BROOKHAVEN BULLETIN
Vol. 37 — No. 14 April 8, 1983
BROOKHAVEN NATIONAL LABORATORY

Lasers Light Up Chemistry

While lasers have been making the news as futuristic weapons, several scientists at Brookhaven have been using them as tools to probe a fundamental process of nature — electron-transfer reactions.

These reactions occur widely in chemical and biological systems. An easy way to illustrate them is by describing the first key steps in photosynthesis. Light strikes a green plant or photosynthetic bacterium and is absorbed by a molecule. This molecule donates one of its own electrons to another molecule. The molecule that donated the electron is positively charged, while the accepting molecule is negatively charged. In spite of the great attraction for the electron to return to its original location (a back-reaction), it does not. Instead, it hops to yet another molecule, and so on down the line.

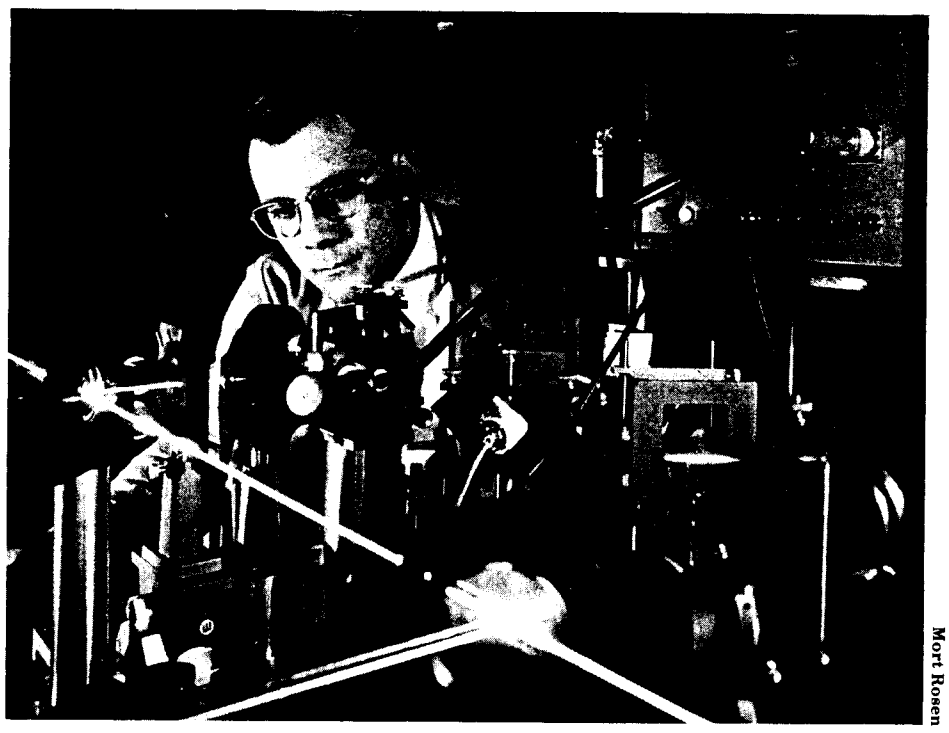
Many electron-transfer reactions, like those in photosynthesis, are triggered by light. They can occur in much less time than the blink of an eye, hence the fastest ones can only be studied with lasers which can be pulsed on the time scale of picoseconds (one picosecond is a millionth of a millionth of a second). For example, such pulses can be less than two millimeters long, and therefore strike molecules for only six picoseconds.

The "fastest" lasers on site belong to Thomas Netzel, Chemistry Department. He has been using his extremely short-pulsed lasers to study various synthetic molecules to get a better understanding of light-induced electron-transfer reactions.

To duplicate the light-activated reactions of photosynthesis one first puts together the same types of molecules — porphyrins, chlorophylls and quinones — that are in plants and photosynthetic bacteria. "In theory, if you understand how something works, you ought to be able to take it apart and put it together again," says Netzel. "We are pretty good at putting some of the pieces back together, but we don't know exactly where the molecules are situated — their angles and how far apart they are. Also, there are some extra pieces we haven't identified a role for yet."

"Scientists are trying to find out precisely how these reactions happen, what molecules are involved, and, perhaps most important in developing artificial systems, how we can mimic this process so that our artificial systems will also be able to efficiently prevent the back-reaction," says Netzel. "The problem with the back-reaction is that it merely converts the energy of the striking light beam into heat. Mud does this very well. What we want to do is harness the light's energy to make useful products."

Netzel has studied some molecular models that work and some that don't (see illustrations). As he says, "If everything worked, or if nothing worked, we would not know why. We need both so that we can learn by comparison."

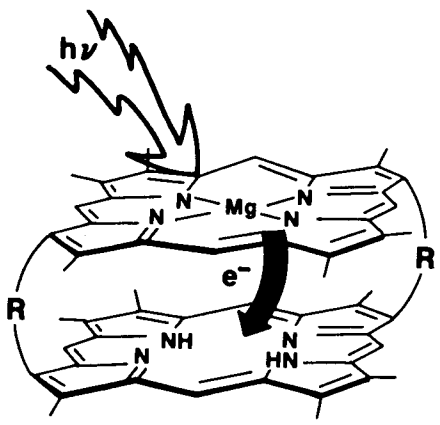

Mort Rosen

Chemist Thomas Netzel fine-tunes the alignment of some of the optical components in his picosecond-pulse laser system. A single infrared laser pulse is used in his experiments on electron-transfer reactions both to produce green excitation light which starts the reactions and to produce white light which probes the spectra of the electron-transfer products.

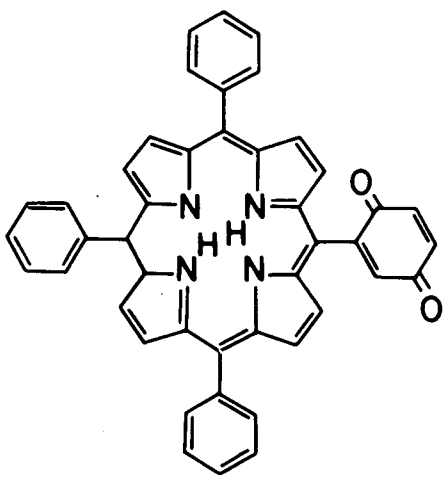
One of the more successful models of fast electron-transfer reactions like those of photosynthesis are diporphyrins, which are molecules constructed out of two porphyrins linked by chains of carbon and nitrogen atoms. (A porphyrin is a large, plate-like organic molecule that can bind metals in its center. Besides chlorophylls, which contain magnesium, other commonly known porphyrin derivatives are hemoglobin, containing iron, and vitamin B_{12}, containing cobalt.) The molecule was made by a synthetic chemist, Chi-Kwong Chang, of Michigan State University. According to Netzel, synthetic chemists like Chang specialize in making these kinds of unique electron donor/acceptor molecules. "The technology is so complicated that the best way to study ultra-fast electron-transfer reactions is to assemble teams of experts," he says. "Making molecules is an art, doing electrochemical measurements is a specialty, and working with picosecond-pulse lasers takes quite a bit of know-how."

The work on diporphyrins was done by Netzel in collaboration with Jack Fajer, in DEE's Division of Chemical Sciences. Diporphyrins seem to mimic

(Continued on page 2)



An illustration of the operation of a successful photosynthetic model, diporphyrin. Light (hμ) is absorbed by the molecule, which transfers an electron (e^-) from a magnesium porphyrin half to an attached metal-free porphyrin. The two porphyrins are held together by chains of carbon and nitrogen atoms (R). For this model, the back-reaction is nearly as slow as that found in photosynthetic bacteria. This molecule was synthesized by Chi-Kwong Chang at Michigan State University.



A structural drawing of a metal-free porphyrin (large central ring) joined to three benzene rings and one benzoquinone (containing two oxygen atoms). While observations indicate that there is rapid light-induced electron-transfer (less than six picoseconds) from the metal-free porphyrin to the benzoquinone, they also show that the back-reaction is much faster. Thus, no useful electron-transfer products are formed from the first excited state in this model. This molecule was synthesized by John Dalton at the City of London Polytechnic.

BNL Lecture Targeting Tumors

In a Brookhaven Lecture entitled "Cancer Radiotherapy: In Pursuit of a Magic Bullet," medical physicist Ralph Fairchild will discuss his current research — the development of improved techniques for radiotherapy of cancer. Fairchild will speak at 4:30 p.m. on Wednesday, April 20 in Berkner Hall.

In conventional radiotherapy, an external beam of radiation is focused on the area of the body where the tumor resides. To include microscopic fingers of growth, that area must be significantly larger than the actual tumor. Unless the cancer is more radiosensitive than surrounding normal tissues, poor results are obtained, since radiation dose must be limited to the tolerance of these normal tissues. In addition, it is generally accepted that during the six week course of 30 dose fractions, misalignment of beam and tumor often occurs, leaving viable cancerous cells which initiate regrowth.

It should be possible to bypass the above difficulties, if biomolecules carrying lethal substances could be found which showed specific binding to cancer cells. In this intriguing situation, toxic substances given to humans would automatically seek out remote metastatic disease, leaving normal cells untouched.

Numerous biomolecules exist which could transport isotopes to tumors. In general, however, these same biomolecules are also taken up avidly by rapidly proliferating normal cell pools, such as gut and bone marrow. Toxic levels are exceeded in these sensitive organs before a dose is achieved which is strong enough to kill the tumor.

An apparent exception to this general rule is the molecule thiouracil (TU), which is taken up in growing melanoma at concentrations approximately 100 to 300 times greater than in normal tissues. Fairchild's first experiments in giving S-35 labeled TU to mice carrying a subcutaneous melanoma have shown that this β^- emitter can produce a two-week halt in tumor growth. He hopes that soon this treatment will be extended to humans.

The problem of biomolecule uptake in normal cell pools described above can be solved by an alternative and more general approach. In this procedure, stable non-toxic nuclei are bound to the tumor, then activated with appropriate external beams. Since the beam is focused on the tumor target, normal cell pools not in the beam are spared. Fairchild is investigating two separate techniques: Photon Activation Therapy (PAT) and Neutron Capture Therapy (NCT).

In PAT, stable I-127 is incorporated in DNA. Low energy photons can then be used to stimulate extremely radiotoxic cascades of electrons (Auger cascades). Results indicate that implanted sources of 40-50 keV x-rays should easily provide doses to tumor 10 times greater than that in normal tissue.

The NCT approach utilizes stable boron-10 which interacts with thermal neutrons. Perhaps the most powerful approach is the use of boronated monoclonal antibodies. Current studies in collaboration with the University of Bremen, West Germany, indicate that these molecules can be boronated to therapeutically significant levels, and that activity and specificity will be retained.

Mort Rosen

Ralph Fairchild

Ralph Fairchild has been on the staff of the Medical Research Center since 1961. He received his master's degree in nuclear engineering from Cornell and a Ph.D. in physics from Adlephi University. He is a consultant to the Veterans Administration Hospital, Northport, New York, and is Associate Professor at the School of Medicine, Health Sciences Center, SUNY, Stony Brook, He is the author of nearly 100 publications.

A coffee reception will be held at 4 p.m. preceding the lecture and a buffet supper at 6:30 p.m., approximately an hour after the lecture. The price of dinner is $7.50 and reservations should be made by calling Ext. 3541 before 5 p.m. that day.

Bar Coding Comes To BNL

Ask people what a bar code is and chances are they will look perplexed. Is it a lawyer's version of the Hippocratic Oath? Or is it the no-bare-feet policy at the local pub? Nice tries, but no cigar. A bar code is that familiar patch of stripes, usually printed black on white, that appears on billions of retail products from cans of cat food to boxes of breakfast cereal, and even on the cover of Fortune magazine.

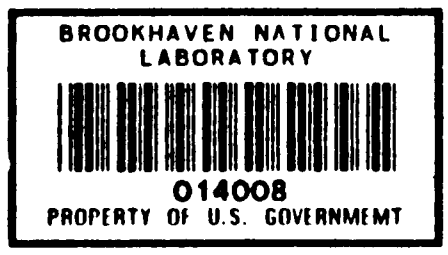
Easily read and decoded by computers, the black bars are finding new uses in unexpected places. They are used to track inventory on an aircraft carrier, blood in blood banks, and applications in the U.S. Patent Office. They identify people in libraries, hospitals and marathons.

Bar codes are rapidly making inroads into many industrial, manufacturing and administrative areas because they can help to make their operations more efficient. In standard procedures, keypunch operators supply most data to computers by pounding away on keyboards, and humans are slow and error-prone by computer standards. But bar code readers, equipped with special scanning devices, can read bar codes quickly and accurately, and transmit data directly to the computer through various coupling devices.

Starting this week, members of the Supply & Materiel Division will conduct a wall-to-wall inventory of all reportable property, and will replace the familiar blue and white BNL property label with a new red trimmed bar code property tag. It is expected that this project will take approximately one year to complete.

The true benefits to be derived from the Bar Code Property Tag will not be realized until subsequent physical inventories are conducted utilizing the portable Bar Code Readers. The Bar Code Readers are actually mini computers that can store 120,000 characters of information which can be directly transmitted to the computer in a matter of seconds. Data collection is extremely accurate and can be accomplished in less than one-third the time required to hand write the same entry.

Collecting inventory data is a relatively easy procedure once the operator acquires the knack of passing a "wand" over the bar code label. The wand is attached to the reader and by means of an infrared light beam, it translates the black and white lines into a binary number (computer readable) for transmission to the computer. When reading a bar code label



with the wand, the bar code reader will emit a beeping tone to indicate a good entry and the next label can be read. As labels are read into the reader, they are also displayed on the digital display portion of the reader. In addition to the series of black and white lines, the bar code label will show the property number.

One of the most important requirements for a successful bar code inventory system is the placement of the tag. It is mandatory that the property tag be placed in a location that allows reading the tag without the need to move the equipment. The new bar code labels will not be affixed to any area that interferes with the functional properties of the equipment, and placement will not be influenced by esthetic or personal preferences.

There will be two bar code teams involved in the inventory and retagging project. They have been instructed to inventory every piece of BNL-tagged equipment in every building, trailer, storage room, closet, or cabinet they see. A master schedule has been established which ensures that every building will be inventoried, and each department and division will be contacted by Property Management personnel prior to the inventory of their areas. Employees are expected to cooperate with the inventory teams and provide whatever assistance is necessary to ensure that the Laboratory's objectives are achieved.

Tip For Travelers

When next you travel on business, or for pleasure, check your hotel's policy on telephone calls. It seems that since the FCC approved the "resale of service" concept, many hotels in the U.S. have placed surcharges on local and long distance calls placed from hotel rooms. As there are no limitations on what hotels may charge, you may be billed 100% or more above the actual cost of the call. You may find that it is far less expensive to place a call from a public telephone in the hotel lobby, than from your hotel room.

Lasers (Cont'd)

at least three key aspects of photosynthetic electron-transfer reactions: they react very, very fast; store a lot of energy (greater than 90%); and make very efficient use of light — one electron is transferred for each photon of light absorbed.

Netzel has two laser systems. The one he calls mature took him ten months to build and another year and a half to work out the bugs. Then came about three years of data taking, doing just about everything the machine was capable of doing.

Now he is at the point where the technology has improved, and the emphasis of the chemistry he wants to do has changed. His second laser system, which he has recently finished building, can fire as rapidly as ten times a second, or six hundred times faster than the old system. And instead of only visible light, it can also make ultra-violet light.

The new system makes possible studies of light-induced electron-transfer reactions in a large number of inorganic molecules containing metals such as iron, chromium and ruthenium. For this work, Netzel is collaborating with Norman Sutin and Carol Creutz, in the Chemistry Department.

They have been measuring the lifetimes of excited states of metal complexes and looking at the rates of electron-transfer from one metal complex to another.

Says Netzel, these metal complexes are simpler than biological molecules like diporphyrins, so their electron-transfer reactions can be more easily manipulated and understood. Also, since the reactions of certain of these metal complexes yield hydrogen and oxygen, one long-term result of this work may be the photogeneration of fuels and other useful chemical products.

"In general, research on light-induced electron-transfer reactions has two sides," says Netzel. "We are getting a better understanding of a fundamental chemical process. And while we may not be saving barrels of oil today, there is good reason to hope that useful products will result in the future."

—Mona S. Rowe

1983 AUI Scholarship Winners

Twelve AUI Trustee Scholarships, each in the amount of $1,700 per year have been awarded to children of BNL employees. The scholarships will be in effect for up to four years, and are to be used to defray college expenses. The winners were selected from 78 applicants by an independent committee reporting to the College Scholarship Service.

Hyla J. Dickinson...daughter of Thomas S. Dickinson (NSLS)...student at Bellport High School...resident of Brookhaven...plans to attend Washington Univ....major in fine arts.

Maurice A. DuBois...son of Maurice DuBois (Fiscal)...student at Earl L. Vandermeulen H.S....resident of Mt. Sinai...plans to attend Northwestern Univ....major in journalism.

Lisa T. Galati...daughter of Salvatore B. Galati (Fiscal)...student at Rocky Point H.S....lives in Rocky Point...plans to go to Yale Univ.... premed.

Alexandra Kroeger...daughter of Peter G. Kroeger (DNE)...Shoreham-Wading River H.S....resident of Shoreham...plans to attend Princeton...(as we went to press Kroeger was away, but we understand she will major in science or history).

Susan Y. Lee...daughter of Yong-Yung Lee (Accel.)...student at Smithtown West H.S....resident of Smithtown...plans to attend Wellesley College...major in biology or chemistry.

Judith M. Lorenz...daughter of Richard R. Lorenz (Physics)...student at Centereach H.S....resident of Centereach...plans to attend Fordham Univ....premed.

Dinnah A. Peng... daughter of Martha L. Peng (MIS)...student at Smithtown East H.S.... resident of St. James...plans to attend Cornell...major in biology.

Marko Prelec...son of Krsto Prelec (Accel.)...student at Ward Melville H.S....lives in Setauket...plans to attend Harvard Univ....major in science or philosophy.

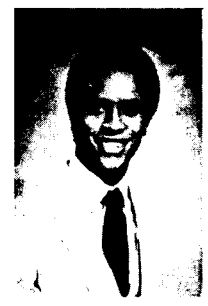
Eva M. Rorer...daughter of David C. Rorer (Reactor)...student at Earl L. Vandermeulen H.S....resident of Port Jefferson... plans to go to Harvard Univ....premed.

Stanley F. Rose...son of Philip F. Rose (DNE)...student at Ward Melville H.S...lives in Setauket...plans to go to Georgetown Univ....major in political science.

Michael D. Sintchak...son of George F. Sintchak (Instrumentation)...student at Ward Melville...resident of Stony Brook...plans to go to Harvard Univ....major in biochemistry.

Marion M. Tang...daughter of Ignatius N. Tang (DEE)...student at Shoreham-Wading River H.S....resident of Shoreham...plans to attend Cornell...major in electrical engineering.

Hyla Dickinson


Maurice DuBois

Judith Lorenz

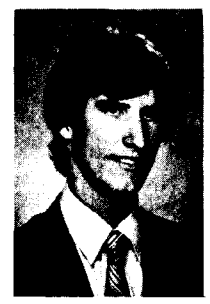
Lisa Galati

Susan Lee

Alexandra Kroeger

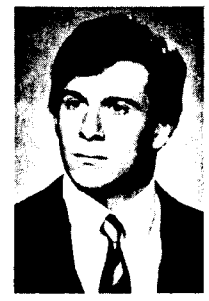
Eva Rorer

Dinnah Peng


Stanley Rose

Marko Prelec

Marion Tang


Michael Sintchak

Nursery School

Attention parents of pre-schoolers! If you are thinking about nursery school in the fall, consider enrolling your children in the on-site nursery school. Children of both BNL employees and their relatives are eligible.

The Upton Nursery School is located in the housing area. It offers morning classes for three and four-year-old youngsters.

The school will be having an enrollment day on Tuesday, April 12, from 11:30 a.m. to 12:30 p.m. in the cafeteria. Representatives will be on hand to answer questions and give out applications for the 1983 school year. Applications can also be obtained from the school, or by calling the co-president Donna Miltenberger at 924-0590, or the enrollment chairperson Dorey Panno at 924-5495.

Concert Reminder

Pianist Minoru Nojima will present a concert at 8:30 p.m., April 12 in Berkner Hall. General admission $7; students and senior citizens $4; and those under 18, $3.

Prior to their New York debut, the Ridge String Quartet will give a special concert in Berkner Hall, at 8:30 p.m. on April 14. General admission $6; students and senior citizens $3; and those under 18, $2. For this concert, unused BERA Concert Series block tickets can be redeemed for a $3 discount on general admission tickets.

Seen on the door of geologist Mary Daum, Bldg. 475:

"People take me for granite, but I'm really very gneiss. Daum, but gneiss."

BROOKHAVEN BULLETIN

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WIS Meeting

Jerome I. Barancik, a scientist with DEE's Biomedical & Environmental Assessment Division, will speak on "A Perspective on Epidemiology" at a meeting of Women in Science, on Wednesday, April 13 at noon, Room C, Berkner Hall.

Dr. Barancik will discuss epidemiological approaches to the understanding of environmental and occupational health problems. He will describe the life of "Sir Urban Dweller" to illustrate the complex relationship between multiple environmental exposures and acute-chronic health effects.

Cooking Exchange

Chocolate lovers unite! The next meeting of the Cooking Exchange at the Recreation Bldg. at 12:30 p.m. on April 13 will feature such delights as chicken molé, French silk chocolate pie, and chocolate fondue. The fee is $1 per person and 50¢ for babysitting. For more information contact Adrienne Usher, 289-7658, or Dee Polychronakos, 744-3578.

NYC Train Trip

The Hospitality Committee is planning a group railroad trip to New York City on Wednesday, April 20. Departure will be at 7:55 a.m. from the Patchogue LIRR station. Round-trip fare for adults is $3.50; children under five years ride free.

Reserve a ticket by sending your fare through the U.S. mail to Hospitality Committee, P.O. Box 322, Upton, New York 11973. Please do not send cash. Checks or money orders, payable to BNL, must be received by Thursday, April 14. Put the date of the trip, your BNL life number and your phone number on the back of your check or money order. Your tickets will be given to you at the railroad station on the day of the trip. Refunds will be made only if cancellations are received by the Monday morning preceding the trip.

Note: Do not park your car in the LIRR parking lot at Patchogue unless you are a resident of Patchogue and have a parking permit.

Arrivals & Departures

Arrivals

Antoinette A. Carollo.....Fiscal
Theodore W. D'Ottavio.....DEE
Robin C. Leonard.....Medical

Departures

None

Singles Club

A meeting of the newly formed Singles Club will be held on April 12 at 5:10 p.m. in Room C, Berkner Hall. All interested parties are invited to attend. For further information contact Chuck Watson on Ext. 5317.

Cafeteria Menu

Week Ending April 15, 1983

Monday, April 11		
Cream of tomato soup	(cup)	.65
	(bowl)	.75
Cheese omelet & 1 veg.		1.80
Kielbasi & sauerkraut		1.90
Hot Deli — Corned beef	(bread)	1.85
	(roll)	1.95
Tuesday, April 12		
Old-fashioned bean soup	(cup)	.65
	(bowl)	.75
Savory baked chicken quarter & 1 veg.		1.95
Chinese pepper steak on white rice		1.95
Hot Deli — French toasted ham & cheese		1.85
Wednesday, April 13		
Minestrone soup	(cup)	.65
	(bowl)	.75
Sauerbraten & potato pancake		2.00
Hot Deli — Chicken pattie Parmesan hero		1.95
Thursday, April 14		
Split pea soup	(cup)	.65
	(bowl)	.75
Beef teriyaki on rice		1.95
Stuffed pepper & 1 veg.		1.85
Hot Deli — BBQ fresh ham	(bread)	1.85
	(roll)	1.95
Friday, April 15		
Fish & chips		1.85
Fish chowder	(cup)	.65
	(bowl)	.75
Ham & potato au gratin		1.85
Hot Deli — Knockwurst & kraut	(bread)	1.85
	(roll)	1.95

Bowling

Pink League

High games were bowled by K. Kissel 169, K. McNally 168, D. Johnson 182/196/176, H. Keeley 168/172, M-G Meier 180/199.

White League

S. Smith had games of 267/186, G. Hassell converted the 5/10 split, J. Griffin 217/202/607 scratch, P. Manzella 189, V. Manzella 203, J. Roesler 224/605 scratch.

Red/Green League

T. Prach rolled games of 224/211/611 scratch series, J. Muller 236, J. Petro 224, N. Combatti 222, D. Jesaitis 211, E. Sperry 211, C. Bohnenblusch 209, R. Jones 206, C. Neuls 205, J. Carroll 203, J. Morris 203, L. Schairer 201, R. Wiseman 200.

Purple League

E. Meier had games of 202/214/591 scratch, C. MacDougall 212, G. Spira 203, J. Mayeski 201.

LONG ISLAND CHAMBER OF COMMERCE

225 W. 34TH STREET - NEW YORK CITY

SERVICE BULLETIN - To Suffolk County Directors May 29th, 1931.

DISPOSITION of CAMP UPTON

Suffolk County Directors of the Long Island Chamber of Commerce have taken a decisive stand in opposition to the proposal to use Camp Upton near Yaphank as a state prison site. When the U. S. War Department sent out announcement from Washington of intention to abandon its wartime campsite in Suffolk County, newspaper announcements appeared proposing the use by New York State of the several thousand acres at Camp Upton for prison purposes. Suffolk County Directors of the Chamber, led by Vice President Walter R. Pettit of Huntington, took immediate steps to sound public sentiment and found it strongly opposed not only to the establishment of a prison in Suffolk, but as well to any further encroachment upon the county by state institutions.

To ascertain the exact status of the federal government in regard to the Camp Upton property, Mr. Pettit telegraphed to Congressman Robert L. Bacon for information. Replying, Representative Bacon wrote:-

"I can confidently state that for the moment no decision has been made by the War Department as to what they wish to do with Camp Upton, and no negotiations at present are under way with anybody. Before any decision will be made by the War Department the matter will be discussed with every other department of the Federal Government as to whether or not this land can be of use after a complete survey has been made of its value, not only to the War Department, but to every other federal body. I do not anticipate that any decision will be made for several months, if then. In the meantime, the War Department will keep me informed of any steps that may be taken."

The Long Island Chamber has received strong protests against any action which would result in a state prison being established at Camp Upton or anywhere else on Long Island. The newspapers of Long Island are already expressing their opposition emphatically.

The Long Island Chamber is prepared to not only oppose the establishment of a prison, but to constructively bring about such use of the Camp Upton property, as will preserve the attractiveness of Suffolk County. It has been suggested that this entire tract be acquired by the State for the purpose of reforesting under the Hewitt act and in this way make it suitable for a game refuge and future use as either a state or county park.

MEADE C. DOBSON,
Managing Director.

A state prison instead of a national research laboratory? It might have happened, but for the efforts of the Long Island Chamber of Commerce back in 1931. This reprint of a service bulletin sent out by the Chamber (now the Long Island Association, headquartered in Melville) sums up the events of the time. As it turned out, the prison movement was stopped, Camp Upton became Upton National Forest, and the Civilian Conservation Corps planted white pine and fruit trees. (The service bulletin was discovered by Tom Browne, Graphic Arts, who was leafing through a journal kept by a neighbor of Browne's grandfather. The journal was left to the Lake Ronkonkoma Historical Society.)

Color It Blue — Or Pink!

The florist hydrangea is unique among colorful plants. As the Cooperative Extension Association of Suffolk County points out, the soil in which the plants grow can be manipulated to make some varieties produce either blue or pink flowers.

If a hydrangea is grown in soil which is alkaline, or just slightly acid, and well-supplied with phosphorus, it will develop pink pigment in its flowers. The same kind of plant grown in acid soil with low phosphorus levels will develop blue flowers. And a plant which produces blue flowers one season can be made to have pink ones the next year. Soil manipulation will not affect white varieties.

Motorcycle Club

A meeting of the club will be held on April 11 at 5:15 p.m. in the Recreation Bldg. All members are asked to attend.

Correction

In last week's Bulletin, a photograph of Dupree Maples was incorrectly identified as that of Robert Brockman. Professor Maples was one of the instructors for the DOE-sponsored boiler efficiency course held March 28-31. He teaches mechanical engineering at Louisiana State University.

Volleyball

Standings as of 4/4/83

Mixed League

A Division

Dinkers	15-0
EPO's	11-4
Teddybares	8-7
Mixed Ups	6-9
Nuts and Bolts	4-11
Nuclear Wastrels	1-14

Congratulations to the Dinkers Don and Sandi Litcher, Bert and Annette Meier, Dennis Weygand, Jeanne Danko, Adrienne and John Usher as winners of the fourth quarter. The playoff for the first half will be played on Monday, April 11 at 5:30 p.m. between the Dinkers and the Teddybares.

B Division

There will be a playoff scheduled shortly for winner of the first half between TNT and the Phoubars. Playoffs for the second half are not as yet decided, but will be posted in future Bulletins.

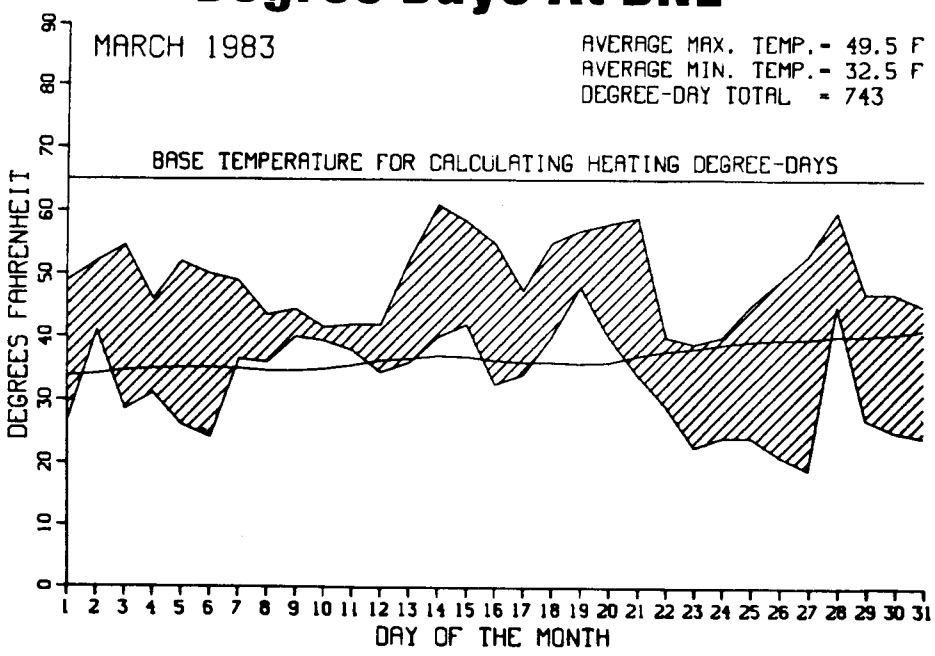
Open League

Phoenix	16-0
Brewmasters	9-7
Random Errors	7-5
Raiders	4-8
FRE8D	4-12
Half Lifes	4-12

Makeup games between the Raiders and Random Errors to be scheduled.

The volleyball awards party will be held at the Brookhaven Center North Room on Friday, June 3 at 5:30 p.m. Hot and cold buffet will be served as well as an open bar. The cost is $3.00 for volleyball participants, $7.00 for guests. Please contact Bob Marascia, Ext. 4672; Don Litcher, Ext. 7587; Lois Marascia, Ext. 4904; or Kathi Barkigia, Ext. 4382 within the next few weeks for ticket availability.

Degree Days At BNL



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.

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.

1845. MAIL CLERK - (Temporary 5/23/83 to 9/2/83) - Staff Services Division.

1846. RESIDENCE CUSTODIAN - (Temporary 5/16/83 to 10/14/83 - three openings). Staff Services Division.

1847. SECRETARIAL POSITION - Requires AAS in secretarial science or equivalent and excellent typing skills. Diverse duties include typing technical manuscripts utilizing a word processor. Knowledge of shorthand useful. Will function as secretary to three Solid State groups. Physics Department.

OPEN RECRUITMENT: Opportunities for present Laboratory employees and outside applicants.

1848. NUCLEAR REACTOR OPERATOR TRAINEE - Requires AAS in a technical field or equivalent experience. Prior reactor background and experience in maintaining and operating electrical and mechanical equipment very desirable. Must be able to work rotating shifts, obtain "Q" clearance and maintain reactor qualifications. Will operate and maintain HFBR and auxiliary equipment. Reactor Division.

Autos & Auto Supplies

72 HONDA MOTORCYCLE FRAME -750cc, custom rigid frame w/fender & seats, oil tank, many extra parts. 654-2076 eves.

VW PARTS - muffler assemblies, $28; bumpers, $27; repair manuals, $16; 009 distributor, $36; all brand new. Augie, Ext. 2419 or 289-4211 eves.

78 TRAVEL TRAILER - Airstream Argosy, 24 ft., excel. cond., extras, $7,500. 286-0706.

73 DODGE MAXI VAN - 1 ton, high mi., good cond., $1,050. 928-9568.

80 FIAT STRADA - excel. cond., $2,500. Ext. 2231.

65 CHEVY - 2 dr., clean, 6 cyl., orig. mi., excel. running cond., reliable. Ext. 4810 or 288-3591.

75 FORD - 1 ton, 42,000 mi., Amerigo camper, very clean. 286-8991.

77 CHRYSLER CORDOBA - p/s, p/b, a/c, s/s wheels, Landau roof, 6 way power seats, mint, $3,900. 727-0948.

75 TOYOTA COROLLA - SR-5, silver, auto., rebuilt engine, new paint, no rust, radials, am/fm. Ext. 3565 or 878-2233 after 6 p.m.

81 PONTIAC T-1000 - white w/blue pinstripe, a/c, 4 spd., w/w rad., 15,000 mi., still under warranty, tinted windows, asking $4,500 negotiable. Ext. 2964.

80 PONTIAC PHOENIX - 6 cyl., a/c, p/s, p/b, am/fm cassette, 32,500 mi., orig. owner, excel., $4,000. 744-4611 eves.

67 COUGAR - 289 cu. in., a/t, a/c, p/s, p/b, clean in & out, $1,100. Al, Ext. 5128.

RIMS - (2) Ford/Mercury, 14", $10/ea. Tony, Ext. 3658.

80 HONDA HAWK - CB400T, excel. cond., low mi., extras, $995. 286-8814 after 5:30 p.m.

73 TOYOTA PICKUP - a/t, new brakes, tires, sliding rear window, new paint, $1,200. 744-4386.

82 SUZUKI - RM 125, dirt bike, excel. cond., extras, $1,075. 929-8520.

72 PONTIAC LEMANS - 350 V-8, hi mi., some rust, good for parts, runs, $300. Ext. 2021 or 286-9685 after 5 p.m.

77 SAAB - 99 EME, sport coupe, sunroof, luggage rack, Perelli tires, gold alloy rims, $5,100. Jim, 667-3909.

SLIDE-IN CAMPER - 8 ft., sleeps 4, jacks, stove, ice box, $500. Murdock, Ext. 4649.

72 FORD LTD - 4 dr., reg. gas, low mi., runs and looks like new, $800.

744-2805.

78 BUICK CENTURY - unique 2-tone, 4 dr., 6 cyl., new tires & brakes, low mi., stereo/CB, p/b, p/s, pinstripe, showroom cond., $4,600 negotiable. 751-6418.

75 MERCURY MONTEGO - 4 dr., a/c, radio, tape deck, tinted glass, 351 cu. in., asking $900. Ext. 3712.

77 BMW - 320i, am/fm stereo cassette, 4 speakers, BMW maintained, excel. cond., $6,000. Al, Ext. 4301.

65 BUICK LESABRE - 4 dr., many new parts, asking $500. Steve, Ext. 4297 or 924-6877.

69 CADDY - 2 dr. coup, motor gone, body very clean, new tires, many new parts, $500 or best offer. 864-4661.

74 CHEVY - pickup, 3+3, p/s, a/t, a/c, am/fm, camper cap, original owner, $3,000. 744-0027 eves.

72 PINTO - a/t, new carb., decent tires & brakes, am/fm, high miles, dependable, driver's door damaged, extra trans., radiator & windshield, $250. 281-0360.

CHEVY PARTS - small block, alum. super rods w/L.W. pins, $100; crane cam, 516-539 lift, $30; 327+.030 Manley pistons 12.5 comp, 043 rings, $150. Bill, Ext. 4434.

80 CHEVETTE - 4 dr., hatchback, 4 cyl., 4 spd., very good cond., 39,000 mi. Bob Kiss, 981-6092.

72 DODGE POLARA - excel. cond. in/out, well maintained, excel. running, $700. 924-3281.

74 CHEVY MALIBU - 350, bucket seats, good tires, runs well, some rust, $900. 331-9171.

74 BLAZER TOP - fiberglass, fits 74-75, white, $750, must sell. 744-3968, leave message.

74 BLAZER TIRE - 36", 350 Rollbar rims, $25, must sell. 744-3968, leave message.

FIAT - 131S, 2 dr., 5 spd., 26 mpg, a/c, asking $1,300. Ext. 2521 or 928-8379.

75 YAMAHA MOTORCYCLE - 500 cc, mint. cond., $875; also Kawasaki street-trail, 125 cc, $400. Jerry, 281-8957.

79 CHEVETTE - 4 spd., 4 dr., radials, great mileage, good cond., $2,500. Diane, Ext. 4142 or 727-6214.

76 PONTIAC GRAND PRIX - full power, white w/blue vinyl top, good cond. Ext. 3644 or 929-8143.

76 DATSUN PARTS - B210, 4 spd. transmission, bumpers, radiator, jack. Ext. 3644 or 929-8143.

80 CHEVETTE - blue, 20,000 mi., excel. cond., 4 dr. 878-0771.

77 BMW - 530i, 55,000 mi., a/c, sunroof, stereo, bronze w/tan leather, 6 cyl., OHC., excel. cond., $6,250. Peter, Ext. 3867.

70 CHEVY IMPALA - gold, excel. cond., best offer. 878-1698.

73 CHEVY VEGA - good station car. Ext. 3596 or 821-1039.

75 TOYOTA CORONA - engine & interior good, new muffler, needs front pipe, $1,000. Pat, Ext. 4602.

TIRES - (4) 1200R x 16.5, mounted on 9.75 x 16.5 spoked rims, 8 lug wheels, fits all trucks, $75 ea. Barrett, Ext. 4558 or 325-0013.

79 CHEVY MONZA - am/fm 8 trk. stereo, 2 dr. hatch, V6 eng., a/t, new tires, m/e, v/c. 727-5198 after 6 p.m.

DUNE BUGGY - new paint, many new parts, mint, best offer or trade. Ext. 5385 or 744-0290.

72 OPEL MANTA RALLYE - clean, spoilers, mags, suspension worked, hot motor, seats, spares, $2,500. 234-2034.

78 HONDA - CB550K, excel. cond., low mi., extras, $1,200. Rich, Ext. 4662.

73 OLDS DELTA 88 - a/c, a/t, p/b, p/s, am/fm stereo, good tech. cond., $600. Wolfgang, Ext. 3798 or 3213.

69 VW SQUAREBACK - new tires, recently rebuilt eng., good for parts, $100. Larry, Ext. 5385.

71 DODGE CHARGER - radials, new carburetor, starter, water pump, fuel pump, needs minor work, $375. Ext. 3319.

Boats & Marine Supplies

21' RENKEN - 1980 cuddy, 120 Volvo Penta engine, I/O many extras, full canvas, winter cover, 50 hrs. use, excel., $7,000. 981-0989.

73 CHRYSLER - 105 HP, new power pack, tune-up, winterized, runs perfect, $750; 20' wood boat, $300. Ext. 2733.

16' GLASSPAR - w/trailer, excel. cond., $1,000 firm. Harry, Ext. 5010 or 744-2715 after 6 p.m.

14' SUNFISH - two sails, excel. cond., $600. Joe, Ext. 7961 or 878-2655 eves.

17' IMPERIAL BOWRIDER - 1970, 70 HP Evinrude, Holsclaw galvanized trailer, full canvas, anchor, skiis, excel., $3,995. 698-6544.

EVINRUDE - 100 HP, w/controls, good cond., $350; 75 HP Evinrude, w/controls, good cond., $150. Ext. 2705.

32' LUHRS - fly bridge, dual controls, all equip., head, no engine, $1,000. Chris, Ext. 2561 or 588-8866.

17' CATHEDRAL HULL - Thunderbird, 90 HP Mercury, Trailex alum. trailer, asking $2,000. Borg, Ext. 3568 or 286-0428.

15' SAILBOAT - Blue-Jay, fiberglassed plywood, 3 sails, approx. $500 or make offer. Ken, Ext. 7959 or 581-1169 eves.

OUTBOARD MOTOR - 1978 Johnson, 9.9 HP, used once, new condition, $500. Sheldon, Ext. 3354.

BOWLINES - w/heaving ball & sternlines w/finished ends in 3/8" nylon, $25 per set. Mark, Ext. 3499 or 698-5748.

16' TRI-HULL - Thunderbird, fiberglass, 45 HP, trailer, full equipped, top, jackets, radio. 727-4539 after 6 p.m.

14' ALUM. BOAT - Star Craft, Tee Nee trailer, 7-1/2 Sears motor, $550. John, Ext. 4243.

17' CANOE - Grumman, w/w PFD's & paddle, good shape, $350. John, Ext. 4243.

PARTS - zincs, prop shaft, rudder button, outdrive OMC Merc Volvo, Ext. 4664 or 298-4089.

11' SAILBOAT - Atlantic, good cond., many extras, $300 firm. Larry, Ext. 5385.

CHILD'S LIFE PRESERVER - up to 40 lbs., used twice, cost $40 new, asking $25. 399-4122.

KAYAK - w/airbags & paddle, $180. Ext. 2521 or 928-8379.

18' SPEEDBOAT - 1969 Chris Craft, mahogany, 283 CI, collector's item, mint cond., $4,000. Mike, 289-0602 eves.

OUTBOARD MOTOR - Johnson, 25 HP, long shaft, light use, $850. John, Ext. 4243.

Free

POOL TABLE - full size, w/accessories. Jim, 281-8957 after 6 p.m.

HOT WATER HEATER - 30 gal., LP gas, you pick up, works fine. 473-7667.

Moving Sale

MOVING SALE - living room chair, 6 ft. dresser, 7 ft. standing closet, kerosene heater, stereo equipment, plus more. Seth or Carol, 928-3650.

Miscellaneous

CANOPY FRAME - white, good cond., $50. Ext. 2964.

SYNTHESIZER - Multivox MX2000, excel. cond., $400. 363-2614 after 6 p.m.

WALL OVEN - w/infra red broiler, Caloric Ultramatic, propane, stainless steel finish, very good cond., $75 or best offer. Ext. 2492.

HAMS - Heath C.W. transceiver HW16, with V.F.O., antenna tuner, SWR meter, coax. switch, $200 complete. 589-2648.

PEREGO TWIN STROLLER - Jonny Jump-Up swinging chair; swinging cradle. 286-2821.

CHINA CLOSET - walnut, 36"Wx65"H, good & sturdy, 40 yrs. old, $65; fir & spruce trees, 20"-40", you dig, 2 for $7. 878-6637.

LOCUST FENCE POSTS - strong, long lasting, selection of sizes. Ext. 3841 or 286-9450.

DINETTE - Douglas with 4 overstuffed chairs, queen size sofa bed, Bassett square sofa table, large desk. Ext. 3565 or 929-6964.

HIDE-A-BED COUCH - $75; living room chair, $45; end tables, $40; 27" color TV; 8-drawer dresser, $75. Ext. 3698 or 473-2524.

GRAY FOX - mounted in natural pose on log, $125 firm. Bob, Ext. 3354.

BREEDING FEMALE PARAKEET - terrific egg layer, $15; talking english parakeet, $60, rare parrokette, $30. 589-5126.

MAPLE TREES - you dig, all sizes. Walt, Ext. 7154.

TORQUE WRENCHES - dial-in, brand new, $75. Charles, Ext. 2021 or 878-8901 after 5 p.m.

CABLE TV CONVERTER/TUNER - Gamut 26, 26 channel capability, good cond., $25. 281-0360 after 6 p.m.

DINNERWARE - service for 12 & serving pieces, $50. George, Ext. 7647.

FREEZER - Sears, 16 cu. ft., excel. cond., upright, white, $250. 878-2421.

BACKPACK - 34", magnesium alloy frame, 24x15x8 in. bag, $35. Ext. 7509.

DRYER - RCA whirlpool gas, 3 cycle, old but works, $50; Westinghouse refrigerator, white, side-by-side, 16 cu. ft., $75. Bob Kiss, 981-6092.

SPACE HEATER - Sears, gas, 75,000 BTU, 2 blowers, excel. cond., $135. Hugh, Ext. 4669 or 924-3522 after 6 p.m.

FERRARI SUNGLASSES - $6 ea; am/fm Walkman type radio, $19; am/fm cassette, $40. Paul, 727-4859.

KEROSENE HEATER - Omni-15, 9,000 BTU, used one season, asking $80. Sheldon, Ext. 3354.

DINING ROOM SET - 48" round, formica table, 4 swivel upholstered chairs, excel. cond., $125. 473-7667.

CLUB CHAIRS - (2), upholstered w/slipcovers, excel. cond., $50 ea., sell one or both. 286-1253.

DESK - wooden, double, seats two, 4'x5' top., $85. Ext. 7509.

CAR SEAT - child's & baby's, Strollee, good cond., $25. Ray, Ext. 4479.

SOFA BED - queen size, tan, navy & white print, excel. cond., $400. Nick, Ext. 2490 or 286-1816.

COUCH - 8', $100; solid pecan dining room table, chairs & buffet, $650; weight bench & weights, $25. 744-1845.

STOVE - wood burning, like new, airtight. Ext. 4635.

PEARSON BOW - 45 lb., $35; Mooring chain, 50', best offer. Bob W., Ext. 7197 or 821-0705.

DOG FENCE - 4'x150', plus metal poles, 1 yr. old, $75; b/w TV, $15. Ursula, Ext. 4389 or 331-4596.

FIREWOOD - full cords, 4'x4'x8", $115 delivered. 467-8976.

SCREEN DOOR - white aluminum, 35-1/2"x80-1/2", just screen, $20. 924-9378.

MEN'S BIKE - Fuji Del-Rey, new, tire pump, other extras, $260; GE oven, Americana model, double oven, coppertone finish, 30"W, 60"H, working condition, self clean, $150. John, Ext. 4255 or 929-4450.

SUEDE SPORTSCOAT - brown, size 42, just cleaned, like new, $25; pool stick w/leather case, asking $25; leather jacket, light tan, size 42, asking $35. 399-4122.

CASSETTE DECKS - am/fm, 2 ea., $50-$75. Bob Kiss, 981-6092.

TAPES - BASF Pro II blank cassettes, CrO_2, C-90, $2.75 ea. Ext. 2521.

SCARVES - handmade, pure silk, prints & solids, $6. Ext. 3136.

POOL FILTER - & pump, 3/4 HP, used one season, excel. cond., $55, cost $120 new. 289-1442.

BLACK ANGUS STEER BEEF - 9 months prime, will deliver, $50. Bob, Ext. 2084.

GRAND PIANO - upright, good cond., best offer, you haul; sewing machine, w/table, J.C. Penney, zig-zag, like new, asking $150. Ext. 3712.

CORNER DESK - Ethan Allen, hutch bookcase, nutmeg finish, $150. 929-6692 after 3 p.m.

SEWING MACHINE - Kenmore, new, $150; Coleman metal cooler, $20; fan, $15; car roof rack, $15. 924-0582 eves.

AUTO RADIOS - & speakers, at discount prices. Paul, 727-4859.

ELECTRIC OVEN - Farberware Turbo oven, counter top, like new, $40. 331-3069.

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 Sale

STRATHMORE RIDGE - condominium, 2 bdrms., 1-1/2 bath, mint condition, 5 min. from Lab., $32,000. 924-7637.

EAST MORICHES - Newport Beach, 3 bdrms., 2-1/2 baths, 2-car garage, fireplace, fenced backyard, 2-zone heating, on 1/2 acre, private beach rights, docking space available and launching ramp, $70,000. Ext. 2733 or 878-8491.

SAYVILLE - cedar & brick ranch, 7 rm., eik, d/r, 2 full baths, full basement, garage, central air, extras, excel. cond., can be made mother/daughter apt., $66,500. 589-2681.

SETAUKET - 4 bdrm. colonial, mint cond., Three Village School District, walk to SUNY, assume 8-1/2% mortgage. Ext. 2611 or 751-4098.

MIDDLE ISLAND - townhouse, 3 bdrm., 1 bath, 5 min. to Lab., central a/c, 5 appliances, new w/w carpet, woodstove, loft den, skylights, cathedral ceiling, prime location, wonderful for family w/children, $47,900. Ext. 5284 or 924-4237.

RIDGE - (3) one acre plots, ea. over 100'x400', fully wooded in quiet established area, $13,900 ea., terms. 924-3236.

For Rent

STONY BROOK - 2-3 bdrms., l/r, d/r, eik, full basement, f/p, walk to Stony Brook, asking $700. 751-2835 after 6 p.m.

WESTHAMPTON BEACH - summer house, pool, Har-Tru court, dock, interesting, bright, friendly professional group w/diversified talents and careers, $750 half share $950 private room. 653-5372.

SHOREHAM - studio apartment, w/private ent., w/refrig. & oven, $300 includes all util. 744-6648 after 6 p.m.

SHOREHAM - 1 rm. apartment, new kitchen, lovely area. 744-3375 after 5 p.m.

MANORVILLE - Pine Hills, 1 bdrm, chalet, avail. immed., extras incl. f/p, dishwaster + prime location, 10 mins. to Lab, $390/mo. incl. heat golf, tennis, pool. 654-3041.

Lost & Found

LOST - grey running shoes, gym, 3/28. Kurt, Ext. 4116.

Car Pools

STONY BROOK/STRATHMORE - established carpool needs 4th rider/driver. Morris, Ext. 4192.

COMMACK - looking for 4th member to join carpool. Don, Ext. 2043.

HUNTINGTON STATION - 3 person carpool looking for 4th driver to start 4/11/83. Meyer, Ext. 3036.

Wanted

MAN TO MOW LAWN - Shirley area. Ext. 2050.

FILE CABINET - 2, 3 or 4 drawer, good cond., reasonable. Ext. 4656.

FILE CABINET - 3' high, 2 drawers. Charlie, Ext. 2021 or 878-8901.

HOUSE TO RENT - Bayport/Blue Point area only, 2-3 bdrms. Carol, Ext. 3341 or 567-6433 after 6 p.m.

INFANTS OUTDOOR SWING - car bed; pressure gates; 3' picket fencing; covered sandbox. Ken, Ext. 4421 or 744-0722.

HOUSE TO RENT - couple building house, need unfurnished or furnished house for about 6 months, beginning mid June. Ext. 4788 or 472-1012.

MARINE CB ANTENNA - reasonably priced. 399-4122.

WOMAN'S BIKE - 286-2155 or 286-8788.

HOT WATER HEATER - electric. GR5-4199.

CAMPING & FISHING EQUIPMENT - used. 924-3281.

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

SAILBOAT - 14'-20', wood or glass; trailer, O.B. Ext. 5190.

HOUSEMATE - share 4 bdrm., 3 bathroom house, 20 min. to Lab., washer & dryer, sundeck, $164/mo. & 1/3 util. Ext. 2521 or 928-8379.

BABY CARRIAGE - + playpen, very clean & in good cond. 928-1831.

HOUSEMATE - single working female to share house in South Bayport, $275/mo. pays all. 289-7228 after 5 p.m.

MOTOR - 1/4 or 1/3 HP, 3600 RPM. George Hrabak, Ext. 3536.

JEWELRY BUFFER - to polish jewelry, also Ultra-Sonic cleaner, any cond. George Hrabak, Ext. 3536.

APARTMENT - need 1 bdrm. apt., area of Holtsville, Holbrook, Farmingville, Port Jefferson, Coram or Medford. Chuck, Ext. 4095.

FLOOR WAXER MACHINE - scrubber with 2 sets of brushes, reasonable cost. 924-5192 eves.

Services

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

TAXES - prepared by tax consultant, your home or mine, reasonable. John, Ext. 3571 or 732-2472.

PROFESSIONAL INCOME TAX SERVICE - by experienced preparer, IRS enrolled, by appointment. Jack, Ext. 7942 or 864-2236.

CHILD CARE - in my home in Bellport, experienced mother, part/full-time. 286-2435.

MATURE BABYSITTER - mother & helper will babysit in my home, reasonable price, Centereach. 981-4626 anytime.

WOMEN - exper. in social work, geriatrics, paid companion, shop, cook, clean, days, for senior citizen. 924-3281.

HOUSE CLEANING - and/or babysitting, hours flexible, experienced, refs. available, college student. 289-9580.

FUEL OIL - converted to natural gas heating, will buy your unused fuel oil. Don, Ext. 4167.

Ads left out of this issue due to lack of space need not be re-submitted to appear in next week's issue. Please note that ads may not be more than 15 words long and must be received in the Bulletin office by 4:30 p.m. Friday, for inclusion in the following week's Bulletin.

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