BROOKHAVEN BULLETIN
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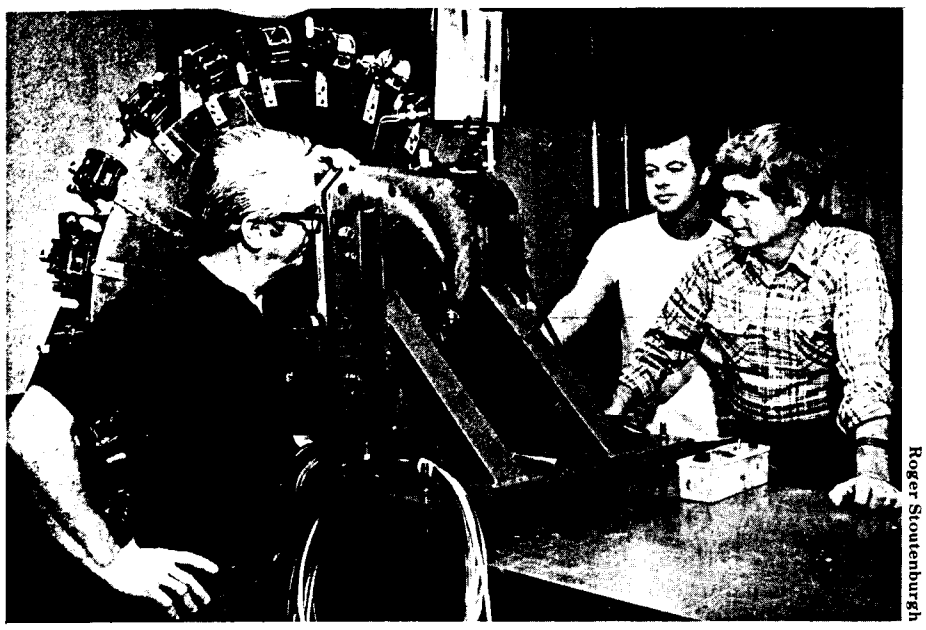
BROOKHAVEN NATIONAL LABORATORY



Roger Stoutenburgh

Al Bertsche, Danny Schiappa, and Brian Vogt inspect a sample of cable as it comes out of the machine they constructed.

Reeling In the Cable

Project Engineer Al Bertsche knew he was taking a chance. When he presented his idea to the High Energy Facilities Magnet Division last November, some people laughed.

"Look fellas," he said, "when we're done with the project, 23 of us will be able to go fishing."

Fishing? project? Wait a minute.

The department wanted to save valuable time while spending as little money as possible in building a machine capable of manufacturing superconducting cable similar to the type made in industry. These cables make up the coils which are major components of the magnets in accelerators such as the proposed Superconducting Super Collider (SSC) or the Relativistic Heavy Ion Collider.

The task force, including Bertsche, senior technical specialist Brian Vogt, and technician Danny Schiappa, who replaced another technician, Rich McCluskey, went to other departments to borrow the necessary equipment to build the machine from scratch. This included a riveting gun from the sheet metal shop; a cabler from the power transmission group; and motors, gear boxes, a turk's head (a machine used to size cables), and a drive control from the CBA project. Nothing, says Vogt, is brand new.

But fishing reels? Bertsche felt they would fit in nicely as spools from which the wires can be fed into the machine, in a fashion similar to the one that he had observed at the New England Electric Wire Corp. The price was right — only $35 each — and the order was met by a local bait-and-tackle shop within a week.

The contraption works remarkably well, one soon finds out. With Bertsche at the control box maintaining its speed at about two feet of cable per minute, Vogt at the turk's head regulating the size of the cable as it goes through, and Schiappa loading the cable evenly on a spool, the machine builds up to a tremendous roar and the men don earmuffs. The four-foot diameter aluminum disc rotates clockwise, with the fishing reels attached, and the niobium-titanium, (NbTi), wires are fed into the turk's head and are pulled out by a capstan.

Just before entering the turk's head, they are hammered flat by a riveting gun. The cable comes out after passing through rollers that are ground to a 2.8 degree keystone angle. This angle gives the cable different thicknesses at each edge, 0.057 and 0.042 inches, allowing it to wrap effectively around the shape of the magnet's bore.

The machine has not always worked quite so simply, however. Says Vogt, "It's been a lot of head-bashing." Although the group was able to produce cable only a month after the plan was unveiled, they have been working since January to develop what is known as an "internal flat" — a condition that gives the cable increased flexibility and ensures that the wires remain in place — something which has never been done before in the production mode, according to Bertsche. It now appears that it has been achieved, but still needs to be perfected.

The next step in the process will be an attempt to achieve the same internal flat in cable made from niobium-tin (Nb_3Sn) wires. Although it has similar properties to NbTi, there will be some adjustments necessary in using the Nb_3Sn. "We hope," says Bertsche, "they will be minor." Afterwards, the group will design, build and test production tooling which will then be used to make the cable commercially.

The group has gained a great deal of satisfaction from working on the project. But what will they do when the project is completed and the machine is dismantled?

"Maybe next summer we'll go fishing," Bertsche tells Vogt.

"Yeah, with 23 reels, we could make a great troller..."

— Maurice A. DuBois

Attention Retirees!

A retiree-volunteer based at Lawrence Livermore National Laboratory has taken on projects with the Department of Interior assisting the people of the U.S. Trust Territories. He would like to assemble a list of interested people who could be called on for various short-term overseas assignments in these areas. The terms would be from one to four months and would concern projects from road building to computer technology. Participants would not be salaried but would receive a per diem and travel expenses. Their retirement and/or social security would not be affected.

Those who would like to volunteer, should send a resume, including area of expertise, address and phone number, to William Marcuse, head of the Office of Research and Technology Applications, Brookhaven National Laboratory, Bldg. 197C, Upton, New York 11973. He will forward the resumes and supply any further information required.

Physics for the Defense: Part II

A Case of Mistaken Identity

In part I, BNL guest physicists Arthur Damask and Arthur Paskin produced the first computer graphics to be used as evidence in a U.S. criminal case. During the trial of Michael McHugh, a 17-year-old Bronx boy charged with four counts of manslaughter and reckless driving after a fatal car crash, Damask and Paskin's computer animation of their accident scenario was presented as part of McHugh's defense. Their computerized version of the accident demonstrated how an open manhole into which the auto's right front wheel fell, not the driver's recklessness, was responsible for causing the car to spin out of control.

McHugh's own lawyer, as well as the prosecution, had assumed that the boy must have been the driver of the Mustang when the car crashed, killing his four friends. But no one knew, not even the boy. He only thought so, but he did not remember.

Hoping to discover who was the driver, Damask went to a medical library to reread studies of injuries to cadavers in simulated car crashes. On the third day of the trial, Damask was again called to testify. What he revealed from his medical physics literature search dragged the trial on for another seven days.

"Three collisions are involved in a car crash," explains Damask. "First, the car hits something. Second, the occupants of the car are still moving until they strike something. And third, the organs of the body continue in motion until they collide within the body.

"All four of the deceased had ruptured aortas, the main artery coming from the heart," says Damask. "If you exceed about 180 G's deceleration, the heart hits the inside of the chest wall, rotates and tears the great vessel. Calculating the deceleration of the car into the wall, I showed that they had about 240 G's — more than enough to rupture their aortas."

Damask also learned that if a chest blow has enough deceleration, the ribs and sternum fracture. "I demonstrated that the driver of the car would have struck the steering wheel with enough force to break his ribs and sternum," says Damask. "Using skull studies, I showed that the driver of the car would have fractured his skull and lacerated his face.

"According to the literature, if the driver is riding in a bucket seat, like those in the Mustang, he would be trapped by the wheel and slide forward upon impact," adds Damask. "One or both knees would hit the lower end of the dashboard and be severely injured, and the lower leg of the injured knee would receive a signature fracture."

Of the deceased, Damask found that only one had all of these injuries, and none of the others had more than two. The person having all of the injuries had to have been the driver. And that person wasn't McHugh.

But McHugh's injuries could not be discussed in court without introducing all medical evidence, including his blood alcohol level. So Damask postulated the boy's injuries or lack thereof indirectly.

"McHugh was alive so he did not rupture his aorta," explains Damask. "An officer at the scene helped splint his left arm, implying a fracture. McHugh complained to the officer that his chest hurt him, indicating fractured ribs or shoulder. The boy had severe abrasion of his right cheek and neck, implying that he had slid.

"Working from the abrasions described on the four autopsy reports and the coefficient of friction, I was able to find how far and in which direction each boy had slid," continues Damask, "and from what position in the car each one was ejected. My calculations resulted in the same configuration of

(Continued on page 2)

Alex Reben

Arthur Damask and Arthur Paskin

Mort Rosen

High school teachers return to classroom after a summer of research. From left, Roderic Beaulieu, Barbara Bergman, Vincent Sydlansky, Richard Feldman, Paul Calcanes, Don Metz (BNL program head), Chirakkal Krishnan and Carl Campbell.

Teachers Sum Up Summer Research

The first summer term of a three-year summer program for selected area high school math and science teachers is coming to a close this week at BNL. In keeping with the "What did you do this summer?" theme that traditionally seems to usher in every new school year, these seven Suffolk and Nassau County instructors were asked to comment on the program as they prepare to leave the lab and return to the classroom.

Chirakkal Krishnan of East Islip High School found the program "exciting for teachers because it gives them a chance to come into the world of research and find out what is going on at a personal level." His students? "They are curious to find out what I am doing outside the classroom!" says Krishnan.

As for Barbara Bergman's students at Garden City Sr. High School, they will see her incorporate much of what she has learned into her method of teaching. "It's better to demonstrate than to just explain verbally, it's much harder to learn without seeing. So it makes a big difference if the teachers have done personally those things that they're explaining."

Roderic Beaulieu, also from Garden City Sr. High School, feels as though he has gained insight into what is important to teach his students. "With my work this summer, I think I'll be able to give my students real insight as to what is going on as far as computers are concerned. I've also learned, from working with computers, the general technique of breaking down a large problem into smaller problems and working on the smaller problems individually. This is something that you have to do in a practical environment, but it hasn't been applied in a classroom situation because the problems that you attack are not that big. But now I know the importance of teaching students how to subdivide problems."

For Vincent Sydlansky of West Hollow Jr. High School, the program "opened up a lot of doors for me because I was able to see and work with some equipment that I wouldn't have the opportunity to use in the classroom. This hands-on experience will enable me to inform my students that working in the laboratory is not just theoretical."

Carl Campbell of Bay Shore High School would agree. "What happens to many teachers is that they have a lot of theory, but they haven't done any research at all, or else not for a long time, probably since graduate school," says Campbell. "This has been an experience, working with certain types of materials and unfamiliar equipment. In the classroom I've only talked about theory, now I can explain it to the kids firsthand. I've seen the setup and have actually performed the experiment. You need every bit of this experience when you're working with college bound students."

Paul Calcanes of Herricks Sr. High School felt his summer was "highly successful. I can personally say that this program gives the teachers greater insight into how current research is conducted. The teachers, in turn, will be able to keep students abreast of the state-of-the-art technology. That sums it up in my mind."

Also summarizing her experience this summer, Kathleen Smith of St. Mary's Girls High School simply concluded, "This program has helped my background as a scientist, which is valuable if I'm going to be a good science teacher."

— Sally Sargent

Case (Continued)

the bodies as photographed by the police." (Their 1972 Mustang was not equipped with seat belts or shoulder harnesses.)

To arrange the occupants within the car, Damask compared the spinal fractures of the deceased to those reported in a simulated car crash study resulting from severe whiplash.

"During the second collision, if your chest is stopped, but your head is not, one of the upper two vertebrae can be fractured," explains Damask. "Whiplash resulting in neck fracture occurs as you approach 50 G's because the adult head, which normally weighs eight or nine pounds, suddenly weighs 400 to 450 pounds, and the neck can't hold up. With backward whiplash, your spine transfers the load from your neck to the small of the back, and a vertebra in the lumbar region cracks."

The two boys in the left and middle rear seat had upper vertebrae broken from the whiplash. The one in the right rear seat had a lower vertebra fractured when he was thrown backwards by the end of the concrete guardrail as it penetrated the car. "The fractures of the deceased all corresponded to my postulated seating arrangement, confirming the ejection pattern," says Damask.

"There was no route by which the driver could have been ejected," states Damask, "because the driver's door was closed, and the steering wheel, dashboard and gearshift untouched. The driver had to have been killed. McHugh was alive and had been found on the road outside the right front wheel of the car. With his injuries, he couldn't have crawled to his final position from the driver's seat.

"From their injuries and the position where they were found, I concluded that Skehan, not McHugh, was the driver," says Damask.

According to Damask, McHugh survived because the right front door was ripped off the car when it hit the concrete barrier. "Instead of having his second collision in the car, the boy went through the opening where the passenger door had been and flew through the air for 11 feet," the physicist explains. "McHugh hit the road with his shoulder, chest and wrist at an angle that sufficiently reduced his deceleration and slid for 13 feet. He never experienced the sudden deceleration that would have ruptured his aorta."

Before the judge, the prosecuting attorney argued that Damask's medical physics testimony was the equivalent of a surprise witness because the prosecution was given no prior knowledge of what the physicist was going to say, and that the prosecution should be allowed to present a rebuttal witness even though the direct testimony had been concluded.

The judge agreed, and allowed Youngs's 16-year-old sister to testify that McHugh had confessed to her that he was the driver. She stated that while visiting her brother's grave with McHugh two months after the accident, he had told her he was sorry that he had killed her brother and their three friends.

After four hours of deliberation, the jury returned the verdict of not guilty on four counts of felony manslaughter, but guilty of the misdemeanor reckless driving.

"This was our most exciting case to date," says Paskin, "especially considering the legal ramifications of the use of computer graphics in the court.

"More graphics will be seen in the court in the future, and they will become more sophisticated and expensive," says Damask. "Unless the current ruling is modified, the person who writes the equations of motion and programs these for the computer must be in court to defend both as I did.

"I would like to see more physics applied to questions of civil and criminal law in court proceedings, and the advancement of forensic physics by competent scientists who work for the court," comments Damask. "This would ensure that accident reconstruction would be properly performed, and no one would assume that the analysts are biased in favor of the side by which they were hired."

"We were disturbed that an expert witness like the police investigator could give testimony under oath that contradicts the laws of physics," says Paskin, "but in the court room, he is an expert by his having testified in other cases. The fact that he may have mistestified is unfortunately irrelevant.

"The legal phrase 'in your expert opinion' also bothered us because physics is fact, not opinion," continues Paskin. "A lawyer could ask if he were to throw something up, would it come down 'in your expert opinion.' We would answer 'yes,' but if another expert witness answered 'no,' his opinion would be equal to ours in the eyes of the law even though his opinion is physically incorrect.

"As scientists, we were disappointed that the prosecution persisted with the same testimony though it violated the laws of physics," adds Paskin. "We expected them to give up. But that didn't happen."

— Marsha Belford

In Memoriam

Doris L. Kilthau, a registered nurse at the Medical Department, died on August 13 in Brookhaven Memorial Hospital. She was 64 years old. Kilthau came to the Laboratory on August 1, 1964. She is survived by three children, Doris, Marshall and Paul. She was a resident of East Patchogue.

Patents Awarded

Toshifumi Sugama and **Lawrence E. Kukacka**, both in the Department of Applied Science, were issued U.S. Patent #4,436,555 for inventing fast-setting, high strength, bonded aggregate compositions which can be adapted for use as construction materials. Their invention provides a high strength magnesium phosphate (Mg glass) cement composition which sets rapidly. The material can also withstand extremely high temperatures and is thus useful as a high-strength building material. It's prepared from a cation-leachable powder and a bivalent metallic ion-accepting liquid such as an aqueous solution of diammonium phosphate and ammonium polyphosphate.

U.S. Patent #4,442,185 was awarded to **Terje Skotheim**, Department of Applied Science, for inventing a photoelectric device that uses a layer of dry solid polymer electrolyte placed between two semiconductor layers. A layer of a polymer blend of a highly conductive polymer and a solid polymer electrolyte is further interposed between the dry solid electrolyte and the first semiconductor layer. Two main goals of any photovoltaic cell are efficiency and higher output voltage. While most cells have a theoretical efficiency of 25% and voltage ranges from 0.2-0.5 volts per cell, cells of this invention approach 35% efficiency and 0.625 volts. The invention also provides for an easy method of manufacture resulting in low cost cells.

Mort Rosen

On behalf of DOE, David Schweller (left), Brookhaven Area Office Manager, presented an Award of Excellence for BNL's 1983 safety performance to Lab Director Nicholas Samios (center). Attending the presentation were Charles Meinhold, head of the Safety and Environmental Protection Division, and Herbert Kouts, acting Associate Director for Applied Research (right). As it did in 1982, BNL reduced its lost time rate to three-quarters of the average of the three previous years.

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BERNICE PETERSEN, Editor
MONA S. ROWE, Associate Editor
ANITA COHEN, Reporter
MARSHA BELFORD, Reporter

35 BROOKHAVEN AVE., UPTON, N.Y. 11973
Telephone (516)282-2345

Tick Watch

According to Occupational Medicine Clinic director Laura Sbarra, employees have been requesting information about Lyme Disease, Rocky Mountain Spotted Fever and Babesiosis.

Lyme Disease, as reported upon in the Brookhaven Bulletin of April 13, 1984, is characterized by a migrating ring-shaped red skin rash, fever, and/or muscle and joint pain occuring three to twenty-one days after a tick bite. If not treated with antibiotics, a person having Lyme disease may later develop joint, neurological or cardiac abnormalities.

Rocky Mountain Spotted Fever is another tick-borne disease which may cause chills, headache, fever and/or a skin rash. The incubation period ranges from two days to two weeks, with an average of seven days.

Babesiosis symptoms include general uneasiness, fatigue, fever, muscle and joint pain, and/or destruction of red blood cells which may arise one to six weeks after a tick bite. People who become severely ill from the disease are the frail elderly, alcoholics and those who have had their spleens removed.

Sbarra recommends that you consult your doctor if you develop any of these symptoms especially after being bitten by a tick. To prevent exposure to these diseases, promptly remove ticks using blunt tweezers; if one has bitten, use the tweezers to grasp the tick where it has attached itself and pull straight out. Avoid squeezing the tick's abdomen or crushing the tick while it is attached, since by doing so you may promote rather than eliminate the possiblity of infection.

If you have further questions, contact the Clinic at Ext. 3670.

New Area Code

As of September 1, Brooklyn, Queens and Staten Island will have the area code 718; Manhattan and the Bronx will still be under 212. Callers should start using 718 on September 1 even though mandatory use of the new code does not begin until January 1, 1985. After that time, use of the wrong area code will result in a recorded message or a wrong number.

CREF Values

July	65.43	August	66.13
September	67.02	October	65.95
November	67.06	December	66.84
January	66.50	February	64.21
March	65.37	April	65.34
May	60.81	June	61.71

July $60.35

SCCC Deadline

Today is the last day to register for fall on-site Suffolk County Community College courses. For information on the course offering and on BNL's tuition refund program, see Pat Knisely in Personnel, Bldg. 185, or call her at Ext. 4262.

BERA News

Touch Football

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

All teams interested may pick up entry blanks and game rules at the BERA Sales Office any weekday between 9 a.m. and 1 p.m. New teams will be welcome. A Players' Pool will accommodate those individuals who would like to play but are not included on an organized team's roster. Since no blocking and limited body contact are game rules, players of all ages can take part with little fear of being injured.

Contact Ed Taylor, league chairman, on Ext. 7589 for further information.

Swimming Pool

Summer season tickets are valid through Sunday, September 2. During the week of August 27 through September 2, the pool will be open as follows:

Monday through Friday
(Employees only)
11:00 am to 1:30 pm
(Employees/Families/Guests)
1:30 pm to 9:30 pm
Saturday and Sunday
(Employees/Families/Guests)
1 p.m. to 6 p.m.

The pool will be closed on Monday, September 3 (Lab holiday).

New Season

Tickets for a new three-month pool season will be sold at the pool starting Tuesday, September 4.

Fee:

Season Tickets (fees not prorated)	
Individual Membership	$18.00
Family Membership	23.00
Daily Admissions	
Employee/Family Member	1.25
Guest	1.75

Schedule:
Monday through Friday
(Employees only)
11 a.m. to 1:30 p.m.
(Employees/Family/Guests)
5 p.m. to 9:30 p.m.
Saturday and Sunday
(Employees/Family/Guests)
1 p.m. to 6 p.m.

Guest Ruling (Applies to all recreation facilities)

One Guest - An employee is allowed to bring one guest per visit without special permission or prior arrangement. The guest must be accompanied by the employee.

Two to Five Guests - Advance arrangements for two to five guests may be made at the Recreation Office. (No more than five guests per employee is ever permitted.) When such an arrangement is made, the Recreation Office issues an admission card stating the sponsor's name and life number, the number of guests permitted, the date of visit, and the facility to be visited. Guests must be accompanied by the employee, who will be requested to show the admission card at the main gate and at the swimming pool ticket desk.

Culinary Tour

The BNL International Cooking Exchange is planning a bus trip on Thursday, September 27, to the Culinary Institute of America located in Hyde Park, New York. The day's activities will include a guided tour of the Institute, and a sumptuous five-course luncheon (menu below) in the American Bounty Dining Room.

The cost of the trip, which will include bus fare, tour and luncheon, is $30 per person. The bus will leave from Berkner Hall at 7:00 a.m. with an expected return between 6:00 and 7:00 p.m.

Only 49 reservations will be accepted due to the allowable number of bus passengers. Make your reservation by calling the Recreation Office, Ext. 2873.

For those who enjoy gourmet cooking, this is a trip not to be missed!

Menu
Appetizer
Smoked Idaho Trout Filet with Creamy Mustard Sauce
Soup
New Orleans Chicken and Sausage Gumbo with Rice
Salad
Fresh Greens and Vegetables with Virginia Peanut Dressing
Entree
Braised Beef Flank — "Shaker Village"
(Beef Flank Stuffed with a Savory Bacon Stuffing and served with Oven-Baked Tomato Slices)
Variety of Homemade Breads
Dessert
A Culinary Institute Baked Specialty
Coffee/American Bounty Tea

Softball

Games for Week of August 13

League I
Blue Jays 16 — Ice Pops 7
Six Pax 12 — Moles 3
Makeup game:
Blue Jays 14 — Six Pax 9
League II
Medical 9 — Dirty Sox 8
Make up games:
Dirty Sox 23 — Random Errors 8
Medical 11 — Magnuts 5
League III
NADS 8 — No Names 7
Source (won) — E-Z Riders (forfeit)
League IV
Kidz-R-Us 8 — Turkeys 5
TNT 11 — Septembers 10
League V
No Feedback 12 — Mudville Sluggers 3
Foul-Ups (won) — Space Kadets (forfeit)
Who Cares 17 — Erasers 1

Bowling

Regular and alternate bowlers are still needed for all leagues. If you are interested, contact Charles Bohnenblusch on Ext. 4758, or Richard Scheidet, Ext. 5284.

Cafeteria Menu

Week ending August 31

Monday, August 27

French onion soup w/croutons	(cup)	.65
	(bowl)	.85
Veal scallopini on egg noodles		2.00
Western omelet w/French fries		1.90
Hot Deli: Top round of beef	(bread)	1.95
	(roll)	2.10

Tuesday, August 28

Cream of broccoli soup	(cup)	.65
	(bowl)	.85
Broiled flank steak w/mushroom gravy & 1 veg.		2.20
Hungarian beef noodle bake & 1 veg.		1.95
Hot Deli: Chili dogs		2.00

Wednesday, August 29

Vegetable beef soup	(cup)	.65
	(bowl)	.85
Baked meatloaf w/Spanish sauce & 1 veg.		1.90
Roast pork w/apples & prunes		2.05
Hot Deli: Roast turkey breast	(bread)	1.95
	(roll)	2.10

Thursday, August 30

Split pea soup	(cup)	.65
	(bowl)	.85
Ham & potato au gratin & 1 veg.		1.90
Spaghetti special w/meatsauce & garlic bread — "All you can eat" * No take-out orders on this special		2.10
Hot Deli: Barbecue chicken breast	(bread)	2.15
	(roll)	2.30

Friday, August 31

Manhattan clam chowder	(cup)	.65
	(bowl)	.85
Old fashioned beef stew w/baking powder biscuit		2.05
Tuna noodle casserole & 1 veg.		1.90
Hot Deli: Pastrami	(bread)	1.95
	(roll)	2.10

Arrivals & Departures

Arrivals

Jeffrey Colbert ..... Instrumentation
Ann L. Mutschler ..... Medical
Raymond J. Raynis ..... Physics
Jeffrey S. Rubenfeld .. Mgt. Info. Syst.

Departures

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

Eshagh Anavim ..... DNE
Mary E. Cuthbert ..... DNE
John A. Fillo ..... DNE
Randy A. Johnson ..... Physics
Maureen M. Mulcox ..... Medical
Chieu D. Tran ..... DAS

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, 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 Personnel Placement Supervisor, Ext. 2882.

LABORATORY RECRUITMENT — Opportunities for Laboratory employees.

2101. SECRETARIAL POSITION — Requires AAS degree in secretarial science or equivalent and excellent clerical and communication skills. Familiarity with Laboratory practices and policies, and proficiency in the preparation of technical manuscripts on a word processor necessary. Department of Nuclear Energy.

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Autos & Auto Supplies

81 GTA CELICA - Supra Int. limited edition, all power, cruise, must see, $7,000. Ext. 7745.

76 CHEVY NOVA - 4 dr., a/c, p/s, p/b, stereo cassette, new tires, brakes & exhaust, very clean. Jimmy, 878-8591 after 5 p.m.

HONDA MOTORCYCLE - CX500, w/windjammer and backrest. Ext. 2558 from 8 a.m. to 4 p.m.

78 MOTORCYCLE - KZ-400, dealer maintained, low mi., many recent parts and tune up, asking $850. 281-0360 after 6 p.m.

80 FORD FIESTA - low mi., good cond., asking $2,100. Ext. 3597.

81 KAWASAKI MOTORCYCLE - 440 LTD, black, low mi., must sell, $1,000. 289-6519.

79 HONDA MOTORCYCLE - CX500, drive shaft, 5,000 mi., windshield, luggage rack, $1,000. Herman, 475-3238.

72 OLDS 98 - all power, tiltwheel, new snows, trans. drive shaft good, int. mechanic, $600. John, Ext. 7519.

82 FORD T-BIRD - Landau, auto., p/s, p/b, loaded, low mi., excel. cond., $6,300. 567-4333 or 567-1395 eves.

63 FORD VAN - 6 cyl., std., runs but needs work, $75 or best offer. Frank, Ext. 2022 or 399-4480.

BATTERY CHARGER - exide commercial charges, 1-6 batteries at one time, adjustable charge rate, $50. Walter, 878-8967.

82 YAMAHA 750 - Virago, shaft drive, only 800 miles, new, asking $2,350. 261-5448.

71 CHEVY IMPALA - V8, p/s, p/b, a/c, 4 dr., good cond., $1,500. Ext. 2673 or 744-8632 after 6 p.m.

81 DATSUN MAXIMA - diesel engine, every avail. option, 42,000 mi., perfect cond. inside and out, $7,975. 473-8387.

79 HONDA MOPED - good running cond. Ramona, 928-3088.

80 CHEVETTE - excel. cond., a/c, am/fm stereo cassette, $2,600. Ext. 3798 or 744-6148.

PICK-UP CAMPER - 11', slide-in, self contained, sleeps 6, alum., step bumper, excel. cond., $2,395. 821-1081.

74 GMC PICKUP - 4x4, new body, wheels, tires, paint, springs, dual tanks, must sell, $5,500. 744-9892 after 6 p.m.

70 NOVA - orig. owner, recent improvements, runs well. Ext. 4192 or 751-7787.

83 SUZUKI - RM250-D, new tires, chain, sprockets, used only six months, brand new cond. 929-4678.

80 KAWASKI - 440 LTD, runs well, booster fairing, stereo, new tire sprockets chain, $600. 399-0168.

76 PLYMOUTH VOLARE - 4 dr., sedan, 6 cycl., R&H, $300. 363-6538.

71 DODGE DART - 1318, 4 dr., p/b, p/s, a/c, excel. running cond., body fair, 127K, asking $750. Ext. 4260.

71 PONTIAC GRANDVILLE - V8, a/t, p/s, p/b, good running cond., $275 or best offer. Ext. 3628 after 6 p.m.

73 PINTO WAGON - 3200cc, rebuilt engine, trans., parts only, $100. J. Medina, Ext. 7636 or 924-6971.

68 FALCON - warranted rebuilt trans., engine good, ugly but runs great, $349. 924-0138.

75 DODGE - 3/4 ton pickup, blue, 4 wd, am/fm, good cond. John, 589-6181.

80 YAMAHA - Maxim 650, good cond., garaged, w/many extras, incl. (2) Arai helmets, $1,300 or best offer. Mark, Ext. 5464 or 727-1429.

TIRES - (4) 235x15, Goodrich, radial, all terrain, w/Ford white spoke rims, 2 new, 2 fair, asking $250. Ext. 7713.

78 CADILLAC - D'Elegance model, 4 dr. sedan, full power, cruise control, 66,000 mi., excel. cond. Ext. 3319 or 744-9802.

71 BUICK - LaSabre, good cond., runs very well, p/s, p/b, auto., a/c, asking $995. 286-0211.

CAMPER - wheel pop-up, hard-top, sleeps nine, spacious, excel. cond., $1,175. Ralph, Ext. 7772 or 744-8921 eves.

80 BOBCAT - am/fm cass., 75K mi., crushed rear quarter, new clutch, must see, $1,100. Bob, Ext. 4547.

68 CAMARO - am/fm stereo, new tires & rims, good cond., $1,500. Dick, Ext. 4313 or 369-2857.

78 NOVA - 4 dr., a/t, p/s, p/b, am/fm stereo, new exhaust, red/black, 60K mi., excel., $2,650. Ext. 7759 or 3073 eves.

74 CHRYSLER - Newport, $450 or best offer. 727-5912.

SNOW TIRES - (2) excel. cond., C78-13, $40. Susan, Ext. 4267.

72 OLDS 98 - high mi., 4 new tires & other parts, reliable, asking $500. Marian, Ext. 3999 or 3129 eves.

84 FORD - Escort, LX station wg., 6K mi., fuel inject., auto., cruise, rack, a/c, p/dr locks, loaded, deluxe, $9,200. 286-0795.

72 DUSTER PARTS - 6 cyl. eng. & trans., right fender, right door, windshield. 727-3608.

80 CHRYSLER - LeBaron, under 30K mi., fully equip., mint cond., $4,500. 921-0548 after 7 p.m.

73 FORD LTD - station wagon & 17' Avalon trailer, good cond., both for $2,000; 1966 Avalon trailer, 17', sleeps 6, refrig., bathroom, good cond., hitch included, $1,050. Joe, Ext. 5131.

72 VOLVO - 142E, need body work, asking $800. Eric, 289-2352 or Ext. 2973 after 5 p.m.

76 BUICK CENTURY - V6, full power, am/fm radio, good cond., $1,800. 289-5379 after 5 p.m.

74 NOVA - new brakes, tires, radiator, am/fm stereo, runs well, asking $1,500. Klint, Ext. 3541 or 878-1698.

76 CHEVY NOVA - excel. mechanical cond. Ext. 2073 or 928-8071.

78 PUCH MOPED -90 mpg., excel. cond., class B, $325. 363-6845.

74 HORNET - 74K mi., new tires, battery, muffler, runs well, body rusty, $500. Ext. 5222.

84 HONDA CIVIC - 4 dr., 3K mi., 5 spd. David Jhirad, 754-3828 after 7 p.m.

77 CHEVY CAPRICE CLASSIC - 350 V8, 4 dr. sedan, Jensen stereo/tape deck, $2,900. 744-2783 a.m.

75 SKYHAWK - V6, auto., p/s, p/b, a/c, good transp., good cond., $1,000. Charlette, 286-0913.

70 VW FASTBACK - good in/out, fuel inject., stick, 8K on rebuilt eng., just inspected, $1,000. Walt, 757-5478 or Ext. 4986.

82 YAMAHA - 750 Virago, shaft drive, 800 mi., $2,350. 261-5448.

76 DATSUN 710 - 4 spd., am/fm radio, very good cond. Ext. 3565.

75 MGB CONVERTIBLE - am/fm 8 track, 82K mi., good cond. $2,600. John, Ext. 7671.

73 FORD LTD - station wagon, 400 ci., a/c, equipped for trailer towing, super shape in/out, $1,200. Joe, Ext. 5131.

67 PONTIAC FIREBIRD - 400 ci. eng., 4 spd. trans. George, 475-5336.

63 FORD VAN - parkway windows, 6 cyl., std., runs but needs work, $65. Frank, Ext. 2022 or 399-4480.

59 WILLYS - 4 wd, body good, needs eng., $500. Ext. 2877 or 289-8428.

81 KAWASAKI MOTORCYCLE - 440 LTD, black, low mi., must sell, $1,000. 289-6519.

68 MERCURY - Cougar, need work, good transp. Rich, 273-9086.

75 CHRYSLER - New Yorker, 4 dr., p/s, p/b, good cond., asking $975. John, Ext. 4089 or 298-4567 after 6 p.m.

PARTS - for 72 Chevy wagon, 350 eng., 30K mi., 400 auto trans. Ext. 5318 or 585-2084 after 6 p.m.

TIRES - (4) General steel belted radials, almost new, P225-75R-14 white wall, $200 or best offer. 289-8212.

82 KAWASAKI - KZ440, low mi., like new, $1,000 or best offer. 924-0960.

80 KAWASAKI MOTORCYCLE - 440 LTD, runs well, rooster fairing, stereo, new tire, spockets, chain, $600. 399-0168.

75 VALIANT - slant 6, 70K mi., air cond., p/b & steering, good cond. 732-7185.

VESPA BRAVO MOPED - Super Deluxe, Class B, excel. cond., used very little, $500. Lloyd, Ext. 3381 or 286-1024.

Boats & Marine Supplies

15' JOHN DORY - fiberglass boat, w/steering, excel. cond., $500. Ext. 3604 or 878-0516 after 6 p.m.

28' OWENS - new canvas & hardtop, head, sink, stove, sleeps 4, very good cond., asking $2,800. 281-0360 after 6 p.m.

AMF SUNFISH - $175. Ext. 7727 or 929-4631.

16' FIBERGLASS BOAT - 55 HP electric start motor, all for $500. Bud, 878-1915 after 5:30 p.m.

MERCURY OUTBOARD - 1974, 50 HP, electric start, excel. cond., stored the past five years, will demonstrate, $1,500. 286-1709.

19' FIBERGLASS CRUISERS INC. - w/90 HP Chrysler, trailer, many extras, excel. cond. 325-0447 after 6 p.m.

MUSHROOM ANCHOR & CHAIN - 100 lbs., w/pickup buoy, $75. Joe, Ext. 5233 or 369-0432 eves.

18' MARQUIS - 1979, open-bow, 85 HP, Johnson, w/power-trim, full equip., canvassed, excel. cond., orig. owner, in-water, asking $5,300. Arnie, Ext. 2040 or 289-1870.

WINDSURFER - 13' mast, brand new, $650. Rich, 744-9529 after 6 p.m.

21' FIBERGLASS T-CRAFT - 1972, 245 HP, OMC I/O, cuddy cabin, VHF radio, sleeps 4, trailer, elec. winch. 744-9802 or 369-3068 before 5 p.m.

OUTBOARD MOTOR - 4-1/2 HP, good cond., $150; arc welder 230 amp., Helorey 10 lb. rods, $99. 289-8601.

OUTBOARD ENGINE - 1978 Mercury, 4.5 HP, long shaft, low hrs., $350. Ext. 3833 or 587-8408.

34' NAUTALINE HOUSE BOAT - 1968, fiberglass, $15,500 firm; 1962 Pacemaker cabin cruiser, 30', FWC; 1976 Crusader, many extras, excel. cond., $6,300. 289-0012.

21' SAN JUAN SAIL BOAT - Mark II, w/custom trailer, sleeps 4, excel. cond. 924-0848 after 5 p.m.

PVC KAYAK - and Mitchell paddle, orange, excel. cond., $325. Sue, Ext. 7772.

TIRE AND WHEEL - for boat trailer, 5.30x12, 4 hole, new, unused, $25. Joe, Ext. 2575 or 281-2767 eves.

Miscellaneous

BEDROOM SET - man's dresser and woman's dresser w/mirror, 2 end tables, headboard, frame, mattress and box spring, $250. 331-5528 eves.

REFRIGERATOR - apt. size, excel. cond., $75.00; double hung window, wood, new, approx. 42"x60", $50. Joe, Ext. 5233 or 369-0432 eves.

VIC-20 - excel. cond., & three games, $90. 475-3452.

CHILD'S PLAYHOUSE - all wood, dutch doors, open window, 4'x6'x4'ht., good cond., needs minor shingle repair, $50. Tom, Ext. 4084 or 878-1060.

SOFA - good quality, colonial style, recently re-upholstered, $250 or best offer. Dave, Ext. 4254.

CONTENTS OF MODERN DINING ROOM - glass chrome table, 4 chairs, wall unit, lamps, $950; antique stain glass hanging fixture, beautifully colored. 325-9580 after 6 p.m.

WOOD STOVE & PIPE - Lange, 26", excel. cond., $350. Ext. 3128.

LOLLY COLUMNS - adjustable 6' to 9', various tonnage, several sizes/types avail., $7 to $20. Walter, 878-8967.

STEREO SPEAKERS - Magnapan Model SMG, good cond., moving, must sell, $200. 924-7480.

TICKETS - for benefit golf tournament Aug. 29 at Middle Island Country Club. Roy, Ext. 7578.

SPARE - for BAR-B-Q, L.P. gas tank, $9. Sal, Ext. 2460.

24" BOY'S BIKE - Sears Free Spirit, 10 speed, like new, $50; BMX custom made, $40; 18" elec. Sunbeam mower, catcher, $50; Ross 10 spd., 26". Lydia, Ext. 2380.

TRADITIONAL COUCH - blue and tan print, excel. cond., $125. 751-8240.

BICYCLE - men's British Raleigh, 3 spd., 25" frame, $125. Ext. 7509.

GUITAR AMPLIFIER - Guild Model Two; (2) 10-1/2" speakers, hardly used; ladies bicycle, Vista, 10 spd., 21" frame, good cond., $80. Ext. 7112 or 472-1922.

FIREWOOD - full cord, split & delivered, $135 or 399-0168.

STEREO CABINET - teak veneer, $40; Marantz 15 watt receiver, $40; Fisher speakers, $40. Sheryl, 689-7725.

GARBAGE DISPOSAL - GE Piranha, never used, in box, $60. Karen, Ext. 2950.

25" ZENITH TV - excel. cond., $175. Richie, Ext. 3815 or 924-5329.

SECRETARIAL STAND - new, $25. Susan, Ext. 4267.

COLOR TV - Zenith 25" console, excel. cond. 325-0447 after 6 p.m.

CHILD'S BIKE - red, 16", very good cond., $22. Ext. 4935.

OAK DINING ROOM SET - 4 chairs & side board, excel. cond., claw feet, $2,100. Ext. 7918.

STUDIO COUCH - $100; B/W TV, 25" console, $75; white crib w/mattress, $50, all items good cond. 475-5332.

GIRL'S BICYCLE - 20", good cond., $20. Dick, Ext. 2911.

BRIDESMAIDS GOWNS - (4) matching, moss rose, taffeta, $50/ea. Don, Ext. 4821 or 286-2267 after 5 p.m.

STORMDOOR - good cond., glass w/new screen, 81/36-1/2, $50. 286-9510.

STOVE - wood or coal burning, make offer. Ext. 5297.

DINETTE SET - walnut, w/8 chairs, good cond., 2 ext. leaves, $200. Ext. 2476 or 751-2149 after 6 p.m.

GIBSON FREEZER - 19 cu. ft., upright, excel. cond., $100. Don, Ext. 2043.

SCHWINN BICYCLE - 10 spd., like new, $100. Ext. 3105.

FRIGIDAIRE WASHER - automatic agitator, good cond., old but hardly used, $75. Marty, Ext. 3563 or 286-0478 after 6 p.m.

CELLAR STAIRS - 8'H x 3'W, $50. Don, Ext. 4821 or 286-2267 after 5 p.m.

DIAMOND - 12 pt. solitare gold band, mounted 6 prong setting, keepsake "K" quality, $175. Ext. 4237.

78 RPM - classical record albums, also operettas by Gilbert and Sullivan, mint cond. 928-3478.

SINGER SEWING MACHINE - antique treadle, mint cond., $100. 928-3478.

TWIN SIZE BED - Broyhill, colonial captain's bed, dark pine, excel. cond., $150. 472-2581.

BEDROOM DRESSER - mirror, head board, night table, pecan veneer, good cond., $50. 929-8330.

TWIN BEDS - long, extra firm, frames join for king size, $150. 286-8747 or Ext. 4771.

FURNITURE - chairs, table, rugs, etc., must sell. Laurence, 246-8297.

FOOD PROCESSOR - 1 yr., $40; table & chairs, $40; sofa $30; crib $20; mattresses $20 each. Till, Ext. 3525.

BARBER CHAIR - early 1900's, white w/green uphlstery, great conversation piece, must see, $100. 422-1846 after 7 p.m.

GUITAR - 12 string, good cond., make offer. Fred Kuehl, Ext 7947 or 4823.

NATIONAL GEOGRAPHIC MAGAZINES - 1970's issues, make offer. Ext. 3082 or 727-5912.

COLOR TV - 19", Sears, very good, $140; infant car seat, like new, $25. Ext. 7759 or 3073 eves.

PIANO - upright, 1935 vintage, best offer; Xerox 660, excel. cond., $650; files, chairs. Ext. 7108.

CALORIC - hi-low ultra ray gas range, lower oven w/rotisserie, avacado, $200. Ellie, Ext. 3395 or 325-1537.

RIDING LAWN TRACTOR - 10 HP, electric slant, 4 spd., gas eng., heavy duty, Sears, excel. cond., asking $500. Ext. 2303.

STEREO SPEAKERS - Magnapan Model SMG, good cond., moving must sell, $200. 924-7480.

PIONEER SUPERTUNER - am/fm stereo cass., 40 watt booster-speakers, $90. 924-6582.

TENNIS RACQUET - Wilson "Sting", all graphite, 4-1/2 oversize, hardly used, best offer. Joe, Ext. 4477 or 475-1303.

ELECTRIC STOVE - harvest gold, GE, good cond., $50; aluminum window, sliding, 35"x59" storm & screen, $15; (3) bowling balls, children size, $3 ea. Ed, Ext. 2477.

BEDSPREADS - twin size, red, white and blue; king size, gold and beige, $15 each. Les, Ext. 2920.

PANASONIC BLENDER - never used, $39; step lamp table, $25; 3 drawer white chest, $25. 654-3781.

CHAIN HOIST - one ton, $30. John, Ext. 2269.

MAGNAVOX STEREO - hi/fi console, good cond., nice piece of furniture, good sound, $150; Wurlitzer organ, spinet, solid cherry, model 4300D, multimatic percussion, excel. cond., $900. Lloyd, Ext. 3381 or 286-1024.

GIRL'S BICYCLE - for age 6-10, red, 2 wheeler, good cond., $30. 929-6442.

SNOWBLOWER - Toro, 5 HP, 2 stages, elec. start, new cond., asking $550. Joe, 261-7825.

FIREWOOD - full cord, split & delivered, $135. 399-0168.

PVC DARKROOM SINK - 72'x22', splash board, print drying racks, cabinet underneath, excel. cond., $250. 732-6822.

SPEAKERS - (1) pair, K.E.I. columns, 18"x56", ea. has two 12" & 3/7" speakers, $250. 924-7677.

Yard Sale

SHOREHAM - Prospect St., house, personal, outdoor goods, 10-5 p.m., 8/25 & 8/26. 744-8639.

STONY BROOK - 16 Burgess La., 8/24 to 8/26, 10-4 p.m., kid's clothes, furniture, household items, 1950 workshop items, more.

Free

CAT - beautiful, black & white, spayed, declawed, affectionate, looking for good home. Carol, Ext. 2907 or 698-8510.

HOT WATER HEATER - oil fired; dish washer; oscilloscopes etc., take all. 862-6259 after 6 p.m.

BLENDER JAR - glass, for Waring Century 9, base needs repair. Ext. 4475.

FIREWOOD - you cut trees and haul away. Ext. 4094 or 751-6575 eves.

Real Estate

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

For Rent

SHOREHAM - garage, $20/mo. Pete, Ext. 3297 or 821-9547.

PORT JEFFERSON VILLAGE - 2 bdrm., house, new EIK, all appliances, front and back porches, walk to everywhere, $1000. Ext. 4853 after 1 p.m or 473-4948 after 6 p.m.

VERMONT - 3 bdrm. house, reasonable, fall or winter vacation, 2 baths, f/p, beautiful view, foliage, apple picking, woodland trails, x-country & downhill skiing, family oriented, avail. weekly or weekends. 732-6499 after 6 p.m.

PORT JEFFERSON VILLAGE - 1 bdrm. apt., sublet 3 mo. plus 1 year lease renewal, $375. incl. heat. Ext. 3865.

MILLER PLACE - 10 rm/4 bdrm. house, fp., new baths, new kit., fenced yard, 2 car garage, walking distance to beach & stores, 15 min. to Lab. or SUNY Stony Brook, many extras. Ann, Ext. 2022 or 744-8386 eves.

ADIRONDACKS - lake front vacation home on Rt. 8, 20 min. to Gore Mt., 5-1/2 hrs. from Suffolk County, fishing, boating & swimming, 5 bdrm., w/elec. heat, l/r, w/wood burning stove, d/r, eik, 2 full baths, $375/wk., (Sat.-Sat.). 751-3868 after 7 p.m.

CENTER MORICHES - apt., 1 bdrm., w/util., located in quiet court, $525 mo., no pets or children. Dave, 878-9457.

MIDDLE ISLAND - on secluded 4 acres, w/private pond, 3 bdrm., 1-1/2 bath, f/p, w/d, dishwasher, 5 min. from Lab., $800/mo., avail. Sept. 1. 924-7480.

APARTMENT - 1 bdrm., avail. 9/1, $425 mo. incl. all util. Nancy, 281-5142.

HAMPTON BAYS - winter rental, 2 bdrm., furn., w/c, washer, $300/mo. plus util., avail. 10/84 to 5/85. 728-2104 eves. & wknds.

For Sale

SHOREHAM - waterfront, 5-room, year round house. 544-9749 evenings.

RIDGE - 7 rm. ranch, lr., dinette, kit., study or 4th bdrm., bsmnt., 5 top line appl., more extras, lovely landscaped acre plus property, 5 min. to Lab., $82,000. 924-0767.

CORAM - Birchwood at Bretton Woods, condo., Dalton model, 3 bdrms., den, formal d/r, 1-1/2 baths, gas heat, central air, patio, 1/2 blocks to clubhouse. 732-6822.

Car Pools

E. NORTHPORT/COMMACK - 3 person carpool, looking for 2 drivers or merger. Paul, Ext. 4156.

Wanted

GLASS INSULATORS - railroad or power line type, all colors. John, Ext. 4075 or 589-2262 eves.

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

HOUSE OR APARTMENT - retired couple needs place to rent/house-sit, end August/start September. Ext. 4192 or 751-7787.

MEN'S BICYCLE - 5 spd., working or not, cheap. John, Ext. 2269.

HOUSE TO SIT - reasonable, Suffolk and Nassau areas. Ext. 3671 or 736-2131 eves.

TUNER AM/FM STEREO - Bill Stars, Ext. 4278/7626 or 298-9648 after 6 p.m.

REFRIGERATOR - small dorm type. Northam, Ext. 2468.

GARDEN TRACTOR - with rotary mower. Ext. 7590 or 878-1790.

CHESSMATES - people interested in forming a BERA chess club. Kim, Ext. 7110.

HOUSEMATE - to share lg. house, 20 min. to Lab, all app., sundeck, 3 baths, $233/mo., plus 1/3 util. 928-8379 or Ext. 2521.

LOBSTER TRAPS - for landscape use, used w/rounded tops, some damage ok. Walt, Ext. 7154.

HOUSE TO SIT - free, reliable caring, any period any duration, 8/27-11/1. J. Allentuck, Ext. 2421.

REFRIGERATOR - dorm size, reas. & reliable. Andy, Ext. 2907 or 929-4850 after 5:30 p.m.

HOUSEKEEPER/BABYSITTER - 3 to 5 days/wk., E. Patchogue, 1 yr. old and 6 yr. old, own transp., refs. 289-9724.

HOUSEMATE - male w/child to share lg. house in good school district, finances negotiable. Ext. 3401 or 744-6229.

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