BROOKHAVEN BULLETIN
Vol. 40 - No. 21 May 23, 1986
BROOKHAVEN NATIONAL LABORATORY

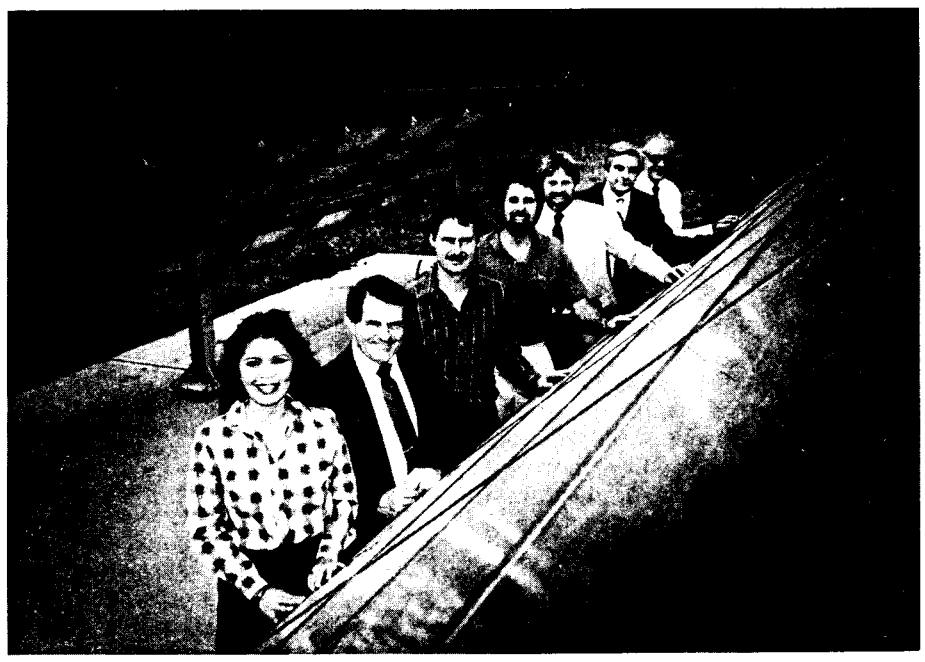
News Flash!

The brightest continuous soft x-rays in the world were seen last Friday at the National Synchrotron Light Source (NSLS). This bright output was the result of the installation last week of the first magnetic insertion device in the x-ray ring of the NSLS. The device, an undulator, increases the brightness of the synchrotron radiation and emits radiation primarily of one wavelength.

The undulator was placed in one of the five available straight sections of the x-ray ring and is a prototype of the Soft X-Ray Undulator to be put in the ring next year. Jerry Hastings, whose idea it was to utilize a prototype, heads the Beam Line R&D Section that has so far made broad-band measurements of the output. After the light from the prototype is characterized, it will be used this summer by two insertion device teams on beam line X-17T for soft x-ray imaging and spectroscopy; Harvey Rarback is the principal scientist on that beam line.

John Galayda, head of the Diagnostics & Control Section, measured the device's magnetic properties before it was installed. The Engineering Section, headed by Hank Hsieh, installed the undulator, and the Machine Physics Group, under Ben Craft, commissioned the x-ray ring with the device in place in one shift of operation.

"Not only does this undulator give us a big lead in this important area of science," says NSLS Chairman Michael Knotek, "but it is an important test-bed device that will be used to prepare for the full complement of Phase II insertion devices."

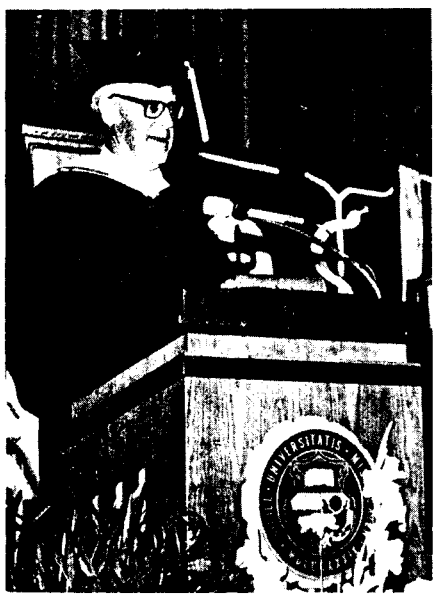


Mort Rosen

Members of the Energy Analysis & Applications Division of DAS by the photovoltaic array: (from left) Ruth Coughlan, Michael Bonner, Michael Piraino, Philip Metz, Jerome LaMontagne, Al Mezzina and George Skaperdas.

UMC Honors Vineyard

George Vineyard, physicist and former director of BNL, was awarded an honorary Doctor of Science degree by the University of Missouri-Columbia (UMC) at its 144th annual commencement, Saturday, May 17. Vineyard was on the UMC faculty from 1946 to 1954, first as assistant professor and, for the two years preceding his arrival at BNL, as professor of physics.



George Vineyard at UMC.

Vineyard was cited for his "thoroughness of approach and lively curiosity" as a teacher and a scientist, and for his accomplishments at Brookhaven where, under his direction, "fundamental research flourished and new facilities for high energy research were developed." Further, his citation reads that he has "advanced the frontiers of physics, providing an increasingly complex society with the insights of basic research."

Other distinguished people who received honorary degrees were Beryl W. Sprinkel, chairman of the President's Council of Economic Advisers; Herman Lum, chief justice of the Supreme Court of Hawaii; and Paul N. Doll, former executive director of the Missouri Society of Professional Engineers.

Vineyard has been at Brookhaven 32 years and, in this time, served as chairman of the Physics Department from 1961-66; BNL associate director 1966-67; deputy director 1967-72 and director, 1973-81. He received an Award for Distinguished Contributions to Higher Education from the Stony Brook Foundation in 1975 and an honorary Doctor of Science degree from Long Island University in 1977. He will become president of the American Physical Society in 1987.

Evaluating Hydrogen Technology

What do space shuttles, turboelectric generators and solar-powered water electrolysis have in common? Hydrogen.

Hydrogen is the most abundant element in the universe and can ultimately serve all of our energy needs without burdening the environment. It does not exist in a free form, and separating hydrogen from other elements, such as oxygen in water, is expensive at present.

In addition to chemical uses, hydrogen is used as fuel for the space shuttle and to cool turbine generators. And hydrogen is experimentally produced by splitting water at BNL's Hydrogen Technology Evaluation Center (HTEC), which is operated by Philip Metz and Michael Piraino.

Since HTEC became operational in February 1984, it has been used to evaluate experimental methods of producing, storing and using hydrogen, technologies which are ultimately to be transferred to industry. HTEC was built to test more efficient and less expensive hydrogen-energy systems and provide scientists and engineers from outside the Lab an opportunity to experiment with these new methods.

The work at the HTEC has been conducted for the Department of Energy's Office of Energy Storage Systems by BNL's Energy Analysis & Applications Division (EAAD) of the Department of Applied Science. Since 1975, BNL has engaged in developing effective processes to separate hydrogen from water. At present, EAAD is continuing this work and also exploring means for storing and transporting this fuel of the future.

Advanced Electrolyzer

The first project of the HTEC staff was to evaluate its own advanced electrolyzer system, which is powered by solar photovoltaics. By passing an electric current through the solid-polymer electrolyte, the HTEC electrolyzer dissociates water into 99.995% pure hydrogen gas and into oxygen. In combination with utility electricity, a five-kilowatt, flat-plate photovoltaic array (PV) powers the electrolyzer.

Metz and his colleagues established how the cost of hydrogen depends on the price of the electrolyzer, photovoltaic array and utility electricity. If only the photovoltaic array is used to power the electrolyzer, it can produce hydrogen only during the day, and because an array is expensive, the hydrogen produced by such a power source is costly.

Using electricity only from the utility, the electrolyzer can operate around the clock, and the hydrogen thus produced is priced according to the price of the electrolyzer and the electricity powering it. If the photovoltaic array is supplemented by off-peak electricity for eight hours a day, the resulting hydrogen costs somewhere in between.

Metal-Hydride Compressor

Electric utilities use huge turbine generators to transform mechanical power into electricity. Hydrogen is used to cool these generators so they can run efficiently. At present, electric utilities purchase the gas; however, they are considering producing their own hydrogen electrolytically at their generator plants. This would ensure the availability of the gas and reduce cooling costs.

After the gas is produced, it must be compressed for storage. An experimental compressor, having no moving parts but using hot and cold water to increase the pressure of the gas, was evaluated at HTEC.

The compressor consists of two metal-hydride beds, each containing four smaller coils. The smaller coils are made of different alloys, composed

(Continued on page 2)

The view looking south from Headquarters Hill (now the BNL Exhibit Center) shows Camp Upton as it was during World War II. Henry Boyd's memories of the site from then to now appear on page 2. This photo is part of the Camp Upton History collection assembled by Lou Harson.

NSLS Users Convene

The fifth NSLS Annual Users meeting will be held on June 5 and 6 at Berkner Hall. After an overview of Light Source Operations by NSLS Chairman Michael Knotek, other speakers will discuss the status of the VUV ring, x-ray ring and beam lines, as well as experiments performed at the NSLS. About 400 users are expected at the meeting, and others who are interested are invited to attend. To sign up, call Eileen Pinkston, Ext. 4194, by May 30.

WIS Meeting

At the next luncheon meeting of Brookhaven Women in Science, on Tuesday, May 27 at noon, Room B, Berkner Hall, Physicist Eva Bozoki will discuss the National Synchrotron Light Source. In a talk entitled "Around NSLS," she will review synchrotron radiation, the production of ultraviolet and x-ray light by the two synchrotrons, computer control of NSLS operations and some of the experiments at the Light Source. Bozoki will also talk about her work modeling computer control systems. Bring or buy your lunch.

Equipment Demo

On Thursday, May 29, from 10 a.m. to 2 p.m. in Berkner Hall, Advanced Electronics Design will present a demonstration of its high-speed, high-resolution graphics terminal, the AED 1280. This terminal is suitable for those using Tektronix software and Digital hardware. It offers eight memory planes and a text overlay for 256 simultaneous colors, from a palette of 16.7 million. RS-232-C serial and parallel interfaces are available.

Generator Parts In

The generator options ordered by BNL employees have been received at High Tech Power, Inc. To arrange for pickup and/or installation of the items you ordered, contact this company at 737-6600.

Software Demo

On Wednesday, May 28, representatives from DEC will demonstrate their VAX Information Architecture database and the 4GL products RALLY, RDB and TEAMDATA. The demonstration will be held at 10 a.m. in the Seminar Room of the Applied Mathematics Department, Bldg. 515. For further information, call Carole Saurino, Ext. 4151.

Life on Site: Henry Boyd's Reflections

At BNL, Memorial Day is a reminder of the days when the Laboratory site was Camp Upton, a U.S. Army training camp. To get a feel for what it was like here all those years ago, most of us can visit the Camp Upton display at the Exhibit Center. But all Henry Boyd has to do is close his eyes and remember.

Everyone knows Henry Boyd, the gentleman who has arranged countless conferences, cocktail parties, dinners, coffee hours and other food service affairs for the Laboratory's staff. As a special services assistant in Staff Services, Boyd has enjoyed a special position from which to observe the growth and changes at BNL. But he had known the Lab site even before he knew the Lab.

The year was 1943. World War II was raging when Henry Boyd, a lanky 22-year-old from Louisiana, arrived in New York City to make his fortune. The city was fascinating and Boyd only looked around and up, never east. So when he was drafted into the army and sent to Camp Upton, he had no idea where it was.

We came by train. There was a depot right there . . . After I noticed the surroundings, I loved the country and thought it was a beautiful place to live . . . But it has changed so drastically in the last 30 years. Long Island wasn't congested like it is today. It was all potatoes and ducks then. Now it's all horses and grapes . . . The barracks we were housed in then is where Physics and the Tandem are now . . . I did odd jobs, like go out and pick up cigarette butts, until I was assigned.

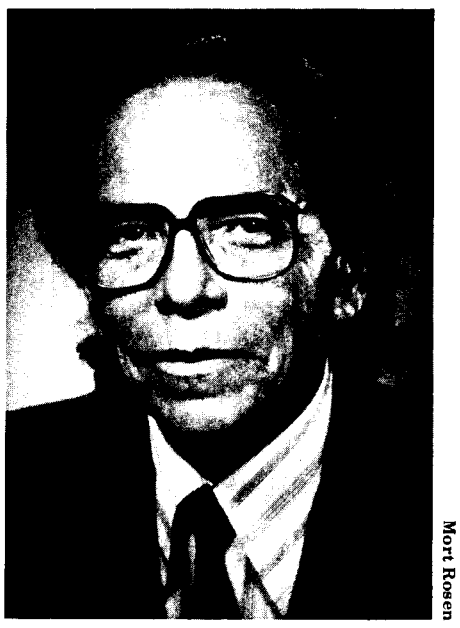
Boyd was assigned to be a medic as part of a dispensary unit. While he was training he met Louise Murray, a young Riverhead woman who was working in Medical Supplies. But he had to leave after a few months to travel the East Coast with his unit.

We went to Boston, Newport News, Fort Dix. We had to give 900 shots a week for the normal diseases that soldiers have. It was very interesting . . . I never went overseas, but I wasn't too sorry . . . I thought of going to Walter Reed for more training after the war, but instead I started working here.

So Boyd returned to Camp Upton. The attraction, of course, was Louise, who he married in 1944. The Camp had been converted to a convalescent hospital for soldiers coming back from overseas. Boyd began working there for the War Department, as a furnace operator and repair man, then as a junior roofer.

I did that for a year, then I went away to school for a heating course. Fourteen months later I came back and the Lab had taken over. I had to reapply . . . I knew what it was going to be — a Lab sponsored by the government with the universities running it.

Henry Boyd, as a Camp Upton soldier.



Mort Rosen

Henry Boyd today.

In 1948, Boyd was assigned life number 1882 and began his BNL employment as a custodian. A principal task was to shovel coal into the heating units. But, as oil boilers replaced coal stoves, there was less and less to do. At the same time, as the Lab grew, more special services were needed.

I used to be a European-style waiter in New Orleans, so I had a good feel for what people wanted in their service . . . I got this job permanently about the time the Brookhaven Center opened, in 1962 . . . We had a nice luncheon club going at the Center, a place for scientific staff to meet and converse . . . It had a lot of Ivy League atmosphere.

I have met just about every Nobel Prize winner and some royalty, like the Queen of the Netherlands . . . I met a lot of the people that worked with the Manhattan Project, like Dr. Oppenheimer and the people mentioned in the series they made about him. They all came here at some time . . . You meet a lot of VIPs . . . It was a pleasure serving them. They were all very nice people, no doubt about it.

The job done by Boyd and Pat Glynn, his co-worker for about 20 years, requires good organizational skills, patience and a pleasant air. Boyd really had to put these to the test one day in the late 1960's.

I was sitting down in the Center for a cup of coffee with Henry Boomer and the cafeteria manager when about 45 people came in. We wondered why, then found out they had come for dinner, but no dinner had been planned, no tables had been set. One of us relieved the barmaid while she set up tables, and we fixed a dinner of steaks, french fries, lettuce wedges and dessert. They thought it was great. It was a surprise to us, but the people never knew what was happening.

After 38 years at BNL, Henry Boyd will retire from the Laboratory at the end of this month. He and his wife will stay in their Riverhead home, where his main plan is to enjoy the extra time he will have for himself.

This type of work I have been doing over the years is day and night. I couldn't participate in any groups because of the job and its demands. One of us had to be here for each occasion . . . But Pat is one of the best workers I have ever known. A lot of things wouldn't have been done without him.

Now I would like to do things that I have not had time for. Watching a stone skim over the water, counting the number of insects on the ground, or maybe doing nothing . . . Actually, I am going to start a lot of perennials and herbs. Every year, I plant something like 250 annuals, but now I will get into perennials because I will have the time.

This has been a beautiful place to work, and certainly I will miss it. But it will be a pleasant type of missing.

— Anita Cohen

Hydrogen (Cont'd)

of nickel, iron, aluminum and rare-earth elements, and each coil is designed to operate over different ranges of pressures. By running cold tap water over one set of coils, hydrogen is absorbed by the metals. By running hot water (85°C) over the second set of coils, hydrogen is driven from its bonds with the metals at a higher pressure.

After three minutes, the hot and cold water flows are reversed. The hot water raises the pressure of the hydride beds filled with hydrogen. This causes them to expel the gas, and it is channeled into the cool empty hydride beds. In this way, hydrogen is compressed in four stages from 100 pounds per square inch to 1000.

Because of its low operating temperature, the heat-actuated compressor has a low efficiency — about 2% for the unit tested at HTEC, as compared with an efficiency of 40% for mechanical compressors of the same size. However, the metal-hydride compressor costs less to purchase and maintain than a mechanical compressor, and the one tested at BNL essentially experienced no operating difficulties. "Therefore, using the heat-actuated compressor is warranted where reliability is important or waste heat is available to heat the hot water," explains Metz.

The heat-actuated compressor was tested at BNL using a system built by Jose Sanchez, Frank McNeill and John Nally, with the assistance of Ergenics, the compressor manufacturer. Students of the MIT Chemical Engineering Practice School at BNL participated in the testing of the compressor, which is owned by Public Service Electric & Gas of New Jersey, in a study funded by the Electric Power Research Institute.

The use of metal hydrides for a compressor was pioneered by John Johnson, James Reilly and Richard Wiswall, who built a heat-actuated prototype in 1970.

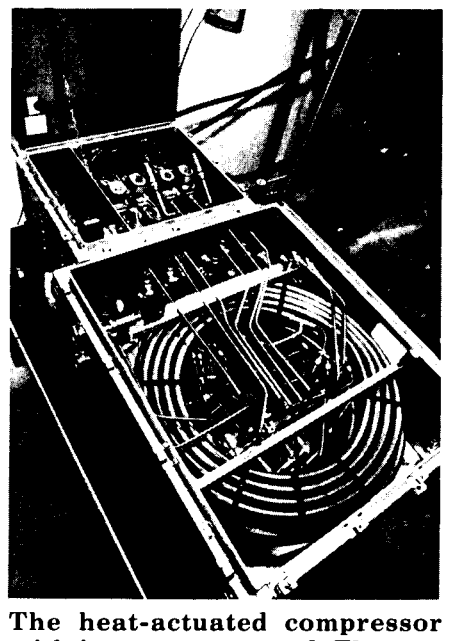
Hydrogen Production

Virtually all the hydrogen produced in the U.S. today is made from natural gas, and most of it is used by the chemical industry. Only a small fraction of this gas is used as fuel for rockets and space shuttles.

Hydrogen, however, may be the fuel of military and civilian aircraft of the future. Recently, the U.S. Air Force asked the EAAD to investigate the feasibility of liquid hydrogen being produced by water electrolysis at Air Force bases.

The EAAD staff, including Mezzina, Metz, Piraino, Michael Bonner, Jerome LaMontagne and Ruth Coughlan, compared the use of three types of electrolyzers to meet the Air Force's needs. Based on hydrogen cost, energy use and size, an experimental, high-temperature (1000°C) electrolyzer being developed by Westinghouse was recommended over a commercially available model and the advanced unit tested at HTEC. The EAAD staff was assisted in this work by Frank Salzano and George Skaperdas.

BNL is working with Westinghouse to determine the life and reliability of single high-temperature electrolyzer cells. "In the future," concludes Metz, "we hope to evaluate a model of this high-temperature electrolyzer made up of a dozen or more cells and to scale this system to meet the Air Force's requirements." — Marsha Belford



The heat-actuated compressor with its cover removed. The two coiled, metal-hydride beds rest one on top of the other, and each contains four smaller metal coils. Hydrogen is compressed by running hot and cold water over the two beds, causing the metal coils to absorb and desorb the gas.

Volleyball Champs

The Phoubars took first place in League II of the Mixed League by going through the season and the playoffs undefeated. The team includes, from left: (front) Frank Haibon, Diana Toledo, John Padden, Carrie Lofstad, (rear) Jim Rowehl, Pat Carr (captain), Lisandro Cardoso, Payton King. Missing from photo: Peter Heotis, Valerie Miller.

The Open League's champions are Odds and Sods, represented here, from left, by: (front) Lucien Wielopolski, Stephen White (captain), Mike Pritsker, (rear) Lisandro Cardoso, Daniel Mullaly, Alex Zaltsman, Kristin Elmore. Not pictured: Jim Rowehl, Robert Schmidt.

Champs of League III in the Mixed League are the Print-Outs. Shown here are, from left: (front) Frank Karl, Jean Ramirez (captain), Cliff Schnepf, (rear) Bruce Miller, Joan Wilson, Ralph Brown. Not present for picture: Caroline Karl, Janet Miller, Donna Mills, Jim Mills, Darlene Reeves, Doris Terry, Bill Wilson.

—photos by Rosen

The Dinkers took top honors in League I of the Mixed League. Shown here are, from left: (front) John Usher, Bob Meier, (rear) Kristen Elmore, Adrienne Usher. Not available for photo: John Elmore, Don Litcher (captain), Sandra Litcher, Annette Meier, Dennis Weygand.

Cooking Exchange

The final spring meeting of the 1986 season will be held on Wednesday, May 28, at 12:30 p.m. in the Recreation Bldg. Jewish Cooking will be featured, and all are welcome. Babysitting will be available for 50¢ per child. For more information, call Sara Morse 286-1712, or Susan Sears, 744-7831.

Hospitality Reminder

The annual Tea and Sherry Party of the Hospitality Committee will be held on Tuesday, May 27, from 3:30 to 5:30 p.m. in the North Room, Brookhaven Center. This year's theme is "Spring Splendor," and herbs and plants will be discussed and on display. In addition to tea and sherry, coffee, homemade breads and cookies, and fresh vegetables and dips will be served. Spouses of Lab employees and guests are welcome. Babysitting will be provided free of charge at the Gym, Bldg. 461, 3 Center Street.

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

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

Golf

The second tournament of the BGA season will be held on Monday, June 2, at the Bergen Point Suffolk County Golf Course in West Babylon. Tee times will begin at 11 a.m. and may be obtained by contacting Joe DePace, Ext. 4133, Bldg. 515.

There is a $1 entry fee for BGA members and a $2 entry fee for non-members. Deadline for signing up for the tournament is Thursday, May 29. Greens fees are $8, $4 and $14 for Suffolk Country residents, senior citizens and non-residents, respectively. The tournament will be stroke play, with gross and net winners by flight.

Fifty-seven golfers teed up for the first tournament at the Bellport Country Club. Low-gross winners were Steve Heald (82), Dick Hildenbrand (85), John Hildenbrand (92) and Ralph Taylor (97) in flights A, B, C and D, respectively. Winners of the Callaway competition were Doug Sweely (73) in A, Joe DePace (74) in B, Barry Karlin (73) in C and Bill Cahill (76) in D. Frank Thomsen was closest to the pin at #2, and Alice Desmond won the long-drive contest on #10.

Arrivals & Departures

Arrivals

Abdulwahid Abdulwajid ..... Biology
Feliciano Illana ..... Plant Eng.

Departures

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

Keldon L. Griffin ..... Plant Eng.
John M. Killelea ..... DNE
John S. Muller ..... Safeguards & Sec.

Swim Club

The Swim Club will hold its last official meeting of the indoor season on Thursday, May 29, at 5:15 p.m. at the BNL pool. We will discuss future plans and hold a fun workout. All those who can swim two laps of the pool using the crawl stroke are invited.

Softball

Games Week of May 12

League I
Dirty Sox 12 - Moles 5
Blue Jays 29 - Six Pax 7
Cool 'n Gang 16 - SMF 7
Ravens 13 - A Team 11

League II
Binary Bombers 12 - Phase II 9
AMD 16 - Medical 11
Magnuts 19 - Cutting Edge 4

League III
Snakebites 13 - Survivors 8
Kidz-R-Us 8 - Who Cares 2
Septembers 6 - The Source 2

League IV
No Feedback 29 - Sandboxers 9
Mudville Sluggers 16 - Spacekadets 4
Underalls 17 - Simply Awesome 11

Note to Diners

The Brookhaven Center will be closed the Sunday preceding Memorial Day, May 25, and will reopen Monday evening, May 26. The Cafeteria will be open from 9 a.m. to 2 p.m. on Saturday through Monday, May 24-26. Vended food service in Bldg. 912 will be in continuous operation.

Cafeteria Menu

Week of May 26

Monday, May 26

Old-fashioned chicken noodle soup	(cup)	.65
	(bowl)	.85
Beef & broccoli stir fry		2.45
Chicken liver saute w/1 veg. (lite weight)		2.45
Hot vegetable plate (lite weight)		2.25
Hot Deli: Roast turkey breast	(bread)	2.35
	(roll)	2.50

Tuesday, May 27

Southern beef vegetable soup	(cup)	.65
	(bowl	.85
Swiss steak jardiniere w/1 veg.		2.45
Broiled fresh perch w/1 veg. (lite weight)		2.85
Hot vegetable plate (lite weight)		2.25
Hot Deli: Grilled pastrami hero		2.50

Wednesday, May 28

Minestrone soup	(cup)	.65
	(bowl)	.85
Spaghetti w/meat sauce /garlic bread		2.45
B.B.Q. spareribs w/1 veg.		2.45
Tortellini salad plate (lite weight)		2.35
Hot Deli: Baked virginia ham	(bread)	2.30
	(roll)	2.40

Thursday, May 29

Beef barley soup	(cup)	.65
	(bowl)	.85
Chicken breast teriyaki w/1 veg.		2.45
Meatloaf w/mushroom gravy /1 veg.		2.45
Vegetable & yogurt plate (lite weight)		2.25
Hot Deli: B.B.Q. Pork	(bread)	2.30
	(roll)	2.45
Extra Special From Hot Deli		
Chili Dog	(each)	.85

Friday, May 30

Boston clam chowder	(cup)	.65
	(bowl)	.85
Turkey à la king w/biscuits		2.45
Hot vegetable plate (lite weight)		2.25
Rice chicken salad plate (lite weight)		2.25
London broil w/1 veg.		2.45
Hot Deli: Roast beef	(bread)	2.35
	(roll)	2.50

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.

2437. CONTRACTS AND PROCUREMENT MANAGER - Requires a bachelor's degree in business or engineering and an MBA or its equivalent plus substantial experience in the procurement field. Additional requirements include: comprehensive knowledge of the pricing structure of standard and complex technical equipment, experience in negotiations, in-depth knowledge of federal procurement regulations, and excellent verbal and written communication skills. Will be responsible for the planning, overall management and control of the Laboratory's purchasing and contracting function. Will develop and recommend procurement policies and procedures and coordinate the Laboratory's needs with the suppliers to insure an uninterrupted flow of materials, equipment and services. Please submit resume to Robert D'Angio, Personnel Division, Building No. 185. Contracts and Procurement Division.

2438. MAIL CLERK - Staff Services Division.

OPEN RECRUITMENT - Opportunities for Laboratory employees and outside applicants.

2439. TECHNICAL POSITION - Requires an AAS in mechanical technology or equivalent. Will be responsible for the maintenance of neutron spectrometers and the fabrication and operation of experimental equipment, such as cryostats and furnaces. Good communication skills are necessary to closely interact with associated technical ment and services. Contracts and Procurement Division. Please submit resume to Robert D'Angio, Personnel Division, Building No. 185.

Autos & Auto Supplies

78 T-BIRD - low mi., a/c, am/fm, well maint., $2,200. 735-4478.

76 PONTIAC VENTURA - 2 dr. sedan, a/t, p/s, am/fm cass. stereo, new exhaust, battery, $400; roof rack, extra lg. fits all cars, $30. Ext. 4153 or 732-5829.

67 VW - runs well, 12 volt, 44k mi. on engine, $200. 821-0693.

78 CADILLAC - Sedan DeVille, all options, like new. 475-6938 after 6 p.m.

79 VOLARE - station wagon, white, brand-new a/t, extras, clean, 71k mi., excel., $2,200. Ext. 7505 or 689-8605.

VW PICKUP - gas. eng., new exhaust, carb., clutch, 1980 cap. 821-2697 eves.

84 BRONCO II - V6, a/t, 2-tone, am/fm cass., oversize tires, Meyers power angle snowplow, will separate, $9,900. Ext. 3341 or 981-9474.

78 PINTO WAGON - body good, (4) new tires, battery, runs well, $700. Joe, Ext. 4661 or 878-2203 after 5 p.m.

77 BUICK REGAL - a/c, a/t, p/s, p/b, 350 eng., a/c, needs work, $1,300. Jim, Ext. 7669 or 399-1790.

73 HARLEY DAVIDSON - 125 cc, 152 mi., dirt/street, excel., $450. 265-4811.

85 DODGE CHARGER - 2.2 liter, h/b, sunroof, louver, 5 spd., man. trans., w/extras. 727-2861 after 6 p.m.

SHOP MANUAL - Haines, for Chevy Vega, $7; Class 2 bolt-on trailer hitch w/head and 2-3/16" ball, $65. Ed, 929-4522.

RIMS - (4), slotted 15", wide, for Jeep, Blazer, Bronco, $50. Lou, Ext. 2302.

84 TEMPO GL - fm cass., 37k mi., mint, $5,200. 589-7429.

82 DATSUN SENTRA - blue, 4 dr., h/b, a/t, p/s, p/b, a/c, am/fm, sunroof, excel. cond., $5,250. 728-6353.

76 VOGUE - 32', R/B, microwave, color TV, new Michelins, am/fm stereo, blender, bar, dinette, $31,500. Tallon, Ext. 4547 or 473-3987.

76 VOLARE WAGON - p/s, p/b, a/c, new exhaust, good cond., 83k mi., $1,100. Ext. 3458 or 369-2504.

78 FORD PINTO - 84k mi., new water pump, exhaust, radio, good cond., $900. Hans, Ext. 7547 or 3200.

80 VIKING - popup camper, ice box, sink, stove, table, heater, storage, canopy, excel. cond., $2,200. 744-0811 after 6 p.m.

BUMPER - chrome, fits 72-79 Chevy pickup, good cond., $40. Ext. 7578.

82 PLYMOUTH CHAMP - excel. cond., 45k mi., $3,000. Ext. 2575 or 451-4092.

77 TOYOTA CORONA - wagon, 5 spd., clean, some rust, runs well, $1,800; 76 SUZUKI GT 500, 17k mi., very clean, $400. Dave, 928-6190 eves.

CHEVY RIMS - (4), 16", 5 holes. Walt, Ext. 5316.

80 TOYOTA COROLLA - 4 dr., 5 spd., am/fm, excel. cond. in/out, $2,800. 862-7821 eves.

83 TRANS AM - mint in/out, T-tops, a/c, 5 spd., more, $10,495. John, 744-0290.

75 IMPALA - blue, a/c, a/t, p/s, p/b, am/fm, good tires & body, recent tune-up, powerful, reliable, $825. Ext. 4118 or 928-5714.

77 VIKING POP-UP - stove, elect., refrig., sink, sleeps 8, $1,850. Dan, Ext. 4987 or 698-7322.

ALL SEASON TIRES - (4) 185-80R13, $35 ea. or 4/$100. Harris, Ext. 4417.

TIRES - (1) G78-A, tubeless regular; (2) G78-15, snow, tubeless; (2) L78-15, snow, mounted on wheels; (2) P175/80R13, radial. Ext. 2050 or 473-6432.

83 S10 BLAZER - 4x4, extras, never on beach, 47k mi., $7,800. Ed, 929-4437.

77 DATSUN B210 - excel. cond., no rust, 4 spd., a/c, am/fm, new clutch, front end, $1,700. 928-4683.

79 PINTO - no rust, good running cond., $1,800. Frank, Ext. 5105 or 588-3565.

TIRES - glass belted, good tread, (1) ea., P195/75B14, $10; H78-14 on Chrysler wheel, $15. Bob, Ext. 4824/Beeper 343, or 744-5098 eves.

77 PLYMOUTH TRAILDUSTER - 4x4, 75k mi., a/t, p/s, p/b, a/c, mech. good, body bad, many new parts, $2,900 neg. Ken, Ext. 2350 or 698-4254.

75 CADILLAC - Coupe De Ville, excel. cond., $1,200. 751-1413.

SLIDE-ON CAMPER - 9-1/2', stove, heater, ice box, good for hunters or fishermen, $300. Jim, Ext. 4215 or 878-8012 after 6 p.m.

80 OLDS OMEGA - 2 dr., a/t, V6, p/s, p/b, am/fm cass., $2,000. Bill, 472-4684 weekends.

72 YAMAHA - 250 cc, needs brakes. Roy, Ext. 4664 or (212) 691-4396.

TIRES - rims, hubcaps, P23575R15 on 6-lug rims, $100. Ron, Ext. 4082 or 289-1003.

83 NISSAN PULSAR - Limited Edition, sedan, a/c, new stereo, mint, $5,300. Jerry, Ext. 2198 or 744-4662.

TAILGATE - for 78 Ford pickup, fits 72 thru 79, $50. Chuck, Ext. 3525 or 589-1069.

250 ENGINE - straight 6, for 73 Firebird, $45. Ken, 473-7460.

TIRE - new, 4 ply, 15x78, mounted on GM rim, $35. Ext. 3312.

71 VW SQUAREBACK - 55k mi., all records kept, some body damage, needs muffler, $100. Ed, Ext. 4768.

79 MERCURY MARQUIS - wagon, 302, V8, p/s, p/b, a/t, a/c, roof rack, excel. cond. 821-0695.

79 OLDS CUTLASS - 2 dr., 63k mi., good cond., excel. tires, $2,500. 744-6423.

75 PLYMOUTH GOLD DUSTER - 2 dr., 6 cyl., a/c, p/s, am/fm cass., $550. 924-3236

71 MUSTANG COUPE - 6 cyl.; 72 FASTBACK, 8 cyl., extra parts. Bob, 588-0186 after 6 p.m.

77 TOYOTA CORONA - 4 dr. sedan, a/t, a/c, p/s, p/b, excel., new tires, $1,200. 281-2040.

83 SENTRA - h/b, a/t, a/c, p/b, am/fm stereo, radials, excel., 57k mi., $4,500; 80 CHEVY CITATION, 2 dr., 4 spd., mint cond., 46k mi. 281-1980.

81 YAMAHA XS-650 SPECIAL - excel. cond., 4k mi., $1,000. Ext. 2168 or 744-7679.

79 FORD FAIRMONT - p/s, 4 cyl., $1,400; 72 PLYMOUTH DUSTER, p/s, p/b, 6 cyl., $550. Ines, Ext. 3449 or 3092 eves./wkends.

78 CAMARO - std. shift, 6 cyl., am/fm, good cond., $3,000. 744-3203 after 5 p.m.

80 CITATION - Sports Coupe II, new eng., m/t, p/s, p/b, a/c, stereo, 4 spkrs., extras, $2,350. Marv, Ext. 3440.

75 OLDS DELTA 88 - p/b, p/s, a/t, a/c, am/fm cass., runs well, new tires, $600. Ext. 2337 or 2788.

ROOF CARRIER - perfect for camping, custom-made, wooden, large w/canvas top, $65. Ext. 2529.

78 CHEVETTE - 4 spd., runs well, clean, $1,100; 75 HONDA GOLDWING, loaded, 20k mi., clean. Bill, Ext. 7145 or 286-9700.

76 MAVERICK - 6 cyl., a/t, a/c, new carb., runs well, good cond., $700. Ext. 4002 or 924-7658.

76 FORD GRANADA - clean in/out, $500. Frank Perez, Ext. 3531.

74 MG - $400. Ext. 7633.

77 MERCURY BOBCAT - wagon, 56k mi., new carb., new tires, $1,750. 727-3145.

76 CHEVELLE - Malibu Classic, 2 dr., 305 V8, a/c, p/s, p/b, rally wheels, 93k mi., $1,195; 1976-79, 302 Ford cyl. heads, good cond., new springs/seals, $75 pr. Ext. 4081 or 874-3844.

80 DATSUN 510 WAGON - 4 spd., new tires, stereo, excel. cond., $2,600. 286-0563 eves.

82 HONDA - wagon, 5 spd., am/fm, 62k mi., $2,000. Wells, 878-4214 eves.

TIRES - (4) 205/75R-14, radials, w/w, $75. Ken, 289-8212.

67 TOYOTA CORONA - 3 spd., green, 4 dr., 4 cyl., good gas mi., runs well. Hank, Ext. 3848 or 472-0553.

81 PICKUP - V8, black, H/D susp., new tires, 63k mi., $4,100. 589-6181.

74 CADILLAC - Fleetwood Brougham, fully loaded, p/s, p/b, a/c, am/fm, 4 dr. sedan, 68k mi., $1,775. Fred, Ext. 3259 or 473-8622.

Boats & Marine Supplies

TANZER 22 - excel., glass, new sails, roller furling, shoal draft, K/CB, 6 HP Chrysler, $7,700. Ed, Ext. 7943 or 589-3992.

23' F/G SLOOP - European crafted, sleeps 4, privacy head & galley, 3 sails, 6 HP, will demo, make offer. Ext. 4605.

16' V HULL BOWRIDER - 1983, 4 Winns, 120 HP Merc. cruiser, 15 hrs., full canvasses, galv. trailer, power winch, garaged, $7,500. 286-8797.

18' SEABREEZE - fiberglass, 75 HP Johnson outboard, w/all equip., $800. 567-8280 eves.

26' PEARSON - 1972, 15 HP Evinrude, 5 sails incl. spinnaker, DF, VHF, extras, $9,900. Ext. 4099 or 689-9214.

8' DINGHY - w/oars, $75. Frank, Ext. 5105 or 588-3565.

28' OWENS - sleeps 4, new canvas & hardtop, head, galley, extras, engine needs some work, boat is sound, $1,500. 281-0360 after 6 p.m. or beeper 266.

18' BOWRIDER - 100 HP motor, trailer, needs work, fair cond., $1,200. Wells, 878-4214 eves.

16' BAYLINER - cuddy cabin, used once, 85 HP eng., trailer, c.c. package, cover, garaged, showroom cond., extras, $7,000 firm. 289-3360.

11' RUNABOUT - $135. 878-6637.

Miscellaneous

BEDROOM SET - triple dresser, chest, bookcase headboard, mirror, $300. Tallon, Ext. 4547 or 473-3987.

ATARI 800XL - disk drive, printer, buffer, software, $200. 543-7952 after 5:30 p.m.

TICKETS - for U.S. Open at Shinnecock Hills, good any day. Paul, Ext. 2476.

MUSIC STAND - folding, new, $7; photo screen, 18x24, $15; new wallpaper, cocoa, $8. Susan, Ext. 4267.

STROLLER - Aprica LaBelle, like new, $100. Karl, Ext. 4410 or 929-8680.

ROTOTILLER - for 10 HP tractor, w/belts and pulleys, $250; seed spreader, like new, tractor for mount/flex. shaft drive, 1 bu. cap, $55. 929-4522.

SANSUI STEREO - rack system, w/extras, $500. Mark, Ext. 5350.

LOWREY PLAYER PIANO - excel. cond., $800 or best offer. 567-8280 eves.

ROTOTILLER - needs work, 3 HP, $50. Ext. 2487 or 928-6930.

SEARS AIR COND. - 5000 Btu, $100; Lafayette SSB-100 CB w/range boost. $175. Mike, Ext. 4312.

VIDEO DISC PLAYER - RCA, w/2 discs, $65. Scott, 732-0203.

RIDING TRACTOR/MOWER - Huffy, new 5 HP eng., B&S, $225. Karson, 281-5532.

STEREO SPEAKERS - (2), 2-way, excel. cond., $25. Ext. 4153 or 732-5829.

RADIAL ARM SAW - Sears, 10", with dado, $200. Bob, 543-4228 eves.

UPRIGHT FREEZER - Sears, 15.3 cu. ft., good cond., $100. 744-0811 after 6 p.m.

FISH TANK - 55 gal., new hood and pump, underground filter system, gravel, etc. 286-5962 eves.

SANYO 555X COMPUTER - 256K, mono monitor, Panasonic 1091 Printer, software manuals, etc., $995; riding lawnmower, 8 HP, elec. start, 36" floating deck, runs, needs work, $150. Bob, Ext. 4551.

TRS80 MODEL III COMPUTER - w/RS232 port, cassette cable, documentation, $160. Lee, Ext. 7286 or 821-3963.

MAPLE BABY BED - w/mattress and bumpers, $100; (10) wood frame screens, 30x54-1/2; (18) fiberglass roof panels, 2'x10', $35. Terry, Ext. 2945 or 744-4594.

COLOR TV - Zenith, 25", 13 yrs. old., modern console, good picture, poor sound, $100. Paul, Ext. 2264 or 941-9055.

3M DISKETTES - 5-1/4", new, 10/$10. Jim, Ext. 3372.

AMPEG AMP - and acoustic speaker cabinet, (6) 12" speakers, 200 watt, excel. cond., $350. John, 744-0290.

SOFA - excel. cond., $85. Ext. 4192 or 751-7787.

SEWING MACHINE - 1918 Singer, 7-drawer, carved oak, good cond., $75. 878-6637.

COAL STOVE - Franco Belge, good cond., $150. 878-2482 eves.

DIRT BIKE - 1982, RM125, very good cond., $575. 722-4821.

PING PONG TABLE - 3/4", top folds in half, very good cond., nets, paddles, $60. Jim, Ext. 4215.

SOFA - loveseat; La Machine food processor; folding bed w/mattress, neg. Rajiv, 924-1460.

COMPUTER MONITOR - color RGB, TOEI, 14" commercial, for IBM, Commodore 128, $125. Roy, Ext. 4664 or (212) 691-4396.

THEATRE TICKETS - (2) "Personals", Minetta Lane Theatre, Off-Broadway, Sat. eve., May 24, orchestra seats, orig. cost $32 ea., sell $20 ea. 878-2239 or 878-9035.

CONTEMPORARY CHANDELIER - chrome, $50; grey stretch cover for bucket car seat, 2/$15; Oster juicer, $15. Ext. 3701 or 751-8128 eves.

TV - b/w, 13" Zenith, 3 yrs. old, $30. 924-0582 eves.

MOTHER OF BRIDE GOWN - size 16, draped in sequins, grey silk, worn once and dry cleaned, $50; shoes to match, size 8-1/2, $5. 878-1755.

ROTISSERIE - Sears, auto., broiler, grill, excel. cond., $15. 924-3236.

COLOR TV - almost new, $150. Shosh, Ext. 3190.

REFRIGERATOR - 14 cu. ft., $50. Mike, Ext. 3254 or 399-3473.

TABLE SAW - 8", $45. Cleve, Ext. 7234.

DINING CHAIRS - (6), by "Hickory," signed, excel. cond., quality, $600. 928-4068 eves.

BABY'S DRESSING TABLE - brown wicker, w/white vinyl cushion, (4) compartments, hamper, shelf. S. Spark, Ext. 4111.

SPIKES - softball, rubber, size 8-1/2, Ponys, $10. 289-8212.

TELEVISION - 12", b&w, good cond., $30. 475-4394.

CHANDELIER - 5 globe, colonial-style for dining room, good cond., $30. Jim, 265-8551 after 6 p.m.

BED - full-size frame, spring, mattress, good cond., $75. 286-3865.

TABLE - cocktail, rock maple, new cond., 56x21, 2 drawers, $75; trains & access., Lionel, A.F., Marx, engines, tin-type cars. Al, Ext. 4615 or 751-8462 eves.

TYPING ELEMENTS - golf ball-type for IBM Selectric, $5 ea.; child's maple desk, w/shelf, 24W x 18D, $8; maple chair, $4. Mike, Ext. 4987.

GE TOASTER OVEN - works, $5; (4) lawn chairs, good cond., need cleanup. Paul, Ext. 2264 or 941-9055.

CHAIR - l/r, navy blue velvet, good cond., $58. 758-5659.

BOY'S 16" BIKE - $20; wood desk, $40; love seat, $75; child's bureau, $50; (2) end tables, $25; folding doors, $30. Ext. 2007 or 751-1474.

TENNIS RACKETS - (2) Prince, Series 125, $125 ea.; (1) Comp. $50; all gut. Ext. 7130 or 929-8323.

CAMERA SYSTEM - Canon A1, w/50 mm 1.4 lens, Vivitar lenses: 28-85 mm, 70-150 mm, 28 mm Series 1, 2x multiplier, 55 mm Macro, 199A flash, all for $555. 473-8387.

Car Pools

PATCHOGUE - van pool, 2 seats open, leave name and number. Ext. 4669.

Free

TR3 - good for parts only, not restorable. Don David, Ext. 3942 or 286-2267.

KITTENS & CATS - furry and fat, free to good home. Ext. 2050 or 475-6239.

INSERT FOR WOOD BURNING STOVE - or fireplace. Joe, 728-6890.

WINDOWS - wood frame, all sizes. Cleve, Ext. 7234.

GUINEA PIG - w/access. Ext. 4013 or 928-4048.

Yard Sale

WADING RIVER - 205 N. Wading River Rd., Sat. 5/24, 9 a.m.-4 p.m.

RIVERHEAD - 251 Howell Ave., 5/24 and 5/25, 9 a.m.-4 p.m.

WADING RIVER - 76 Northside Rd., contents of home, sofas, tables, chairs, paintings, etc., 5/24 and 5/25, 9 a.m.-5 p.m. 929-6932.

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

SHIRLEY - 2 bdrms., l/r, eik, full bath, newly decorated, walk to beach, $675 mo. incl. util. 744-2821.

N. SHIRLEY - lg. studio, furn., w/kit., priv. ent., 1 person only, non-smoker, no pets, 5 min. from Lab & stores, $400 mo. incl. util. plus sec. 281-8044.

WHITE MOUNTAINS, NH - lovely 3 bdrms., 2 baths, riverfront condo., cable TV-HBO, f/p, priv. deck, view, pool, tennis, clubhouse, jacuzzi, near all area attractions, shopping, golf, July-August, $425 wk. June and Sept., $390 wk. (914) 232-4039.

WADING RIVER - fully furn., lakefront property, SWR schools, avail. 9/86-6/87. Ext. 3822.

MT. POCONO, PA - 3 bdrm. apt., summer rental, amt. depends on length of stay. (215) 861-3911.

N. SHIRLEY - 3 bdrm. house, S. of Lab, $700 mo. + util. (215) 861-3911.

HILTON HEAD, SC - 2 bdrm. condo., tennis, golf, beach, pool, extras, $400 wk. for Lab employees and families. 585-9149.

HUNTINGTON - spacious studio apt., full-size stove and ref., priv. ent., wet bar, near shopping and highways, 40 min. to Lab, $500 mo. 427-2544.

ROCKY POINT - Tides area, furn. 3 bdrm. house, 1 bath, l/r, d/r, eik, all appl., beach rights, avail. 7/1 for 1 year, $850 mo. plus util. or exchange with equivalent near CERN. Ext. 3982 or 744-3578.

For Sale

YAPHANK - Colonial Woods, 2 bdrms., 2 baths, bsmt., cent. air, storms/screens, fully carpeted, $96,000. Ext. 2462.

RIDGE - N. of Rt. 25, 100'+ x 400'+, 80% cleared, 20% wooded, level, quiet est. neighborhood, $49,500. 924-3236.

MEDFORD - 2 bdrms., l/r, d/r, kit., f/p, w/w, appl., attached 1-car garage, fenced yard, landscaped, residential, extras, $98,500. 698-0576 after 9 a.m or 286-2005 after noon.

OAKDALE - Idle Hour section, near water, 2-story Tudor, 4 bdrms., 2 baths, garage, attached full apt. w/priv. ent., 1/2 acre on dead-end street, $210,000. 363-6940 eves.

Wanted

HOUSE OR APT. TO SHARE - starting 6/1, reliable, non-smoker. Corinne, Ext. 4493 or 924-0836.

GENERATOR - 1.5-3.0 KW, 110 Vac. output, reason., any cond., camper refrig., gas/elec. Bob, Ext. 3145.

HOMES - for adult cats and kittens, shots and neutered. 928-9537 or 744-2821.

HOUSE TO SIT - going away on vacation or business, I will stay with your house. Ext. 3671 or 736-2131 eves.

HOME - for 6 wk. old kittens. Frank, Ext. 4113 or 399-1307.

TRIMMER - lawn edger. Ext. 2487 or 928-6930.

HOST FAMILIES - S. Country SD, for French students, age 13-21, 4 wks. beginning 6/28. 286-3742 eves/wknds.

SOMEONE INTERESTED IN OLD MAGAZINES - years of accumulation, pick up load. 878-6637.

REPAIR PERSON - Intellivision game computer. Carol, Ext. 3325.

HOUSE TO SIT - free, caring, exp., rel., any period after 6/27. Jack Allentuck, Ext. 2412.

CONNIE FRANCIS RECORD - or album with song "Baby's First Christmas". Larry, Ext. 2021 or 281-7240.

GO PLAYER - visiting scientist wants to continue playing while at BNL. Chris, Ext. 4382.

DOCK SPACE - for 14' sailboat, South or North shore, reasonable. Pete, Ext. 3166.

LAWN MOWING/LAWN CARE JOBS - E. Patchogue, Bellport, Brookhaven. Kevin, 286-8521.

REFRIGERATOR - in good working cond., under $100. Ext. 4081 or 874-3844.

Lost & Found

LOST - gold "Chai" pendant w/inscription on back, on or near tennis courts. Paul, Ext. 5287.

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