BROOKHAVEN BULLETIN
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BROOKHAVEN NATIONAL LABORATORY

Keeping Cables Cool

Power Transmission Project Passes Definitive Test

When can something "cold" produce something "hot"? A simple answer to this paradoxical question is found in BNL's Power Transmission Project. The project is based on the principle of superconductivity, which holds that when certain materials are chilled to temperatures approaching absolute zero on the Kelvin scale (—459°F), all electrical resistance suddenly disappears and the material becomes a "superconductor." Acting on this principle, the project is using a "cold" cryogenic system to develop a viable and cost-effective means of transmitting large amounts of "hot" electrical power through underground cables.

Since 1975, when the first brick was laid at the demonstration site of the BNL system, there have been a number of landmark accomplishments. One of the most important occurred last month when, according to Eric Forsyth, head of the Advanced Technology Applications Division, "The definitive test of the 100-meter superconducting cable enclosure went off without a hitch."

Although the November test was successful, Jack Jensen, deputy manager of the Power Transmission Project said, "This is a story that has taken a year to be written." Back in November 1979, a first test of the cable enclosure, located on East Fifth Avenue, was undertaken to measure the performance of the complete cryogenic (cooling) system. The objective of the test was to determine the amount of heat that can be tolerated in both the cable and its terminations.

The cable enclosure consists of one pipe suspended inside another, with the space in between evacuated — rather like a giant thermos bottle. The inside pipe contains the superconducting cable cooled to about 8 Kelvin; the outside pipe is at ambient temperature. Because the refrigerator can only maintain temperature with a fixed head load, it is important to know the amount of heat "leaking" into the inside pipe. The balance left after accounting for the heat leaking in determines the amount of heat that can be tolerated.

A Tale of Three Turbines

After a couple of days of testing, the refrigerator broke down. It was quickly determined that the three high speed turbines, vital components of the refrigeration system, had been damaged. Thus, efforts were then directed towards determining the cause of this problem and solving it.

These turbines were manufactured by Sulzer Brothers in Switzerland using highly specialized engineering techniques which were necessary due to the very high rotational speed of the turbines — about 200,000 rpm. This speed is achieved only because the turbines act like miniature helicopters and "lift off" the bearing pad so that they rotate without metal-to-metal contact.

On disassembly in Switzerland the word was flashed back that the culprit was glycol, which had been detected in the turbine housings. This triggered a three month search to find the source of glycol leakage into the helium stream somewhere in the maze of pipes and heat exchanger. By February every source of possible leakage in the equipment had been rigorously checked and given a clean bill of health. The only remaining possibility was that the leakage originated within the turbine cartridges, which are also cooled by a water-glycol mixture. A special rig was constructed at BNL to test the cartridges for leakage and, sure enough, under some conditions minute amounts of coolant could be induced to break through the seals. The cartridges were returned again to Sulzer Brothers and a new seal was quickly designed. In early May, three cartridges with the new seals were received at the Laboratory. A quick check showed the leak problem had been eliminated and the turbine cartridges were promptly in-

(Continued on page 2)

Doug Humphrey

Last summer, this team of technicians took a moment to pose with the 100-meter superconducting cable enclosure at the Power Transmission Project's East Fifth Avenue demonstration site. (From left) John Valek, John Tradeski, John Slavik, supervisor John Wilcenski, and Conrad Dabrowski were responsible for the construction of the cryogenic system and the solution of the turbine seal problem. This November, they saw these efforts pay off when the "definitive" test of the cable enclosure was concluded successfully.

BNL Lecture

Lasers Shed Light On Chemistry

In its early days, the laser was disparaged as "a solution in search of a problem." At the next BNL Lecture, entitled "Shedding Light on Chemistry with Lasers," Ralph E. Weston, Jr., Associate Chairman of the Chemistry Department, will discuss the evolution of the laser into an almost indispensible tool for the solution of problems in the field of chemical physics. Weston will speak on Wednesday, December 17, at 8 p.m. in Berkner Hall.

At the border between chemistry and physics, chemical physics includes the study of detailed energy states of atoms and molecules. Laser light has unique properties which permit routine experiments that were impossible a few years ago. Weston's talk will focus on extremely sensitive analytical methods used in some recent experiments. With these methods, single atoms, or contaminants, at levels of less than one part per billion can be detected. At these levels, the laser methods rival radiochemical techniques for sensitivity.

Lasers are being used in chemical physics in both old and new areas of research. Much of chemistry has always been concerned with the study of chemical reactions. Lasers are now being used to gather detailed information which is important for the development and refinement of theories of chemical reaction. Breaking new ground, the use of lasers that emit short pulses of infrared radiation has led to a new field of photochemistry that deals with the reactions of vibrationally excited molecules.

Weston's own research at BNL has encompassed both these areas. He has conducted studies of energy transfer from vibrationally excited molecules and chemical reactions of the energetic molecules.

Ralph Weston came to BNL in 1951 as an Associate Chemist. As a chemist Weston has been continually involved in research and has served as a visiting lecturer at Hunter College, the University of California at Berkeley, Columbia University, and the Centre d'Etudes Nucleaives, Saclay, France. In 1976 he was appointed Assistant Chairman of the Chemistry Department and became Associate Chairman in 1979.

After receiving his B.S. in Chemistry at the University of California at Berkeley in 1947, Weston was awarded a Ph.D. in Chemistry from Stanford University in 1950. From 1949 to 1951, he was a Research Fellow at Harvard University. He is a member of the American Chemical Society and the American Association for the Advancement of Science. Weston has had over 60 publications in scientific journals and, with H.A. Schwarz, was co-author of the book, *Chemical Kinetics* (Prentice-Hall, 1972).

A buffet supper is served at 6:30 p.m. at the Brookhaven Center before the lecture. Many find it convenient and it is a pleasant way to meet members of other departments. Reservations for the buffet should be made in advance by calling Ext. 3541 before 5 p.m. on the day of the lecture.

Doug Humphrey

Ralph E. Weston, Jr.

CABLES (continued)

stalled in the regrigerator. A successful test of the complete system was carried out in mid-May.

Fourth Turbine Added

These efforts paved the way for the final step: the installation of a fourth turbine at the far end of the enclosure. This configuration was invented by the Power Transmission group and is the subject of a patent filed by BNL and assigned to the Department of Energy. The extra turbine improves the efficiency of the system by permitting the cable itself to act as a heat exchanger in the cooling system. Helium gas sent down the center of the cable is expanded by the far-end turbine, and the cooler, low pressure helium then makes the return trip on the outside of the cable.

The installation of the new turbine and all auxiliary components was accomplished over the summer. A new computer, designed and built by the Instrumentation Division, was also installed. On Monday, November 17, 1980, the cool-down started. During the initial stages, only two turbines were spinning, but all four were running by Tuesday. Operation continued around the clock with everything running smoothly. By Thursday, the enclosure had cooled to about 8 degrees above absolute zero and heat was added. Numerous readings of temperature and pressure were recorded by the computer, which has been programmed by Rich Thomas to display the data on a symbolic flow diagram in full color. The amount of heat added was gradually increased to 600 Watts, and on Saturday afternoon, the system was shut down.

A Team Effort

Credit for this happy conclusion, said Forsyth and Jensen, goes to many individuals, including Bob Gibbs, supervising engineer at the Test Facility; design engineer Arthur Blummert; the team responsible for the construction of the cryogenic system and solution of the turbine seal problem consisting of supervisor John Wilcenski and technicians Conrad Dabrowski, John Slavik, John Tradeski and John Valek; Fred Kuhn, who built and installed the equipment controls; personnel from Plant Engineering, particularly plumber Jimmy Morris and welder Charley Vogel; and several electricians, most recently Walt Annand.

One more run is planned for March after which the cables and terminations will be added for the "big test" —the full power voltage and current trials at the 1000 MVA level.

A Comic Book...?

The complex world of high energy physics - how can it be explained simply and interestingly enough to arouse the curiosity of the average 13-year old? The Department of Energy thinks Miriam Lafleur can do it through cartoons.

A physicist who teaches at Vanier College in Montreal, Lafleur is also a cartoonist. Her cartoon series on energy was syndicated for 18 weeks in newspapers all across Canada, but it was while she was involved in a project at the Fermilab in Illinois that she came to the attention of DOE.

DOE envisions a colorful cartoon book of at least 20 pages that will explain what high energy physics is all about and how it is approached at three national laboratories: BNL, Fermilab, and SLAC in California. The idea for such a book was inspired by one produced by CERN in 1978, *Hunting Particles*, by Brian Southworth and Georges Boixader.

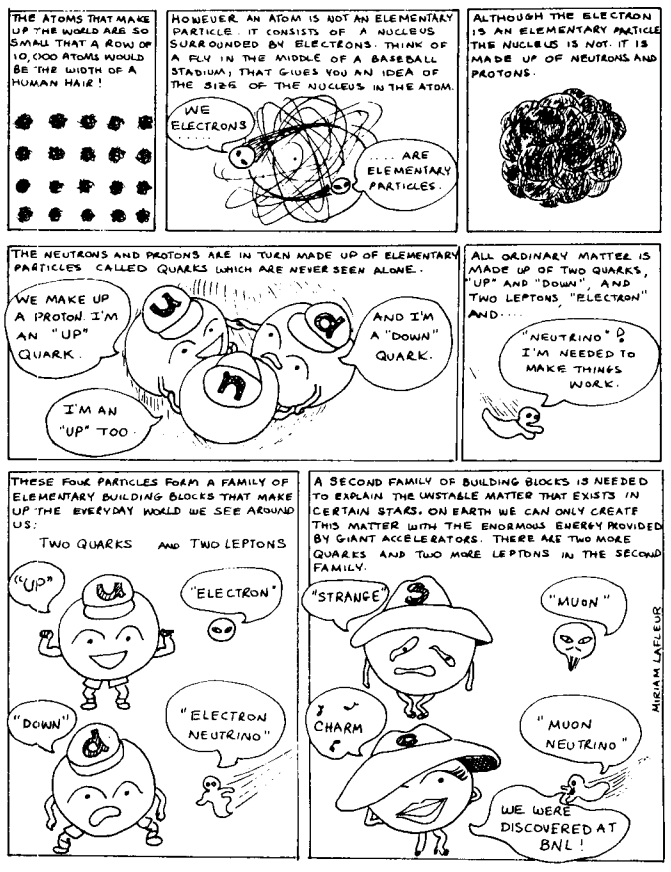
Lafleur visited BNL last month to get an overview of high energy physics here and to discuss the preliminary sketches she had brought with her. Guided by Neil Bagget, liaison physicist in the Director's office, Lafleur toured BNL in much the same manner as her cartoon characters will in the finished book.

The proposed characters are children whose curiosity about "How small is an atom?" leads them to the laboratory of a local physicist. The limitations of his small lab prompt the physicist to tell the children, "There are three laboratories in America that do experiments to look deeply into the nucleus [of an atom]. What do you say we visit them and see their giant accelerators at work?" BNL is the first stop on their tour.

Once the book is completed, which should be in about six months, it will be distributed to the public through the national laboratories. While it is intended for children, Neil Baggett said, "The cartoon approach is a good way to tell the world what we're doing." He described the reaction to the cartoon book as "enthusiastic" and said Lafleur's work aims to show that "physics is very much a human activity."

— Anita Cohen

At the drawing board in her Montreal home, Miriam Lafleur, cartoonist and physicist, completes an artwork for her 18-week cartoon series, "The Adventures of Energy Whizz and His Friends."



Created by Miriam Lafleur specifically for BNL, this cartoon series endows distinct personalities on the elementary particles studied in high energy physics. She may use some of these illustrations in the cartoon book she is now creating for DOE.

Patent Awarded

David Dew-Hughes, a former BNL employee, was recently awarded U.S. Patent No. 4,215,465 for an improved "Method of Making V_3Ga Superconductors."

Employees Honored

During 1980, 17 employees completed their 30th year at Brookhaven and 43 completed their 25th year. These 60 employees were the guests of honor at a reception held at the Brookhaven Center on Friday, December 5.

The reception featured cocktails, hot and cold hor d'oeuvres, and the music of "Horizon." On this occasion, the honored employees were joined by their spouses or guests, their supervisors, and members of the Director's Office.

BNL Singers

The BNL Singers will have their last rehearsal on Tuesday, December 16 so all stragglers should plan to meet at Berkner Hall at noon for a long get-together.

The performance will begin at lunchtime, in the Cafeteria on Thursday, December 18. On that day, the cafeteria staff will prepare a special holiday menu. The Carolers will perform for patients at the Medical Research Hospital around 2 p.m. and complete their tour at the Director's Office.

Holiday Concert

Bach's *Christmas Oratorio* will be presented at the annual holiday concert of the Long Island Symphonic Choral Association. Adding their talents to the performance will be BNL's Jane Danby, Juris Kaugerts, Dick Rothe and Art Scholtz.

The concert is scheduled for two performances, on Saturday, December 20 at 8 p.m. in the Chapel of St. Charles Hospital, Belle Terre Road, Port Jefferson, and on Sunday, December 21 at 7:30 p.m. in the Congregational Church, Patchogue. The chorus, soloists and 22-piece orchestra will be conducted by Gregg Smith.

Tickets are $4 for students and senior citizens and $5 general admission. For further information, call 751-1203.

Mountain Club

There will be a meeting of the Mountain Club on Tuesday, December 16, at 5:30 p.m. in the North room of Brookhaven Center. Winter activities will be discussed. Anyone interested in outdoor activities is welcome.

Food Services

The Vended Food Service in Building 912 will be open at all times and will be serviced regularly throughout the Christmas and New Year's Holidays.

The Cafeteria will close at 2:00 p.m. on Wednesday, December 24. On Friday, Saturday and Sunday, December 26 through December 28, and Friday, Saturday and Sunday, January 2 through January 4, Snack Bar Service will be available from 9:00 a.m. until 2:00 p.m.

The Cafeteria will be closed on Thursday, December 25 and Thursday, January 1.

The Center Club Snack and Beverage Bar will be closed on Wednesday, Thursday, Friday and Saturday, December 24 through December 27, reopening at 5:00 p.m. on Sunday, December 28. The Center Club will also be closed on Wednesday, December 31, reopening at 5:00 p.m. on Thursday, January 1.

The Coffee Truck will not make its rounds on Wednesday, December 24, due to the half holiday.

Cafeteria Menu

Week Ending Dec. 19, 1980

Monday, December 15

Beef barley soup	(cup)	.55
	(bowl)	.65
Veal pattie parmesan & 1 veg.		1.55
Chopstick tuna & 1 veg.		1.60
Hot Deli — Pastrami	(on bread)	1.65
	(on roll)	1.75

Tuesday, December 16

Potato leek soup	(cup)	.55
	(bowl)	.65
Grilled liver & onions w/1 veg.		1.55
Beef chili w/rice		1.50
Hot Deli — Italian sausage hero		1.70

Wednesday, December 17

Minestrone soup	(cup)	.55
	(bowl)	.65
Country fried steak & 1 veg.		1.65
Scalloped ham & potatoes		1.55
Hot Deli — Meatball & pepper hero	(on bread)	1.60
	(on roll)	1.70

Thursday, December 18

Christmas Special

Small juice or Cup of beef veg. soup
Choice of:
Standing steamship round
or
Chicken Kiev
Choice of:
Baked potato w/sour cream
& Stringbeans amandine
or
Buttered noodles & Glazed carrots
Coffee or Tea
Holiday cake
$2.95 plus tax

Friday, December 19

New England clam chowder	(cup)	.60
	(bowl)	.70
Shrimp sukiyaki w/rice		1.65
Sauerbraten & potato pancakes		1.60
Hot Deli — Smoked baked ham	(on bread)	1.60
	(on roll)	1.70

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Letters To The Editor

To all of Steve Stadnicki's friends at BNL:

I want to thank you all so very much for the love and support you gave my husband Steve during his illness. The many telephone calls, cards and the basket of fruit he received from you, definitely helped him through those days of his serious illness.

I must also thank you very much for the support you gave me after Steve's death. I greatly appreciated your generous money gift and all the lovely flowers you sent.

It gave me great comfort to see many of you at Steve's wake.

Steve was a very special person and touched many people's lives. Thank you so much for treating him in such a special way.

Elizabeth Stadnicki

To the friends of Warren Behie at BNL:

We would like to thank you all for your prayers and support during our time of sorrow. We cannot express in words our heartfelt appreciation for your generosity.

The Behie Family

Candy Orders

Today is the last day the BERA Sales Office will take orders for Swersey's holiday candy and cookies.

The office is open from 9:00 a.m. to 1:00 p.m.

Volleyball

Results of the Open League Tournament

Team	W	L	T	PT
Spikers	7	0	0	14
Moles	5	1	1	11
Brewmasters	5	2	0	10
Raiders	4	2	1	9
Toga	3	4	0	6
OTHG	2	5	0	4
Schpiken setsen..	1	6	0	2
Monday Terrors	0	7	0	0

For One Day Only

The recent three-day sale at the Exhibit Center's Science Shop was so successful that it's coming back - by popular demand - for *one day only*. On Tuesday, December 16, the Science Shop, which is located on the west side of Building 701, will open its doors from 10 a.m. to 3 p.m. Newly restocked "special gifts for special people" include such favorites as radiometers, gyroscopes and science kits.

FICA Change

Effective January 1, 1981, Social Security taxes will be deducted on the first $29,700 of each wage-earner's income at the rate of 6.65%. In 1980, the Social Security base was $25,900 and the rate of tax was 6.13%. This means the maximum Social Security tax a wage-earner pays in 1981 will be $1,975.05 compared with $1,587.67 in 1980, an increase of $387.38.

If there are any questions, call Maurice DuBois, Ext. 2487.

Bridge Club

Effective immediately, the Duplicate Bridge group will meet on Tuesday nights. For more details, call Colin Durston, Ext. 2598.

Emergency Closings

The following radio stations will carry notification of BNL delayed openings and emergency closings.

Station	Area	AM	FM
WBAB	Babylon	1440	102.3
WGLI	Babylon	1290	–
WLIX	East Islip	540	–
WHLI	Hempstead	1100	98.3
WALK	Patchogue	1370	97.5
WBLI	Patchogue	–	106.1
WRIV	Riverhead	1390	–
WRCN	Riverhead	–	103.9
WLNG	Sag Harbor	1600	–

Golf Champs

After four rounds of match play-offs, the 1980 BGA team championship was won by Kyung Lee and Kenichi Harigaya, who beat Ron Webster and Skelly Frei in the final match. Other team winners were Pete Bond and Mike Losquadro, and George Waldbauer and Joe Fortugno.

The individual championship tournament, another match-play event, was won by John Dioguardo over John Usher in a close match earlier this season.

The golf committee extends its congratulations to the winners and its thanks to the Golf League membership for helping to make this a successful and enjoyable season.

Doug Humphrey

1980 BGA team champions (from left) Kenichi Harigaya and Kyung Lee, and individual champion John Dioguardo, share the "thrill of victory."

Cooking Exchange

A crackling fire, good food, good company – all these and more will ensure a festive mood at the Cooking Exchange holiday party, to be held at the Recreation Building on Tuesday, December 16, between 5:30 and 7:00 p.m.

Please bring a dish of your favorite hors d'oeuvres or appetizers. There will be a charge of $1.50 per couple and babysitting will be provided at 25¢ per child. Call Ruth Fernow, 928-8465, for further details.

"Seasonings" cookbooks, containing recipes collected from past Cooking Exchange demonstrations, make tasteful holiday gifts. They can be purchased at the BERA Sales Office or during any Cooking Exchange meeting. The cost is $3.50 per copy.

Selected Reading

Time 116 (23) December 8, 1980
The Robot Revolution by Otto Friedrich, 72-83

Saturday Review 7 (16) December, 1980 The Unearthly Powers of Anthony Burgess by Rhonda Koenig, 34-37

Newsweek XCVI (23) December 8, 1980 Moscow's Polish Crisis, 40-49

U.S. News & World Report LXXXIX (23) December 8, 1980
Battle of the Sexes — Men Fight Back, 50- 54

New Scientist 88 (1227), November 13, 1980
Wood stoves: the trendy pollutant. Michael Allaby and Jim Lovelack. 420-2.

Science 210 (4471), November 14, 1980
Innovation: Japan races ahead as U.S. falters. Constance Holden. 751-4

Long Island Forum 43 (11), November, 1980
He founded Setauket's Library. William Brewster Minuse. 223-5

Scientific American 243 (6), December, 1980
Addictive behavior. Vincent P. Dole. 138-154

New Scientist 88 (1226), November 6, 1980
Science goes to the Karakorum. 374-377

Time 116 (19), November 10, 1980
A glorious, bubbly finale - Beverly Sills ends her opera career with a jubilee. 80

Nature 288 (5786), November 6, 1980
Plugging Nobel gap. 7

Bowling

Green League

The Pinball Wizards lost 11 to the Designers. The Sparks moved into a tie for first place as they took 5 from the Phoubars. The Blue Jays managed 6 from the Sandbaggers with N. Parrinello bowling a 200. The Old Timers II had a team gross series of 3039 and took 11 from the Light Source. G. Fales rolled a 215. The Trouble Shooters could only manage 3 against the Freon Loaders.

Purple & White League

The Diamonds won all 7 giving them a 5 point lead for 1st place. Ed Meier's 660 series (226/210/224) was high for the night and for the season, Jim Griffen rolled a 624 series (215/236/173) and Ken Riker rolled a 606 series (191/182/233). Other good games were bowled by Al Pinelli 218, Vito Manzella 211, Ed Sperry 202. Jeanne Penoyar converted the 6/7/10 split and Gerrie Riker the 4/5/7.

Red League

The Designers took the Pinball Wizards for 11. A. Pinelli (201) grossed 640, E. Sperry 637. The Freon Loaders won 8-3 over the Trouble Shooters. V. Bilms (205) grossed 662, T. Rudolf 618, R. Marlow 617, L. Schairer 612. The 76'ers took 8 from the Old Timers. R. Adams (201) grossed 612, M. Morris (201) 613 gross. The Strangers won 8-3 over This Isa Team. M. Iarocci rolled 202 and R. Taylor grossed 625. The Sandbaggers split 5-6 with the Blue Jays. R. Jones bowled a 217, K. Riker and A. Dick grossed 621.

Pink League

The Lickety Splits and Book-Ends are tied for first place. Carol Beckner bowled a 188/185/153 for a 526 scratch and Deb Johnson 182/187/142 for a 517. Other good games were bowled by Helen Keeley 190/169, Audrey Blake 176/160, Ellie Kristiansen 171, Karen Alberico 167.

Anyone interested in bowling full-time should contact Helen Keeley, Ext. 4649.

Arrivals & Departures

Arrivals

Thomas C. Esnes..... Plant Engrg.
J. Bruce Medaris, Jr...... Plant Engrg.

Departures

Harry E. Davitian..... Energy & Env.
Anna Marie C. Findley..... Chemistry
Donald C. Gregory..... Physics
Anthony S. Hendrick..... Energy & Env.
Daniel M. Hughes..... Personnel

Stony Brook Events

Exhibit: Printmakers, students of Art Prof. Dan Welden, through Dec. 29, Administration Gallery, first floor Administration Bldg. 8:30 a.m.-6 p.m., seven days a week.

Folk Dancing: International Folk Dancing, Mon., Dec. 15, 22 & 29, 8 p.m., Tabler Cafeteria. Students, $1; others, $2.50. Information: 935-9131.

Radio Program: An interview with folksinger Oscar Brand and comedien Shelley Berman on "The Lou Stevens Show," Fri., Dec. 12, 6 p.m., WUSB, 90.1 FM.

Music: Sea Cliff Chamber Players, Fri., Dec. 12, 8 p.m., Main Auditorium, Fine Arts Center. Students, sr. citizens, $5; others, $7.

Music: Fourth Annual Messiah Sing-In, Sat., Dec. 13, 8 p.m., Recital Hall, Fine Arts Center. Information: 246-5672.

Music: The Boston Camerata, Joel Cohen, director, Sun., Dec. 14, 3 p.m., Main Auditorium, Fine Arts Center. Students, sr. citizens, $6, $8, $10; others, $8, $10, $12. Information: 246-5678.

Music: Guitarist Steven Heim, Sun., Dec. 14, 8 p.m., Recital Hall, Fine Arts Center.

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. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161. Staff members should call Ext. 3484.

BNL 50923 **$5.25**
A Comparative Assessment of Energy-Economy Interactions. R.J. Goettle, IV, et al

BNL 51105 **$4.00**
A Strategic CostBenefit Analysis of Energy Policies: Overview. H. Davitian, et al

BNL 51110 **$6.00**
Energy-Environmental Impacts of Five Energy Conservation Measures in the Middle Atlantic and Pacific States. P.D. Moskowitz, et al

BNL 51127 **$6.00**
A Strategic CostBenefit Analysis of Energy Policies: Detailed Projections. H. Davitian, et al

BNL 51128 **$4.50**
A Strategy CostBenefit Analysis of Energy Policies: Comparative Analysis. H. Davitian, et al

BNL 51153 **$6.00**
Phosphate-Bonded Glass Cements for Geothermal Wells. Final Report. September 1979. T.J. Rockett, et al

BNL 51164 **$6.00**
Staff Roster for 1979 - Energy Sciences Programs. B. Manowitz, Chairman

BNL-NCS-51184 **$5.25**
Evaluation of ^{235}U Neutron Cross Section and Gamma Ray Production Data for ENDF/B-V. M.R. Bhat

NUREG/CR-1438
BNL-NUREG-51186
Steam Line Dynamics - A Computer Program. W. Wulff

BNL 51188 **$8.00**
Proceedings of Brookhaven National Laboratory's Fusion/Synfuel Workshop (August 27-29, 1979). J.A. Fillo and J.R. Powell, Editors

BNL 51189 **$6.00**
Geological and Hydrochemical Sensitivity of the Eastern United States to Acid Precipitation. G.R. Hendrey, et al

BNL 51197 **$4.50**
Measures to Reduce Industrial Consumption of Petroleum Under a Short-Term Energy Emergency. R.G. Tessmer, Jr., et al

BNL 51198 **$5.25**
Fuel Cell Applied Research: Electrocatalysis and Materials. Quarterly Report, July 1 - September 30, 1979. S. Srinivasan, et al

BNL 51213 **$4.50**
Energy Conservation in Two Northeastern Cities: Opportunities, Problems and Prospects. F.C. Bryant and P.D. Moskowitz

NUREG/CR-1505
BNL-NUREG-51217
Advanced Reactor Safety Research Division. Quarterly Progress Report, January 1 - March 31, 1980. A.J. Romano, Editor

NUREG/CR-1506
BNL-NUREG-51218
Water Reactor Safety Research Division. Quarterly Progress Report, January 1 - March 31, 1980. A.J. Romano, Editor

BNL 51247 **$4.50**
MAP3S/RAINE Modeling Abstracts 1980. P. Michael, Editor

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.

The determination of the best-qualified candidate for available positions will be based upon education, experience and other job-related criteria. Such factors will be evaluated and measured against the demonstrable requirements of the available vacancy, as well as the Laboratory's Affirmative Action objectives.

The Laboratory is committed to a policy of Equal Opportunity in its selection and placement of personnel. Its objective is equality of opportunity in employment, training, and promotion without regard to race, color, religion, national origin, sex or handicap.

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, as indicated below. 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: Opportunities for present Laboratory employees.

1523. CLERK-TYPIST (two positions) - Supply and Materiel Division.

1524. CLERICAL POSITION - Requires excellent typing and clerical skills to act as a floater in Department. Word processing experience or the willingness to be trained is highly desirable. Department of Energy and Environment.

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

1525. COMPUTER SCIENCE ANALYST - Requires BS in physics or related field or its equivalent and knowledge of electromagnetic theory, elementary statistics, FORTRAN and inter-active computer operation. Knowledge of PDP-11, RSX-11M operating system preferred. Will process data resulting from the testing and measurement of ISABELLE magnets. Accelerator Department/ISABELLE Project.

1526. TECHNICAL POSITION - Requires AAS degree in electro-mechanical technology or equivalent background. Will work as operator in AGS Main Magnet Power Supply Group. Responsibilities will include operation and maintenance of various electrical and mechanical devices and fabrication of electrical and mechanical parts. Requires strong background and interest in mechanical devices, including rotating machinery, and in power electronics. Shift work required. Accelerator Department.

1527. PLUMBER A - Under minimum supervision lay out, constructs or installs, repairs and maintains water, sewage and gas distribution systems, related facilities and auxilary equipment. Proficiency in working with glass, aluminum and monel, stainless PVC piping or tubing systems is required. Applicant must have seven - ten years commerical/industrial plant experience. Plant Engineering Division.

Autos & Auto Supplies

72 CHEVY SUBURBAN - 9 pass., good mechanical cond. $975. Mike, Ext. 4526 or 929-4113.

VW PARTS - engine, drive train, body axle types I -IV. 821-0618 or 744-3324 after 6.

69 DODGE CHARGER - 440 Magnum, all stock color, black interior, mint. Asking $2,000. 475-0037.

SNOW TIRES - (2) E78-14 Firestone on Chrysler wheels, little used. $45. 475-8971 after 6 p.m.

SNOW TIRES - (2) E78-14 Sears Dynaply, very good cond. on wheels. $45. Ext. 2610 or 744-5709.

RIMS - new 15" Ford wheel rims, $12. pr. J. Gabusi, Ext. 4641 or 298-4435.

79 DODGE OMNI - 024, 4 cyl, auto, p/s, am/fm, many extras, 1400 mi, original. $5,200. Ed, 727-0555.

71 TOYOTA CORONA - 4 dr. wagon, hi-mileage, good cond. $500. Walt M. Ext. 3256 or 286-0336.

67 MUSTANG - 6 cyl, new engine, starter, water pump, carb, body needs work. 929-4358 or Ext. 2289.

72 PLYMOUTH - black, 318 engine, excel cond, many new parts, located at Mobil Garage. 399-4213.

75 SAAB - EMS, sunroof, 4 spd, FW drive, stick shift, radio/cassette, 4 spkrs, excel cond, 42,000 mi. Asking $3,600. 283-4306.

74 CHALLENGER - 318, am/fm cassette stereo, reg. gas. $900 firm, Ext. 2957.

71 TOYOTA COROLLA - 29 MPG, good mech. cond. $600. Ray, Ext. 4444 or 732-4885.

72 OPEL - red, 4 cly, 75,000 miles. $750. 744-6063.

74 SUPER BEETLE VW - conv., excel cond, new radials, orig. owner. $3,500. 286-9485 after 7.

CAP - fits Toyota, Datsun, etc. Pick-up. John, Ext. 4976 or 744-4386.

74 PLYMOUTH VALIANT - needs work but excel shape, w/t snow tires. Hwang, Ext. 7732 or 744-0481.

76 DATSUN B210 - Hatchback, 4 new wide radials, 8 trk player, mint cond, 39 MPG, $2,800; also 1976 Datsun B210, 39 MPG, clean, 4 new tires, $2,500. Judy, Ext. 7619 or 744-3509 after 4 p.m.

CB RADIO - for car, complete w/mic. and ant. $30. Ext. 3106.

RIMS - (4) GM chrome rims 15"x7" chrome spokes w/locks. Asking $100. 475-0037.

TIRES - (4) L78-15, good treads, driven w/TLC. $50. 744-3069.

76 JEEP CJ7 - black, conv., 6 cyl, auto, p/s. $4,200. Frank, Ext. 4709 or 281-4607.

RADIO - am/fm w/speaker, antenna will fit Datsun, other small cars, $35; Exxon Uniflo low 40 oil. $.80 per quart. Ext. 3742.

74 CHRYSLER - 4dr. H/T, a/c, well kept, fine family car. Asking $975. Nancy, Ext. 3793 or 751-3298 after 6.

71 DATSUN 510 - wagon, manual 4 spd, good MPG. $750. or best offer. 286-2412.

72 PINTO - 70,000 mi, a/t, v. roof, bronze, includes 2 mounted snows. $900. 483-6657.

71 MUSTANG - a/c, p/s, p/b, snow tires, very good cond. $1,500. Ext. 3397 or wkends/eves 345-2623.

RADIATOR - Chevelle, Skylark, etc., excel cond, $20; Saginaw 4 spd trans w/shifter, $75; Muncie tranny parts, misc. Big Block Chevy parts. Randy, Ext. 4636 or 277-3451.

72 PLYMOUTH FURY - 2 dr., r/h, p/b, p/s, good cond. Asking $600. Ext. 2914, 286-3742 eves/-wkends.

SNOW TIRES - (2) G78-14 white wall on rims. $30. Jerry, 281-5667 after 3:30 p.m.

RACING TIRES - (2) N50-15 Pro-track, brand new for $225. 924-0960 after 5 p.m.

HONDA MOTORCYCLE - 1972, 125 SL, shop manuals. $165. 286-1975.

396 CHEVY POWERED - 1970 Skylark Wagon, balanced, blueprinted, Muncie 4 spd, 12 Bolt Posi, L60 radials, sunroof, much more, mechanically perfect, good mileage, sacrifice. $2,000. Randy, Ext. 4636 or 277-3451.

72 FORD - station wgn, p/s, p/b, some dents but excel mechanically. $850. L. Epel, Ext. 4074 or 928-0829 eves.

72 PINTO RUNABOUT - 59,000 mi, a/t, dependable transp, body needs work. $150. Tuthill, Ext. 2269.

77 RABBIT - 2 dr, 55,000 mi, excel cond, avail. Jan. 31. $3,000. J. Olson, Ext. 3382 or 289-8629 after 7 p.m.

53 WILLYS - Pickup, 4 WD, 6 cyl, fair cond. $1,000. or best offer. Ext. 4446 or 286-0925.

71 DODGE CHARGER - SE, 8V, a/t, clean interior, Keystone rims, $500. Henry, 727-0216.

TRAILER HITCH - square tongue, orig. used on Olds. wagon, heavy duty. $50. Charlie, Ext. 4758.

74 PLYMOUTH SATTELITE - 2 dr, a/t, 6 cyl, new brakes and shocks, high mileage. Jerry, 281-5667 after 3:30 p.m.

TIRES - (1) E78-14 snow on Dodge rim; (1) E74-14 belted w/w, very good; (1) G78-15 belted w/w, new; (2) HR78-15 snow radial, w/w. Walt C., Ext. 3255.

Boats & Marine Supplies

SAILBOAT - AMF Puffer 12½' fun boat, good cond, trailer. $975. 621-0262 after 7 p.m.

SAILBOAT - Sunflower, 11', new great Xmas gift. $325. 727-3608 after 5 p.m.

Miscellaneous

KODAK - color burst instant camera w/flash, like new, best offer. Ext. 2460 or 744-9822.

FIREPLACE GLASS DOORS - brass w/screen, 1 yr. old, orig. $200. asking $135; cast iron woodburning holder, $20; tools, $15. Ext. 7686 or 878-0897.

SMALL DINING - room set; modern sofa, 2 driftwood lamps. 669-9234.

NEW SAMPLE - Bridal dresses and formals, very low priced. 475-0037.

ARTIFICIAL CHRISTMAS TREE - green, 7 ft. w/stand, $30. Louisa, Ext. 4207 or 286-2251.

AIR COND - window type, Fedders 115 VAC, 11.4 Amps, 12,000 BTU, $50. U-pick up. 27"w x 20.5"d x 16.5"h. Nick, Ext. 3458.

LADIES WATCH - Wittenauer dressy, reasonable; luggage, American Tourister - weekend and wardrobe. $40. ea. new. Ann, 286-2280.

CHRISTMAS WREATHS - $3.50; Christmas items, $1; special tree decorations. 878-0026.

SPRINGER SPANIEL PUPPIES - $50. Liver/white, black/white, ready for Christmas, no papers. 475-6027 after 5 p.m.

CHRISTMAS TOYS - and games, hockey sticks, pucks, bumper pool, pivot golf, kids' puzzles. Nancy, 281-4673.

POINSETTIA'S - 4-15 large blooms per plant. 4-6-12 Dollars. Harry Syers, 567-5947.

SCOTT - FM solid state tuner, $25; Garrard Lab-80 turntable. $25. Ext. 3992 or 298-4172.

CHRISTMAS TREES - live, blue-green spruce, to 15 ft, cut while you wait or tag for pick up later. Jim, 289-0876 or 286-0024.

BUFFET - 5½ ft. custom built, walnut finish, 5 doors. $125. Ron, Ext. 3887 or 286-0353 after 6 p.m.

VIP MEMBERSHIP - Holiday/Jack LaLanne Spa. Lifetime membership. $600. 585-9816.

IBM ELECTRIC - Executive typewriter, works but needs adjustment. $25. or best offer. Dave, Ext. 4394 or 2533.

DISPOSAL - GE, used 1 mo., $50; icemaker for GE refrig, never used, $10; Panasomic home cassette deck, $60; 100 amp fused outdoor switch, $15; Raleigh 3 spd bike, $20. Randy, Ext. 4636 or 277-3451.

ANTIQUE HALL SEAT - bevelled mirror, excel cond, $700; Ski boots, Nordica, 2 pr. sizes 8 and 9. $25. ea. Ext. 7130.

LEATHER WATER BED - heater & thermostat, good cond. orig. cost, $625. Asking $350. 744-9573.

CHRISTMAS FLOWERS - Poinsettias for sale. Ext. 4612 or 289-0687.

OVAL TABLE - French Prov., cherry w/fruitwood finish; buffet; 4 chairs; 2 leaves & custom pads; Orig. $1200, sacrifice $450. 4-6' wooden Roman Shades; $15 ea. 473-0058.

VOLT - Wing compound Bow, peak wt. 45-60 pds. Draw length 29-30 in., can be made into a four wheeler, comes w/sight, glove and a doz. arrows. 475-9131 after 6 p.m.

ROCKWELL ROUTER - steel carrying case, never used. $65. Firm. 924-6354.

HONEY — raw organic, 12 oz. honey bear, $1.50; 1 lb. $1.75. Hugh, Ext. 4660 or 924-3293.

BICYCLE - 27" frame, 10 spd, silver Nishiki, $50. Bill, Ext. 7688.

COLOR TV - Panasonic 19", $100; fm/am radio cassette recorder, $30; men's. kid's bicycles. Ext. 3073.

STEREO - beautiful solid wood console stereo Harmon-Kardon receiver, Gerrard turntable, electro-voice speakers, custom made. 369-2151 after 6.

SKI BINDINGS - Tyrolia Jr.'s, new cond. $25. Frank, Ext. 3898.

GAS STOVE - Kenmore. $45. 654-1945.

WOOD BURNING STOVES - (1) Fisher Mama bear, $350; (1) Morso, $300. both excel cond. Larry, Ext. 4987.

BIKE - girl's 20" Cactus flower bike, $35; 19" color TV, needs tuner, best offer. 698-3724 eves.

CHILD GAMES - scrabble, etc; stool; 2 telescopes, 25 power. Ext. 7772.

AUDIO CABLES - w/premolded ends, various types available. Walt, Ext. 7154.

CANDY - and cookie house in time for Christmas, to see sample call Cathy, Ext. 4093.

ORGAN - "Hammond Sounder" electronic rhythm section, excel cond. $300. 277-2671 after 6 p.m.

SHEET PLASTIC - 250 sq. ft. Kalwall Sunlite fiberglass, .040" thick, 5'x36' and 5'x14', Solar collector or greenhouse cover. 473-7141.

SKI BOOTS - men's size 9 or 10, $15; ski boots girl's size 7, $5. Ext. 4312.

ARTIFICIAL - Scotch pine Christmas tree, 7½ ft. high and stand, $20. Nick, Ext. 4701.

PLANTS - Closeout, 10 min. from Lab. Call C. Hull for directions. 281-2002.

GIRL'S RED ASPEN - ski jacket, size 12, like new. $10; boy's size 12 navy blue blazer, worn twice, orig. $30. now $15. Ext. 2543.

OIL BURNER - Shell pack, 3 yrs. old, like new. $35. Andy, 289-1755.

FREE CHRISTMAS PRESENTS - 8 wks old 12/24 Shepherd/Setter puppies. 929-8427 after 6.

PEANUT MACHINES - 10¢ and 25¢ dispenser w/stand and heater, like new. $50. Barry, Ext. 4533 or 727-5956.

ENLARGER - needs minor repairs. $5. Morris, Ext. 4188.

GUITAR - Ibanes, 6 string elec., gold inlay, artist model. Tax ded. - for church bldg. fund. Call Pete, Ext. 3297 or 821-9547.

FRANKLIN STOVE - American made, Washington foundry, will burn wood or coal. $150. Jack, Ext. 4447 or Joan, Ext. 4112 or 744-3919 after 5:30 p.m.

INSULATION - new, unfaced R-19, 6 in. thick, 50 sq. ft./roll. 5 rolls $45. Ext. 4695 or 744-1917.

COUCH - sectional, brown, corner table, custom drapes gold/green, 1 pr. triple, 2 pr. single, excel cond. Ext. 2979.

GARRARD - automatic record changer. $20. Ext. 2113.

WEDGEWOOD DINNER - and coffee service, Kutani crane, new, asking $1500. or offer. 744-5079.

TYPEWRITER - antique, Remington Model 10, manual, 1940's era, excel cond, works; French bks & texts, 13 different. Dennis, Ext. 4259 or 736-2534 eves.

BICYCLE - men's 10 spd Raleigh, excel cond. $65. 727-2038 after 5 p.m.

FISH TANK - 10 gal. w/light, top, excel for Christmas, only $9. 473-2473.

SKI RACKS - $25; fireplace grate, $5; diving weight belt, $10. Greg, Ext. 7960.

MACRO LENS - Mamiya/Sekor 60mm/f2.8 for screw mount 35mm, excel cond. $65. Claudia, 589-2114.

SKIIS - Hart Camero, 205 cm, $10; ski boots, ladies size 9, like new, $15. 744-5096.

REMINGTON STANDARD - and Underwood Five desk typewriters, $25. ea; Smith-Corona portable typewriter, $15. good cond. H. Smith, 588-3999 or Ext. 3050 after 2 p.m.

POLAROID - SX70 camera w/case, excel cond. $70. Jim, Ext. 4574 or 286-2557.

SAXOPHONE - used, good cond, needs mouthpiece, best offer. Charlie, Ext. 4758.

BEDS - (2) single beds, excel cond. $50. ea. 929-4886 after 5 p.m.

TYPEWRITER - Remington; heater; hamburgermaker; misc. items. Ext. 3027.

SONY - ICF-7600 am/fm 5-bands short wave, smallest made, list $160. sell $110. Jim, Ext. 3291.

MEN'S DRESS WATCH - gold color, Jules Jurgensen, 17 Jewel Swiss Classic, new, never worn. Full warranty. $60. Ext. 4701 or 271-2877.

BASEBOARD HEATERS - 4' and 8' heaters w/thermostat 220V. $20. and $30. Rip Bowman, Ext. 4672.

DISHWASHER — Kitchen Aid, $35. excel cond. under counter model. Ext. 4664 or 744-8779.

HOT AIR FURNACE - oil fired gun approx. 85,000 BTU. $50. 727-4859.

PLAYER PIANO - Aeolian Pianola w/about 130 rolls music, very good cond. 589-0750.

PAIR - of occasional chairs, antique white high cane backs w/arm rests and padded seats. Asking $35. ea. JU-4-6019.

SKATES - ladies white figure skates, size 10. $5. 475-4199.

HITACHI - 8 trk tape player, asking $25. 8 track tapes. J. Deedy, 475-4792.

BEDROOM SET - 5 pc. walnut. $275; pole lamp, $15; green swivel chair rocker, $10; fire place irons, $3; additional home furnishings. Ext. 2979.

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

MEDFORD - 1/3 acre, Cape, 4-5 bdrm, 2 bath, den w/fp, l/r with wood stove, large eik, formal d/r, 18x36 in ground pool, assume 7½%. $41,900. Jack, Ext. 4254 or 289-6708.

CENTER MORICHES - 4 bdrms, 2 baths, lg. country kit, l/r with fp, attached apt. w/Living rm., w/fp, bdrm, bath & kit. separate entr. 2½ ac. w/200' waterfront. 878-0642

YAPHANK - 6 room Cape, ½ acre property. Assumable 7% mortgage. $35,000. 744-3443.

CORAM - 4 bdrm Hi-ranch, 3 full baths, 1/3 acre, central a/c, 20x40 inground pool, 2 car garage, suitable M/D. $45,000. 928-5789.

For Rent

PT. JEFF VILLAGE - 3 bdrm ranch, l/r, formal d/r, fam rm w/fp, eik, fin. bsmt, lg. deck, completely furnished. $650/mo. plus util. Will store furniture if tenant wishes. 2 yr. lease desired. Ext. 4074 or 928-0829 after 3 p.m.

JAMESPORT - 3 bdrm house, lg. l/r, d/r, lg. sun porch, pantry off kit, walk to beach & local stores, quiet area, available Dec. 15. $325/mo. 722-4330.

PATCHOGUE VILLAGE - 2 bdrm apt, garage, fenced yard, near shopping etc. 289-0012.

MEDFORD - near Woodside Ave. & Rt. 112, 3 furnished rms & bath, priv. entr, heat & util, working gentleman, security & references. 475-6398.

MEDFORD - Blue Ridge Condo, 1 bdrm, l/r, d/r, prep kit, utility rm, wash/dryer, w/w, central a/c, patio, prime loc, in/out pools, tennis, golf, spa. 698-4516 eves.

E. PATCHOGUE - 3 bdrm. furn. house, gas heat, $250/mo. plus util. Feb. 1 - June 30, 1981. J. Olson, Ext. 3382 or 289-8629 after 7 p.m.

RIDGE - 2 bdrm townhouse, w/w carpet, central a/c, 2½ mi. from Lab. $375/mo. Ext. 3541 or 924-4070

NORTH SHIRLEY - 2 single rooms, 5 min. to Lab. 924-0960 after 5 p.m.

Car Pools

SYOSSET/PLAINVIEW AREA - start or join. Peter Cartselos, Ext. 4605 or WA 1-4623 after 6 p.m.

SOUTHHAMPTON - wish to join car pool or start a new one. Ganu, Ext. 3379 or 283-1940 Ext. 203.

TWO DRIVERS - 8:30 to 5:00, ¼ mi. North or South Jericho Tpke. & Sunken Meadow Pkwy. Jim, Ext. 4452.

BELLPORT VILLAGE - want to form or join, preferred arrival 8:30 - 8:45 a.m., preferred departure 5:30 p.m. Ext. 2914 or 286-3742 eves/wkends.

CENTER MORICHES - Red Bridge Rd. & Ocean Ave. area, wish to start or join car pool. Marilyn Gibbons, Ext. 2969.

Wanted

TIRES - F, G or H78-14 polyester tires, in decent cond. Frank, Ext. 3898.

HONEY EXTRACTOR - and leaf mulcher. George, Ext. 4812.

HOUSE SITTER - from 12/22 to 1/9. 281-2002 anytime.

MOTORCYCLES - bent or broken, any age or cond. Kevin, 281-8031.

PERSON - to share apt. Have an option, still looking about. $225. ea. Mark, Ext. 2504.

VEGA BODY - must be clean inside/outside, engine drivetrain not important, any year. 744-3968 after 4.

SKI POLE - one half of pair, basket not necessary. Dennis, Ext. 4259 or 736-2534 eves.

QUIET COUPLE SEEKING - small house to rent, late Feb. occupancy, Saed, Ext. 4339 or Jackie, Ext. 2400. or 924-5509.

VESPA MOTORCYCLE - Do you own one? I want your opinions on operation/maintenance. Nick, Ext. 3458.

PERSON INTERESTED - in skiing either Berkshire East or Hunter Mt. For info call Bea, Ext. 3571.

CELLO - for high school student; leathercraft tools; supplies for student; super 8 projector. Nancy, 281-4673.

USED SAXAPHONE - in fairly good cond. Ext. 3689 or 286-8490.

VIOLIN - for high school orch. Ext. 2043 or 472-3985 Norman.

NIKON - 35mm wide angle lense, Claudia, 589-2114.

INFORMATION - on working women for a research project at Stony Brook. Complete privacy assured. Sharon Smith, Ext. 2835 or 924-8523 after 5 p.m.

Services

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

EUROPEAN AUTO PURCHASES - Big savings, Volvo's, Porsche, Mercedes, others. You pick up. Ext. 7932, 475-0065.

UNICEF GREETING CARDS - immediate delivery, for Catalogs & orders call Ann, Ext. 4959.

CARPETS INSTALLED - repaired, quick dependable service, free estimates. Jim, 821-0187.

HOUSECLEANING - babysitting or homemaker, Mon. thru Sundays. 5 min. from Lab. 924-3755.

HELEN'S HATS - $7. 878-4979.

NUTCRACKER TICKETS - $20. includes transportation. Dec. 31 Matinee, return by 7:00. For more info 289-7658.

PILLOWS - patchwork by Un-Hee. 736-2534.

PIANO TUNING - and repair, resonable rates & conscientious service. 751-4985.

EXPERIENCED BABYSITTER - very good w/kids, toilet trained only, on site. Wkdays or wkends. Ext. 3090.

INTERIOR PAINTING - custom workmanship, top quality materials, insured. Bob, 289-7657 after 6 p.m.

LIMO SERVICE - Chauffered driven luxury, for Weds, Prom, all occasions. 698-2266 or 698-2268.

ORGANIST - for in house Weddings, popular, international, music. Roy, 744-8779.

FIREWOOD - cut, split. $140. cord. Free local delivery. 325-1234.

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