BROOKHAVEN BULLETIN
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BROOKHAVEN NATIONAL LABORATORY

Views From Our Visitors

James Krumhansl, Theoretical Physicist

"An advantage of being a theoretical physicist is that my work is very portable," says James Krumhansl, a Cornell physics professor, who brought his briefcase to Brookhaven this summer. During his distinguished career, Krumhansl's briefcase has accompanied him to a large variety of situations, in academe, in research, in government and in industry.

Two threads have connected his various endeavors, one of which has been his association with Cornell University. He earned his Ph.D. there in 1943, then stayed on another year as a physics instructor. Following stints in industry and at Brown University, Krumhansl returned to Cornell as an assistant professor in 1948. When he left again in 1954, to spend four years with Union Carbide Corporation, he was an associate professor. In 1959, he returned to Ithaca as a full professor.

With Cornell as home base, Krumhansl has had the oportunity to delve into diverse areas. From 1974 to 1977, for example, he served as editor of Physical Review Letters, the prestigious publication of the American Physical Society. At that time, the journal had its offices at Brookhaven, on the third floor of the Physics Building. His editorial responsibilities brought Krumhansl here about every three weeks and introduced him to BNL and its people.

Krumhansl left Physical Review in 1977, to become Assistant Director of the National Science Foundation (NSF). On leave from Cornell, he spent two years in Washington, before returning to the campus in 1980.

The second thread tying together the places he has been, is the work he has done. "My basic field is theoretical condensed matter physics — what used to be known as solid state," Krumhansl says. In academe, he has drawn on his area of expertise to teach courses ranging from applied mathematics to solid state theory. In research, he has explored subjects ranging from the general theory of thermoelectric energy conversion to molecular hydrogen as a quantum crystal. In government, he assumed administrative responsibility for the NSF's Pure and Applied Mathematics, Physics, Chemistry, Material Research, Computer Science and Engineering Research Division. And in industry, his energies have focused on such areas as high strength carbon whiskers and fibers, and microwave and pulse communication systems. Summing up these many activities, Krumhansl says, "I've been in and out of basic and applied research with two common denominators — curiosity and quality. Good applied research is as challenging as basic science."

Still, it is basic science that is calling him now. "My main interests now are molecular biophysics and structures and textures in materials," he says. Molecular biophysics is a hybrid field joining molecular biology and physics. As Krumhansl describes its evolution, "Molecular biology has principally been preoccupied with biochemistry [chemical composition] and equilibrium structures at the molecular level. But over the last ten years, more

Roger R. Stoutenburgh

James Krumhansl

(Continued on page 2)

Paloma Lopez and Manuel Espinosa, Biologists

Paloma Lopez and Manuel Espinosa are from the Council of Research in Madrid, are married, and are collaborating on DNA transformation with Sanford Lacks of the Biology Department.

Their research involves the cloning of the gene for amylomaltase (an enzyme which digests the sugar maltose) from *Streptococcus pneumoniae* and its introduction into *Bacillus subtilis*, where it is expressed. The molecular mechanism of this process is being studied, and the results may lead to a more efficient means of manufacturing enzymes and other chemical substances.

Lacks has been studying the genetic transformation of *S. pneumoniae* since he was a graduate student. And Lopez and Espinosa have been using *B. subtilis* for expressing genes, and more specifically, for synthesizing proteases (enzymes which digest proteins) since 1980.

In 1976 Lacks met Lopez and Espinosa in Granada, Spain at a meeting of biologists conducting research in the area of DNA transformation. (Genes consist of DNA segments.) In the spring of 1980, Lacks visited Madrid to observe their research, and in 1981, the couple came to BNL and stayed for eight months.

"Close collaboration, especially between scientists from different countries, is not very common," says Espinosa. "But it has turned out to be very profitable. Sandy is number one in the transformation field. And so far, six papers describing our work have been published and one is about to be."

At the Council of Research, which is funded by the Spanish government, there are 4000 employees among the six branches, with the emphasis being on biology and agriculture. "Most of the research is not individual, like it is here," says Espinosa, who recently returned from Spain, where he was looking after his own research group: a technician, a post-doc, and two graduate students, one of whom will be at BNL next year.

Because of their limited stay here, Lopez and Espinosa work between ten and twelve hours a day, seven days a week. So they seldom have time to sail on Lacks' boat, to swim in the Lab pool, or to attend parties. "People are very friendly here," says Lopez. "Not as many parties are given in Spain. One reason may be that the homes are smaller."

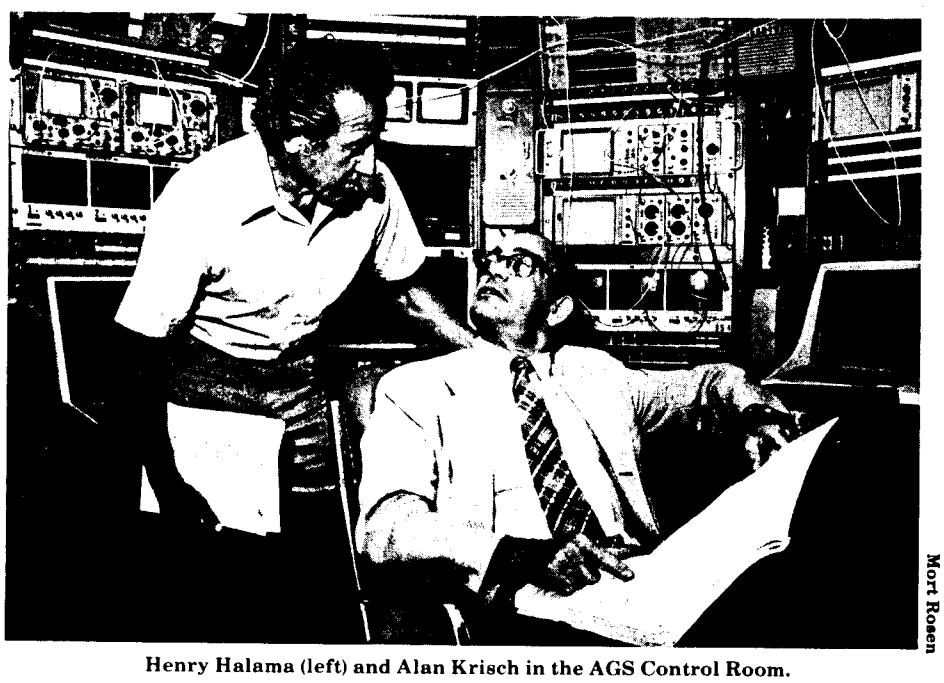
Doug Humphrey

Paloma Lopez and Manuel Espinosa

Espinosa returns home in September. Lopez returns in November. They've noticed that people here come from different backgrounds, unlike Europeans. They've observed that it's easier to obtain supplies here, unlike Spain. And, again unlike Spain, they've realized that people here move from city to city during the course of their careers. Like themselves.

They'll be back next year.

— Steve Eisenberg


Mort Rosen

Henry Halama (left) and Alan Krisch in the AGS Control Room.

Polarized Protons Spin Along

For about three years, collaborators from BNL, Argonne National Laboratory, the University of Michigan, Rice University and Yale University have been working to give the Alternating Gradient Synchrotron (AGS) the world's highest energy polarized proton beam — about 26 GeV. Having recently passed several major hardware milestones, the polarized beam project is now moving from a construction to a commissioning phase, in preparation for acceleration of polarized protons in December. Last week, Derek Lowenstein, Deputy Chairman of the Accelerator Department, announced that physicist Alan Krisch, professor at the University of Michigan, will lead the effort to commission the polarized beam. He will work closely with AGS senior engineer Henry Halama, who is in charge of construction for the project.

Until now, the protons that have circulated in the AGS have had different spin directions. When the polarized beam is accelerated, the protons will share the same direction of spin and provide physicists with exciting new areas of research. Krisch began experimenting with polarized beams at Argonne's ZGS in 1972 and has devoted his research efforts to this field ever since. He now heads a University of Michigan experimental team which plans to use the high energy AGS polarized beam to study large angle elastic scattering. Krisch's background is important for the com-

(Continued on page 2)

Power Project Keeps Its Cool

From July 18 to 29 several first-time tests were run on the Power Transmission Project: a computer worked the midnight to eight shift in the control room, and the refrigerator was shut down with full power on the line.

Operations Coordinator Richard Thomas programmed the computer to talk on the phone with a voice synthesizer. On three occasions, during the graveyard shifts, the computer called his house when the system malfunctioned. The first time, about 1:00 a.m., there was a computer hang up — that is, the program had stopped. After the computer told him of the problem, Thomas pressed a certain number on his touch tone phone. Otherwise, the computer, thinking the message wasn't received, would have phoned the next person on the list. Thomas then drove in to correct the problem within an hour. If he hadn't, the computer would have called again.

The second time, the refrigerator was over-cooling the system. The third time, a printer simply ran out of paper. In all the incidences, the computer's program was changed the following day: the threshold temperature of the refrigerator has been changed, and the computer can now wait until 8:00 a.m. for more paper.

On the last day of operations, the refrigerator was shut down and full current was maintained for 110 minutes. The helium, which cools the cables, stopped flowing and warmed up slightly. There were no malfunctions, even with the maximum 4100 amperes still running through the cables, proving that a power failure will not affect the flow of current.

Winner's Circle

Under the Employee Suggestion System, two more employees have received awards for improving Lab procedures:

John Bland (Mgt. Info. Systems Division) proposed the development and publication of a detailed functional listing of on-site services to improve the usefulness of the BNL Directory. This alphabetical listing, which he has compiled, will be incorporated in the next printing of the telphone directory. For his idea, Bland received an award of $50.

Dominic De Angelis (Safety & Environ. Protection Div.) last spring suggested a Lab-wide collection and repair of bicycles. Supply & Materiel authorized such a pick-up, and, to date, have received 70 bicycles. These repaired bicycles will be returned to users or kept in stock for reissue. Either way, the result is a significant savings in replacement costs. De Angelis received an award of $100.

Protons (Cont'd)

missioning phase, which will be a complex mix of accelerator physics and high energy experimental physics. "Turning on a polarized beam is very much like running an experiment," he said.

Any experiment starts with equipment. Project personnel have devoted the summer to completing the complex array of apparatus the effort requires, not only to accelerate polarized protons, but also to maintain polarization during acceleration. "It's never been done before at these energies," said Krisch, "and it's a difficult thing. But we have wonderful equipment and wonderful personnel, and every reason to believe that our calculations will work out as anticipated. That's what we'll be checking during the commissioning phase. When we do accelerate polarized protons, we will have a very exciting and attractive facility."

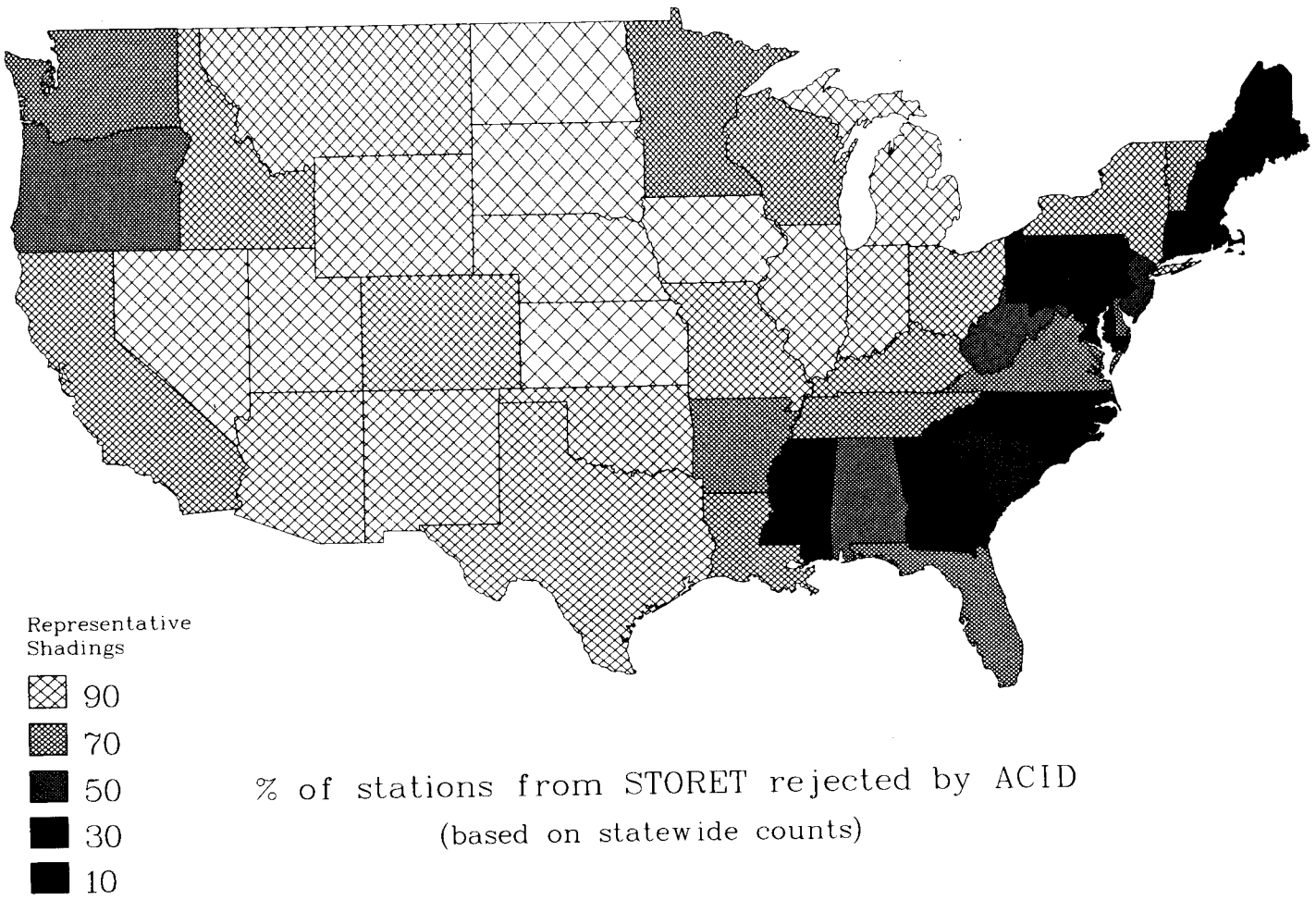
Say It With Graphics

Once, it was easy to identify a computer printout, with all those squared-off characters lining up on alternating green and white backgrounds. While reams of such printouts still spew forth daily from the Central Scientific Computing Facility and other site computers, the origins of a growing percentage of BNL's hard computer copy are less recognizable. Thanks to refined computer technology and a device called the Information International COMp80, it has become ever more difficult to tell whether a graphic image has been produced by hand or by computer.

The refinement in technology involves smaller dots. The increasingly finer dot network used in computer graphics permits computer drawn lines to take on a quite natural appearance. Today, even alpha/numeric characters can appear in any typestyle desired.

Computer graphics begins with information and inspiration. Gordon Smith of the Applied Math Department explained, "Often there is so much data involved in a project, that graphics is the only way to get your key points across succinctly and effectively." After a graphics format for displaying a particular set of data has been designed and the program has been written, the magnetic tape containing that graphics information is fed through Graphic Arts' COMp80. Though this machine is designed to produce micrographics (small outputs, such as microfilm or movie films), another possible output is a full-size paper positive of such high resolution and high quality that it is ideal for offset printing.

From time to time, such computer graphics will be reproduced in the Bulletin — to illustrate the fascinating things being done in this area, as well as the fascinating things being done at BNL. Anyone with information about a computer graphic suitable for publication, should contact Gordon Smith, Ext. 3216, or the Bulletin, Ext. 2345.



An ongoing project of DAS' Terrestial and Aquatic Ecology Division is the collection of historic and current data on the quality of surface and fresh water throughout the country for the purpose of studying the effects of acid precipitation. That data forms the Acidification Chemistry Information Database, known by the apt acronym ACID. Some of the data in ACID was selected from the Environmental Protection Agency's national environmental data base, STORET. However, ACID focuses on low alkalinity surface water so much of the data in STORET was rejected. To visualize the spatial pattern of those rejections, Chris Hoogendyk and Edward "Chip" Balzer devised the program that produced this computer graphic. The United States map data base was created by Carmen Benkovitz of Meteorology. The various shadings show what percentage of the STORET information in each state was rejected from ACID. The key shows the percentage of representative shadings, but the program causes the actual shadings to reproduce the true percentages, state by state. The spacings of the shading lines are calculated to provide a linearly perceived scale of darkness.

Krumhansl (Cont'd)

and more attention has focused on how molecular structure changes with biological activity. When you talk about transitions of structure, this is dynamics and you're coming closer and closer to physics. So I see a big opportunity for physicists to look at problems in molecular biology."

Last year, Krumhansl was on sabbatical from Cornell. He spent the fall in Japan and the spring at Cambridge. "My work at Cambridge was in the nature of reconnaissance," he says. "As a result, I decided to devote my major effort for the next few years to understanding, -from a theoretical point of view, molecular motions and structural changes in biological materials, such as DNA, hemoglobin and rhodopsin."

That's the work he's continuing here this summer. and it's also one of the reasons he chose BNL as a base. "There's both condensed matter physics and biophysics going on here," says Krumhansl. "In fact, that diversity is one of the strengths of Brookhaven. There's a tremendous amount of activity in my area and I know a lot of people here."

Among the people Krumhansl knows is former Lab Director George Vineyard, with whom he participated in the Institute for Theoretical Physics at Santa Barbara, California, last year. Vineyard and his wife Phyllis live in Bellport, across the street from Marilyn Dahl, widow of Medical's Lewis Dahl. When Marilyn Dahl visited the Vineyards at the Institute, she was introduced to Krumhansl. They were married this spring and suddenly Bellport became home — at least for part of the year. "We will have two bases of operation," he says, explaining that this fall he will return to Cornell, to assume a half-time appointment which should leave him more time for research.

In the pursuit of his interests, Krumhansl has seen science from many angles. "All in all I suppose that I've been around a lot," he says, "and I continue to be both a positivist and an optimist. Being a positivist means I believe that science contributes far more to human welfare than the negatives which inevitably accompany progress. And the optimist says that there's still an endless variety of new things to discover. Discovery comes in waves; then, for a while, there's a pause for digestion. But it is, as Vannevar Bush described it, 'the endless frontier.' That new horizon will always be there, as long as you keep looking."

—Anita Cohen

DAS Conference

All interested staff are invited to attend the High Temperature Solid Oxide Electrolyte Conference at Berkner Hall, August 16-18. Presentations will begin at 9 a.m. on August 16. The purpose of the conference is to bring together those involved in research and applications of solid oxide electrolytes, in order to define the present state of the art and to determine the direction of future research and development. It is sponsored by DOE's Office of Fossil Energy. Members of the organizing committee are Frank Salzano, Clovis Linkous and Ann Schuler of the Materials Chemistry & Energy Conversion Div., DAS; Hugh Isaacs, Materials Technology Div., DAS; John Fillo, Reactor Systems Div., DNE; Darrell Fee, Argonne National Laboratory; and Gerald Wirtz, University of Illinois.

Tuition Increase

Tuition has increased for on-site courses offered in the fall by Suffolk County Community College (SCCC) and St. Joseph's College. SCCC is now $39 a credit and St. Joseph's is $105 a credit.

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Microcomputer Club

A demonstration of the Toshiba T100 personal computer, the Fortune 16/32 bit computer (which supports up to 14 terminals) and the Toshiba P1350 printer (180 × 180 dots/inch) will be given by Contemporary Computer Services, Inc., on Thursday, August 18, from noon — 1 p.m. in the Biology library (Bldg. 463). For more information call Jim Hainfeld, Ext. 3372.

Afro-American Club

The 20th anniversary of the historic "March on Washington," led by the Rev. Dr. Martin Luther King, Jr., in 1963 is quickly approaching. This year's march will be held on August 27 with an emphasis on Jobs, Peace and Freedom. Buses will be leaving Suffolk County to make the trip to Washington, D.C. Those who would like to participate should contact the Club through Ralph Wilson, Ext. 3572/3900, or Deidre Seymore, Ext. 5037.

Rose Pruning

The time to prune rose ramblers is nearing, says the Cooperative Extension Association of Suffolk County. Ramblers differ in their flowering habits from most other roses in that the flowers are produced upon the previous year's wood. Since cutting this year's wood could reduce the number of flowers produced next year, pruning should focus on two-year old wood. After flowering, in late July or August, remove the older wood and cut back the tops of this year's growth about six inches, to stop further development and induce maturity before winter.

Another important step is removal of suckers from budded roses. These wild shoots come from buds on the root stock and can kill or devitalize the top. Regard any strong shoot with suspicion, and if its origin is found below the bud union, remove the shoot.

Softball

Scores for week of August 1

League I

Ice Pops 18 - Big Sticks 9
Ice Pops 13 - Big Sticks 6

In this double header, Tony Mendez was the hitting star for the Ice Pops with 2 home runs in each game, one a grand slam.

Six Pax 12 - Ravens 8
Ravens 7 - Six Pax 4

Ed Meier Jr. had a home run in the first game for the Six Pax.

Phoubars 8 - Moles 4
Blue Jays 9 - AMD 2

For AMD, Frank Teich was 2 for 2, Jim Della Sala was 2 for 4. For the Blue Jays, L. Nieves and G. Oldham (with a broken finger) were 3 for 3; Hank Arnesen and Larry Musso were 2 for 3; Frank Palmeri was 2 for 4 with a home run.

Makeup games in addition to the doubleheaders above:

AMD 12 - Phoubars 11
Six Pax (won) - Ice Pops (forfeit)

League II

Roga 14 - Magnuts 10

Home runs by Pete Ratzke, Lou Cannizzo and Lou Snead.

Titans 20 - Random Errors 1
Light Source 10 - Dirty Sox 8
Medical 18 - Lights Out 9

An explosive 16 runs in the 5th inning enabled Medical to overcome a 5 run deficit to win the game.

League III

E-Z Riders 5 - Nads 4
No Names 10 - Mole-Esters 5
TNT 7 - Survivors 4

League IV

Septembers vs. the Source
Game rained out.
Random Sample (won) - Who Cares (forfeit)
Turkeys 11 - Mudville Sluggers 7
Underalls 16 - Spacekadets 13
No Feedback 8 - Who's On First 7

Makeup game:

Turkeys (won) - Who Cares (forfeit)

Pool Races

Winners of pool relay races on July 29 were as follows:

Ages 4 and 5
1st Adam Huhn, Kelly and Shannon Drossel
2nd Melanie Suller, Jan Marcel, Nikhil Baghatt
3rd Hefziba Ten Brink, Sammy Rosenthal, Kevin Holden

Ages 6 and 7
1st Carolyn Galayda, Christa Chiapeta, H. Meron
2nd Rakesh Singh, Christine Hsieh
3rd Chris Fox, Supna Bhagat, Jennifer Chen

Ages 8 and 9
1st Claire Suller, Nazik Moudden, Hilda Ten Brink
2nd Neesha Singh, Kaya Wielopolski, Kathleen Holden
3rd Jeffrey Chen, Yassir Moudden, Keith Chan

Ages 10 and over
1st Maurissa Holden, Wendie Vehlinger, Maya Wielopolski
2nd Gerenon Sistenich, Aluse Holden, Laurie Sobers, Jennifer Chan
3rd Megan Holden, Garen Thomas, Keith Holden

Last Friday's pool special featured displays of varied talents. Winners were:

Ages 4 and 5 — Cup Race
1st John-David Beuhler
2nd Nikil Bhagat
3rd Hefziba Ten-Brink

Ages 6 and 7 — Cup Race
1st Kerry Parsons
2nd Supna Bhagat
3rd Amy Colleran

Ages 8 and 9 — Cup Race
1st Ann-Claire Thiry
2nd Jeffrey Chen
3rd Hilda Ten-Brink

Ages 10 and over — Ping Pong in Spoon Race
1st Megan Holden
2nd Greg Holden
3rd Alyse Holden

Arrivals & Departures

Arrivals

None

Departures

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

Gary F. Benenson..... Accelerator
Ronald W. Oram ..... Accelerator

Cafeteria Menu

Week Ending August 19

Monday, August 15		
Cream of potato soup	(cup)	.65
	(bowl)	.75
Western omelet & hash browns		1.80
Sweet 'n sour pork on rice		1.95
Hot Deli — Breaded chicken pattie club	(bread)	1.95
	(roll)	2.10
Tuesday, August 16		
Beef barley soup	(cup)	.65
	(bowl)	.75
Tomato poached cod 1 veg.		1.90
Braised beef & 1 veg.		2.00
Hot Deli — Pastrami	(bread)	1.85
	(roll)	2.00
Wednesday, August 17		
Split pea soup	(cup)	.65
	(bowl)	.75
Shrimp cakes w/cream sauce & 1 veg.		1.90
Old fashioned beef stew on egg noodles		1.85
Hot Deli — Italian-style meatball hero		1.95
Thursday, August 18		
Minestrone	(cup)	.65
	(bowl)	.75
Western style chili on rice		1.85
Spaghetti special "All you can eat" w/meatsauce & garlic bread		1.95
Hot Deli — Grilled Reuben		1.90
Friday, August 19		
Seafood chowder	(cup)	.85
	(bowl)	1.00
Roast fresh ham & 1 veg.		1.95
Baked meatloaf & 1 veg. w/mushroom gravy		1.85
Hot Deli — Corned beef	(bread)	1.85
	(roll)	2.00

Reports Available

The following reports are now available to the Laboratory staff and to affiliates of the DOE, AUI and NRC. Others may purchase the reports from the National Technical Information Service, U.S. Dept. of Commerce, 5285 Port Royal Rd., Springfield, VA 22161. Staff members should call Ext. 5068.

NUREG/CR-1967
BNL-NUREG-51543
Failure Evaluation of a Reinforced Concrete Mark III Containment Structure Under Uniform Pressure. S. Sharma, M. Reich, T.Y. Chang, S. Shtyngart

NUREG/CR-2755
BNL-NUREG-51544
Packing Material Testing Required to Demonstrate Compliance with 1000-Year Radionuclide Containment. G. Bida, D. Eastwood

BNL-51568
A Review of Coal Supply Models and Forecasts: A Critique of the Current State-of-the-Art. R. Newcombe

BNL-51596
Coal-Oil Mixtures — An Alternative Fuel for the Commercial Sector Annual Report — Fiscal Year 1981. T. Butcher, C.R. Krishna, J. Saunders

NUREG/CR-3010
BNL-NUREG-51601
Post Event Human Decision Errors: Operator Action Tree/Time Reliability Correlation. R.E. Hall, J. Fragola, J. Wreathall

BNL-51608
Gas-Fired Submerged Combustion Solencon Hot Water Boiler. A.W. Johnson

BNL-51610
The Effects of Magnetic Non-Linearities on a Stored Photon Beam and Their Implications for Superconducting Storage Rings. M. Cornacchia, L. Evans

BNL-51612
Solidification of Oils and Organic Liquids. D.E. Clark, P. Colombo, R.M. Neilson, Jr.

BNL-51614
Waste Form Development Program. Annual Progress Report Oct. 1981 - Sept. 1982. R.M. Neilson, Jr., P. Colombo, et al

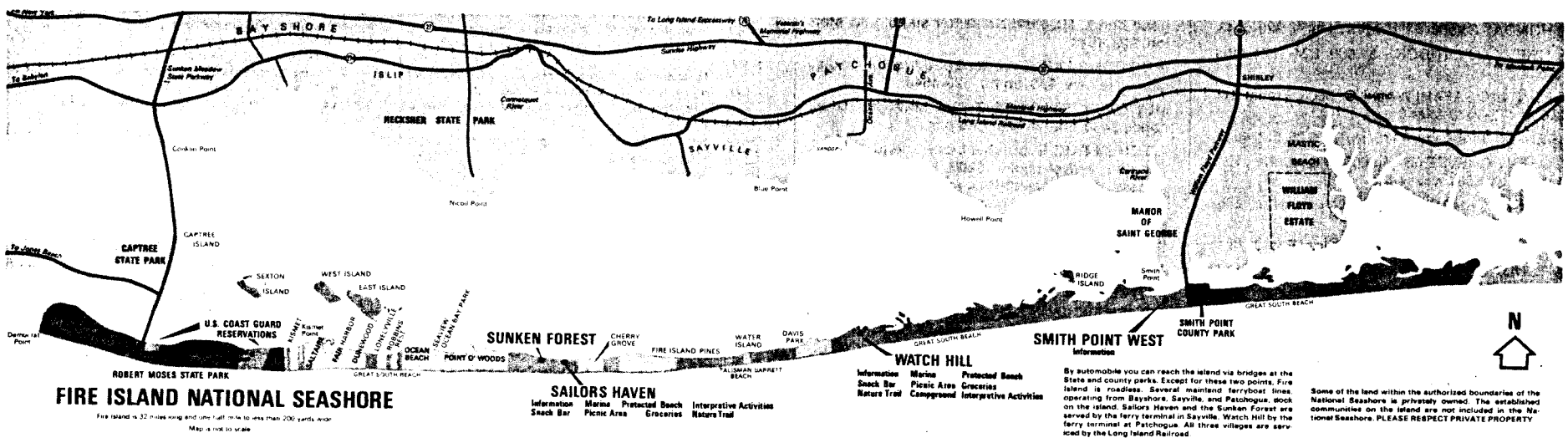
NUREG/CR-3073
BNL-NUREG-51616
Constitutive Relations in TRAC-PD2. U.S. Rohatgi, J. Jo, L. Neymotin

NUREG/CR-3014
BNL-NUREG-51621
Assessment of the Thermal Hydraulic Technology of the Transition Phase of a Core-Disruptive Accident in a LMFBR. G.A. Greene, T. Ginsberg, M.S. Kazimi

NUREG/CR-3086
BNL-NUREG-51629
Investigation of the Conservatism Associated with Different Combinations Between Primary and Secondary Piping Responses. Y.K. Wang, M. Subudhi, P. Bezler

BNL-51634
The 1982 Breeding Bird Censuses and Summary of 1977-1982 Results. G.S. Raynor

BNL-NCS-51635
Review of Panel on Reference Nuclear Data Surveys and Discussions on Reference Nuclear Data Needs. T.W. Burrows



One of the most beautiful barrier beaches in the world, Fire Island is 32 miles long and one-half mile to less than 200 yards wide. Still relatively unspoiled and isolated, it is a combination of fine-grained quartz sand, twisted pines, marshes, wildlife, and dunes dotted with beach plum, wild rose, beach grass and poison ivy. Whipped into existence by wind and waves, it could also disappear by the same means. About the only thing that is prohibited on the beach is running on the dunes. As their fragile vegetation protects the existence of the entire island, visitors are cautioned to leave them undisturbed. Besides swimming in the ocean and strolling on the beach, visitors may cast in the surf for striped bass, bluefish, mackerel, weakfish and fluke. On the bayside, many other fish may be caught and treading for clams is popular. Guided nature walks are offered through the maritime Sunken Forest, a unique retreat from sun and sand. Although the eastern end of the island may be reached by automobile across Smith Point Bridge, regular ferry service is also available from Bay Shore, Sayville and Patchogue to points west.

Classified Advertisements

Placement Notices

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

Each week, the Personnel Office lists new personnel placement requisitions. The purpose of these listings is, first, to provide open placement information on all non-scientific staff positions; second, to give employees an opportunity to request consideration for themselves through Personnel; and, finally, for general recruiting purposes. Because of the priority preference policy stated above, each listing does not necessarily represent an opportunity for all candidates. As a guide to readers, the listings are grouped according to the anticipated area of recruitment.

Except when operational needs require otherwise, positions will remain open for one week following publication date.

For further information regarding a placement listing, contact the Personnel Placement Supervisor, Ext. 2882.

LABORATORY RECRUITMENT: Opportunity for present Laboratory employees.

1925. ELECTRICAL ENGINEER - Requires MS in electrical engineering or equivalent. Candidates must have a broad background in analog circuit engineering, feedback systems and controls, high-frequency low level RF circuitry, and HV pulsed systems. Applicants must have a solid record of accomplishments and a sound ability in network analysis, feedback theory and signal treatment. Position involves narrow and broad band electron beam coupled feedback systems for the suppression of beam longitudival and transverse instabilites. National Synchrotron Light Source Department.

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

1926. PAINTER A (temporary opening) - Under minimum supervision, performs wide variety of interior and exterior skilled painting operations on buildings, furniture, and Laboratory equipment. Must know use and application of paints, synthetics, bleaching materials, stains and similar products. Plant Engineering Division.

Autos & Auto Supplies

79 HONDA MOTORCYCLE - CM400T, $1,000. Ext. 7125.

RADIAL TIRES - (2) P155/80R13, $50. Jake, Ext. 4532.

72 KARMEN GHIA - $2,700. 286-8921 after 6 p.m.

73 VW BUG - $2,000 neg. Ext. 3011.

FUSE KITS - for British autos. Susan, Ext. 4267.

78 CADILLAC EL DORADO - $7,000. 473-4948 eves.

81 TOYOTA CELICA GTA - Linda, Ext. 7745.

75 PLYMOUTH CUSTOM VALIANT - Rich, Ext. 4134.

73 CHEVY IMPALA - $400. Ext. 4796 or 289-1705.

65 VW BUG - extras, $400. 281-7230.

69 VW BEETLE - $300. Ext. 4587.

74 BRONCO - 698-1676 after 5:30 p.m.

81 CHEVY MALIBU CLASSIC - $6,100. Marcie, Ext. 5294.

CHEVY WHEELS - (3) 15-1/2", $12/ea. 751-3062.

79 MUSTANG TURBO - $4,200. Ray Patuano, 666-0587.

GM WHEELS - 6 lug, $10/ea.; '76-'81 GM truck chrome bumper guards, $20. Paul, Ext. 4665 or 727-4859.

72 VW BUS - asking $1,000. 654-2076.

73 VW TRANSMISSION - semi-automatic, $90. Toni, Ext. 2907.

VW TOW BAR - $50; VW parts, new. Augie, Ext. 2419 or 289-4211 eves.

72 OLDS DELTA 88 - $550. Paul, Ext. 3080 or 473-3689.

HONDA SR - Express, $350. Sal, 331-1256 after 6 p.m.

71 VW SUPER BEETLE - $600, neg. 751-5378.

79 HONDA - CX500, $1,200 firm. Chris, 929-6543.

76 CHEVY LUV TRUCK - $2,000. 324-1984 after 5 p.m.

73 PONTIAC SAFARI WAGON - $800. Frank, Ext. 7200 or 473-9379 after 6 p.m.

TIRES - (4), Firestone, P175/75R14, $25. Ext. 4846.

80 CHEVY CHEVETTE - $3,000 or best offer. Ext. 3131 or 731-6581 weekends.

76 CHEVY CAMARO - $2,000 or best offer. 286-8041 after 5 p.m. or weekends.

77 BUICK LESABRE - Custom. Hirai, Ext. 3113.

75 HONDA CVCC - wagon, $1,195. 289-9074 eves.

80 TOYOTA COROLLA - $3,600. Ext. 3890.

76 MERCURY MONARCH - $1,900 or best offer. Ext. 7160 or 736-1525.

68 DODGE CHARGER - best offer. Mary Jean, Ext. 3630 or 246-9235 after 7 p.m.

75 FORD TORINO - $900. David, Ext. 4362 or 4890.

68 VW - $300. Ext. 4308 or 878-2179 after 5 p.m.

72 MERCURY COMET - $500. Ext. 2909 or 473-5996.

71 VW SUPER BEETLE - $200. 286-2718 after 6.

75 FORD TORINO - $1,200. 924-0589.

76 HONDA - 750 CB. 363-7032.

68 DODGE WAGON - $175. Dave, Ext. 3093 or 281-0062 eves/weekends.

78 JAWA MOPED - Ext. 3894 or 744-9812.

74 GREMLIN - asking $500. Ext. 7707.

WATER PUMP - new, 1969-1971, for 307 V8, $15. Paul, Ext. 4156.

71 PONTIAC VENTURA - $500. 821-0144 after 6 p.m.

75 FORD UTILITY TRUCK - $3,000 or best offer. Mack, 589-8228.

74 VEGA GT - $250. Duke, Ext. 3371 or 289-3586.

80 RENAULT - LeCar Deluxe, $2,800. Ron, Ext. 3887 or 286-0353.

72 FORD LTD - Country Squire Wagon, $900. Ron, Ext. 3887 or 286-0353.

79 CHEVETTE - $1,995. 473-2473.

80 CHEVETTE - $3,500. 732-7444.

74 TOYOTA COROLLA - $1,400. Ext. 2057 or 261-5735.

81 COLEMAN POP UP CAMPING TRAILER - Sun Valley, $3,000. Chuck, Ext. 4483.

CANVAS TOP - beige, for 79 Renegade jeep, $200 or best offer. 286-8041 after 5 p.m.

30 CHEVY - restoration started, all parts. Pete, 744-8349 after 6 p.m.

Boats & Marine Supplies

19' THUNDERBIRD - all glass, sit down cabin, 105 HP Chrysler, $2,200. Ext. 2075.

75 CHRYSLER - 35 HP, outboard, controls, gas tank, battery, runs well, $500. Jeff, 286-0353.

19' LIGHTING - wood, blue, 4 sails, extras, $500 neg. 751-5378.

27' OWENS - cabin cruiser, in water, runs excel., will demonstrate. Ext. 3698 or 496-4585.

69 CHRIS CRAFT - mahogany speedboat, 283 cu. in. inboard, rebuilt, $3,000. Ext. 7160 or 289-0602 eves.

ENGINE - Chrysler Marine, 400 cu. in., excel. cond., will demonstrate, $400. Bob, Ext. 4220 or 286-8770.

20' CRUISER - 1979 Beach Comber Holiday, 200 HP OMC, full galley, sleeps 4, galvanized trailer and electric winch, many extras, excel. cond., $14,500. 475-8219.

MUSHROOM ANCHOR - 100 lbs., can be used for mooring, $100. 751-6418.

Yard Sales

MILLER PLACE - Sat., August 20, 9:00-5:00, 47 Radio Avenue.

MASTIC - Aug. 13&14, 91 Abbott Ave., toys, baby items, children's coats, much more.

RIDGE - Aug. 13-14, 10 a.m.-4 p.m., 17 Gull Dip Rd., off Half Moon Pond Rd., off Rt. 25, at blinker just east of Wm. Floyd, furniture, clothes, etc.

Lost & Found

LOST - Wilson Jack Kramer Pro tennis racquet, near tennis court. Christine, Ext. 3107.

FOUND - keys in parking lot, Bldg. 197B, on 8/5. Karen, Ext. 2950.

Free

ROCKS - large assortment for young collector. Fred, Ext. 4988.

DOG - miniature Collie mix, very loveable, ideal with kids, young dog. Carol, Ext. 2907 or 698-8510.

OLD CAR SHOW - Sunday Aug. 14, neighborhood Rd., Mastic Beach. Judy, Ext. 3496 or 281-4472.

PUPPIES - Samoyed mix, 5 weeks old, 4 males, 3 females. Joe, Ext. 7519 or 732-8303.

CONSOLE TV - color, Sylvania, 21" for parts. 286-8521.

Miscellaneous

GOLF CLUBS - driver, sand wedge, 8 iron, 2 putters. George, Ext. 7956.

BABY STROLLER - converts to carriage, Hedstrom, $10; training seat, wood frame, $4. Ext. 7530.

CASEMENT WINDOWS - heavy duty, aluminum screens, storms incl., various sizes, $20/ea. Niels, Ext. 4124.

8 TRACK TAPES - rock & classical, $2/ea. Janet, Ext. 2345.

AIR CONDITIONER - Sears Coldspot, 4,500 BTU, $60. Karen, Ext. 2950.

FUR COAT - size 14, muskrat, mink dyed, very good cond., $300; music center stand, $20. Marion, 929-4540.

PING PONG TABLE - w/net & paddles, fold to play back, like new, $30. Jo hn, 929-4540.

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

KITCHEN TABLE - butcher block, round, 42" dia., 3 leather swivel chairs, $200; Frigidaire upright freezer, 18.7 c.f., frost-free, excel. cond., reasonable. 363-6121 after 6 p.m

COLLECThOR DISHES - Royal Copenhagen and B&G, $45. Ext. 2888.

ANTENNAS - Wilson Tribander, 3 yrs. old, $60 & Radio Shack V-185, brand new, $50. 744-9677.

AIR CONDITIONER - Sears, 11,000 BTU, operates on regular wall outlet, v.g. cond., $125. John, Ext. 5152 or 281-2471.

BMX BICYCLE - Schwin Scrambler, free wheel, front & back hand brakes, cal. lite pads, back z rim, $135; Tecumseh mini bike, 5 HP. Chris, 585-4038.

PINE BEAMS - 12-14 ft. long, 6x12, 4x12, 4x8. Ext. 2081 or 878-9384.

BASF BLANK CASSETTE TAPES - C-90, Proll, CrO^{32}, $2.75/ea. Ext. 2521.

DOUBLE HIBACHIS - $8; (2) wood frame sand canvas back rest & seat, $ ea.; (2) beach/pool bath/body towels, striped 36x64, $5/ea.; Detecto scale, gold base, pink & gold flecked mat, new, $15. 289-6490.

LEATHER TRUNK - sturdy, 20"x36"x12, $35. 751-3062.

FREEZER - 12 cu. ft., excel. cond.; large blue/w hite bathroom vanity, $50. 298-4398.

PORTABLE DISHWASHER - Hotpoint, good cond., cutting board on top. 924-0983.

HI-FI CABINET - mahogany, custom made, with speaker, $35; Emerson air conditioner, 8,000 BTU, $125. 265-0501 after 6 p.m.

WOMAN'S BICYCLE - 3 spd., Raleigh, $45; air conditioner, window-unit, Emerson, $110; full size mattress, $20. Ext. 3182 also eves.

ANTIQUE DRESSER - walnut, 4 drawers, with mirror, good cond. Walt, Ext. 7154 or 754-1392 after 7.

ELECTRONIC STROBE LIGHT - rechargeable, use with any 35 mm camera, $10; Carbide Datto blade, adjustable, $20. Ext. 3405.

DELTA SKY KENNEL - to house small dog when traveling by air. Al, Ext. 2043.

HEAD GK03 SKIS - Austrian, with Solomon binders & women's Nordica ski boots, size 8, $100 takes all. Ext. 2705 or 286-1062.

OIL BURNER - good for separate hot water unit; suitcase, 25"x32", on wheels, used once, $25. Frank, Ext. 2350 or 475-8187.

REFRIGERATOR - Westinghouse, $60; Sears workbench, $10; photo developing kit, $25; projector screen, $20. Yoko Ozaki, Ext. 4876 or 3915.

DINING ROOM TABLE - and 4 chairs, excel. cond. 928-6930.

DOLLHOUSE - wallpapered, painted, 6 rooms, $10; framed backpack, excel. cond., with hipbelt, $20. Jack, Ext. 3040 or 399-5042.

NIKON LENS - 55 mm, 1.8E, as new, $35. Vasilis, Ext. 2830 or 543-0487.

BLOW DRYER - Sears 1500, $5; oil painting, $10; auto slip cover, new, $2; Royal elec. typewriter, $100. Ext. 3113.

REFRIGERATOR - old, needs paint, works well, $25 or best offer. Dan, Ext. 3631.

ORGAN - Yamaha Spinet, 2 keyboards, auto chords, preset instruments, much more, new cond., cost $2,100 sell for $900. Richie, Ext. 2175 or 734-7342E.

PRESSURE COOKER/CANNER - new, still in box, 16 qt., $40, sells for $80; 3 doz. qt. jars, $3 dozen. 878-6637.

EXERCISE BICYCLE - Sears, excel. cond., $45. Bill, Ext. 4633.

PAINT - 3 gallons, Fuller O'Brien exterior flat, pale yellow. Les, Ext. 5180.

COUCH - vinyl sleeper, 72", excel. cond., rust color, $150. 289-3047 after 6 p.m.

HOBBY GREENHOUSE - 8'x12', plastic pipe frame, complete, $100. 473-7667.

RAILINGS - (2), for a 3-step stoop, heavy duty wrought iron. Jim, 744-3792.

FOAM MATTRESS/FRAME - queen, good cond., $50; Philco-Ford color TV/photopfact folder, needs work, $25; Kenmore washer, works well, $50; sofa, turns into bed, $100. Ext. 2733 or 878-8491.

CONSOLE TV - black & white, 23", needs minor repair, $25. Ext. 4156.

DINING TABLE - oval, 42"x58", 12" leaf, very good cond., asking $50. Ext. 7505 or 689-8605.

PING PONG TABLE - 3/4 in., with net and paddles, $40; ITT flash for Polaroid Pronto, $10. 928-1831.

PING PONG TABLE - folds for single player, $50. Duke, Ext. 3371 or 289-3586.

Real Estate

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

For Sale

MARGARETVILLE, NY - year round, 2-plus bdrms., 2 baths, elec. & wood heated, full cellar, fireplace, 2 car garage with shop & loft, all heated & insulated storage bldg., 8 acres, 2 cleared, 1/2 stream, adjoins state land. (914) 586-4634.

COOPERSTOWN, NY - 200 acres, reasonable. 363-7032.

RICHMOND, NH - secluded 3+ acres for vacation/retirement home or camping, with membership share in 35 member co-operativethat owns surrounding 400 acres, prime woodland, 3 ponds, swimming, fishing, boating, etc., 5-1/2 hrs. from BNL. Bob, Ext. 4824/4688 or 744-5098.

STONY BROOK - 5 bdrms., 3 baths, hi ranch, 3,000 sq. ft. on landscaped half acre, walk to SUNY, central air, w/w, s/s, $128,500. 751-2030.

RIDGE - one acre bldg. plot, 100 x 400, fully wooded, in quiet established residential area, only $13,900. 924-3236.

SAYVILLE - cedar & brick ranch, 7 rms., eik, d/r, 2 full baths, full basement, garage, central air, excel. cond., can be made mother/daughter apt., across from golf course, $69,900. 589-2681.

For Rent

EASTHAM, CAPE COD - Sept.-Oct., 4 bdrm. house, sleeps 8, 2 baths, washer/dryer, dishwasher, deck, near beaches, fall rates. 722-386 eves & weekends.

APT - 1 bdrm., Sept. '83-May '84, 12 min. from Lab, $420/mo. heat included. 878-9520.

APT - modern, 4 rm., 2 bdrm., full bath, refrigerator, gas stove, oil heat, private thermostat, private entrance, 1 flight up, prefer working couple, reference. 924-0983.

APT - 3-1/2 rm., lg. kitchen, full bath, private entrance, carpet + cable, $500/mo. pays all, 1 month security, avail. Oct. 1st. 878-0480 eves.

SHIRLEY - apt. with large rooms & closets, 3 rooms with bath, near Lab, working person or couple preferred. 281-6699.

Car Pools

NORTH SMITHTOWN - would like to join or start car pool. Judy, Ext. 2145.

BELLPORT - need individual to complete 4 person car pool, 8:30-5:00. George, Ext. 7654.

Wanted

CAMPBELL SOUP LABELS - send to F. Chandler, Bldg. T-89 (For St. Mary School, East Islip).

HOUSEKEEPER - to care for home & children. 744-4611 after 7 p.m.

SOCCER COACH - handicapped children, North Shore PAL, Rocky Point, Fall 1983, clinic available. Tony, Ext. 3198 or 924-5248.

TRAILER - for 16 ft. rowboat. Ext. 7226.

BUNK BEDS - Linda, Ext. 7745 or Walt, 722-3938.

HOUSE TO SIT - 8/22-9/9, reliable, references, excel. w/animals. Joe, Ext. 7961.

MODEM 1200 BAUD - Jerry, Ext. 2934.

CONVERTIBLE SOFA - reasonable. Ext. 4547.

WOOD STOVE - Vermont, Castings, Defiant, reasonable. Ken, Ext. 4514 or 289-8212 eves.

FRANKLIN STOVE - used, wood burning. Tim, Ext. 3436 or 727-7741.

WASHING MACHINE - gold, good condition. 298-4398.

RIDER TO L.A. - leaving in about 2 weeks. 363-7032.

OLD WATCHES - & clocks, espec. cuckoo clocks in any cond. Al, Ext. 2043.

BOOK - Valley of the Horses. Janet, Ext. 2345.

ELECTRIC GUITAR/AMP - to rent to end of Aug. Nick, Ext. 4890.

HOUSE OR APARTMENT - to rent, Bellport/Brookhaven Hamlet area, family of 4. Venki, Ext. 3388.

HOUSEKEEPER - teenage girl in Bellport/E. Patchogue to care for home. 286-8521.

HOUSEMATE - to share spacious condo., patio, washer/dryer, storage shed, w/w carpeting, central air, good location, must be responsible, mature, dependable female, $275/mo. includes all. 924-6772.

APARTMENT - 2 bdrms., Miller Place/Port Jefferson/Setauket area, reasonable, refs. Donna, Ext. 2926 eves.

Ads for Services may be posted at the BERA Sales office.

Classified Ad Policy

Deadline is 4:30 p.m. Friday for publication Friday of the following week.

1. The Brookhaven Bulletin's classified section may be used only by active and retired Laboratory employees.
2. All items for sale or rent must be the advertiser's property.
3. Ads for material acquired for resale in association with a full or part-time business cannot be accepted.
4. Ads for the sale or trade of firearms will not be accepted.
5. Ads not carried because of space restrictions will be held for publication in the next issue.
6. Ads are run only once and must be resubmitted if they are to be repeated. One ad per person per week.
7. **Property for sale or rent cannot be accepted on this form. Special Real Estate Ad Forms are available at the office of the Brookhaven Bulletin, Building 134.**

☐ For Sale: Autos & Auto Supplies ☐ For Sale: Boats & Marine Supplies ☐ For Sale: Miscellaneous ☐ Car Pools ☐ Wanted ☐ Free ☐ Lost & Found

Please print your ad below in 15 words or less using one word per block. Include name and phone number to call.

Note: The following must be completed for your ad to appear.

NAME (Please Print) .....

Employee's Signature ..... Life No. ..... Ext. .....

Send to: Brookhaven Bulletin, Building 134 (Ext. 2345).

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