

New Chelating Agents Being Mobilized to Fight Cancer

This is the final article in a series discussing four grants awarded to BNL scientists in the Biology and Medical Departments by the U.S. Department of Energy (DOE), Office of Energy Research, under a special grant program for nuclear medicine.

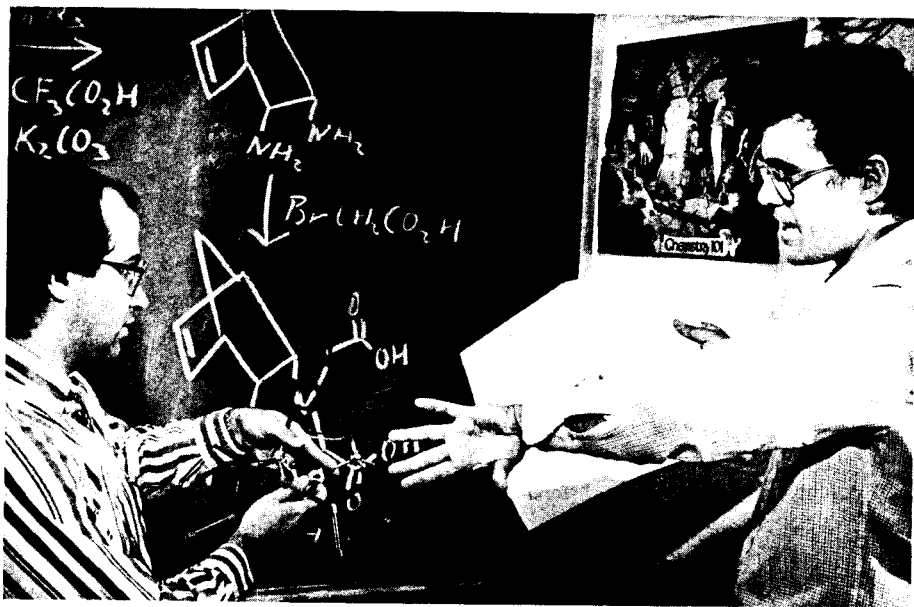
The list of biologically active chelating agents — organic compounds that can form more than one coordinate bond with metals in solution — is impressive. The list includes hemoglobin, chlorophyll, and vitamins B₆, B₁₂ and C.

During a chemical reaction called chelation, two or more groups of atoms within a molecule donate pairs of electrons to a metal ion, thereby forming a ring around the metal. Chelation is responsible for the action of many drugs, and chelating agents are now being used as a medical treatment to remove toxic metals from the body.

Chelating agents are also being used to combine radioactive metals with antitumor antibodies as diagnostic or therapeutic agents in the medical battle against cancer.

Administered intravenously, antibody-chelate-radiometal complexes locate tumors within the body. The radiation released by the radiometals within the complexes is used diagnostically to image or therapeutically to dose cancerous tumors.

To synthesize new chelating agents for this purpose, Associate Scientist Ron Mease, Medical Department, was awarded a three-year, special research grant in nuclear medicine from DOE. Mease is working with postdoctoral Research Associate Mark Sweet within Medical's Radionuclides and Radiopharmaceuticals Group.



Mark Sweet (left) and Ron Mease discuss synthetic strategies for making eight new chelating agents.

Mease's new chelating agents will be attached to antitumor antibodies and reacted with such radiometals as indium-111, lead-203, gallium-68, copper-67, copper-64, samarium-153, cobalt-55 and cobalt-57. These radioisotopes will be produced at the Brookhaven Linear Isotope Producer, BNL's High Flux Beam Reactor and elsewhere.

As Mease explains, the most common chelating agents currently used as diagnostic or therapeutic agents for cancer are two flexible molecules, known as EDTA and DTPA. These chelating agents form stable complexes with many metals outside the body.

Once injected as antibody-metal complexes into living beings, however, some of the metals dissociate from these complexes and bind with

competing proteins. As a result, radiometals accumulate and release their dose in noncancerous tissues, such as the liver and kidneys, and the imaging of the cancerous tissues is poor because of the low accumulation of radiometals in the tumor itself.

Thus, new chelating agents that form more stable complexes that survive within the body are needed — like the ones Mease and Sweet are synthesizing.

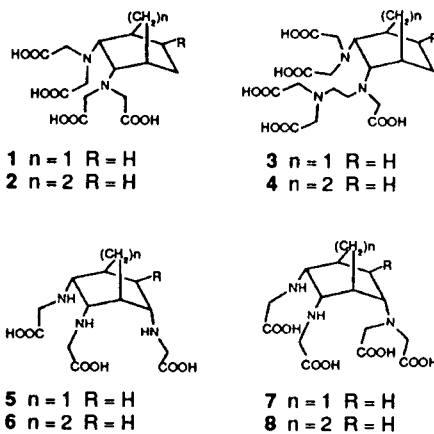
"What is new and improved is the metal-binding region of our chelating agents," says Mease. To date, compounds numbered 1 and 2 (see diagram) have been made by Sweet, following syntheses designed by Mease.

He explains, "Usually, flexible chelating agents like EDTA and DTPA

wrap around the metal when they complex and unwrap when the metal dissociates. On the other hand, our chelating agents are designed with a rigid carbon 'backbone,' which forces several metal binding sites to be oriented in favor of complexation."

In other words, the rigid carbon backbone forms a cavity in which the metal can bind. In addition, the bulk of the rigid backbone may inhibit the approach of proteins in the body that would compete for the metal.

So, by increasing the chelating agents' structural rigidity, Mease believes that the metal-chelate complexes will be more stable within the blood. This is because he expects that the rate of metal dissociation will be decreased. (continued on page 2)



The atomic structures of eight new chelating agents. Called bicyclic di- and triaminocarboxylates, they have an ethylenediamine portion of the compounds EDTA and DTPA replaced with the rigid carbon backbone of bicyclo [2.2.1] heptane or bicyclo [2.2.2] octane.

Lab Announces Changes To Military Duty Policy

The current Middle East Crisis began on August 2, when Iraq invaded Kuwait. Since then, U.S. troops have been sent to Saudi Arabia, and President George Bush has activated some armed forces reservists.

At BNL, approximately 50 employees are in the U.S. military reserves. According to Personnel Manager Robert D'Angio, while some of them have been placed on alert, none has been called up yet.

As BNL Director Nicholas Samios explained this week in a memo to all employees, "The call-ups have been for a period of 90 days, with a possible extension of another 90 days. In order to assist any BNL employees placed on active duty in the current situation, the Laboratory has made several changes to its policy concerning military duty."

The changes are:

Topic	Present Lab Policy	Mid East Crisis Policy
Length of Absence	Employees called to active duty beyond the two-week annual reserve training, are terminated, with reinstatement guaranteed upon discharge.	Rather than being terminated, reservists would be placed on a leave of absence for three months with the possibility of extensions beyond that if the need arises.
Dependent Medical Coverage	When an employee is terminated, all benefits are suspended.	Employees on three-month leave would be able to continue medical coverage for dependents only.
Leave With Pay	None.	An employee would receive two weeks' leave with pay, not to exceed the difference between base pay and military pay for the first two weeks of the call-up, to be reimbursed when the employee rejoins the Lab.
Use of Vacation Pay	Employees may use vacation pay for only two days of each month of anticipated leave.	Employees going on the three-month leave can receive pay for all of their accumulated vacation days.

Any employee who is called up to active military service should notify his or her supervisor as soon as possible. Also, to assist BNL in planning for any future call-up of reservists, all employees with active reserve status in any branch of the military should complete the form distributed with this week's memo and return it to Virginia Brown, Personnel, Bldg. 185, before September 24. For a form or more information, call Brown, Ext. 2874.

BWIS Seminar Computing & Competitiveness

Many scientific projects — including global change studies, the Human Genome Project, and future high-energy physics experiments at the national Superconducting Super Collider — will involve billions of calculations. To do all this number crunching in a reasonable time, higher performance is being demanded from computers.

In the early 1960s, the definition of high performance computing was one million calculations per second. Today, that definition is one billion calculations per second. The ability to handle more data in less time has been accomplished by instituting new computing strategies — including vector processing, parallel computing and reduced instruction-set computing, to name a few.

In devising faster and faster computing strategies, is high-performance computing following or leading science and industry?

This is one question that Louise Nielsen, Director of High Performance Computing Solutions Development for IBM's applications-solutions business line, will answer in her talk "High Performance Computing and U.S. Technological Competitiveness."

Sponsored by Brookhaven Women in Science (BWIS), Nielsen's talk will take place on Thursday, September 27, at 4 p.m., in the second floor conference room of the Computing & Communications Division, Bldg. 515. Coffee and cookies will precede the talk at 3:30 p.m., and all are invited.



Louise Nielsen

In addressing the role that high-performance computing plays in laboratories and business today, Nielsen will discuss how new computing technology is changing the way in which problems are solved. As she will explain, this, in turn, has not only increased scientific and industrial productivity, but will also create educational opportunities in other fields.

Nielsen will conclude by outlining how the progression in computerized problem-solving approaches has had an impact on U.S. technological competitiveness in the world market.

Louise Nielsen received a B.S. in mathematics from Adelphi University. (continued on page 2)

BNL's Recycling Program Needs You!

This is a story about the comprehensive recycling program that BNL is going to initiate soon, and it would have been nice to start it off with a catchy slogan or to accompany it with an appealing logo. But there isn't one . . . yet.

But you can help. Send your idea for a slogan, catchword and/or logo for this important new program to Nelson Tyler, Bldg. 452, by October 8. You could win a gift certificate to the BERA store, but even more important, you could provide the symbol that everyone will associate with BNL's recycling program.

The program you'll be trying to capture symbolically is being coordinated by Tyler in the Plant Engineering Division. "It's driven by both environmental and economic concerns," he says. "Recycling will help us conserve natural resources and stay abreast of state and local regulations, reduce disposal cost, further express BNL's concern for the environment and possibly earn revenue."

Some of these results have already been demonstrated by the National Synchrotron Light Source Department, where a pilot recycling program began in June. "They've done a great job, really gotten their people together, and we've learned from their efforts," says Tyler.

The much larger Labwide recycling effort is planned to begin in November by collecting recyclable office paper. As the Lab completes negotiations with appropriate contractors, the program will be expanded to include such materials as cardboard, glass, plastic and wood.

Recyclable office papers include computer paper, bond paper, envelopes, memos and pamphlets, but not books, magazines and newspapers.

Once the program starts, instead of



Standing by bins filled with recyclable paper collected at the National Synchrotron Light Source (NSLS) are some of those involved with recycling efforts at BNL: (from left) William O'Brien, Michael Kelly and Johnny Kirkland, NSLS; Nelson Tyler, Plant Engineering Division (PE) who is coordinating the new Labwide program; Michael Guacci, Supply & Materiel Division, Roy McWilliams, PE, and Oscar Blevins, PE.

— Photos on these pages by Stoutenburgh.

discarding these papers in a wastebasket, you'll simply place them in the special container that you'll be provided with for your immediate work area. When your container is full, you'll dump it in a 20-gallon container provided for your office or group. The building custodian will empty that container into a special hamper provided by the contractor.

In essence, then, everyone will still be moving the same amount of paper — just to different places.

Tyler is optimistic about how BNLers will respond. "I have gone

through buildings and talked to people to evaluate the volume and types of paper that they are generating," he says. "I received numerous positive comments from employees in support of the proposed recycling program, so we feel we are going to get 100% cooperation."

But some catchy reminder — a cute cartoon, a snappy slogan — would surely help. To recycle an old phrase or two: Put on your thinking cap — BNL's recycling program needs your ideas!

— Anita Cohen

BWIS Elections

The regular Brookhaven Women in Science (BWIS) meeting for September will be held on Tuesday, September 25, at noon in Room A, Berkner Hall. There will be no speaker; this will be a bring-your-own lunch business meeting to summarize activities for the year and to present the slate and elect new officers. The slate selected by the nominating committee is as follows:

Office	Nominee
Coordinators:	Susan Eng*, CCD; Harriet Martin, TID
Secretary:	Margaret Foster, Med.
Treasurer:	Pamela Mansfield, CCD
Membership:	Betty McBreen, Phys.
Newsletter:	Ronnie Evans, CCD
Publicity:	Susan Hobbie*, DNE
Scholarship:	Ruth Kempf*, DNE; Sharon Smith, DAS
Seminar-Lecture:	Jane Setlow*, Bio.; Eva Bozoki, NSLS
Program:	Dorry Tooker, DO
One Mind:	Victoria McLane, DNE

*continuing

BWIS Seminar (cont'd)

sity, M.S. in computer science from Pennsylvania State University, and Ph.D. in computer and information science from Syracuse University.

Having joined IBM in 1973, Nielsen was named to the directorship in May 1989. In this position, she and her staff work with IBM customers to solve their high-performance computing problems with existing IBM products or specially developed enhancements.

In prior management capacities, Nielsen has worked on engineering computation, design automation, software engineering, intelligent workstations, systems education, and developing IBM's VM/XA, MVS and SAA software platforms.

Those who would like to lunch with the speaker before the lecture, at noon in Room A, Berkner Hall, may make reservations at \$11 per person by calling Edie Thornhill, Ext. 3336.

Reports Available

The following reports are available to Laboratory staff and affiliates of DOE, AUI and NRC. Others may purchase the reports from the National Technical Information Service, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161. Staff members should call the designated contact.

- NUREG/CR-5472
BNL-NUREG-52220
Contact: J. Danko, Ext. 7125
A Risk-Based Review of Instrument Air Systems at Nuclear Power Plants. Prepared by: G. DeMoss, E. Lofgren, B. Rothleder, M. Villaran, C. Ruger.
- NUREG/CR-5527
BNL-NUREG-52228
Contact: K. Nasta, Ext. 2267
Risk Sensitivity to Human Error in the LaSalle PRA. Prepared by: S. Wong, J. Higgins, J. O'Hara, D. Crouch, W. Lucas
- BNL-52229
Contact: N. Sautkulis, Ext. 4304
Report of the Workshop on the Proposed Pulse Radiolysis Facility at Brookhaven National Laboratory Organized by: C. Creutz, H.A. Schwarz, J.F. Wishart
- BNL-52230
Contact: D. Tooker, Ext. 2103
Report of the Fifth Workshop on Synchrotron X-Ray Lithography. G.P. Williams, J.B. Godel, G.S. Brown, W. Liebmann
- BNL-52205 Addendum
Contact: P. Powers, Ext. 4828
Safety Analysis Report, February 1990
N.F. Gmur, W. Tholinson
- NUREG/CR-5474
BNL-NUREG-52221
Contact: S. Flippen, Ext. 2507
March 1990 Assessment of Candidate Accident Management Strategies. Prepared by: W.J. Lucas, J.J. Vandenkiesboom, J.R. Lehner

Chelating Agents (cont'd)

If so, then the distribution in the body of the antibody-chelate-radiometal complex should be determined only by the specificity of the antibody. This is what Mease has found using a semi-rigid EDTA chelate known as cyclohexyl EDTA (CDTA): Antibody-CDTA-radiometal complexes are more stable in blood serum and have higher tumor uptake in mice than complexes using the flexible chelating agents EDTA and DTPA.

"There is a drawback," admits Mease. "By using a more rigid chelate, its metal-complexation rate is decreased because the metal must approach the chelating agent at the correct angle. We may have to take this into consideration with short-lived radioisotopes."

Once all eight chelating agents are synthesized, their ability to chelate with various radiometals in solution will be measured. Then, experiments will determine the stability of the chelate-radiometal complexes in blood serum alone and in serum containing other compounds that compete to bind with the metal.

Those chelating agents that pass these tests will be modified so they can combine with antibodies. The antibody-chelate compounds will then be labeled with radiometals.

After the stability of the antibody-chelate-radiometal complexes is determined, their immunoreactivity will be demonstrated in cell culture. Finally, how well these complexes are taken up by human tumors implanted in mice will be evaluated.

"We hope to end up with at least one all-around chelating agent that can be attached to whatever antibody and radiometal are needed for diagnosis or therapy," concludes Mease. — Marsha Belford

Scoop of the Week



Summer officially ends at 2:55 a.m. on Sunday, September 23 — when the autumnal equinox marks the start of fall. Precisely at that time, the Bulletin's third annual Scoop of the Week contest ends as well.

Since summer was only so long, and the Bulletin and its staff only so big, we will be following up on remaining summer scoops through the fall.

So as not to shortchange the tipsters whose good ideas for news and features have yet to metamorphose into published Bulletin stories but may, in good time, we hereby award scoops to: Ollie Booker, Plant Engineering Division; Jerry Hudis, Associated Universities Inc.; Kumi Pandya, National Synchrotron Light Source Department; Richard Savoy, Central Shops Division; and Nicholas Upenieks, retiree.

Arrivals & Departures

Arrivals

- Richard A. Conte.....Accel.Dev.
- Brian J. McClafferty.....Plant Eng.
- Renée M. Moadel.....Chemistry
- Wendy Mosca.....Saf.& Env.Prot.

Departures

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

- Juan L. Alvarez.....Sup.& Materiel
- Hsing C. Cheng.....App. Science
- Ronald F. Lankshear.....Nuc. Energy
- Shyh-Yuan Lee.....Accel.Dev.
- Lawrence Witt.....Sfgrds.& Sec.
- Xun Zhang.....Chemistry

Note to Employees:

Attendance at lectures, meetings and other special programs held during normal working hours is subject to supervisory concurrence.

Clean and Reap

If you're looking for something to do outdoors on Sunday, September 23, here are two possibilities:

• **Beach Cleanup at Smith Point** — As part of National Beach Cleanup Day, an event will take place at Smith Point County Park. Organized by the state Department of Environmental Conservation and cosponsored by the Marine Science Research Center at the State University of New York at Stony Brook, it will involve removing debris from the beach and recycling as much as possible.

Volunteers will assemble at Smith Point at 10 a.m. and collect trash for about two hours. Gloves, garbage bags, pencils, and hats or T-shirts will be provided for each volunteer.

For more information, contact Doreen Monteleone, 632-8700.

• **Long Island Fall Harvest Festival** — The eighth annual such event will run from 11 a.m. to 5 p.m. at the eastern campus of Suffolk Community College in Riverhead. It's sponsored by Cornell Cooperative Extension of Suffolk County, the Long Island Farm Bureau and Suffolk Community College.

At the festival, you'll find live music, dancing, local foods, horse demonstrations, a farmers' market, master gardeners, a wine tent, samples of Long Island's marine harvest, honeybee demonstrations, hayrides and more.

For more information, call 727-7850.

Hang on to Your Hard Hats



For safety's sake, new hard hats have been issued within the Plant Engineering Division — and now the occupation of a hard-hat wearer can be identified by the color of the wearer's protective headgear. Not only do the new hard hats have eight-point suspension to protect against shock and have a ratchet fit to hold them on their wearers' head, but they also come in 16 colors. The Plant Engineering logo can be seen on the side of each hard hat, and the front is labeled with the wearer's craft — if the color isn't enough of a giveaway. Modeling the new protective headgear are: (top, from left) Thomas Boucher, water & sewage operating engineer, blue hard hat; John Mollica, painter, dark yellow; Steve Eckhoff, sheet metal worker, light green; Michael Curtis, heavy-equipment mechanic-operator, light blue; Keith Detmer, grounds worker, dark tan; Martin Klein, steamfitter, light gray; (bottom, from left) Frank Ferraro, plumber, green; John Biemer, stationary engineer, gray; Patricia Bender, quality assurance & training engineer, purple; Joseph Mead, cabinetmaker, terra cotta; David Johnstone, electrician, high-voltage orange; utility worker Joseph Lopez wears the riggers' red hardhat; Kenneth Crowe, refrigeration and A/C engineer, dark orange; and electrician Frank Trapani wears the carpenters' dark brown hard hat. PE management and supervisors can be seen in the field with white hard hats on; and Bender holds a yellow hat for visitors.

IBEW Meeting

Local 2230 IBEW will hold its regular monthly meeting on Monday, September 24, at 6 p.m., in the Knights of Columbus Hall, Railroad Avenue, Patchogue. On the agenda will be regular business, committee reports and the president's report.

Nursery School

The Upton Nursery School is now open for the school year and greatly in need of any used toys, tricycles, or games suitable for three- and four-year-olds. If you are interested in registering your child, visiting the school or donating any toys, please contact Cal Roberts, 874-2992, or Cathy Lombardo, 924-2205.

Amateur Radio Club

The BERA Amateur Radio Club will meet in Berkner Hall, Room D, on Thursday, September 27, at noon. The agenda includes a discussion of current club business and upcoming activities for the fall. All licensed radio amateurs employed at the Lab, those wishing to obtain amateur radio licenses, and Lab guests are invited to attend. For more information, contact Andy Feldman, Ext. 3264, or Bob Bacharach, Ext. 7790.

Sign up for Stretch Or Aerobic Dance

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

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

Classes in aerobic dance are held on Tuesdays and Thursdays, while stretch classes are held on Mondays. All classes run from 5:15 to 6:15 p.m. Participants may take any or all of these classes. Mats are recommended for floor exercises. The fee for each ten-week session (M, T or Th) is \$30, payable before the first classes.

- **Stretch** — Monday, September 24, at Physics, Bldg.510.
- **Aerobic Dance** — Tuesday, September 25, and Thursday, September 27, at the Recreation Building in the apartment area.

For more information, call Pat Campbell, Ext. 3483, or Janet Sillas, Ext. 2345.

Softball 1990

- Playoff Results
- **League I:** Blue Jays outflow Ravens.
 - **League II:** Scrambled Legs ran over CCD.
 - **League III:** Cocoon wrapped up Medical.
 - **League IV:** Brewers bit the Snakebites.
 - **League V:** Cosmic Debris dusted What's on 2nd.

Final Standings			
League I		League II	
Ravens	11-3	Scrambled Legs	11-3
Blue Jays	10-4	CCD	11-3
Cool 'n Gang	10-4	Dirty Sox	10-4
Phoubars	8-6	Setback	10-4
Magnuts	6-8	Lights Out	6-8
Light Source	4-10	Titans	5-9
Cutting Edge	4-10	Scram	2-12
Six Pax	2-12	Bombers	1-13
League III		League IV	
Cocoon	13-0	Snakebites	12-1
Phase Out	9-5	Brewers	9-4
Medical	7-6	Simply Awesome	9-5
Quantum	3-9	Fielder's Choice	7-7
SureFire	0-13	Survivors	4-9
		Kids R Us	4-10
		Source	1-12
League V			
What's on 2nd	12-1	Underalls	5-9
Cosmic Debris	10-4	Mudville	
Turkeys	10-4	Sluggers	3-10
Sandboxers	8-6	Foul Ups	8-13

Badminton News

Each year from September until April, the Badminton Club runs a ladder tournament for both singles and doubles. Last year's doubles winners were Y.Y. Chu, Chemistry, first, and Jack Detweiler, Reactor, second. Om Singh, National Synchrotron Light Source, was on top of the singles ladder and See Meng Wong, Nuclear Energy, was second. This year's official season begins Monday, September 24. Sign-up sheets for reserving courts at 11 a.m., noon and 1 p.m. are found on the Badminton bulletin board in the gym. Newcomers are welcome, but please register with Bill Love, Physics, Bldg. 510, Ext. 3996, to receive a copy of the official tournament rules.

On the Menu

At the Cafeteria	
Luncheon served 11:15 a.m. to 1:30 p.m., grill open to 3:45 p.m., Cafeteria closes 4 p.m.	
Monday, September 24	
Soup: Cream of tomato	.75/.95
Entree: Grilled beef liver smothered w/onions & 1 veg.	3.10
Entree: Stuffed shells w/1 veg.	3.10
Fitness: Oven-broiled fish w/1 veg.	3.10
Carvery: Hot pastrami sandwich	2.85
Grill: Fried fish sandwich	2.85
SPICE: Top a salad w/dressings of France	
Tuesday, September 25	
Soup: Navy bean	.75/.95
Entree: Pork fried rice w/1 veg.	3.10
Entree: Potatoes au gratin w/1 veg.	3.10
Fitness: Chicken Parmesan w/1 veg.	3.10
Carvery: Hot roast beef sandwich	2.85
Grill: Turkey melt	2.65
SPICE: Muffin mania	
Wednesday, September 26	
Soup: Chicken gumbo	.75/.95
Entree: Ham rolls w/broccoli & cheese sauce	3.10
Entree: Quiche du jour w/1 veg.	3.10
Fitness: Baked ziti w/1 veg.	3.10
Carvery: Hot Black Forest ham	2.85
Grill: Cajun chicken on roll	2.85
SPICE: Real men & women do eat quiche	
Thursday, September 27	
Soup: Vegetable	.75/.95
Entree: Kielbasa & sauerkraut w/1 veg.	3.10
Entree: Chef's choice w/1 veg.	3.10
Fitness: London broil w/mushroom gravy & 1 veg.	3.10
Carvery: Hot corned beef sandwich	2.85
Grill: Pastrami melt	2.85
SPICE: Parisian holiday	
Friday, September 28	
Soup: Clam chowder	.75/.95
Entree: Fried catch of the day w/1 veg.	3.10
Entree: Nacho grande w/1 veg.	3.10
Fitness: Chicken Marsala w/1 veg.	3.10
Carvery: Hot turkey sandwich	2.85
Grill: Fried clams on a bun	2.85
SPICE: Calorie countdown	
Breakfast w/coffee, 7:30 - 10:30 a.m.	
2.65	
Mon.: 2 eggs, bacon & pancakes	
Tue.: Western omelet, French fries, toast	
Wed.: Spanish omelet, home fries, toast	
Thu.: 2 eggs, bacon, cheese on croissant, fries	
Fri.: French toast, 2 eggs, bacon, home fries	

Hospitality News

Marion Davis-Parzen will conduct a Women's Support Group meeting every third Tuesday of the month in the Recreation Building in the apartment area, from 10 a.m. to noon in the lounge. Sponsored by the BNL Hospitality Committee, this group will meet informally to discuss topics of interest to many women, especially those living on site.

Bowling

- Red/Green League**
R. Sick had a 225, J. Muller 224/200, N. Combatti 221/210/617 scratch series, H. Arnesen 219/205, R. Jansson 213, A. Warkentien 208, M. Verderosa 203.
- White League**
Caryl MacDougall had a 214/197, Ed Beadle 210, Paul Callegari 203, Joe Mayeski 200.
- Purple League**
Joe Ferrante had a 225, Ron Picinich 204, Pat Manzella 203, Fern Simes 186.

ACMC Cruise News

The BERA Antique & Classic Motoring Club (ACMC) will hold its fall cruise to Shelter Island on Sunday, September 30. Departure from the Brookhaven Center will be at 10:15 a.m. sharp. This cruise is open to all BERA members and guests. All cars welcome. For details call Ken Asselta, Ext. 5110, or Ken Sutter, Ext. 4514.

Crafty BNLeers — Here's Your Chance!

Get fired up with enthusiasm to contribute your work to the 5th BERA Craft Show, which will be sponsored by the BERA Art Society at Berkner Hall from November 6 to 9. Suggested crafts include quilting, original needlework, stained glass, metalsmithing, jewelry, pottery, inlaid wood or tiles, crochet, macramé and weaving. Employees, their family members 15 years and older, retirees and guests of BNL are all eligible to exhibit. More than one piece may be entered by an exhibitor, to be shown as space permits. So that a catalog can be made available, please complete two forms for each work that you will enter and return them no later than October 29 to Jackie Mooney, Bldg. 510.

5th BERA Craft Show Entry

Name _____ Phone _____

Craft _____

Space needed _____

Vertical or horizontal; table or floor _____

BNL contact & phone _____

Return to Jackie Mooney, Bldg. 510, by Oct. 29.

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Classified Advertisements

Placement Notices

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

Each week, the Personnel Division lists new placement notices. The purpose of these listings is, first, to give employees an opportunity to request consideration for themselves through Personnel, and, second, for general recruiting under open recruitment. Because of the priority policy stated above, each listing does not necessarily represent an opportunity for all people.

Except when operational needs require otherwise, positions will be open for one week after publication.

For more information, 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.

SCIENTIFIC RECRUITMENT - Candidates may apply directly to the department representative named or through the Office of Scientific Personnel, Ext. 7818.

POSTDOCTORAL RESEARCH ASSOCIATE - Position available in the Radionuclides & Radiopharmaceuticals Group for recent Ph.D. in radiopharmaceutical chemistry to prepare selected radiometals and optimize their attachment to monoclonal antibodies, as part of a project on radioimmunotherapy. Contact: Leonard Mausner, Medical Department.

POSTDOCTORAL RESEARCH ASSOCIATE - Position available in the Radionuclides & Radiopharmaceuticals Group for recent Ph.D. in organic chemistry. Responsibilities will include synthesis of chelating agents, both known and new; conjugation of these agents to monoclonal antibodies; and their subsequent radiolabeling. Contact: Leonard Mausner, Medical Department.

OPEN RECRUITMENT - Opportunities for Laboratory employees and outside applicants.

4329. ENGINEERING POSITION - Requires BS/MS in chemical or nuclear engineering, or equivalent, and minimum of ten years' experience in hazardous-waste management. Familiarity with appropriate environmental regulations is essential. A strong background in project management with a knowledge of the fundamentals of QA is required. Responsibilities include oversight for the Laboratory's waste minimization program and supervision of waste assessment and regulation activities. Safety & Environmental Protection Division.

Motor Vehicles & Supplies

89 JEEP WRANGLER - blue, hardtop, V-6, excel. cond., must sell, went away to college, \$11,000. 744-7280.

89 CAVALIER - 11k mi., p/s, ac, cruise, tilt, stereo cass., excel. cond., \$8,200 or take over payment. John, 563-9223.

88 PONTIAC LEMANS - 4-dr., ac, am/fm, 42k mi., 60k/6 yr. warranty, m/t, 35-40 mpg, \$5,600. Bernard, Ext. 2694 or 345-3579.

87 JAYCO MOTOR HOME - 25', 17k mi., ac, generator, cruise, rear bath, like new, best offer, must sell. Lois, Ext. 4904 or Bob, 929-4753.

87 MAXIMA - ac, sunroof, low mi., \$10,250. Ext. 2475 or 751-4539.

87 DODGE OMNI - black, a/t, p/s, 69k mi., excel. cond. 472-4228.

86 DODGE VISTA - 7-pass. wagon, ac, a/t, p/s, p/b, am/fm cass., new tires & exhaust, silver, mint cond., \$5,500. Louie, Ext. 7609.

86 MITSUBISHI TREDIA-L - 4-dr., p/b, ac, am/fm cass., 52k mi., mint cond., \$5,700. Jim, Ext. 2183 or 689-8284.

86 CHRYSLER FIFTH AVENUE - silver, 68k mi., new tires, all power, ac, extras, electric sunroof, \$6,500. John, 878-4414.

86 TOYOTA MR2 - 73k mi., 5-spd., ac, power pkg., sports pkg. sunroof, Sony am/fm cass., alarm, tilt wheel, \$6,500. Diana, Ext. 3379.

85 BUICK REGAL GN - black, fully loaded, clean in/out, excel. cond., \$9,500 firm; Pontiac rim & tire, \$30. Tim, Ext. 3357.

85 CHRYSLER TURBO LASER - 5-spd., new turbo, front & rear brakes, excel. cond., \$2,500. Vito, Ext. 5385 or 243-2743.

85 HONDA CIVIC - 4-dr., 5-spd., 71k mi., \$3,800. German, Ext. 2365.

84 PONTIAC FIREBIRD - V-8, a/t, loaded, custom wheels, alarm, spoiler, Pioneer stereo, 63k mi., must see, \$6,300. Artie, Ext. 5215.

84 MERCURY GRAND MARQUIS - 8-cyl., 4-dr., full power, cruise, am/fm stereo cass. radio, adj. seats, \$4,300. Roy, Ext. 2384.

84 OLDS FIRENZA - 2-dr. h/b, m/t, ac, p/s, tilt wheel, good cond., asking \$550. Tom, Ext. 5275.

84 NISSAN STANZA - 4-dr. h/b, a/t, ac, p/s, p/b, am/fm, EFI, 76k mi., \$3,400. Ext. 4521.

83 280ZX - 2-dr. coupe, T-top, digital dash, ac, cruise, 5-spd., loaded, \$2,200 neg. Artie, 696-2398.

83 NISSAN SENTRA - 4-dr. h/b, 5-spd., ac, p/b, p/s, am/fm, 35 mpg, excel. in/out, high mi., \$800. Chris, Ext. 3723 or Ext. 3200 eves.

82 CHEVETTE - tan, treated w/TLC, great performer, dependable, clean in/out, \$1,500. 281-7844 eves.

82 DATSUN 280ZX - mint cond. in/out, orig. owner, \$5,200. Steve, Ext. 7936 or 243-1755 after 6 p.m.

82 SUBARU WAGON - 4wd, \$1,400. Ext. 7130 or 929-8323

82 DODGE ARIES WAGON - a/t, \$800. Ext. 2475 or 751-4539.

82 DODGE RAM CAMPER VAN - sleeps 4, refrig., heater, new tires, battery, 89k mi., excel. cond., come see. 924-6129.

81 MUSTANG - 2-dr., 6-cyl., p/s, p/b, new tires, clutch, brakes, 91k mi., \$900. 924-4290.

81 AMC CONCORD - 4-dr. s/w, recently tuned, new brakes, runs well, 75k mi., best offer. Linc or Dorry, 286-8689.

81 COROLLA - needs rear end, all else good, \$500. 924-3307.

81 BUICK CENTURY - 4-dr., good cond., \$1,500 firm. Joe, Ext. 4204.

80 CHEVY CHEVETTE - 4-spd., h/b, am/fm, roof rack, high mi., black/red int., runs well, clean, body excel. cond., \$300 neg. Fat, Ext. 2023.

80 CHEVY MALIBU - 4-dr., p/s, p/b, a/t, small V-8 267, blue, gauges all factory, orig. owner, garaged, like new. Al, Ext. 3992 or 331-1003 eves.

80 FORD F250 4x4 PICKUP - 33" tires, eng. runs well, 3" lift kit, new brakes & trans., cap, tool box, 4 extra tires. Ext 2705.

80 DATSUN 210 - 5-spd., 96k mi., runs well, \$250. Chen, Ext. 5232.

79 FORD FIESTA - runs, \$100 or best offer, must sell by 9/28. Maryanne, Ext. 5849 or 2420.

79 OLDS TORONADO - p/b, p/s, p/w, am/fm, tape, ac. 758-6251.

79 OLDS - s/w, 8-cyl., p/s, p/b, ac, new a/t, am/fm, body good, 112k mi., well maintained, \$800. Tony, Ext. 5508.

79 PONTIAC BONNEVILLE - 64k mi., 4-dr., full power, runs well, \$600. Sue, Ext. 7235 or Al, 286-3847 after 5 p.m.

79 CHEVY TRUCK - 6' bed, p/s, p/b, 350, a/t, 2wd, Dave, Ext. 3499.

78 MERCEDES BENZ - '86 engine, a/t, p/s, am/fm radio, etc., excel. in, some rust out, very reliable, asking \$2,000. Joe, Ext. 5477.

78 FORD PINTO - 108k mi., m/t, am/fm cass., new brakes, clutch, exhaust, runs well, needs a thermostat, make offer. Ext. 4940 or 929-3464.

78 FORD VAN - fair cond., good tires, \$500. 878-1178.

77 PLYMOUTH VOLARE WAGON - a/t, p/s, 150k mi., \$200. Hans, Ext. 2624.

77 OLDS 98 - full power, stereo, excel. cond., must sell this wkend., leaving country, \$1,000 or best offer. Ext. 2625 or 467-8297.

75 GRANADA - 6-cyl., runs well, \$525 neg. Jack, Ext. 7869.

73 SUBURBAN 4x4 - 4" lift, 33" tires, mech. excel., \$1,500. Manny, Ext. 5439 or 422-5961 eves.

73 VW KARMANN GHIA - restored, 90% complete, absolutely no rust, mech. sound, \$1,750. Ali, 286-8563 or 286-3917.

73 VOLVO P1800ES SPORT WAGON - a/t, ac, leather, 4-cyl., fuel inj., classic, 68k mi.; '68 Volvo 112S wagon, 4-cyl., 4-spd. Bruce, 475-6070.

73 MERCEDES BENZ - Ext. 3563.

72 CORVETTE - convertible, restoration project needs completion, many new parts, \$3,900, car in Deer Park. George, Ext. 4769 or 242-9301.

72 BMW BAVARIA 3.0 - new starter & front brakes, good cond., \$1,500 or best offer. Ext. 4597 or 924-8213 after 5 p.m.

FORD PICKUP BED - short step-side, reconditioned, new wood & metal parts, fits '83 & earlier, \$250. Joe, Ext. 4786 or 281-7683.

Boats & Marine Supplies

22' CATALINA SAILBOAT - 3 sails, motor, trailer, asking \$3,999. Steele, Ext. 3496 or 929-8912 eves.

21' BAYLINER TROPHY - 1988, 125-h.p. ob., radios, canvas, instruments, trailer, fast, great fishing boat, \$10,900. Ext. 2015 or 929-5911.

20' MARATHON - 1987, 130-h.p. Mercruiser i/o, VHF, F/F, 2 anchors, c/g package, much more, must sell. Artie, 696-2398.

20' FIBRE - i/o, Volvo Penta Ford, not in boat, \$600. Ken, 395-6235.

18' THUNDERBIRD TRI-HULL - 4-cyl. Merc. i/o, rebuilt motor not in boat, on new Cox trailer, \$1,500. Manny, Ext. 5439.

17' CHRIS CRAFT - Gator tilt trailer, 60-h.p. Evin., CB radio, elec. winch, v.g. cond., \$2,200. Bill, Ext. 3859.

YAMAHA WAVERUNNER - 1988, w/trailer & access., \$3,500. George, Ext. 4769 or 242-9301.

Furnishings & Appliances

BEDROOM SET - triple dresser, mirror, 2 night tables, moving, make offer. 924-5913.

BOOK SHELVES - wood, \$20; wood table floor lamp, \$50; home entertainment center w/1 hinged door, \$60. Anne, 345-3579.

BUREAU - rock-maple, heavy, \$35; maple vanity or desk, \$15; wood highchair, \$15; bottle capper, \$10; 16 qt. pressure cooker, \$15. 878-6637.

DINETTE SET - wrought iron, 6 chairs, extension leaf, asking \$90; chairs, end table, lamp, child's dresser, table. 744-7338.

DINING ROOM SET - contemp., 6 chairs, \$300; 2-piece china closet, \$350; coffee table & 2 end tables, \$85; 3-piece wall unit, \$125. 589-3072.

DINING ROOM SET - dark pine, 42" table w/2 leaves, 4 captain's chairs, reasonable. 744-2214.

DINING ROOM SET - dark pine, large unique hutch, corner hutch, oval table w/2 leaves, 6 ladderback chairs, \$900. 878-4265.

DISHWASHER - port., wood top, \$100; kerosene heater, \$50; wood-grain dinette table, 4 Bruer chairs, \$150; a/c, window unit, \$150. Ext. 3354.

MINI DUSTBUSTER - Black & Decker, \$10; Conair pro-style hair dryer, \$10; automatic can opener & knife sharpener, \$8. Anne, 345-3579.

REFRIGERATOR - port., 2 yr. old, \$45; electric lawn mower, 3 yr. old, asking \$45. 724-7758.

TABLES - 3-piece set, cocktail & 2 end, wood, contemporary, excel. cond., \$125/all. Margaret, 588-7989 eves.

TWIN BED - 2 pieces w/frame, 1 yr. old, \$28. Joe, Ext. 5477.

VACUUM - also portable humidifier, iron, set of 4 folding chairs, cheap, make offer by 9/28, must sell. Maryanne, Ext. 5849 or 2420.

Tools, House & Garden

CESSPOOL BLOCKS - 75, new, 30" concrete cover, \$60. Bill, 473-3938.

FIREWOOD - full truckload, seasoned hardwood, \$150; phone, new, \$10; brass porthole mirror, \$35; shoe rack, \$5. Tim, 744-2203.

LAWN MOWER - Yardmaster, 20", \$65; Wheel-horse lawn tractor, model #1057, 36" deck, elec. starter, \$1,500. Dan, Ext. 4987 or 698-7322.

LAWN TRACTOR - Sears LT/8, headlights, Die Hard battery, 3-spd. manual, 36" cut, double blade, good cond., asking \$375. Ed, Ext. 7649.

TOPSOIL - delivered, 3 yard minimum, fine screened. 696-6011, leave message.

WHITE PINES - nursery grown, 1-4', you dig, \$2/foot; 1 dig, \$3/foot. John, 744-5867.

Sports, Hobbies & Pets

EXERCISE BICYCLE - w/monitor, front wheel, stationary back, good cond., \$35. Ext. 7108.

BICYCLES - man's 10-spd., Nishiki, woman's 10-spd., v.g. cond., w/trap carriers. Betty, Ext. 7126.

CLARINET - wood, Signet, excel. tone, w/case, \$250. Jim, Ext. 3372 or 821-0250.

CONSOLE PIANO - good cond., \$300. 665-4495.

GYM EQUIPMENT - treadmill, \$25; stationary bike, \$25; West-Bend complete workout, \$100. Ext. 7286 or 581-7656.

WEIGHT BENCH - 2-level bars, leg lift w/weights, orig. \$150, asking \$50. Joe, Ext. 4786 or 281-7683.

Audio, Video & Computer

CLOCK RADIO - am/fm cass., \$15. Anne, 345-3579.

COMPUTER - Apple IIGS, 1 meg ram, two 3½" drives, one 5¼, Image Writer printer, 2,400 baud modem, software, ask. \$1,650. Gary, Ext. 3560.

COMPUTER - Tandy 1000EX, PC compatible, dual disk drives, 640k, RS232C, color monitor, NLQ printer, joystick, \$700 neg. John, Ext. 7982.

COMPUTER - TRS color, 64k, monitor, floppy drive, printer port, games, spread sheet, word processor, \$50. Bruce, Ext. 4332 or 286-2114.

DESCRAMBLER - descrambles copy protected video tapes, \$70; image enhancer, restores detail & quality of video tapes, \$30. Hans, Ext. 4584.

ELECTRIC TYPEWRITER - IBM, new, \$50. 281-7844 eves.

ELECTRONIC TYPEWRITER - Brother, \$38. Joe, Ext. 5477.

POWER AMPS - Technics, #SE-A5MK2, 150 watt/channel, new, list \$1,200, asking \$750 or best offer. Al, Ext. 3992 or 331-1003 eves.

RECEIVER - SW, Drake R4B, 4 bands, digital frequency meter, v.g. cond., ideal for CW & SSB listening, \$190. Chris, Ext. 3723 or 3200 eves.

SCANNER - Macvision for Macintosh-Plus high resolution video camera, software hardly used, \$500/all. Ext. 7699.

SPEAKERS - Dahlquest 10A, excel. sound quality, \$500. Joe, 698-8623, leave message.

STEREO AMPLIFIER - Akai, 75W, Optonica turntable, Technics tuner, Award speakers, best offer by 9/28. Maryanne, Ext. 5849 or 2420.

STEREO AMPLIFIER - Hitachi HA7500, 60 watt, excel. cond., \$50. Tony, Ext. 5508.

STEREO - Marantz receiver, Infinite speakers, Teac tape deck, \$250. Vale, Ext. 3312.

TELEPHONE ANSWERING MACHINE - Panasonic, dual cassette, no remote, \$45. Albert, 727-6481.

Miscellaneous

HAIR REMOVAL SYSTEM - Epilady, for women, \$10. Pete, Ext. 4550 or 399-2813 after 5 p.m.

ENGAGEMENT RING - ½-carat solitaire, 14k yellow gold, appraised at \$1,175, asking \$800. Frank, Ext. 5120.

TICKETS - New York Jets vs. Chargers, 4 seats, Oct. 14, good location, \$22.50/ticket. Mike, Ext. 7909 or 325-0447.

Free

BUNNIES - adorable & cute, one brown, one black & white, good pets. Frank, 878-4350.

CAGES - 2, w/3 adult rabbits in each. 924-4290.

CLASSIC DUMB TERMINAL - ADM3A, pick up at BNL. Scott, Ext. 7110.

WOOD SIDING - removed from home, pine, suitable for burning, you pick up. Bernie, Ext. 4842.

Lost & Found

LOST - key ring, 5-6 keys, silver hawk's head, softball field, Sat., 9/8. Ext. 3569.

LOST - softball bat, Model #TPS3430, blue-silver, Field #2 during tournament. Mike, Ext. 3499.

Real Estate

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

For Rent

BELLPORT VILLAGE SOUTH - 3 bdrm. house, 2 baths, furn., nonsmoker, no pets, near bay, Sept.-June occupancy, \$900/mo. + util. 286-0466 or 286-9389.

BROOKHAVEN HAMLET - top floor apt., 1/r, bdrm., eik, full bath, priv. ent., walk to water, new appl., next to wildlife refuge, \$650/mo. incl. util. Linc or Dorry, 286-8689.

CALVERTON - 2-bdrm. townhouse, 1½ baths, w/w, patio, deck, appliances. Henry, Ext. 3563.

CENTER MORICHES - 2-bdrm. apt., w/w, new appl., large rooms, \$650/mo. + util. George, 878-1178.

CENTER MORICHES - 2-bdrm. apt., newly decorated, priv. ent., large 1/r, 15 min. to Lab, cable, separate heat zone, \$700/mo. incl. all. George, Ext. 5288 or 878-8177.

CORAM - single or couple, 7-room ranch, 15 min. to Lab. \$600/mo. + util. 928-7154 after 7 p.m.

CORAM - large 1-bdrm. apt. in desired complex, tennis, pool, clubhouse, a/c, \$700/mo. incl. heat & water. Joe, 698-8623, call late or leave message.

HOLBROOK - 3-bdrm. house, den, eik, d/w, refrig., 1½ baths, laun. rm., sunroom, Beckett burner, new win., attic fan, ½ bsmt., \$950/mo. + util., 1 mo. sec. Margaret, 588-7989 eves.

MATTITUCK - 2-bdrm. ranch, d/r, 1/r, bsmt., w/d, gar., Fla. room, \$850/mo. + util. & sec. Dave, Ext. 5460.

MATTITUCK - 1-bdrm. apt., quiet wooded area, near water, full bath, large 1/r & closets, kitchenette, priv. ent., nonsmoker, reasonable rent. 298-9560.

N. SHIRLEY - furn. apt., bdrm. & 1/r combo, eik, w/w, skylight, priv. ent., nonsmoker, no pets, excel. location, 1 yr. lease, \$500/mo. util. incl., sec. 281-8044.

RIDGE - furn. studio apt., w/w, kitchen, bath, priv. ent. & fenced-in yard, 5 min. from Lab., nonsmoker, \$490/mo. incl. all. 744-8632.

SHIRLEY - furn. room in new house, quiet, view of woods from sliding doors, priv. balcony, fan, carpeting, refs. \$100/wk. 399-1868.

SHIRLEY - 3-rm. apt., \$450/mo., responsible. 399-0969.

SPEONK/WESTHAMPTON BEACH - 2 bdrm., upstairs flat, skylights, cac, balcony, 20 min. to Lab, \$800/mo. or \$139,900. Rich, 588-0507.

STONY BROOK - 3-bdrm. ranch, 2 baths, fam. rm., 1/r, d/r, gar., 3-V Schools, 5 min. to SUNY & Smithhaven Mall. Feng, Ext. 2683.

STONY BROOK - 3-bdrm. Colonial, 2½ baths, 1/r, d/r, eik, new appl., 2½-car gar., convenient location. 751-8351.

For Sale

BAYPORT — 5-bdrm. multi-level, den, Fla. rm., 2 full baths, 1/r, laun. rm., att. gar., kit.-d/r combo, new hot/cold water pipes, OHWH. roof, fenced-in yard. 472-1205.

BROOKHAVEN HAMLET - 4-bdrm. Cape Cod, 2 baths, d/r, 1/r, eik, 2-car gar., 20' deck, patio, more, close to bay, ¾ acre, red. to \$219,000. Ext. 7108 or 286-0271 eves, or Carl, 214-708-2058.

CORAM - Strathmore East, 4-bdrm. ranch, 2 baths, cathedral 1/r, 2-car gar., gas heat, fenced corner lot, \$120,000. 928-7154 after 7 p.m.

EASTPORT-WESTHAMPTON - 3-bdrm. ranch, 2 baths, fam. rm., deck, 1½ car gar., quiet loc., ask. \$145,000. Artie, Ext. 4988 or 325-0743.

MASTIC BEACH - 3-bdrm. ranch, newly remodeled, 1/r, eik, appl., excel. location, \$89,900 sale, or \$800/mo. rent. 281-8044.