, who had been a correspondent in Hungary before the government kicked him out, does unique humor writing. He exploits people and their funny habits, relations between East and West, and different countries. He lets no one off the hook.

# Arrivals & Departures

**Arrivals**

| | |
|---|---|
| **Thomas J. Butler** | Plant Eng. |
| **Nanette J. Hjelset** | DAS |
| **Mark W. Renner** | DAS |
| **Clifford H. Scarlett** | Reactor |
| **Michele Stellini** | Biology |
| **Michael I. Stuff** | Instr. |
| **Alexander Wolf** | Physics |

**Departures**

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

| | |
|---|---|
| **Luiz A. Arrieta** | DNE |
| **Axel M. Bossuyt** | Medical |
| **Alice M. Jimenez** | DNE |
| **Richard M. Lopez** | Plant Eng. |

# Lifesaving Course

A course in advanced lifesaving will be offered at the Laboratory pool to employees and their immediate family members 16 years of age and older. Classes will be held on Monday, Tuesday and Wednesday evenings from 9 to 11 p.m. for four consecutive weeks, starting Monday, July 28.

Enrollment will be limited to a maximum of 20 and a minimum of 10 participants. A $20 fee (check payable to BERA) will be due at the time of registration.

Instructor Keith Wilson may be contacted at the pool, Ext. 3496, for more information.

# Cafeteria Menu

## Week of July 28

| | | |
|---|---|---|
| **Monday, July 28** | | |
| Cream of mushroom soup | (cup) | .65 |
| | (bowl) | .85 |
| Baked quarter chicken w/1 veg. | | 2.45 |
| Skinless baked chicken w/1 veg. (lite weight) | | 2.45 |
| Veal cordon bleu w/1 veg. | | 2.45 |
| Hot Deli: Chili dogs | | 2.25 |
| **Tuesday, July 29** | | |
| Beef barley soup | (cup) | .65 |
| | (bowl) | .85 |
| Salisbury steak w/1 veg. | | 2.45 |
| Turkey broccoli crepes w/1 veg. | | 2.45 |
| Zucchini pasta salad (lite weight) | | 2.45 |
| Hot Deli: Corned beef | (bread) | 2.35 |
| | (roll) | 2.50 |
| **Wednesday, July 30** | | |
| Split pea soup | (cup) | .65 |
| | (bowl) | .85 |
| Sweet & sour fish w/1 veg. | | 2.55 |
| Eggplant Parmesan w/1 veg. | | 2.45 |
| Melon & cottage cheese plate (lite weight) | | 2.25 |
| Hot Deli: Veal Parmesan hero | | 2.35 |
| **Thursday, July 31** | | |
| Minestrone soup | (cup) | .65 |
| | (bowl) | .85 |
| Chicken Kiev w/1 veg. | | 2.45 |
| Spanish macaroni w/1 veg. | | 2.45 |
| Fruit and yogurt plate (lite weight) | | 2.25 |
| Hot Deli: French dip sandwich | | 2.45 |
| **Friday, August 1** | | |
| Seafood chowder | (cup) | .65 |
| | (bowl) | .85 |
| Broiled fresh fish (lite weight) | | 2.65 |
| Ravioli Parmesan w/1 veg. | | 2.45 |
| Tortellini salad plate | | 2.25 |
| Hot Deli: Fishwich | | 2.35 |
| Clam boat sandwich | | 2.35 |

# Aviation Club

The Aviation Club would like to congratulate the following people who recently completed the FAA Private Pilot Ground School Course. They attended a 15-week school held at BNL Monday evenings, which prepared them to take the written exam required before obtaining a private pilot's license: Donna Cange, Vincent Castillo, David Dougherty, William Gerstmann, William Horak, Eugene Kaplan, William Leonhardt, Robert Malone, Eric Myers and Frank Thornhill.

This course, intended to generate interest in general aviation, was provided at no cost. Special thanks to the ground school instructors, Larry Leipuner and Doug Sweely.

The Aviation Club may hold another class next winter if there is enough interest.

The Club meets the second Wednesday of every month in the Berkner Hall lobby or adjacent rooms, and welcomes everyone interested in joining the flying community.

# Tennis

The second weekend of scheduled play in the annual tennis tournament has been changed from July 26-27 to August 2-3. Tournament play will therefore take priority over recreational play on August 2-3, not July 26-27.

# Bowling

Applications are now available at the BERA Sales Office at Berkner Hall for the 1986/87 bowling season. Questions can be directed to Ed Sperry, Ext. 2697, Maria Apelskog, Ext. 3138, Maryann Reynolds, Ext. 5241, Charlie Bohnenblusch, Ext. 4758, or Kathy Griffin, Ext. 3420.

# Softball

**Games for week of July 14**

**League I**

Ravens 15 - Dirty Sox 12
SMF 9 - A-Team 4
Six Pax 6 - Cool 'n Gang 3
Phoubars 9 - Blue Jays 6

**League II**

(Games were doubleheaders.)
AMD 12 - Binary Bombers 7
Binary Bombers 12 - AMD 7
Phase II 5 - Scram 3
Scram 11 - Phase II 7

**League III**

Mole-Esters 15 - Who Cares 5
Farm Team 6 - Kidz-R-Us 1
Snakebites 12 - Septembers 9
Source 9 - Turkeys 2

**League IV**

Who's on First 10 - Spacekadets 9
Hit 'n Run 9 - No Feedback 8
Foul-Ups 8 - Mudville Sluggers 5
Sandboxers 18 - Simply Awesome 16

# 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 present Laboratory employees.

2459. SECRETARIAL POSITION - Requires excellent secretarial and communication skills. Under close supervision, will prepare reports and correspondence, make travel arrangements and organize and maintain files. Familiarity with MICOM word processor strongly desired. Security clearance required. Department of Nuclear Energy.

2460. BUDGET ADMINISTRATOR - Requires a bachelor's degree in business administration (master's degree desirable) or equivalent experience plus extensive pertinent work background. Excellent analytical, written and oral communication skills are required. Will be responsible for the overall administration, coordination and control of assigned areas of the Laboratory budget. Will prepare and interpret budget and related financial reports. Must have high degree of initiative and judgment to review and coordinate budgetary matters with both Laboratory and Department of Energy staff. Budget Office.

**OPEN RECRUITMENT** - Opportunities for Laboratory employees and outside applicants.

2461. TECHNICAL POSITION - Requires an AAS degree in electronic technology or equivalent experience. Primary responsibility will be NSLS experimental area safety operations. Duties will include safety system checkouts, beam line documentation, interfacing between control room and experimenters with respect to user safety and enabling of beam lines for experimental use. The safety operator will work with the BNL Safety and Environmental Protection representative at the facility to insure proper beam line operation. National Synchrotron Light Source Department.

2462. TECHNICAL POSITION - Requires AAS degree in electronic technology or equivalent with a good background in pulse circuits, analog and digital controls and high voltage and/or high current power supplies. Should be skilled in troubleshooting of power supplies and associated controls. Shift work required. Alternating Gradient Synchrotron Department.

2463. TECHNICAL POSITION - Requires AAS degree in electronic technology or equivalent experience in the nuclear science field. Knowledge of control and process intrumentation and reactor safety systems is required. Previous reactor experience and the ability to obtain Q clearance required. Will be assigned to the Reactor Division Instrumentation Group. Reactor Division.

## Autos & Auto Supplies

79 MERCURY MARQUIS WAGON - 302 V8, a/c, p/s, p/b, auto, am/fm stereo, roof rack, hi. mi., dealer maint., good cond. 821-0695.

71 DODGE MONACO - 4 dr., ht, 8 cyl., a/t, p/s, p/b, a/c, good cond., dependable, asking $875. Ray, 727-3608.

73 SUBURBAN - C-10, 350-4, p/s, p/b, 10-15LT rear tires, runs well, $650. Dick, Ext. 3910 or 732-7564.

78 CAMARO LT - 305 V8, auto, a/c, p/s, p/b, tilt wheel, stereo, custom wheels, $3,400; 73 CHEV. P.U., V8, auto, a/c, p/s, p/b, stereo, 10-15 tires, good, $2,900. 269-9510 after 6 p.m.

81 FORD BRONCO XLT - every option avail., very good cond., $8,000. Dan, Ext. 4987 or 698-7322 after 7/11/86.

78 FIAT SPIDER - convertible, good cond. Tom, Ext. 5275.

73 CHEV PICKUP - Model C10m 350-79, eng. mech. perfect, new tires & brakes, $1,200. 727-7392 after 6 p.m.

78 MC CONCORD S.W. - 6 cyl., p/s, p/b, a/c, am/fm, 58k, good cond., $1,500. Ext. 2021 or 281-6052.

76 BUICK LESABRE - 93k mi., dependable commuting car, under $1,000. Daniel, Ext. 5254 or 751-8340 eves.

83 NISSAN PULSAR - 4 dr., 5 spd., a/c, p/s, p/b, am/fm stereo cass., mint, asking $4,500. Ext. 2198 or 744-4662.

65 JEEP PICKUP - 350 c.i., Chevy eng., many extras, runs well. Bob, 467-4222.

70 PONTIAC TEMPEST - runs well, $150. Ext. 4597.

81 TRIUMPH - TR-8, auto, 27k mi., a/c, silver, excel., $9,100; 73 SPITFIRE, 2 tops, purple, $1,700. 473-7024.

76 AUDI 100LS - 4 dr., new auto. trans., runs well, need minor work, asking $550. Andrea, 286-1489 eves.

82 PLYMOUTH CHAMP - 46k, excel. cond., dbl. stick, $3,100. 363-7032.

TIRES - B.F. Goodrich, T/A 235-60R15 radial, used only 1,000 mi., set of 4, $150. 732-8837.

76 GRANADA - reblt. 302, 81 auto, new tires, exhaust, am/fm cass., 40 ch. CB, asking $1,750. 737-1458.

75 TOYOTA CORONA - auto. trans., a/c, 2 dr., yellow, $300. 744-2384.

71 VW VAN - good running cond., $500. 878-0817 after 5:15 p.m.

82 MAZDA - 626LX, sunroof, am/fm cass., $4,200. Ext. 3630 or 929-3860.

78 FORD FAIRMONT - 3 spd., p/s, p/b, a/c, 100k mi., blue, $1,500. Ramesh, Ext. 4805 eves. or 924-8113.

79 DATSUN 280 ZX - 2+2, w/grand lux. pkg., 5 spd., all power, cruise control, new tires., Ext. 7953 or 289-0532.

77 VEGA - black, 4 spd., body good cond., eng. poor, new tires, asking $400. Ext. 7197 or 399-1679.

85 NISSAN SENTRA - 4 yr./warranty, am/fm stereo cass., mint, $6,400; 75 MONTE CARLO, 2 dr., mint cond., must see, $2,000 neg. Ext. 3083 or 878-1915.

83 PLYMOUTH TURISMO - red, 29k mi., 2.2L/5 spd., Shelby sport sunroof, louvers, loaded, extras, mint, asking $5,000. Ext. 2368 or 928-6654.

DUNE BUGGY - 65 Volks frame pickup style, rear 2 seater, 31" off-road tires on rear, street on front, runs well, $1,650. Jim, 588-0677.

76 WILDERNESS - 18' camper, self-cont., extras, $3,700; 75 WAGONEER w/tow pkge., $2,500; 84 HONDA ATC, 200 c/c, low hrs., front & rear racks, excel., $975. 585-3417 or 874-3796.

67 CHRYSLER CONVERTIBLE - new top & seats, p/s, p/b, p/w, a/t, 383 V8. Tony, 698-9274.

79 PLYMOUTH VOLARE WAGON - p/s, p/b, brand new a/t, 72k, roof rack, extras, excel., asking $1,795. Ext. 7505 or 689-8605.

77 MERCURY STATION WAGON - very good cond., p/s, a/t, p/b, a/c, p/w, and other goodies, $1,500. Ext. 5161 or 924-1460.

75 PLYMOUTH - runs well, 81k mi., must sell, $300. Ext. 7181 or 286-2857.

79 JEEP WAGONEER - 4/wd, 360 eng., a/c, am/fm radio, very good cond., asking $3,800. Ext. 4270.

80 CITATION SPORT COUPE II - new eng., tires & batt., m/t, p/s, p/b, a/c, 4 spkrs., stereo, great shape, $2,100. Marv, Ext. 3440.

77 LTD - 2 dr., 8 cyl., 351 c level, a/c, p/b, p/s, H/D airs, 63k, excel., $2,000. 878-1934 after 5 p.m.

79 RABBIT - diesel, sunroof, am/fm cass., new brakes, muff., very good cond., high mi., $1,600. 698-8173.

59 CHEVROLET WRECKER - mechanically sound, cosmetically unsound, $350. 286-1829.

84 FIERO - red, 4 cyl., auto., a/c, low mi., $8,000. Barbara, Ext. 3541.

74 CORSAIR - 11½' truck camper, hot water, shower, bathroom, holding tank, am/fm radio, good cond. 874-2961.

77 LINCOLN CONTINENTAL - town car, 2 dr. $2,300 neg., Ext. 3125.

77 PLYMOUTH TRAILDUSTER - 4x4, 76k mi., a/t, a/c, p/s, many new parts, mech. good. $1,675 neg. Ken, Ext. 2350 or 698-4254.

81 TOYOTA TERCEL - 2 dr., 4 spd., 95k mi., excel. cond. $1,500. Bob, Ext. 3346.

SPEAKERS - 6"x9", brand-new, cost $50., selling for $25. Joe, Ext. 2898.

83 HONDA SHADOW MOTORCYCLE - 750cc, black, excel. cond., low miles, garaged, asking $1,700. 395-3165.

75 PLYMOUTH G. DUSTER - 2 dr., a/t, a/c, am/fm cass., good running cond., good value. $550. 924-3236.

72 PLYMOUTH DUSTER - 6 cyl., new brakes, shocks, exhaust & tires, alt., very good cond. $800. 331-4281 after 5 p.m.

78 CHEVY MONZA - 2 dr., wagon, 4 spd., 4 cyl., am/fm cass., runs well, 90k mi., Kevin, Ext. 4409/4662 or 361-7821 eves.

TIRE - Goodyear Tracker, A-T, 10-15 lt., load range B., like new. $40. Ext. 2952.

68 PLYMOUTH VALIANT - 4 dr. sedan, 6 cyl., standard shift, very clean, no rust, runs very well. $395. ENGINE - slant six, running cond., $75. H. Sauter, Ext. 3783.

## Boats & Marine Supplies

85 SUPER 40 HP EVINRUDE - 795-6629 after 7 p.m.

BOAT TRAILER - 13" wheels & Eska outboard, 7½ h.p. plus extra wheel. Ext. 4669 or 744-9429.

11' SNARK - coated styrofoam hull, portable, lateen rig., great for kids, shallow water. $150. 928-2803.

14' BLUEJAY SAILBOAT - wood, three sails with trailer, newly painted. $900. Holroyd, Ext. 4329 or 751-6820.

TANZER 22 - excel. cond., glass, new sails, roller furling, shoal draft (k/cb), 6 h.p. chrysler, $6,500. Ed, Ext. 7943 or 589-3992.

12' ALUMINUM STARCRAFT - 9.9 h.p., Highlander trailer, extras, good cond., must sell. $1,000. Ext. 7772 or 744-8581.

JEFFERSON DEPTH COMPUTER - model 230, Transom mount with 8'&4' alarm, range 2'-200', never used. $150. 289-3360.

82 JOHNSON - 15 h.p.; 16' Row boat; 68 Evinrude 9½ h.p.; 16' Aluminum trailer, good cond., all or mixed. 473-1682.

26' CRIS CRAFT - classic cabin cruiser, in water, ready to go. 475-3553 after 5 p.m.

76 HOBBIE CAT - 16', ready to sail, Highlander trailer with 13" wheels. $2,200. Ext. 3457.

## Miscellaneous

LAMPS - (2) 3-way brass finish, beige shades, 32" hi., $40. Sue, 878-0874.

POOL - filter, pump, all access., 15-16' solar & winter covers, ladder, excel. cond., $100 for all. Ext. 2497.

MOVING SALE - microwave oven, childrens bikes, food processor, x-country skis, etc., Apt. 2A. Ext. 3590.

FURNITURE - white & gold trim 3 draw dresser, $35; 3 oak chairs, (2) stripped; 2 dr. walnut cabinet, needs refinishing, $20; office desk, oak painted red, $50; brass finish over alum. twin headboard, $20; baby scale, $5. Ext. 4070.

SIAMESE KITTENS - blues & chocolate point, from show quality lines. Ramona, 928-3088.

BIKES - (2) Ross men's 10 spd., $40 ea. Ron, Ext. 4082 or 289-1003.

MOVING SALE - Yamaha spinet piano, $1,200; Coldspot freezer, $200; old Coldspot refrig., $30, bookcases, cheap. 928-2803.

ELECT. TYPEWRITER - Smith Corona, like new, $200. 363-7032.

LENS - Tokina SMZ 80-200 f3.5, for Nikon, w/filter, hard lens hood & pouch, $120. Ext. 2482.

MOVING SALE - Apt. 2A, bikes, x-country skis, fans, kit. utensils, etc. Ext. 3125.

PAVING STONES - square-formed, $1 ea., 40/$30; "Tiny Tailor" mending machine, $10; 54x32 storm panel, $5; white shower encl., $10. Ext. 4166 or 286-2282.

POOL LADDER - stainless steel for inground pool, 2 step, good cond., $25. Ext. 7148.

SOFA - 86" long, 35" deep, contemporary style, beige, cotton, clean, excel. cond. Carol, Ext. 4398.

G.E. ELECTRIC STOVE - Hot Point refrig., good cond., price neg. Ext. 5097.

BICYCLES - 26" boy's 10-spd., good cond., needs shifter cable, $20; 27" men's 15-spd., good cond., needs cable, $30. H. Sauter, Ext. 3783.

IBM-PC CARDS - w/chips, disk controller, 64-25k w/serial, STB multifunction; Faraday motherboard. Marty, Ext. 3941.

SHIRTS - men's, short sleeve, size 15, new, $7 ea.; Commodore books, $7 ea. Rich, Ext. 4172.

PIANO - Yamaha spinet, $1,200; Coldspot freezer, $200; toys, misc. furn., oak office desk, bookcases. 928-2803.

COFFEE TABLE - hatch cover, 53½"x29", $175. Peter, Ext. 2304.

DISKETTES - 3M, 5¼", ds/dd, new, best quality, 10/$10. Jim, Ext. 3372.

REFRIGERATOR - 19½"x21"x34", suitable for apt./dorm, woodgrain formica top, delux, excel. cond., $125. Pete, Ext. 4326.

COLOR TV - w/remote control, $120; Panasonic high resolution monitor, $80; Yorx radio tape recorder, $35. Ext. 3076.

BEDROOM SET - cherry, end tables, headbd., triple dresser, large mirror, $250; chifforobe, $35; dinette table, 4 chairs, wood cane, $30; painted oak hutch, small, $50. Ext. 2529.

BEDROOM SET - Basset queen, triple dresser, armoire, headbd., 2 night tables, excel. cond., $750. 751-6303.

RANGE TOP - 4 burners, Hotpoint, 20x20½", $39; birch box cabinet for range top, $39. Jack, Ext. 4447 or 744-3919 eves.

CHAIR - blue velvet for living rm., $25. 758-5659 after 5 p.m.

STEREO RECEIVER - Pioneer, SX535, BIC #912, turntable, $75 for both. 924-3236.

BIKES - children, 16" Huffy, good cond., $15. Naomi, Ext. 4875.

STEREO CONSOLE - 8-track tape, record player, am/fm radio, $50; 2 red Spanish lamps w/wrought iron, $40. Ray, 289-0883.

UTILITY CART - microwave, oak, cabinet w/doors, lg. drawer, 2 open shelves, on casters, like new, $150. 473-7460 after 8 p.m.

MATERIAL - assorted polyester, $6; portable projector screen, 18x24, $8; IBM elec. typewriter, $250. Susan, Ext. 4267.

CAMERAS - Konica TC and Nikromat FT+N camera systems w/access., excel. cond. 225-0178 after 6 p.m.

MACHINIST TOOLS - Mitutoyo mics set 1,2,3, $50; Mitutoyo depth mic. 0-7" on a 4" base, $50, & much more. 924-8143 after 5 p.m.

SOFA - 72", Col., 2 cush., matching arm chair, good cond.; 3 Woodco wood windows, double hung, 6 over 6, 1 single w/storm & screens, approx. 3'4"x6'4" & 3'2"x3'4". 727-4284 after 6 p.m.

COCKATIELS - 1 male, 1 female, w/cage, etc., few mos. old, hand trained, very pretty, $250. Jory, Ext. 5508, 929-6941.

REEL MOWER - self propelled, Briggs & Straton eng., used one season, best offer. Jim Hanson, 878-2484.

WASHER - apt. size, on wheels, 8 lb. load, white, Kenmore, $100; elec. dryer, coppertone, Kenmore, $55. Ext. 4761 or 924-3556.

COMPUTER - Tandy, 4P, dual disk drives, green screen plus software, $500; portable disk drive for model 100 plus lots of software, $200. Tom, 736-6691.

ELECTRIC MOTORS - (2) 5 h.p., 3 phase. 289-0967.

KITCHEN HOOD - 30x18, ideal for removing smells, like new, $25; ceiling lamp, 100-300W, nice, $10; fan, $5. Detlef, Ext. 5508 or 3112.

WINDOW FANS - 10" dual, $47; 9" 2-spd., $27, new, in unopened cartons. 588-9163 after 7/27.

TRAILER - Mesa Apache Solid State fold-up. 475-3553 after 5 p.m.

GAS BARBECUE - Sears w/regulator, needs tank & burner, $20; snow thrower, Yardman, 5 h.p., 2 stage elect. start, $75. Bob, Ext. 4782.

STEREO - Zenith, 15 W channel, 8-track cass., turntable, Pioneer, 3-way speakers, wedge, $100. 924-4193.

## Free

SCIENTIFIC AMERICAN - 1969-1985; National Geographic, 1968-1978. Ext. 4166 or 286-2282.

FREEZER - lg. upright, excel. running cond., you pick up. 924-4193.

75 HONDA CIVIC - 80k mi., runs or good for parts. Ext. 3823 or 3127.

KITTEN - female, calico, litter trained, needs lots of love. 289-8212.

## Yard Sales

MANORVILLE - 215 South Street, east of South Manor School, July 26, 27, tools, household items, 10 a.m. to 5 p.m.

EASTPORT - Mortimer Place off East Moriches Blvd., multi-family, Sat., 7/26 or rain date Sun., 7/27, furn., clothes, toys, etc.

SHOREHAM - 18 James St., Sat., 7/26, many items. 744-7642.

## Car Pools

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

## 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

PATCHOGUE - near village, 3-4 bdrm. Cape, 1/2 basemt., gar., quiet st., $850+. Danny, 981-9037.

MT. POCONO - chalet, summer/winter, 3 bdrm., furn., lake, pool, tennis, horseback riding, weekly, midweek, wknd. rates. Ext. 3164.

BAYSHORE - 1 bdrm., spacious, apt. w/priv. ent., kit./ din. area, l/r, w/w, $500 complete. 666-3042 day/eves.

ROCKY POINT - furn. apt., 1 bdrm., l/r, eik, priv. ent., util. incl., 1 person, $450. Ext. 7238 or 744-1958 eves.

TOPSAIL ISLAND, N.C. - 2 bdrm. house, 100 yds. from the surf. $275/wk. 924-0570.

PORT JEFFERSON STATION - 2 bdrm. ranch, detached oversized (workshop) gar., 2 acres, horse country, lovely area, off Canal Rd., avail. Aug., $825 + util. Nina, 473-6432.

N. SHIRLEY - 2 rm. apt., furn., bdrm. w/skylight, eik, newly decor., priv. ent., util. incl., 5 min. from Lab & stores, 1 person only, non-smoker, no pets, security, $425. 281-8044.

SHOREHAM - lg. clean 1 bdrm. apt., full kit., bath, priv. ent., furn. or unfurn., security, no pets, $550 includes util. 744-8659 or 744-0648.

MIDDLE ISLAND - opp. King Kullen Plaza on Rte. 25, 1 bdrm., lg. apt., conv. & delightful loc., 15 min. from Lab, avail. Oct. 1, $500. Ext. 5161 or 924-1460 eves.

HILTON HEAD, S.C. - 2 bdrm. condo, sleeps 6, tennis, golf, pool, beach, many extras, $400/wk., $200/4 days, taking fall rentals. 585-9149.

WADING RIVER - 3 bdrm., fully furn. house, newly remod., 2 fp, indoor BBQ, lakefront prop., SWR schools, avil. 9/86-6/87. Ext. 3822 or 929-6527.

SHOREHAM - 1 yr. beginning Oct. 1, 3 bdrm., 2 baths, l/r, d/r, f/r, eik, full basement, SWR schools, beach rights, completely furn. w/all appliances, piano, dog, cat. 744-3744.

SETAUKET - furn., 4 bdrm. house, Sept. 1 - Nov. 1. Ext. 2475 or 751-4539.

CATSKILLS - chalet, 3 bdrms., sleeping loft, fully furn., near Hunter Mt., music fest., golf, game farm, trout fishing & rafting, will rent weekly or wknds. Judy or Kay, Ext. 3595 or Bea, Ext. 3642.

VERMONT - vacation, 3 bdrm. house, f/p, fully equip., beautiful view, woodland trails, alpine slide, fishing, boating, etc., family oriented, avail. weekly. 732-6499 after 6 p.m.

PATCHOGUE - 2 bdrm. house, $700 + util. 878-1255.

24' TRAVEL TRAILER - 1984 Wilderness, self-contained, will tow to loc., wknd./$150, wk./$250. Chris, Ext. 4028 or 399-3732 eves.

## For Sale

SHIRLEY - lovely 2 bdrm. ranch, l/r, kit., rec. rm., skylight, fenced yd., gar., city water, 10 min. from Lab, shopping, beach, RR, many extras, must see, $85,000. Steve W., 281-0055.

UPSTATE N.Y. - Granville, near ski areas, 16 acres, 6 meadow, 10 wooded w/seasonal stream, 600' front on county rd., elect., $16,000. 603-826-5673.

RIDGE - North of Rte. 25, 1.12 acre bldg. plot, 100'+x400'+, established community, mostly cleared, level. Asking $47,900. 924-3236.

SAYVILLE - 3-4 bdrm., cedar ranch, brick front, 2 full baths, gar., central a/c in all rms. & in full basement, eik, d/r, l/r, fam./rec. rm., lg. patio w/outside hot & cold shower, appl., w/w, sidewalks, mint cond., walk to golf course and bay, $144,000. 589-2681.

SETAUKET - North of 25A, mint, 2 bdrm. ranch, 1½ baths, eik, fam. rm., deck, gar., full basement, treed prop. on quiet st., $195,000. Ed, Ext. 4768 or 751-2250.

## Wanted

HOUSEKEEPER - Mon.-Fri., 1-5 p.m., cooking, shopping, some child care, non-smoker, must have own car. 744-4611 after 7 p.m.

TRAINS - Lionel, American Flyer, accessories, any cond., brings good price. Carole, Ext. 3362 or 924-4097 eves.

ONE STEP VAN - needed for cabinet business, good mech. cond., good body cond., Jerry, 283-8153.

BOAT - alum. or wood, 14' or 16', reasonable. Tony, 732-3338.

WOODEN CRIB - w/matt., must be in good cond., Sharon, 727-0661 after 5 p.m.

HOUSE TO RENT - South Country school district. Brookhaven/Bellport/E. Patchogue. Bill, Ext. 2378.

TOYS - especially rideable ones, for children 18 mo. to 3 yrs., at garage sale prices. 924-0570.

DOCUMENTATION - 5TB Multi-function card. Marty, Ext. 3941.

DEHUMIDIFIER & WOODEN CLOSET - reasonable. Walt, Ext. 2907 or 698-0576 after 6 p.m.

APARTMENT - for 1-2 yrs. for BNL couple w/dog, starting Sept. 1, maximum $600. Ext. 3758.

T.I. PROGRAMMABLE 59 - in good cond., 475-6773, leave message.

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

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