BROOKHAVEN BULLETIN
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BROOKHAVEN NATIONAL LABORATORY

Alex Reben

(Foreground) Arokiasamy Francis and LaTonya Kilpatrick discuss microbial lead oxide dissolution while (background) Helen Quinby and Cleveland Dodge review an organic composition analysis.

Metals, Mines and Microbes

When wastes from energy and weapons development and production are disposed in the ground, they don't just sit there. Microorganisms present in the soil change and move toxic metals, organic compounds and radionuclides present in the waste. Underground transport of these transformed substances can cause contamination of ground water, making it unusable and an environmental and health hazard.

To find out why and how toxic metals are removed from energy wastes, transformed into other chemical compounds, and dissolved in water or fixed in the soil, Soil Microbiologist Arokiasamy Francis, DAS, is studying the activity of underground microorganisms that grow without oxygen.

Francis works with Chemistry Associate Cleveland Dodge and Biology Associate Helen Quinby, and this spring, he is also being assisted by Semester Student LaTonya Kilpatrick of Hampton Institute. His work is funded by the Ecological Research Division of the Office of Health & Environmental Research, U.S. Department of Energy. Francis's research is part of the Subsurface Transport Program of DOE, which is examining the geochemical, biological and hydrological fate of energy wastes.

"We are looking at the role of anaerobic microorganisms in changing and moving toxic metals in the subsurface environment," says Francis. "Soil microorganisms are generally thought to be beneficial, as they are involved in cycling nutrients and degrading organic pollutants. However, they can also form pollutants by changing insoluble forms of toxic metals into soluble forms, which can enter the ground water.

"Anaerobic conditions are common in the subsurface," continues Francis, "and anaerobic microbes cause slow yet significant chemical change and subsurface movement of toxic metals, organic compounds and radionuclides. We want to know how these metals are being transformed and transported by anaerobic organisms, and ultimately taken up by humans."

To study anaerobic microbial activity, Francis is concurrently conducting laboratory and field research. For a field site, he is using a reclaimed coal strip mine in Buchannon, West Virginia. When the mine was closed, it was filled in with mining waste and covered with its original topsoil.

Francis found this to be an ideal site to study because the anaerobic conditions exist, waste buried at this site contains high levels of trace metals, and data on the water and geochemistry is available. "In this reclaimed strip-mine subsurface," says Francis, "we have found that anaerobic bacteria can dissolve toxic metals and are now looking at the basic mechanisms involved."

At the West Virginia site, which Francis, Dodge and Quinby have visited four times since September 1983, water samples from U.S. Bureau of Mines test wells and subsoil samples at five, nine and 15 feet have been collected under strict anaerobic conditions and analyzed for physical, chemical and microbial characteristics.

Back at Brookhaven, the water samples were analyzed and found to contain iron, manganese, zinc and chromium. The subsoil samples were incubated anaerobically in the presence and absence of carbon and nitrogen nutrients, which were added to accelerate microbial growth. After 30 days, Francis compared the concentrations of trace metals to those in a sterilized control. "We are comparing the chemical and physical processes which are occurring in the absence of anaerobic microbes to the reactions which are additionally caused by microbes," he explains.

"We have found a lot of soluble iron, manganese, zinc and chromium in the biotic samples," says Francis, "while in the abiotic control, we get very little of these metals." To find out what biochemical mechanisms are responsible, Francis is utilizing pure metals and a simulated subsurface environment in the laboratory.

"For our substrate, we are using coal mining wastes and those generated when coal is cleaned," he explains, "We want to know how much metal is solubilized under aerobic, as well as anaerobic conditions." In the presence of oxygen, Francis has found increases in arsenic, chromium, copper, lead, manganese, nickel and zinc. Chromium, iron and manganese and the oxides of lead, copper and manganese are made soluble by an anaerobic bacterium isolated from coal waste.

"Now, we are investigating whether an oxidation-reduction reaction or another biochemical process is involved in making these metals soluble," adds Francis, "and how environmental variables like pH, temperature and other conditions found in the field can affect the process."

Anaerobic bacteria decompose organic compounds needed for growth by a fermentation process. Francis is collaborating with Jean-Marc Bollag of Pennsylvania State University to look at anaerobic degradation of certain organic compounds in energy waste and its effect on metal transformation and transport.

Francis has found that some degradation products of fermentation, particularly organic acids, dissolve metal oxides, like lead, and form stable compounds. "Large quantities of metal are being solubilized and released into the environment in this way," he says.

"If we add lead oxide to the medium," continues Francis, "the anaerobic microbes shift their fermentation to produce more lactic acid than usual. If we needed to produce a

(Continued on page 2)

Kurt Gottfried To Discuss 'Star Wars'

Much has been heard recently of the Reagan Administration's efforts to promote acceptance of its Strategic Defense Initiative, a space-based system, which has generated considerable controversy. This system is better known to the public as the "Star Wars" initiative.

In an AUI Distinguished Lecture on May 13 at 8 p.m. in Berkner Hall, Kurt Gottfried, Professor of Physics at Cornell University, will discuss "Space Defense: Dream or Illusion?" The lecture is open to the public.

Gottfried has written extensively and testified before Congress on arms control issues. His point of view can be inferred from one of the articles he wrote, with Richard Garwin, in The New York Times, February 12, 1985. The article was headlined "Pie in the Sky — or Space Defense?; Even Half Way is Wrong," and led off with the following:

"Advocates of an interim missile-defense system say it could be in orbit in the early 1990's at a cost that is not mind-boggling. What they don't say is that it would be a house of cards. The foundations of the proposal are the same misconceptions that underlie the entire 'Star Wars' initiative."

Kurt Gottfried was born in Austria and emigrated to Canada in 1939. He received his B. Eng. and M.Sc. from McGill University and his Ph.D. from M.I.T. His postdoctoral fellowships were at Harvard and the Niels Bohr Institute. He joined the Cornell faculty in 1964 and was made professor of physics in 1968.

His recent professional activities include the chairmanship of the Division of Particles and Fields, American Physical Society; and membership on the High Energy Physics Advisory Panels of the Department of Energy and the National Science Foundation. He has served on the High Energy Physics Grants Committee of the National Research Council of Canada, the Editorial Board of Zeitschrift fur Physik, and the Swedish National Research Council's Committee on the Evaluation of Theoretical Physics. He was elected a Fellow of the American Physical Society and the American Academy of Arts and Sciences.

On other fronts, he is on the Board of Directors of the Union of Concerned Scientists and sits on the Executive Committee of Scientists for Sakharov, Orlov and Shcharansky. In 1980 and 1981 he chaired the Committee on the International Freedom of Scientists of the American Physical Society.

Tech Transfer Meeting Next Week

The Federal Laboratory Consortium for Technology Transfer (FLC) will hold its spring meeting at Brookhaven from May 6 - 9. About 150 people are expected to attend. In the chair will be William Marcuse, head of BNL's Office of Research and Technology Applications and northeastern regional representative of the FLC.

The Consortium is a national network of technology transfer representatives from all the federal agencies. It was established in 1974 to provide more effective mechanisms for the transfer of federally-owned technology to state and local governments and to the private sector. The FLC membership forms a national network with access to nearly every aspect of unclassified research within the federal government.

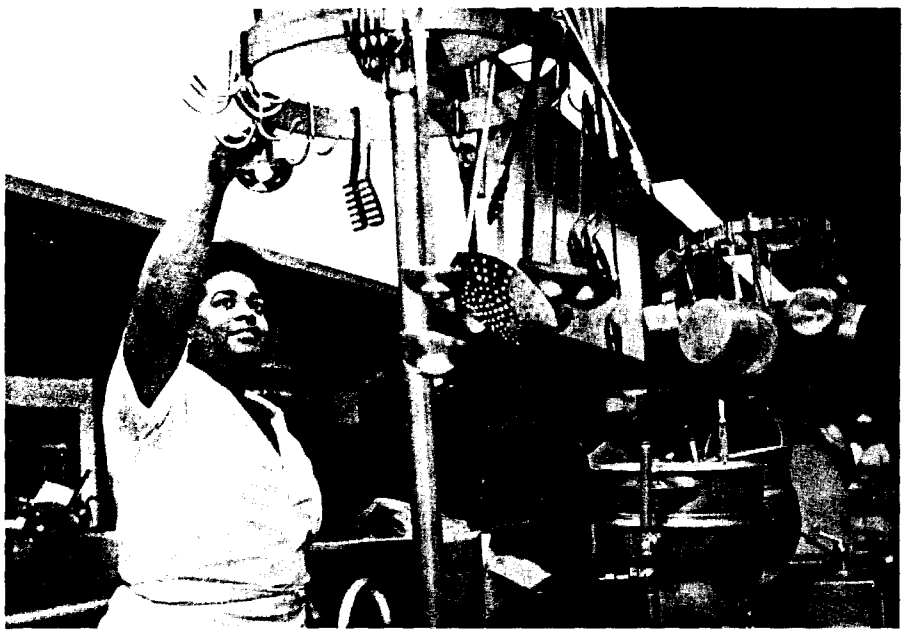
Meetings are held twice a year. At this meeting they will discuss such issues as policy trends in technology transfer, federal laboratory-industry interactions, the Army's ADA language program and patents.

One session of the conference is open to BNL staff. On Wednesday morning from 8:30 to noon, "Negative Technology Transfer and Export Control Issues" will be the topic. William Marcuse says that "some employees might like to know more about unclassified technologies considered sensitive by the Department of Defense because of their military or space applications. Technologies, such as electronics, for instance, are not classified, but are deemed to have strategic limitations." The session will include presentations on foreign technology transfer and associated problems, and on embargoed technology (Military Critical Technology List).

The FLC recently established a Special Award for Excellence in Technology Transfer and, this year, will honor five members of the Brookhaven scientific staff.

Eric Forsyth and Albert Muller (Advanced Technology Applications) will receive the award for "efforts in developing polymeric tape insulation for power cables as an American-produced alternative to paper/polymer laminated insulation (the currently dominant material) produced exclusively by the Japanese."

Meyer Steinberg, Lawrence Kukacka and Jack Fontana are getting the award for "developing and assisting in the commercialization of polymer concrete materials used by industry for producing construction materials; used by states and municipalities for bridge and highway repairs; and used by the U. S. Air Force for runway repair under damp and cold conditions."



Head cook Shelley Moore. —photos by Reben

Cooking for a Crowd

You may think that the food business is just a question of cooking food and dishing it out. That is only partly true. Actually, it all begins with the blue trays.

If you walked into the cafeteria and, for some reason, the trays were not there and you had nothing to put your food on, the cafeteria's whole operation would fall apart. All those hours of preparing food from 6:30 a.m. would be a total loss and there would be much gnashing of teeth, not in mastication, but in frustration.

Other hazards lie in wait for the cafeteria manager. Say, one day, a number of his employees don't turn up because of the flu. At lunch time, a line forms at the grill where a new person is trying to juggle the orders for grilled cheese and hot dogs. The customers get restive. After standing on one foot and then the other, they finally make it to the cash registers, one of which has gone out of commission. The food starts to congeal on the plates. At the cutlery stand there are no forks. So he hustles up some forks. The customers glare and start looking for a table. They can't find one that has been cleaned off because the employees have been needed elsewhere. The customers put rude messages in the suggestion box.

Avoiding such a domino effect is the responsibility of Roy Johannesen, cafeteria manager. Johannesen, a graduate of the Culinary Institute, is the Food Service Director at the Lab for the Saga Corporation, one of the nation's largest food service companies. Saga has had a contract with the Lab for the last 12 years. Johannesen is assisted by Jim Gravina, Food Service Manager.

Seven days a week for 52 weeks a year (only Christmas Day and New Year's Day excepted) Johannesen and his staff of 24 turn out palatable meals at reasonable prices. During the week, they can count on about 350 for breakfast, 850-900 for lunch and 150 for supper. Add at least 200 more per day during the summer.

According to the records, Thursday is the busiest day of the week. Business starts building on Monday, reaches a peak on Thursday, then drops off on Friday. Most people tend to eat lunch between noon and 12:40 p.m. For those 40 minutes, the cafeteria crew is in high gear coping with the log jams. Timing is important. "If you get one line moving too fast," says Johannesen, "you may just create another log jam at the next station."

The staff works two shifts during the week; 6:30 a.m. to 3 p.m. and from 3 p.m. to 8 p.m.; weekends, a crew is on hand from 7:30 a.m. to 3 p.m. When they are catering special affairs at the Lab, some are there until 10:30 p.m. "It can turn into a rather long day," says Johannesen.

How do you go about cooking for such a crowd, day after day? First of all, you start with a menu that is supplied by Saga. They send out what is called a "cycle menu," which is good for three or four months, and the recipes to go with it. The menu and recipes can be adjusted to local tastes, as long as the changes are recorded on the recipe card and then become the standard. At the cafeteria, they do what is called batch cooking. This means cooking in small quantities throughout the lunch period, rather than in bulk at the beginning. This policy enables them to accommodate any unexpected guests.

Some favorite dishes around here are top round of beef, sauerbraten and potato pancakes, omelets, crepes and the seafood chowder. The specialty items, such as tacos and baked potato toppings, go well at first, then fade as people go back to the old standbys like hamburgers and French fries - until the next specialty comes along.

Some specialties are more successful than others. Johannesen remembers when they had a build-your-own-hero sandwich where people were invited to put on a slice of this and a slice of that. But some enterprising souls took enough cold cuts to make sandwiches for themselves all week, so Johannesen had to let the hero idea quietly expire.

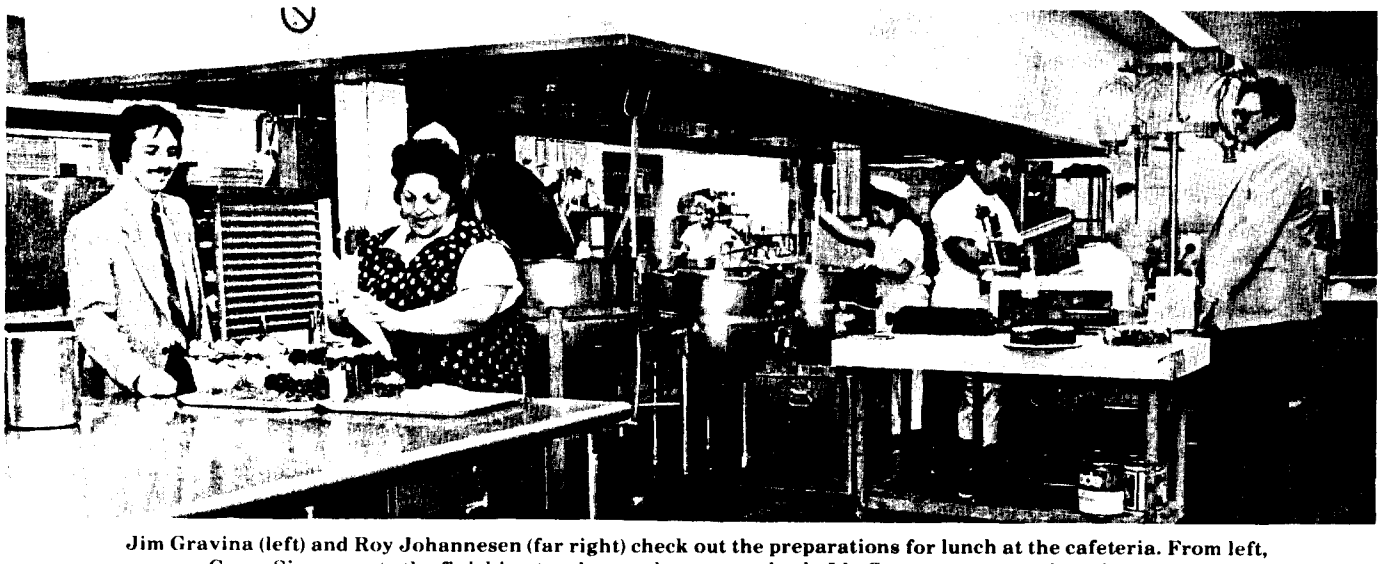
Salad person Debbie Fedoryk and chef Chris Hammer.

Sheet cakes, cheesecakes and soups are made on site. Two 40-gallon stock pots in the kitchen hold the meat bones and other items that produce the soups which have received good notices at the Lab. Frozen vegetables are used generally, but fresh vegetables are served when they are in season. No salt is added to their cooking. "Therefore, some of the vegetables we serve may be bland," says Johannesen, "but there are saltcellars on the tables."

Rolls and danish are bought from local bakeries. Rolls don't last but a day, and when left over, are turned into bread crumbs and croutons. On an average day, 22 dozen rolls and 30 loaves of bread are consumed by hungry employees.

The cafeteria management tries to accommodate BNL's international personnel. Rice appears on the menu frequently, and there is a variety of vegetables to choose from. In fact, says Johannesen, the salad bar grew out of the wish to give our foreign visitors some options.

The food is prepared in what Johannesen calls "a million dollar kitchen." (Berkner Hall won a design award in 1969). When they first moved in, Johannesen said he thought they might have to use roller skates. But now, with an expanded business, they can work comfortably. The kitchen has walk-in refrigerators and a walk-in freezer. French skillets are 3′ long and $2^1/_2$′ wide and are geared so they tilt easily. As to dishes, there is service for at least 1,000 and enough cutlery to go around. The only new items planned are electronic cash registers, "which should enhance our service," says Johannesen, and, maybe, just maybe, a soft ice cream machine. — Bernice Petersen



Jim Gravina (left) and Roy Johannesen (far right) check out the preparations for lunch at the cafeteria. From left, Gerry Simone puts the finishing touches on desserts; at back, Ida Corona prepares the salads and other fixings that go into sandwiches; and Martha Lopez assists head cook Shelley Moore.

Microbes (Cont'd)

specific chemical, we could exploit the capacity of anaerobic microbes to alter their metabolic processes. One application could be to recover strategic metals from wastes."

Based on his initial study, Francis feels that lead compounds in the environment are not as stable as is thought, and that transformation of lead by aerobic and anaerobic microorganisms could be significant. For example, he says geologists use lead-210 found in freshwater and marine sediments to date recent events in lakes, estuaries and marine environments. Although they take into account the perturbation of lead by large organisms, they have not paid much attention to microbial effects on the cycling of lead in the environment.

Update

Susan Agruso, East Islip H.S. physics teacher and a BNL consultant, has moved a step closer to her goal — to be the first teacher to fly in space. Last week we noted that she was one of five finalists in New York State. This week, it was announced that she had been chosen as one of two New York State designees for "teachernaut" in the national competition. This group, in turn, will be whittled down to 10 sometime this summer, with the selection of the winner expected in September.

All film badges will be changed tomorrow. Please place your badge in its assigned rack space before leaving work today.

Cafeteria Menu

Week Ending May 10

Monday, May 6		
French onion soup	(cup)	.65
	(bowl)	.85
Marinated chicken breast & 1 veg.		2.25
Cheese omelet & 1 veg.		2.10
Hot Deli: Knockwurst & kraut	(bread)	2.00
	(bowl)	2.20
Tuesday, May 7		
Minestrone soup	(cup)	.65
	(bowl)	.85
Turkey broccoli primavera on rice		2.15
Breaded pork chop w/1 veg. & applesauce		2.20
Hot Deli: Philadelphia steak w/ peppers & onions	(bread)	2.10
	(roll)	2.30
Wednesday, May 8		
Chicken noodle soup	(cup)	.65
	(bowl)	.85
Chili releno casserole & 1 veg.		2.10
Top round of beef & 1 veg.		2.20
Hot Deli: Grilled Reuben		2.05
Thursday, May 9		
Beef barley soup	(cup)	.65
	(bowl)	.85
Beef stroganoff over noodles		2.20
Baked Italian lasagne & 1 veg.		2.20
Hot Deli: Corned beef	(bread)	2.05
	(roll)	2.25
Special: Bowl of freshly steamed mussels with drawn butter		.75
Friday, May 10		
Fish chowder	(cup)	.65
	(bowl)	.85
Ham & noodles au gratin & 1 veg.		2.10
Western style chili on rice		2.20
Hot Deli: Chicken patty Parmesan	(bread)	2.10
	(roll)	2.30

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

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

BERA News

Theater Group

The next meeting of the BNL Theater Group will be held on Thursday, May 16, in the North Room of the Brookhaven Center. There will be socializing at 7:30 p.m., a business meeting at 8:00, and at 8:30, Ronald Peierls will discuss: "Who Needs a Director, Anyway?", with comments and examples.

Bowling

Purple League

High games were bowled by Ken Riker 257, Gene Fales 228, Joe Ferrante 208, Ed Meier 207, Ron Picinich 200, Pat Manzella 190, Ruth Sheehan 181, Sharon Moore 179, Fran Brown 177, Marge Stoeckel 173, Mary Scheidet 170.

Red/Green League

J. Morris rolled 246, C. Bohnenblusch 244, T. Prach 228, E. Meier 221, J. Medaris 215, A. Pinelli 208, N. Combatti 207, C. Tomesch 203, A. Borrelli 202, E. Sperry 201, E. Sperry IV 200, T. Holmquist 200, L. Jacobson 200.

White League

Ken Asselta had games of 232/216/201 for a 649 scratch series, Lee Barberich 209/200/198/607 scratch, Al Borrelli 223, Jim Griffin 210, Bob Fuchs 209, Bob Barberich 205, Kathy Griffin 196, Kay Conkling 190, Jeanne Penoyar 176.

Cooking Exchange

Spring rolls, porcupine fish balls, eggplant in sesame sauce, and won ton in lychee sauce are dishes that will be prepared by guest chef Jacqueline Newman on Wednesday, May 8. Professor Newman teaches at Queens College and is an expert on Chinese and other Asian foods.

The Cooking Exchange is open to employees and their immediate family members. Meetings are held on the second and fourth Wednesdays of each month from 12:30 to 2:30 p.m. in the Recreation Building. For the $1.00 admission, those present receive copies of the recipes prepared, along with a sampling of each dish. Coffee and tea are also served. Babysitting is provided at 50¢ per child.

Call Dee Polychronakos, 744-3578, for more information.

Volleyball

A final reminder that the volleyball awards dinner will be held on Friday, May 10, at 5:30 p.m. Tickets are $5 for league members and $9 for guests. Team captains can obtain tickets from Barry Karlin, Ext. 5624, or Walt Reams, Ext. 3408.

R/C Model Plane Club

The regular monthly meeting of the R/C Model Plane Club will be held on Tuesday, May 7, at noon at the Club Flying Field, weather permitting, or otherwise in the lobby of Berkner Hall. Anyone interested is invited.

Aviation Club

The Brookhaven Aviation Club will meet at noon on Wednesday, May 8, in the cafeteria.

Golf

The second tournament of the BGA golf season will be held on Monday, May 13 at the Indian Island Suffolk County Golf Course in Riverhead. Tee times will begin at 11:30 and may be obtained by contacting John Nagy at Ext. 2667, Building 475. The deadline for signing up is Thursday, May 9. Greens fees are $7 for county residents and $13 for non-residents. Entry fees are $1 for BGA members and $2 for non-members. The tournament will be run as a Stableford competition; however, BGA team league matches may still be played, with scores and handicaps computed as usual.

Basketball

Playoffs

Longshots - 67		Coasters - 77	
Pat Brown	6	Butch Allen	24
Jerry Gaeta	8	Kevin D'Amico	4
Jeff Gaffney	5	Bob Doty	16
Jim Garrison	6	Mike Fulkerson	8
Leroy James	14	Fred Malone	10
Bob Rowley	5	Art Washington	13
Reggie Seymore	13	Mitch Williams	2
Lee Walcott	10		

Congratulations to the Coasters and Hollywood for winning the playoffs and league respectively, and to all of the players for a great season.

WIS Meeting

The next meeting of the Brookhaven Women in Science, on Wednesday, May 15, will feature guest speakers Daniela Sciaky, Biology Department, and Reed Corderman, Department of Applied Science. In a talk "Introducing the MacIntosh," they will discuss various home and business uses of the personal computer.

The meeting is a dinner meeting in Room A, Berkner Hall, beginning at 5:30 p.m. Reserve a place by calling Eena Mai Franz, Ext. 7103, or Angela Boccio, Ext. 3552, before Monday, May 13. Make your check for $10.50 payable to Brookhaven WIS and send to Angela Boccio, Bldg. 490.

BNLers Shoot the Rapids

There was still snow on the ground, and the water temperature was about 38°F, but no one had second thoughts about climbing into the raft and pushing off into the swift current. The river was high and they had come for an adventure.

A few weeks ago, a band of BNLers took a white water rafting trip on the Hudson River Gorge. Wally Hughes organized the group from Plant Engineering, which included Jack Barry, Jim Boomer, George Elias, John Frezza, Joe Nolan, Bob Rasmussen and Steve Waski. Hughes, Boomer and Elias had paddled the Lehigh in Pennsylvania last year and were looking for something more exciting. The rest were novices. Says Joe Nolan, "It was something I had never done, and I thought it would be a challenge. I like to try things."

The Hudson River Gorge is located in upstate New York, high in the Adirondack Mountains. River trips are usually made during the spring to catch high water during the spring runoff.

The group went with a commercial whitewater outfitter that runs raft trips down the Hudson and on the Kennebec, Dead and Penobscot rivers in Maine. The outfitter supplied a raft, a guide, full wet suits, life jackets, paddles, and lunch and dinner. The BNL rafters came up with paddle power, enthusiasm and a dose of courage.

During the five-hour trip down the river, they had non-stop action negotiating one set of rapids after another, paddling as a team to pick the best way through an obstacle course of rocks and boiling water. Waves kept splashing into the 16-foot rubber raft, and they had to bail constantly to keep the raft from filling up and losing maneuverability.

George Elias will never forget the dunking he took on one particular set of rapids, earning himself the nickname "Flipper." He was quickly grabbed by his fellow rafters, and the guide pulled him back in. "It happened so fast. I was shifting my weight around and all of a sudden, boom, I was in the water!" says Elias.

In the end, they all came off the river with some sore muscles, maybe a few bruises, and a lot of good memories of the day's thrills. Says Hughes, "Everyone who went was looking for excitement, and we got it. Next year, we want to try the Kennebec, which is supposed to be an even wilder ride."

BNL rafters ride the rapids on Hudson River Gorge. Clockwise, starting at the right, are: Steve Waski, Joe Nolan, Wally Hughes, Jack Barry, John Frezza, George Elias, Jim Boomer, Bob Rasmussen and the group's guide.

On Site

Q: What is that tall structure growing on the Lab's eastern skyline?

A: It's the 180-foot center riser for a new water tower, located east of the steam plant. In the next few weeks, the center riser, which also contains a circular stairway, will be joined by an additional nine legs. The crane sitting up there 120 feet in the air is being used to lift up leg sections. Later, it will be used to build the tank in place. The tank will be up in about two months.

Service Awards

The following employees received service awards during the month of April, 1985:

Twenty-Five Years

Gary E. McGovern ..... Biology
Michael A. Zguris ..... AGS

Twenty Years

Frederick J. Altrui ..... Contr. & Proc.
George F. Martin, Jr. ..... AGS
Bonnie H. Wesolowski ..... Chemistry

Ten Years

Virginia H. Brown ..... Personnel
Thomas Hanlon ..... Plant Eng.
Dorothy E. Ivero ..... Applied Sci.
W. Barclay Jones ..... Chemistry
Sheldon Martin ..... Central Shops
Amelio G. Sanchez ..... Plant Eng.
Joel P. Scott ..... Reactor
E. Gail Williams ..... Sci. Personnel

Arrivals & Departures

Arrivals

Dana R. Beavis ..... AGS
James L. Desmond, III ..... NSLS
Sheikh M. Hadi ..... Biology
Tasneem A. Khan ..... S&EP
Daniel J. Oldham ..... AGS
Cynthia M. Weber ..... MIS

Departures

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

James O. Barnett ..... Personnel
Angelo L. DeLucia ..... Biology
David G. Edel ..... Plant Eng.
Theresa A. Esposito ..... P&GA
Emil Prodan ..... Central Shops
Robert W. Siemon ..... NSLS
Maureen A. Tierney ..... Central Shops

Hospitality News

At the next Hospitality Committee get-together on Tuesday, May 7, at 9:30 a.m. in the Brookhaven Center, John Turner, President of the Long Island Pine Barrens Society, will give a talk and a slide presentation on "Introduction to the Long Island Pine Barrens."

Memorial Service

On Tuesday, May 7, at noon, a memorial service for Elsebeth Bak will take place in the garden of the new Danish House on East Street in the apartment area.

Reminder - Bus Trip

Reservations for the bus trip to Old Westbury Gardens on June 6, must be made by May 17. If you want to join us on this trip, call Gillian Love, 928-8579, or Zuna Van Rooyen, 929-6961. Entry fee to tour the museum/house and gardens is $3.50/person.

Wives of Laboratory employees and guests are welcome. Please come and bring the children. Babysitting will be provided free of charge. Coffee, tea and danish will be served.

Garden Plots

Spring has arrived and it's time to begin gardening. Ten-foot square plots have been set aside for on-site residents who wish to grow flowers and vegetables. Gardening equipment is also available. To secure a plot, contact Christina Troutmann, Ext. 3107, Apt. 10B.

Equipment Demo

LeCroy Research Systems will give a product demonstration on May 10 from 10 a.m. to 3:30 p.m. at Berkner Hall. The newly released Digital Storage Oscilloscope will be demonstrated, and product engineers will be on hand to answer questions.

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 Employment Manager, Ext. 2882.

LABORATORY RECRUITMENT - Opportunities for Laboratory employees.

2237. SECRETARIAL POSITION - Requires an AAS degree in secretarial science or equivalent and excellent communications skills to perform group secretarial duties. Responsibilities include the typing of technical manuscripts on a word processor, the preparation of domestic and foreign travel arrangements and maintenance of group files. Shorthand helpful. Physics Department.

2238. LABORATORY CUSTODIAN (three positions) - Plant Engineering Division.

OPEN RECRUITMENT - Opportunities for Laboratory employees and outside applicants.

2239. HEAVY EQUIPMENT MECHANIC OPERATOR - Requires demonstrated ability to maintain, repair and operate all material handling, earthmoving, road and ground maintenance and related equipment. Candidate must have Class 1 license. Plant Engineering Division.

2240. CABINETMAKER A - Under minimum supervision lays out, constructs, modifies and maintains furniture, laboratory equipment and buildings and component parts. Works with wood, wood substitutes and combination materials and flooring, roofing and wall materials. Uses hand, portable and fixed tools common to building construction and cabinet making trade. Plant Engineering Division.

2241. CARPENTER (temporary) - Under minimum supervision lays out, constructs, modifies and maintains buildings and component parts from construction drawings, rough sketches or verbal instruction. Works with wood, wood substitutes and materials and flooring, roofing and wall materials. Plant Engineering Division.

2242. TECHNICIAN - Requires AAS degree or equivalent experience in mechanical technology. Will, under general supervision, be required to assemble experimental magnets, vacuum systems and various other mechanical equipment. Alternating Gradient Synchrotron Department.

2243. CLERICAL POSITION - Requires substantial previous experience as a bank teller or cashier and an overall knowledge of office procedures and paperwork. Fiscal Division.

2244. COMPUTER ANALYST - Position requires an MS in computer science or related field, experience preferably with VAX VMS systems and experience interfacing with large commercial packages as well as participating in the development and maintenance of software systems. Knowledge of one or more languages needed: FORTRAN, assembler, Pascal and/or C. Will work in group involved in the design and construction of a large elementary particle detector. Physics Department.

Autos & Auto Supplies

74 CHEVY MALIBU - Classic, runs well, 2 dr., V8, $750. 399-1349 after 3 p.m.

80 SUZUKI MOTORCYCLE - 1000cc, fully loaded, must sell, $1,700. Dan, 277-1284.

80 CHEVY CHEVETTE - 4 spd., a/c, new battery, tires & exhaust system, 42k mi. Ext. 5200 or 924-6165.

SHOP MANUAL - for Chevy Vega, asking $7; Class II bolt-on trailer hitch with head & 2-3/16 ball, asking $65. Ed, Ext. 4636.

76 CHEVY MALIBU - high mi., 2 dr., a/c, looks good, runs well, 3 spd., best offer; 1981 Viking Pop-up, sink, stove, sleeps 6, ice box, awning, heater, used 3 times, excel., $2,300. Skora, Ext. 5046 or 744-9677.

72 COACHMAN - 24', tandem wheel, sleeps 6, bunk house, refrig., stove/oven, hot water, ducted heat, center bath, asking $35,950. 744-3284 eves.

VOLKSWAGEN BUG - restored, rebuilt motor, everything new inside & out, $1,200. Ed, Ext. 3840.

76 MUSTANG - a/c, p/b, good cond. Don, Ext. 5329 or 878-2215 eves.

75 CHRYSLER NEWPORT - 2 dr., high mi., runs well, $600 or best offer. 727-5912.

74 FORD THUNDERBIRD - good cond., 460 V8 engine, am/fm stereo, a/c, p/s, p/b, a/t. 924-0848.

CARBURETOR - Holley, double-pumper, 650 rebuilt, $50. 878-4285 after 5:30.

76 TOYOTA LAND CRUISER - 4 WD, 4 dr., mag wheels, priced to sell. 286-9389.

83 NISSAN SENTRA - 2 dr., 5 spd., excel., garaged, 18k mi., 35 mpg, am/fm, seat covers, $4,900 firm. Jim, Ext. 4215.

71 DODGE - 26' Champion travel trailer, Class A, 65m mi., sleeps 8, Onan generator, new batteries, brakes, tires, am/fm cassette, a/c, water heater, twin gas tanks. 929-4673.

TRAVEL TRAILER - 17-'.'., sleeps 6, self-contained, new tires & brakes, excel. cond., $2,800. Artie, Ext. 2697 or 325-0743.

MAZDA GLC SPORT - hatchback, excel. cond., stand., sunroof, stereo, $4,300. Ext. 2618 or 751-0061.

80 DATSUN 310 GX - 4 spd., 4 dr., hatchback, excel. cond., orig. owner, $2,500. Carol, Ext. 7215 or 363-2268 eves.

79 KAWASAKI - KZ400, 5k mi., like new, $580. 473-5289.

82 KAWASAKI - 440, 6k mi., $800 or best offer; '75 Charger, excel. cond., $1,100. 924-0960.

72 PONTIAC CATALINA - 4 dr., good running cond., new tires, $650. C. Barrett, Ext. 4558 or 325-0013.

81 HONDA ACCORD - 2 dr., hatchback, a/t, a/c, am/fm cassette, like new, $4,900. 475-6408 after 6 p.m.

79 CJ7 JEEP - 8 cyl., a/t, a/c, p/b, p/s, custom interior/exterior, excel. cond., many access, $6,200. 286-3865.

76 CHEVY MALIBU - a/t, p/b, p/s, a/c, excel., $1,100. Ext. 3124 day/eves.

76 MUSTANG - a/c, p/b, good cond. Don, Ext. 5329 or 878-2215 eves.

67 HONDA - 305cc, Scrambler, not running, will consider any offer. Bill, Ext. 2378.

SNOW TIRES - (4), 1200-16.5, w/spoke wheels, for 3/4 ton truck, cheap. Dick, Ext. 3499 or 589-9103.

79 TORONADO - a/c, p/s, p/b, sunroof, loaded, great cond., $4,000. Ann, 281-0393.

CARTOP CARRIER - x-cargo, Sears, orig. $89, now $58. Ext. 4395.

81 TOYOTA TERCEL - 2 dr., 4 spd., am/fm, 64k mi. good cond., $3,900. Renie, 732-4998.

UTILITY TRAILER - heavy duty suspension, extra tires, $200; 1979 Pinto, good cond., new clutch, exhaust, great on gas, $1,400. Mike, Ext. 4605 or 281-5456.

71 FORD MAVERICK - new battery, tires, starter, excel. mech., 4 dr., 6 cyl., orig. owner. 286-1097.

63 CHRYSLER ENGINE - V8, 413 HP, 4 barrel, $200. Ext. 2334 or 732-3002.

82 THUNDERBIRD - custom made, low mi., gray velour interior, moon roof, spoke wheels, loaded. 878-0487 eves.

76 MUSTANG II - 4 cyl., 4 spd., excel. mpg, recently tuned-up, white w/red roof, $1,200. Ext. 3962.

81 CHEVY CHEVETTE - a/t, 4 dr., am/fm cassette, roof rack, rear def., very clean in & out. 878-6528.

73 WINNEBAGO - 26', full bath, 5 kw gen. vac. sys., motorized, sleeps 6, mint, $11,800. 744-8672.

83 NISSON PICK-UP - 6k mi., king cab, $5,500. Ed, Ext. 2362 or 3925.

80 DATSUN 200SX - 5 spd., hatchback, sunroof, am/fm cassette, louvres, mint cond., $4,300. 929-8365 eves.

74 TOYOTA - needs valves, new front brakes, good tires, asking $250. 286-2338 after 5 p.m.

78 KZ400 - low mi., very good cond., dealer maint., many recent parts, asking $800. Ext. 2621 or 281-0360 after 6 p.m.

Boats & Marine Supplies

31' CORVETTE - K/CB, auxiliary sloop, fully equipped, excel. cond. Ext. 2053 or 363-2796.

16' GLASPAR - 40 HP Johnson, trailer, Teleflex steering, V-hull, in water. George, Ext. 5288 or 878-8177.

26' PACEMAKER - 1968, SP, 318 cu. Chrysler, f/w cooled, sleeps 4, standup head, stove, 110 V/12 ref., VHF, DF recorder, excel. cond. Don, Ext. 5329 or 878-2215 eves.

23' CHRYSLER - 1968, cabin boat, fiberglass, twin Volvo engines, sleeps 4, $3,900. 399-3381.

21' SLOOP - San Juan Mark II, swing keel, sleeps 4, excel. cond., custom trailer, $6,800. 924-0848.

OUTBOARD MOTOR - 1969, 40 HP Evinrude, just tuned-up, $325. 878-4285 after 5:30 p.m.

25' CRUISER - plywood hull, 305 rebuilt Chevy, new interior. 758-6588.

32' RANGER - sloop, auto. pilot, 11 winches, 14 sails, new Stearns mast, $28,500. Terry, 473-8426.

16' DORY - wood, 20 HP Mercury, like new, trailer, $950. Stewart, 273-6993.

28' LUHRS - 1974, twin diesel, all glass, dual station, F.B.-FWC, sleeps 4, galley, head, hot & cold water, $25,000. Ext. 7592 or 727-7515.

21' GALAXY - 1983, cuddy cabin, 125 HP Volvo, 30 hrs., port-a-potty, am/fm cassette, compass, depth, full swim platform, full canvas, $8,800. Ext. 3589 or 281-3635.

23' EUROPEAN CRAFTED AUXILIARY KEEL - sloop, sleeps 4, head, galley, dinette, 3 sails, $8,500. Ext. 4605 or 938-8353.

28' OWENS - stand-up head, sleeps 4, stove, sink, new canvas & hard top, very good cond., asking $2,600. Ext. 2614 or 281-0360.

24' CHRYSLER - 115 HP Evinrude, power trim & tilt, cabin, sleeps 2, new rug, $2,300. Jim, Ext. 2050.

Miscellaneous

DINING CHAIRS - (8), mahogany, Chippendale, $600; Victorian coffee table tray, $125; sofa, $125. 928-4068 eves.

ELECTRIC TYPEWRITER - brand new, Smith Corona, cartridge type. Carol, 929-3860 eves.

ROTOTILLER - for 10 HP tractor with belts & pulleys, very good cond., asking $250; seed spreader, 1 bushel cap, tractor mount/flex drive shaft, asking $65. Ed, Ext. 4636.

LAWN THATCHER - Blue Bird, 5 HP, excel. cond., $450. 289-0413.

BUTCHER BLOCK TABLE - 42" round, 4 bentwood chairs, $100. 944-5149 after 6 p.m.

LAMP TABLES - (2), $10. 727-5912.

GE DISHWASHER - brown, runs well. Ext. 2877 or 289-8428.

SIAMESE KITTENS - Lilac, 6 wks. old, starting to eat now. Whitey, Ext. 2913 or Ramona, 928-3088.

REFRIGERATORS - (2), used, 6' & 10'; portable dishwasher, good running cond., make offer. 588-4987.

ALUMINUM BEDS - (2), single, $20 & $10; large wading pool, child's, excel. cond., $10. 928-8772.

TREES - locally grown, evergreens, maples, dogwoods, you dig, reasonable.

924-6582.

SIMILAC - infant formula, approx. 20 cans, w/iron conc., $1/ea. Ext. 7681.

SOFA - country, blue print, love seat, almost new, $350. 736-4886.

MATTRESS - with brand new bed frame, full size, $40. Steve, 744-4787 eves.

PIANO - very old, good for child to learn on, best offer. Bea, Ext. 3571 or 732-2472.

HARMONICA - accordion; 120 bass; ukelele, no offer refused. Ann, 286-2280.

LUGGAGE - carry-on garment bag, new, used once, $25 or best offer. Ext. 2914 or 286-3742 eves & weekends.

RIDING MOWER - 26", Craftsman, engine needs repair, $100 or best offer; Black & Decker edger trimmer, $15. Lew, Ext. 5193.

RECORD ALBUMS - (40), classical and popular, $10; three-drawer oak chest, $100; (3) Hitchcock chairs, 2 need refinishing, $50; (1) single bed, brand new; (1) double bed, very good cond., both for $190. 281-2002.

SPACE HEATER - floor mounted; electric gas hot water heater, best offer; alum. carport, 2 car, you remove, best offer. John, Ext. 3675 or 924-3528.

SHALLOW WELL PUMPS - ½ HP, $35; 1 HP, $55, good cond. 475-8971 after 6 p.m.

CAMERA - 35mm, Pentax, program plus model with flash, skylight, carry case. Mike, 331-5042.

BOOKCASE CORNER CHEST COMBO - (2), Ethan Allan, butternut maple, like new, $350/ea. 744-9632.

LARGE DROPLEAF TABLE - mod style, mirror finish; floor lamp; mirror, $135. 473 5289.

KITCHENETTE SET - formica topped table with leaf, plus 4 chairs, excel. cond., $90. 751-0061.

ADMIRAL COLOR TV - 23", instant play, $45. Ext. 4925 or 3031.

UPRIGHT PIANO - walnut, $350. Sue, 744-7517.

SC TYPEWRITER - electric, portable, correcting, w/case, pica, new, $200 or best offer; Rogers & Slingerland drums, blue sparkle, many drums and access., $1,200 takes all. 363-6417 after 6 p.m.

KING SIZE BED - super firm, Sterns & Foster, $125. Ext. 7727 or 929-4631.

FOLDING BED - frame & mattress, $58; four-drawer file cabinet, $65; portable typewriter, $30. Ext. 4395.

FOLDING BED - new, steel frame, 4" mattress & storage cover, $95. Ext. 4615 or 751-8462.

TYPEWRITER - Royal, manual/portable, $20. Ext. 7516.

VEGETABLES - 6 pack; flowers, 4 pack, large selection, $.75 pack, delivery week of 5/13. Ray, 727-6818.

GATE LEG TABLE - bunk beds, elec. fireplace; other assorted goods, prices neg. Renie, 732-4998.

SALTON ENTERTAINER CART - heated cabinet, trays, drawer, retails $495 new, still in carton, $200; IBM selectric typewriter, good cond., $110; Smith Corona typewriter, 2200 cartridge, like new, $95. Connie, 727-5790.

DIGITAL BICYCLE COMPUTER - "The Push," 6 function, brand new, never installed, $50. Bob, 924-5511.

CRIB - and playpen, 2'x3', almost new, $30 ea. Maria, 924-5819.

TRACTOR - 10 HP, Bolens Husky, 38" cutter, 22" rototiller, 36" snow blower, $1,000. Ext. 4676 or 286-9721 eves.

STEREO AMPLIFIER - and A.J. fm tuner, Heathkit AA15, excel. cond., $200. I. Meyer, 929-4326.

POP-UP CAMPING TRAILER - with 3 burner stove, needs new canvas, $250. Ext. 2018 or 928-3568.

GE REFRIGERATOR/FREEZER - white, works well, $95, you pick up. Ext. 3222 or 3755.

ALUM. WINDOW - double, 60x50, w/storms & screens attached, $25; elec. range plus hood, coppertone, $50. 744-8659.

FISH TANK - 30 gal., with heater, air pump, hood and 2 filters, $50. Bruce, Ext. 4555.

CONSOLE STEREO - includes cassette deck, plus 8-track player, $100 takes all. Larry, Ext. 2021 or 281-7240.

WOOD FRAME - 16x20, $5; plastic display frames, 11x14, 16x20, $5 & $8. Susan, Ext. 4267.

SANSUI STEREO - cassette deck with full logic control and 4-band stereo tuner, $200. Rajiv, Ext. 5161 or 924-1460.

CHILD'S BEDROOM SET - 3 pieces, w/new mattress. 878-6528.

TWIN BEDS - (2), $40 ea. or 2/$75; (3) canvas awnings, (1) 8', (2) 43", terra cotta, $40. Carol, 878-0885.

Free

HOT WATER HEATER - 52 gal., elec. 924-4749.

Yard Sales

CONTENTS OF HOUSE - everything must go, call for directions. 281-2002.

Car Pools

EAST NORTHPORT/COMMACK - never late. Tony, Ext. 7772.

Real Estate

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

For Rent

CENTER MORICHES - new, waterfront, 2 large bdrms., l/r, full kitchen, tiled bath, w/w, a/c, cable, yard, dock space, avail. May 15 through Sept. 15.

878-8177.

CENTRAL FLORIDA - on the Gulf Coast, quietly situated in a Deltona Community with access to golf and water sports, $300 mo. 261-2719.

POCONOS - 3 bdrms., 2 baths, luxurious master bdrm., 2 balconies, whirlpool, f/p, sleeps 6-8, pool, tennis, golf, starting mid June, all rates avail. Rick, Ext. 7611 or (718) 454-9591 eves.

MYRTLE BEACH, SC - 2 bdrms., 2 full baths, sleeps 6, balcony view of ocean, pools, sauna, jacuzzi on premises, 36 golf courses in area, $550 week. 584-7258.

ORLANDO, FL - condo, fully furnished, week of May 25-June 1, best offer. Bea, Ext. 3571 or 732-2472.

SHAWNEE VILLA, POCONOS - full accommodations for 6-8 people, week starting 6/8/85 through 6/15/85, $400. Charlette, 348-2856 days or 286-0913 after 6 p.m.

BELLPORT - house, 2 yr. lease, large organic garden, $850 firm. Ed, Ext. 2362 or 3925.

HICKSVILLE - house, furnished, 2 bdrms., avail. June to December, $800 plus util. 731-7845.

For Sale

HOLBROOK - Woodgate Village condo., 3 bdrms., 1-½ baths, 5 appl., a/c, w/w, wood stove, attic storage, patio, terrace, pool, club house, $89,000. 472-4929.

SHOREHAM - center hall colonial layout, private beach, 4 bdrms., l/r, d/r, f/r with fireplace, study, $215,000. 744-5709.

SOUND BEACH - Miller Place SD, 2 story house, 140'x100' level lot, low taxes, 4 large bdrms., 2 baths, basement, $117,500. Ext. 3296 or 744-8474.

LADY LAKE, FLORIDA - south of Ocala, 2 bdrms., 2 baths, l/r, w/w, open living, central heat, a/c, appl., util. rm., Florida rm., 1 acre, $62,500. 399-0652.

PORT JEFF./HARBOR HILLS - 3 bdrms., 2-1/2 baths, treed 1/3 level acre, cor. lot., den, l/r, d/r, eik, basement, 1 car garage, patio, pvt. beach rgts., $170,000 by owner. Ext. 4505 or 928-2803.

Wanted

WHEEL CHAIR - collapsible, foot adjustment, brakes. Joe, Ext. 3140.

APARTMENT - Mom with 4 yr. old, looking to rent or share, $375, Ronkonkoma area. 588-2239.

HEAVY OLD MATTRESS - & cushions that you would throw out, will pick up. Dave, Ext. 4256.

APARTMENT - for couple, 1-2 bdrms., August occup. Dan Ext. 2319 or 821-0260.

HOUSE TO SIT - experienced, caring, responsible, any period May 23 to Sept. 15, free. J. Allentuck, Ext. 2412.

CAMPBELLS SOUP LABELS - send to F. Chandler, Bldg. T89, for St. Mary School, E. Islip.

LOVING HOME - Sealpoint Siamese male cat, neutered, declawed, indoor, affectionate, owner allergic. Lois, Ext. 2959 or 751-5585.

WHEELBARROW - construction type, good cond. Bob M., Ext. 2350 or 732-9517.

MOTHER'S HELPER - from 3rd week in June to mid August, live-in 5 days/wk., must be able to drive/swim. Michael, Ext. 3525 or 491-0753.

WITNESS - to accident involving beige Buick Regal on Center St., by Post Office, on 4/24/85. Joan, Ext. 2910.

BRIDE & MAIDS SLIPS - (4), floor length, to buy or rent. Sue, 744-7517.

TYPEWRITER - electric, correct-a-type, in good working cond. Dan, Ext. 2319 or 821-0260 after 6 p.m.

MAZDA ENGINE - Ext. 4395.

APARTMENT/HOUSE - to rent from approx. June 20 to July 16, No. Brookhaven township. Ext. 7933.

GOLF CART - good cond., reasonable for beginner golfer. Fred, Ext. 3259.

CLOCKS - watches, old jewelry, any cond. Al Campbell, Ext. 2043.

HOUSE - for first 2 weeks of August, in Bellport area, immac. Chicago couple. 286-1097.

CLARINET - and/or saxophone. 286-2718.

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

FOLDING BICYCLES - any make or any cond. Walter, Ext. 4605 or 938-8353.

SAFETY MINDED WORKER - rent my scaffolding for 2 yrs., no fee, just paint it. Ed, Ext. 2362 or 3925.

RUGBY PLAYERS - games and tournaments. Pierrick, Ext. 3464.

HOUSEMATE - for large house, 20 min. to Lab, washer/dryer, dishwasher, sundeck, nonsmoker, $283 mo. plus 1/3 util. Ext. 2521 or 928-8379 eves.

HOUSE TO RENT - June-July, Shoreham area, family has two children and one dog. Ext. 2503.

Services

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

BABYSITTER - reliable, experienced teen avail., nights & weekends. Mary, Ext. 2926 or Chris, 281-0268.

HOME IMPROVEMENTS - dormers, extensions, carpentry, concrete, brickwork, roofing, painting, decks, tree removal, etc., licensed & insured, free estimates. Bob Jr., 751-6418.

VIDEO SERVICE - special, children's birthday party's, only $35; record and share your special moment. 928-5684.

PAINTING - and decorating, free estimates. Louie, 924-5816.

ROTOTILLING - reasonable rates. Paul, 924-8143.

KAYAK LESSONS - equipment supplied, weekends, basic to advance, $60 for 5 lessons. Ernie, Ext. 2957 or 281-7873.

TREE REMOVAL - and trimming, free estimates. Ken, 289-8212 eves.

JEWELRY REPAIR - gold and silver chains, rings, etc. Dan, Ext. 2319.

PARTY TENT - 20x30, seat & feed 75, we set up and take down. Fred Kuehl, Ext. 7947 or 588-2268.

TOPSOIL - sand, gravel, bluestone, burgundy/-white marble, and much more delivered, spreading available. 234-0538.

VIOLIN STUDENTS - all ages, also Suzuki method. 821-0754.

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

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