

Looking Into Power Cables

The only way to be sure of an electric power cable's quality has always been to tear it apart. This straight forward approach provides one guarantee: once you tear apart a cable, good or bad, it is useless.

Brookhaven researchers have developed a new approach. Much like a dentist looking for cavities, they hunt for cable defects with x-rays.

They offer real advantages over the conventional hit or miss technology. First, spot-check quality control in a production line simply cannot assure consistent accuracy, as monitoring does.

Second, there are also gains in the field where the cable is being used. The ability to objectively assess damage to a cable could help to prevent local blackouts by signaling when to replace cables.

In both cases many hours are spent for a manual cable check, despite the inconvenience of waiting for results. Two men require 8-10 hours analyzing a cable's quality. By comparison, the highly accurate x-ray picture takes only 10 minutes.

X-raying cable is a technique developed by Al Muller and Art Minardi originally for the Superconducting Power Transmission Group's cables. It is part of the BNL Power Transmission Project which is funded by ERDA's Division of Electric Energy Systems.

Later they decided to try the system on standard electric power cables. Resolution proved comparably good. So good, in fact, that they are already getting requests to demonstrate their test for companies, like Con Ed.

Looking into Cables

The idea of taking x-ray pictures of

cable is a natural. That's why Muller and Minardi still seem surprised as they explain: "This is the first non-destructive method for examining cables in the entire industry."

With many variations, a power cable is basically a conductor wrapped in insulating tape and then sheathed. As many as 300 tape layers might be needed to keep the cable from shorting out in an overload.

But at the same time, the insulation must allow space for the cable to bend. This bending capacity is obviously necessary for cable to go on reels. And more important, the cable repeatedly flexes due to thermal expansion during peak use and background temperature rises.

Cable manufacturers allow for the bending by leaving space between each turn of insulation tape in a given layer. This gap which allows for bending is called the "butt space."

To maintain the insulating value of the tapes, successive layers are wound to overlap spaces and other tapes. They resemble the staggered pattern of a brick wall. No butt space should border or overlap another space in neighboring layers.

Because of inaccuracies in taping machines, sometimes the tapes are not wound properly. Or, regular bending from thermal expansion disrupts the pattern. As a result, butt spaces occasionally fall on top of each other.

Such overlapping gaps are a serious defect called "butt space registration." These aligned spaces provide a site for minute electrical discharges. Eventually, the discharges deteriorate surrounding insulation, amplifying the problem.

Detecting defects in underground lines is
(Continued on page 2)



Joseph Hendrie, speaking in Washington a few years ago, now returns to that city as chairman of the Nuclear Regulatory Commission.
—AEC photo by Westcott

Hendrie Goes To Washington

The President recommended, the Senate confirmed and this week Joseph M. Hendrie, after more than 20 years at Brookhaven, was sworn in as chairman of the Nuclear Regulatory Commission on Tuesday.

Hendrie, who resigned from Brookhaven as chairman of the Department of Applied Science, now becomes head of an independent regulatory agency with a staff of about 2400 people and a current annual budget of \$300 million. After the long delay in filling the commissioner vacancies, "It is now time," said Hendrie, "to get NRC back in business." For the next four years, it will be his main task as he sees it to keep nuclear power a viable option as a source of energy for the nation.

He will be missed at BNL. "Hendrie is a highly valued member of the Brookhaven staff, and has made tremendous contributions over a period of many years," said Laboratory Director George Vineyard. "For example, the HFBR is a monument to a very small group of people, of whom Hendrie as project engineer was possibly the most important. In the last two years, as chairman of the Department of Applied Science, he has provided astute leadership under which the Department has flourished."

"Unfortunately for us, his skills are also badly needed in Washington. The job he has been asked to assume is a very tough one. It is also extremely important, and I can think of no one in the nation better qualified to take it on. We wish him every success."

Hendrie goes into his new job well aware of the difficulties ahead. "Being favorable or unfavorable to nuclear energy as a source of energy for the nation is a fairly sophisticated judgment, or at least it ought to be," he said, "because there are sophisticated issues that have to be weighed." He believes that educational forums for the public, which are rational and unemotional, could only be helpful, but because of the complexity of the issues, he realizes "it is a real question how you can communicate all these things to large bodies of people."

He understands how confused people are

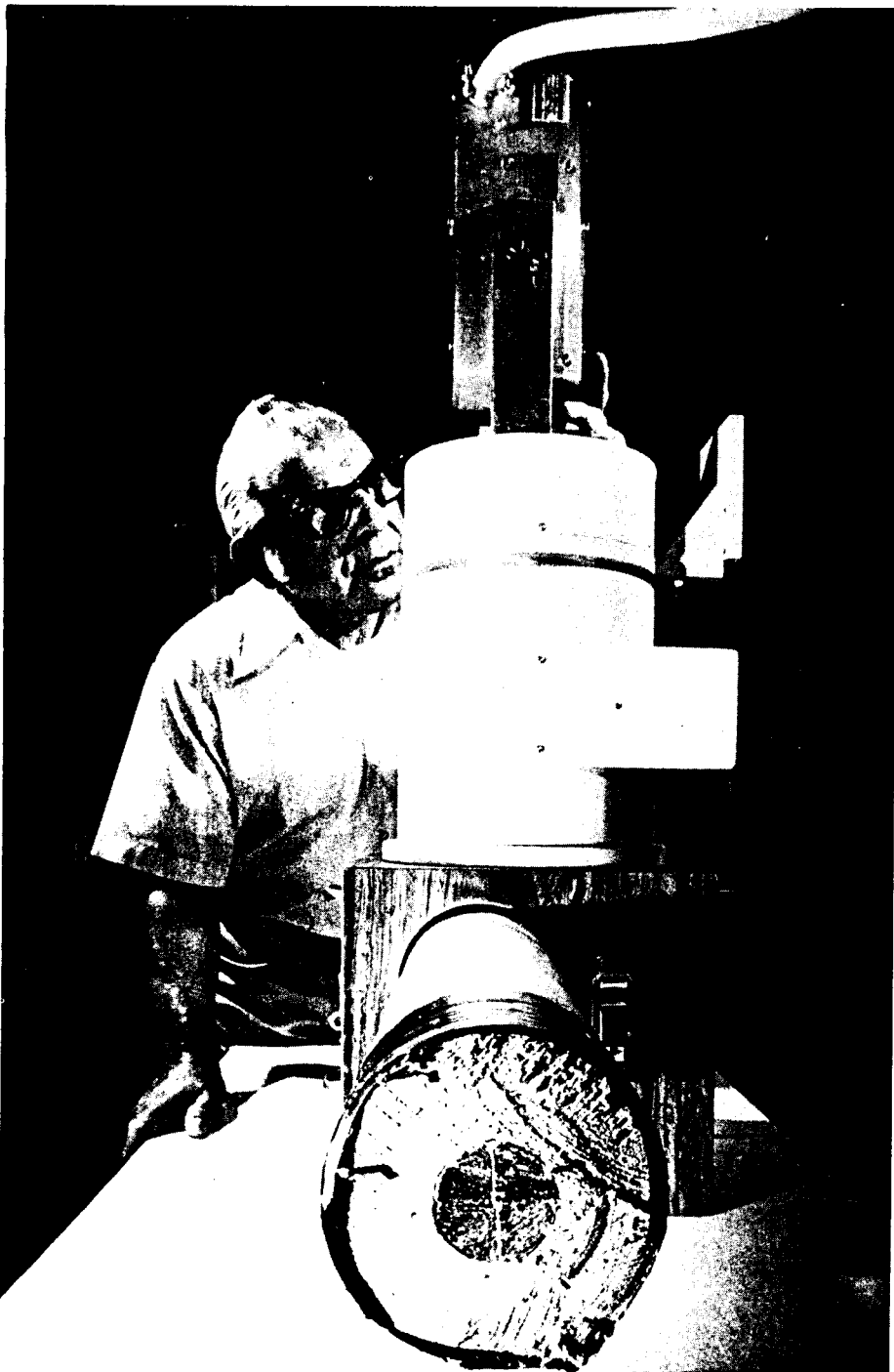
when they hear all the hoopla within the scientific community itself about nuclear energy, and likens it to how he feels when some medical issue is aired about which he has no professional knowledge. "One doctor says put a bandage on it, another says don't put a bandage on it, another says take drugs. I am completely baffled and don't know what to think."

When asked whether he prefers administration or research, Hendrie has a wry smile. "Administration is a proper function of people who have gotten senior enough so that their creative arteries have hardened, but not enough so that they ought to be put out to pasture," he says. "As I get older (he is 52), administration becomes a natural and reasonable role to play, and bright, inventive people are, in their turn, having the fun of doing the creative work in the programs. That's fair."

When he came from the Columbia University Physics Department to Brookhaven 22 years ago, Hendrie was one of those bright, inventive young people, and had already decided he was an engineer by temperament and not a research physicist. Although his B.S. and Ph.D. degrees are in physics, Hendrie says "the educational background is a youthful inadvertence." He is also a licensed professional engineer in New York and California.

He came to Brookhaven because the field of engineering was interesting - and "because the sailing was good." He joined Herb Kouts' group in the Nuclear Engineering Department (now DAS) and he credits them, in particular, and the Laboratory as a whole, for the great freedom he had to create and to build, and for the knowledge he gained about the physics of reactors.

Hendrie will be commuting between Brookhaven and Washington for a time to tie up loose ends here and clear out his office. He notes with regret that after 20 years of working in barracks buildings and using steel desks he finally got a handsome office designed to his specifications about a year ago, and now he must up and leave it. "It's shattering," he says.



Art Minardi, Metallurgy and Materials Science Division, has been developing a portable x-ray unit to detect power cable defects. The new unit is shown fitted around a cable section to simulate tests that will be made in New York City with Con Ed next month.

Inside Info

Jack E. Jensen received the Russell B. Scott Memorial Award, sponsored by the Cryogenic Engineering Conference Board, at the 1977 Conference in Boulder, Colorado, last week. He shared the award with John W. Dean, now of LASL, for their paper, "A Supercritical Helium Refrigerator for Superconducting Power Transmission Cable Studies."

The objective of this award are to provide increased recognition for the recipients in the scientific community and to provide an incentive for higher quality in both oral and written presentations at future Cryogenic Engineering Conferences.

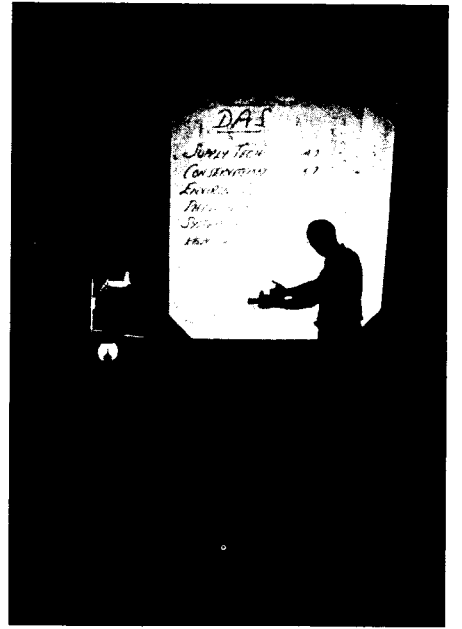
IBEW Contract Status

On July 28, the negotiations between the Laboratory and Local 2230 of the International Brotherhood of Electrical Workers were placed under the jurisdiction of the Atomic Energy Labor Management Relations Panel. The entry of the Panel means that, although the current contract was due to expire at midnight on July 31, both parties are required to maintain the status quo until the Panel takes further action. The Panel will meet with the parties in late August and subsequently submit to them its recommendations for a settlement. The present contract is automatically extended until thirty days after the Panel's recommendations are received.



John Aggus (left) shows some members of the Executive Seminar on Science, Technology & Public Policy, a magnet at the AGS during their visit to the Laboratory on Tuesday. Warren Winsche (far right), Associate Director for Energy, talked to the group about Brookhaven's energy research program. The Executive Seminar Program, which is for public

executives and managers, examines science and technology in the context of contemporary society and issues, in the management of scientific research and technological development. A visit to Brookhaven was included in the current two-week seminar.



Impact Statement Available

The Environmental Impact Statement for the BNL site is now in final form. Anyone who is interested in obtaining a copy may do so by calling Len Emma on extension 4218.

Summer Program

On-Site Residents' Activities

Last Friday the BERA summer recreation staff held their annual Halloween party for the children of the morning activities program.

The party was preceded by a parade of costumes and then the children enthusiastically dunked for apples, ate donuts from a string, and played "pin the wart on the witch."

Costume contest winners were:

Scariest - Martin Meyer, Sandeed Narang, Kamud Narang. Beat - Yoshiko Watanabe, Rachel Bora, Sheela Chikkappa. Prettiest - Vicky Meadows, Einat Arbel, Ranan Arbel. Most Original - Sean Kearney, Yumiko Ikuno, Michele Pilati.

Mini-Olympics - Track and Field Day, scheduled for this week. Next week, Contest Day.

Pool Special

The relay races of last Friday's pool special came up with the following winners: 4 to 6 - Rachel Bona, Adrienne Hunt, Brian Hanson and Tracy Gangwer. 7 to 9 - Pam Dawson, Kathleen Cassidy and Adrienne Clark. 10 and over - Sean Holden, Kristen Holden, Marissa Holden and Shiela McNearney.

Today's special will be ping-pong ball and spoon races, while next week's feature will be an inner tube derby.

Tennis

Instructor Mark Myavec's tennis tournament has been underway this week with many exciting matches. Winners will be listed in next week's Bulletin.

Calendar of Coming Events

August 16 - 7:00 p.m.

Race night at the pool for children of employees ages 10 through 16. Prizes will be awarded to race winners.

August 18 - 5:30 p.m.

International Picnic for families of the children enrolled in the morning and afternoon on-site program. Donation is one or more dishes native to the land of your ancestors.

Featured will be a parade of international costumes before dinner and a spectacular movie after dinner.

August 25 - 7:00 p.m.

Splash party at the pool for children, ages 4 through 9, of all lab site employees. Races will highlight the evening with every contestant a winner.

Arrivals & Departures

Arrivals

Marilyn Johnson.....Plant Engrg.
Thomas C. McGee.....Applied Science
Louisa Morrison.....Safety & Env. Prot.
David A. Pilati.....Applied Science

Departures

Karen E. Henry.....Technical Information
Thomas P. Henry.....Applied Science
Lorraine J. Osterer.....Applied Math.
Anthony Tatakis.....Plant Engrg.

X-raying Cables (Cont'd)

time-consuming and costs can run over \$100,000 each time they open a vault and examine the cables inside. The x-ray system requires a small fraction of both resources.

Muller and Minardi direct x-rays through the cable. More x-rays are absorbed by the insulation. So the butt spaces are high penetration areas and give a precise image. The image has been recorded on Polaroid film, but now they are refining the system.

The new units being assembled will produce an image that can be seen immediately. Instead of film, the penetrating rays register on an image tube - like a TV tube. The picture is relayed over closed circuit TV, bringing many advantages.

"They'll approach the ability to make a perfect cable, which they are nowhere near now," said Minardi. With complete monitoring capability, no defective cable areas could sneak through the quality controls. Also, factories would be able to catch bad production trends more efficiently.

This past June, Brookhaven's cable x-raying equipment was plugged into the production line at the General Cable Company. There, they showed the systems were compatible.

Cable Hunting

In September a portable unit and TV monitor is scheduled for a more challenging test. BNL's researchers plan to take the project into the tunnels of Consolidated Edison under New York City.

On the road - or under it - they will look for hidden cable damage where weak areas are developing. Replacing these lengths before a short circuit occurs is one way to prevent small, local blackouts.

Speed, accuracy, and cost savings are impressive in daylight. Underground and under pressure they should be dazzling.

—Cliff Cockerham

Reports Available

The following reports are now available to the Laboratory Staff and to affiliates of the ERDA, 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 50536 \$5.00
Magnetic Fields for Transporting Charged Beams.
G. Parzen

BNL 50542 \$12.00
Aspects of Safety and Reliability for Fusion Magnet Systems. First Annual Report
J. Powell

BNL-NCS-50545 - Vol. 1 & 2 \$11.75 each
ENDF/B Fission Product Decay Data.
P.F. Rose and T.W. Burrows

BNL 50554 \$6.75
Transportation Energy Consumption and Conservation Policy Options in the Northeast.
Systems Design Concepts, Inc.

BNL 50566 \$6.75
Artificial Islands for Cluster-Siting of Offshore Energy Facilities: An Assessment of the Legal and Regulatory Framework.
T.D. Backstrom and M. Baram

BNL 50589 \$4.00
Pressure-Drop-Fluid-Flow Correlation for Fixed Beds of Small, Irregularly Shaped Particles.
M.J. Rosso Jr., G. Strickland and J.S. Milau

BNL-NUREG-50603 \$5.50
Post-Accident Fuel Relocation and Heat Removal in the LMFBR.
M.S. Kazimi, et al

Polytechnic Alumni

There will be a lunch hour meeting in Room A of Berkner Hall on Monday, August 15, to hear George Bugliarello, President of Polytechnic, give a "status and plans" report on PINY. Also present will be Dan Ross, Vice President for Development; Ben Senitzky, Director of the Long Island Center and Herman Grau, Assistant to Vice President for Development. Bring your lunch to Room A at 12:00 noon and the program will start about 12:30 p.m.

Truffaut Film Coming

If you've found this to be a long, hot summer, your opportunity to enjoy a few shivers is coming up. Next Thursday, August 18, at 8 p.m., in Berkner Hall, the film *La Mariée Etait en Noir* (*The Bride Wore Black*) will be screened, sponsored by the BNL French Group. This film, released originally in 1969, was directed by Jean Truffaut (*Jules et Jim*, *Les Quatres Cents Coups*). The version to be shown has French dialog, and English subtitles. The plot, based on a novel by Cornell Woolrich, concerns a beautiful angel of death (Jeanne Moreau) who is systematically working her way down a list of victims. Truffaut gradually discloses her motivation for these acts of vengeance (and the basis for the film title). By this time, the viewer has been so captivated by Moreau as a *femme fatale* (literally), that he hesitates to question her motivation, or even some of the gaps in the plot.

All members of the BNL community and their friends are cordially invited to attend. A donation of \$2 (\$1 for students) will be requested from those who are not members of *Le Cercle Français du BNL*. Refreshments will be served following the film showing.

BNL 50616 \$5.00
DEALS: A Demountable Externally Anchored Low Stress Superconducting Magnet System for Fusion Reactors.
J. Powell, et al

BNL-NUREG-50617 \$4.00
Properties of Radioactive Wastes and Waste Containers. Quarterly Progress Report. July - September 1976
P. Colombo, et al

BNL-50620 \$3.50
Regenerative Process for Desulfurization of High Temperature Combustion and Fuel Gases. Quarterly Progress Report No. 3, October 1 - December 31, 1976
M. Steinberg, et al

BNL-NUREG-50623 \$4.00
Evaluation of Isotope Migration - Land Burial Water Chemistry at Commercially Operated Low-Level Radioactive Waste Disposal Sites. Quarterly Progress Report. April - June 1976
P. Colombo, et al

BNL 50625 \$4.00
Tritium Storage Development. Progress Report No. 9 July - September 1976
P. Colombo, et al

BNL 50626 \$3.50
Development of a Glass Polymer Composite Sewer Pipe from Waste Glass. Progress Report No. 2 October - December 1976
M. Steinberg

BNL 50628 \$4.00
Technology Assessment and Impact Analysis of Separation Methods Applied to Radioactive Waste Management.
M. Goldstein, et al

BNL-NCS-50632 \$5.50
Compilation of Requests for Nuclear Data. NNSCS for ERDA/NDC

Retraining Project For Women in Science

Women who graduated from college not less than two and not more than 15 years ago with backgrounds in science and, for one reason or another are not working now, in these fields may be interested in a new program at SUNY, Stony Brook.

The Department of Materials Science will offer retraining and career development to qualified applicants to enable them to pursue jobs in materials science, or graduate degrees in materials engineering. Fifteen to 20 women will be accepted into the one-year program, which is free and will start in November. It is funded by the National Science Foundation.

On a one-to-one (student/faculty) basis, the Career Facilitation Program will offer courses designed to update basic skills in the sciences and mathematics in addition to tutorials, which will focus on particular skills needed within a field of materials science that is of most interest to the student. The classes and laboratories will be scheduled at times convenient to each participant and will be taught by members of the Department.

The almost complete absence of women in materials science and the pressing need for skilled technicians and engineers trained in the basic techniques required to handle new industrial technologies, are the principal motivations for undertaking this project, according to Dr. Frank Wang, Professor of Materials Science and Co-Program Director.

"The rapidly growing fields which depend on materials science," Dr. Wang added, "include energy technology, metallurgical processing, ceramics and optical fiber processing, to name but a few."

Women who are interested in applying for the Career Facilitation Project should contact Dr. Frank Wang, Department of Materials Science, College of Engineering and Applied Sciences, State University of New York at Stony Brook, Stony Brook, New York 11794; or call (516) 246-5980 or (516) 246-6759 during regular business hours.

Cafeteria Menu

Week Ending August 19, 1977

Monday, August 15

Cream of mushroom soup
Chicken a la king on rice 1.10
Cheese omelet & 1 veg. 1.15

Hot deli - pastrami

Tuesday, August 16

French onion soup
Chinese pepper steak on rice 1.25
Barbequed spare ribs & black eyed peas 1.35

Hot deli - sloppy joe

Wednesday, August 17

Split pea soup
Breaded flounder filet & fr. fr. 1.20
Hot deli - baked Virginia ham

Special

Spaghetti, meat sauce, garlic bread
All you can eat \$1.20 plus tax

Thursday, August 18

Cream of chicken soup
Beef hash & 1 veg. 1.15
Veal parmigiana & 1 veg. 1.20
Hot deli - meatballs

Friday, August 19

Manhattan clam chowder
Broiled filet & 1 veg. 1.15
Meatloaf & 1 veg. 1.15
Hot deli - roast beef

BROOKHAVEN BULLETIN

Published weekly
for the employees of
BROOKHAVEN NATIONAL LABORATORY

BERNICE PETERSEN, Editor
DOUG HUMPHREY, Photo-Journalist
CAROL PETRAITIS, Editorial Assistant

40 Brookhaven Ave., Upton, N.Y. 11973
Telephone (516) 345-2345

CARL R. THIEN, Public Relations Officer

Service Awards

August

Thirty Years

Robert J. Allen..... Plant Engineering
James Amaro..... Applied Science
John P. Blewett..... Director's Office
Walter C. Buckes..... Supply & Materiel
Robert W. Dillingham..... Instrumentation
George K. Green..... Accelerator
Robert Lehn..... Central Shops
Gerald Strickland..... Applied Science
William A. Tuttle..... Accelerator

Twenty Years

Margaret E. Brockner..... Medical
Leo J. Casey..... Photography & Graphic Arts
Paul G. Edwards..... Safety & Envir. Prot.
George Kuzmack..... Accelerator
Viola Nuara..... Safety & Envir. Prot.
Wesley G. Ripperger..... Applied Science
Frank J. Thornhill..... Accelerator

Ten Years

Hans F. Abendroth..... Physics
Roger E. Hallinan..... Applied Mathematics
Brainard W. Hersey..... Physics
Paula E. Hughes..... Accelerator
Louis A. Licalzi..... Central Shops
Frank Mignano..... Plant Engineering
Charles A. Nielson..... Accelerator
Kurt Rabe..... Plant Engineering
Edwin Taylor..... Applied Mathematics
William F. Taylor..... Accelerator
Glenn V. Tinnie..... Instrumentation
Edward H. Zellner..... Central Shops

• The following employees also received service awards during the year. We apologize for the delay in publishing their names.

Thirty Years

Arthur B. Wright, Accelerator..... July 1

Ten Years

Donald J. Robbins, Applied Science..... May 1
Charles I. Goldstein, Applied Math..... June 1

NYC Trip

The next group railroad trip to New York City will be Wednesday, August 24. If you are planning on taking this trip, please send your check made out to Brookhaven National Laboratory to P.O. Box 322, Upton, New York 11973. The deadline for this trip is Friday, August 19.

Evening Get Together

The Hospitality Committee invites all on-site residents to an evening get together which will be held on Tuesday, August 16, from 8 p.m. to about 10 p.m. at the Recreation Building in the apartment area.

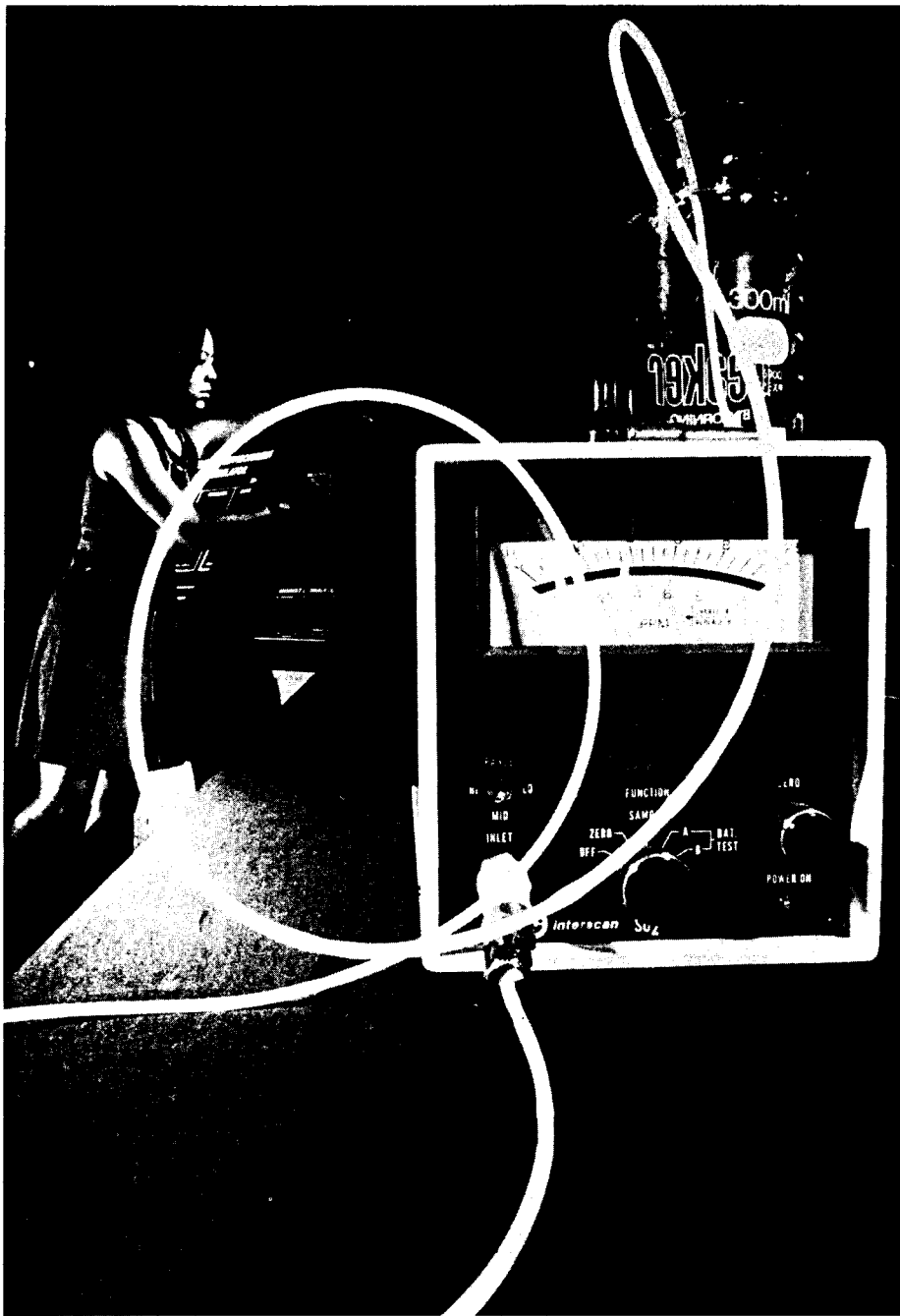
Come meet your neighbors and other members of the Brookhaven community. Light refreshments will be served. Spouses are welcome.

Folk Dancing

Walter Kane will be teaching international folk dancing on Wednesday, August 17, at 8 p.m. in the North Room of the Brookhaven Center. Beginners and experienced folk dancers are all welcome to join in the fun.

Missing

The CSCF Library is missing an IMSL reference manual, volumes 1 and 2. If you have any information about these manuals, please call Ext. 4144.



This air pollution monitoring device will be a special feature at the Exhibit Center this weekend. In the background, Mona Rowe, Exhibit Center assistant, adjusts the Energy Environment Simulator, one of the "educational toys" available to visitors.

Weekend Tour Features Air Pollution Detector

This week's mini tour will familiarize visitors with one of the devices used to detect air pollution. A monitor which detects levels of sulfur dioxide (SO₂) will be operated by a tour guide in the Exhibit Center. The tour guide will also have a source which contains sulfur dioxide so that visitors will be able to see how the monitoring device works.

The monitor measures SO₂ levels from normal (ambient) levels to levels which occur in power plant plumes. Power plant plumes contain several parts per million which is highly noticeable to humans. Humans begin to sense SO₂ when levels reach 1/10 of a part per million.

The detector is a small, simple device which works on an electrochemical princi-

ple somewhat like a battery - as the level of SO₂ increases, the amount of voltage increases.

The detector is used in the power plant plume study conducted by the Atmospheric Sciences Division of DAS.

The entire program includes a guided bus tour of the core of the Laboratory site, the slide presentation *Brookhaven's Quest* and a stop at the Exhibit Center where the air pollution monitoring device will be, along with exhibits about on-going research, historical information about BNL and science games. The tour takes about 2 1/2 hours. The tours begin at 10 a.m. and the last bus takes off at 2:30 p.m. The Cafeteria is open until 2:30 or you can bring along a picnic lunch.

Softball

Employee's League

Phoubars 13 - Charlie Browns 5

The Mighty Phoubars kept rolling along with a well played victory over the slumping CB's. The victory was the eleventh in twelve games for Jack Brennan and the summer boys. Looks like there is no stopping the Mighty Phoubars.

Metallurgy 14 - Power Packers 7

All around key hitting and good defense in a well played game was the deciding factor in the victory for the "Mets."

Nuke Powers 12 - Shoreham Sweathogs 7

Mad Herman and the Nukes did it again. The victory gives the Nukes a solid two game lead for the League IV second half championship. The Nukes know they can win and are really playing well together.

Mixed League Results

TNT's - Turkeys

The TNT's won both games of a double header: 1-9 and 13-4. Home runs for the games were made by Gary Goldstein, Howie Bell and Arty Coone. Jeanne Weber was her usual self at third, just scooping up grounders and flying them over to first.

Oh Kay's - Trouble

The Oh Kay's won both games of the double header: 7-1 and 13-8. In the first game Collos Lamb and Ruth Faine made

some outstanding plays in the field to help preserve the victory for the Oh Kay's. Kay Hunt pitched a great game for the winners. In the second game Sydell Lamb scored two runs and Rosemary Mack made a good play at third base to pace the Oh Kay's to victory.

Diamonds - Balls & Strikes

The Diamonds won both games of the double header: 9-5 and 10-7. One home run was hit by Chuck Carlson. Jack Baer was 5 for 5 for the night. Pat Manzella played a great defense at second base and Pat Oster had a double. Carey Miller hit well (4 for 6). Pat Oster and Carey Miller turned over a double play in the infield.

Hard Ballers - I Don't Know

The Hard Ballers won both games of the double header: 16-5 and 22-1. Gail Waite was absolutely stupendous in fielding at third base. Home runs were hit by Chris Jacinski and Mike Losquadro.

Mixed League Final Standings First Half

Division I	Won	Lost
TNT	5	2
Balls & Strikes	3	4
Diamonds	4	3
Turkeys	4	3
Division II	Won	Lost
Oh Kay's	6	1
Hard Ballers	4	3
I Don't Know	2	5
Trouble	0	7

Bicycling

The one-day tour of Block Island via ferry (\$15) from Montauk Point is this Sunday. Details were in last week's Bulletin. Sign up with Gerry Morgan, Ext. 4841 or 289-5433. Coming up Sept. 11 is the fall race, which will be open to outside clubs.

Bowling

Just a reminder that applications are now being accepted for the 1977-78 bowling season. Entry blanks are available at the BERA Sales Office in the Cafeteria. For information call Carol Beckner, Ext. 3483.

Tennis

Tennis ladder participants have been very active recently, with many close matches and keen competition for position. Keep it up.

For those of you on the ladder who have not played a match since the start of the ladder, your names will be dropped unless a match is scheduled by August 22. To clarify rules, some modifications and explanations have been posted in Berkner Hall.

Golf Reminder

All BGA members interested in entering the singles championship must notify Peter Bond, Bldg. 510A, by mail no later than Friday, August 19.

Football

Football season is almost here again. For those who are not aware, BNL has a Touch Football League. The games are played at the BERA recreation field on Thursday evenings at 5:20. The season runs from the beginning of September to the end of October. There is no blocking and limited body contact, so all ages can play with little fear of being injured.

Game rules and entry blanks can be obtained at the film service office located in the Cafeteria. New teams are welcome. If you do not have a team but want to play, we have a players' pool. For further information contact Ed Taylor at Ext. 4126.

It's . . . Cricket

Brookhaven met the Oyster Bay Cricket Club on Sunday, July 31, at the Recreation Ground. A limited overs match of 35 overs was played with an additional limit of ten overs for individual bowlers. Both sides batted through the full 35 overs with Oyster Bay emerging as winners by the very narrow margin of 127 for 7 wickets to 124 for 6 wickets.

Brookhaven's captain for the day, Grahame Williams, won the toss and offered Oyster Bay first use of the wicket. A few too many full tosses bowled by the BICC bowlers enabled Oyster Bay to reach their respectable total of 127. The wickets to fall were shared by John Millener (2), Dibyender Banerjee (1), Terry Hill (1) and Sachi Dhar (1), and there were two run outs.

In reply Brookhaven started badly, losing Banerjee early but two fine partnerships worth over 50 runs, first between Mike Murtagh (47) and Dhar (24) and then between Murtagh and Millener (34) saw Brookhaven apparently cruising home at 113 for two wickets. However, Murtagh and Millener were out in quick succession to somewhat injudicious shots, both being caught five yards inside the boundary deep over the bowler's head. Brookhaven ended their 35 overs four runs short of victory.

A treat is in store for true cricket devotees. A team of outstanding Test cricket players (Fredericks, Gibbs, Hall, Kamhai, Richards, etc.) led by Gary Sobers will play the American All Star Team at the Meadowlands on September 3. Program ceremonies begin at 12 noon sharp.

This is your chance to participate in the ongoing controversy over professional cricket games. Do come and join in the festivities and good play.

Group discount tickets will be arranged if there is enough interest here at BNL. If you are interested in attending the match, please call Debu, Ext. 2633. For other ticket information call (201) 935-8500 or the nearest Ticketron.

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.

Each week, the Personnel Office lists new personnel placement requisitions. The purpose of these listings is, first, to provide open placement information on all nonscientific 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. 2874 or 2882.

LABORATORY RECRUITMENT: Opportunity for present Laboratory employees.

279. **TECHNICAL SPECIALIST** - AAS in electronic technology or its equivalent with solid background in paging systems, master antennas, audio systems and radio communications equipment. Radio Shop; Instrumentation Division.

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

280. **CHEMICAL ENGINEER** - BS/MS in chemistry or its equivalent with some professional experience in process design and evaluation. Department of Applied Science.

281. **COMPUTER SCIENCE ANALYST** - BS degree or equivalent in a science and some professional experience in scientific-programming in Fortran. Advanced degree and experience with large scale computers desirable. Applied Mathematics Department.

282. **BIOLOGY ASSOCIATE** - BS/MS or equivalent in biochemistry or chemistry. Biology Department.

283. **TECHNICIAN** - AAS or equivalent in electronic technology with expertise in systems troubleshooting, computer operation and controls. Knowledge of high power rf systems and high current power supplies desirable. Main Control Room Operator. Rotating shift. AGS Division, Accelerator Department.

284. **SECRETARY** - AAS or equivalent in secretarial science with very accurate typing skills. Department of Applied Science.

285. **SECRETARY** - AAS or equivalent in secretarial science with good dictation and very accurate typing skills. Physics Department.

286. **OFFICE SERVICES ASSISTANT** - Employment Office, substantial prior relevant working experience with good academic credentials. Personnel Department.

287. **ELECTRICIAN A** - Plant Engineering Division.

288. **REACTOR OPERATOR** - Reactor Division.

289. **SECRETARY** - Six month position. Contracts & Procurement Division.

290. **COMPUTER SCIENCE ANALYST** - Temporary position. Applied Mathematics Department.

291. **DATA SERVICES ASSISTANT** - Temporary position. Applied Mathematics Department.

Autos & Auto Supplies

66 OPEL KADETT - Good cond, new starter, generator, regulator, 28 mpg, excel transportation. \$300. Ext. 3535, 744-1942.

69 FORD SEDAN - 8 cyl, ps, best offer. Shaw, Ext. 3416, lunch hour.

76 GMC - Pickup, ¾ ton, automatic, 4 wh dr, ps/pb/ac, cb, beach equip. Ext. 3085.

76 CAMARO - 305 V8, ps/pb, rally wheels, console, dk metallic blue, good cond. \$3500. Naomi, Ext. 3699, 744-1081.

72 CAPRICE - 36,000 mi, mint cond. Ext. 2951.

68 CAPRICE - 72,000 mi. Ext. 2951.

CAR RADIO - Am/fm. \$25. Ext. 2951.

69 OPEL WAGON - 4 spd, eng 5 months old, transmission, 3 mo old, 6 new tires. Asking \$500. 281-6462.

SCOUT - 4 wheel drive, many new parts. \$550. 475-8547.

2 SNOW TIRES - G78-15, rims, 5-hole, like new. \$55. Jean Louis, Ext. 4762.

69 MACH MUSTANG - 428 Cobra, jet spd, all orig, good cond. Asking \$1650. 477-1706.

69 CHEVELLE - Good transportation. Asking \$400 or best offer. Ext. 3441, 273-7667 after 6.

5 CHEVY WHEELS - W/6-lugs & tires, 16". \$2 each. 363-6597.

74 CAMARO 350 - 2 barrel, factory 4 spd, ps/pb, 29,000 mi, Cragars & f60's, am/fm 8-track, midnight blue, recent tune & brakes. \$3000 firm. Mike, 286-0744.

75 SUZUKI 550 - \$950; 72 Honda, 450, \$800. Excel cond. Bob, Ext. 3313.

68 VW - New battery & brakes, 10,000 mi on new eng. Asking \$800. 584-8929, 751-0226.

USED TIRES - 650 x 13, (2) 155 x 13 radials, DR78 x 14, free installation. Ext. 4597, 475-4935, eves.

65 PONTIAC CATALINA - Running cond, good for local transportation, must sell, no reasonable offer refused. Gail, 878-4664 after 5.

74 HARLEY DAVIDSON 175 cc - Enduro, street & trail, \$400. 924-3997 after 5 please.

75 VW RABBIT - 4 dr deluxe, 60,000 mi. Willie, 928-7367 after 6.

70 DODGE CHARGER - Small V8, auto, ac, low mi, very good cond. Ext. 3503, 924-7338.

71 VW - Auto, am/fm, red, clean, 55,000 mi. \$1150. Len, Ext. 4484, 473-3305.

76 HONDA CIVIC - Auto, good mi, excel cond. Asking \$2550. Evelyn, Ext. 4526, 727-7478.

70 TORINO GT - Convertible, red w/white top, high mileage. \$400. C. Nielson, Ext. 3935, 325-0968.

75 BUICK - Century custom, 14,000 mi, V6, auto, all power options, landau, am/fm stereo, extras. \$3500. 261-9520 after 5.

66 CHEVY - V8, 67,000 mi. \$250. Ext. 2543.

AM CAR RADIO - Chevy. 286-8758 after 5.

73 GREMLIN - A-1 cond, am/fm stereo, needs no work, 23 mpg, steel radials. Al, 588-4703.

70 REBEL - New tires, new starter, tape deck, very clean, high mi. \$800. Grace or Alvin, 286-0556 after 3.

76 HARLEY DAVIDSON - 125 cc, 250 mi, dual purpose, excel cond. \$600. 286-8758 after 5.

74 HONDA CIVIC - Hatchback, 4 spd, roof rack. \$1850. George, Ext. 4613, 473-9139.

67 PLY FURY WAGON - Excel body, always lived in Calif, eng no problem, ps/pb, radio, roof rack. \$700. Ext. 3714.

75 PLY FURY SPORT - Silver/maroon, new brakes, recent tune up, must sell. \$2500 or best offer. 924-0056 after 5.

70 FORD - V8 302 cu in, 76,500 mi, auto, good cond. \$800. Ext. 3130/3998.

70 PONTIAC CATALINA - White w/black vinyl roof, roof, ps/pb, 8 cyl. \$650. Rick, Ext. 4126.

74 VEGA - Auto trans, snow tires, am/fm 8-track stereo, dependable. Ext. 2364.

77 DODGE - B200 van, 7000 mi, fully customized, many extras, must sell. 757-3178 after 6.

72 HORNET - 4 dr sedan, good cond, am/fm radio. \$1150. 286-1454.

71 VOLVO - 4 dr sedan, good cond, am/fm stereo, 4 spd. \$1050. 286-1454.

65 PLY BARRACUDA - Good eng & int, auto trans, Sears Diehard batt, new brakes. \$220. 286-0295.

73 PLY ROAD RUNNER - Orig owner, excel cond, many extras. Linda, Ext. 3199, 727-7304 after 5:30.

71 CAPRI - 2000, 4 spd, am/fm, new radials, low mi. Kim, Ext. 2871, 475-6728.

69 DODGE MONACO - High mi, 2 new tires, 5-yr battery, good mpg. \$600. 286-8517 after 5:30.

67 DODGE CORONET 500 - Good running cond, good body, new battery, water pump, fuel pump, alternator. \$375. Ext. 2206, 751-0833 eves.

73 RENAULT - R12, 44,000 mi, 4 spd, ac & radials. \$1200. Roger Young, Ext. 4480, 928-2849.

PEUGEOT DIESEL - Sunroof, am/fm 8-track stereo, 35 mpg, steel radials, low mi, luxury in new cond. Rich or Bob, Ext. 2965, 924-4162.

1970 PONTIAC CATALINA - Good condition, new tires. \$700. Jerry, 2907.

Boats & Marine Supplies

60 OWENS - 283 Chevy eng, good cond. Asking \$2100. 281-6468 after 5.

17' THOMPSON - Lapstreak, navy top, extras w/ trailer, good cond. \$350. Frank, Ext. 4095.

19' MAKO - 100 hp Johnson, navy top, console cover, trailer, pwr winch, never let in water or outside, mint cond. \$5800. 722-4865.

29' COLUMBIA - Twin screw, sport fisherman, sleeps 5, f/b, dual control, outriggers, fighting chair, bimini top, extras. \$4500 firm. Pat, Ext. 2939.

24' SAILBOAT - Twin keel Tylercraft, sleeps 4, galley, encl head, lg Genoa, extras, excel family boat for bay or sound. \$3200. Ext. 3039, 744-2549.

SUNFISH - W/trailer, perfect cond. \$600. 929-6003 after 5:30.

PLYWOD DINGY - \$50. Ext. 4208, 924-3756 after 5.

INFLATABLE KAYAK - W/2 oars & foot pump, will hold 550 lbs. \$40. Pete, Ext. 3297.

33' CHRIS CRAFT - 1967, twin f/w, V8, low hrs, many extras, top cond. Andy, 732-7985, 473-5143.

8' PRAM - Oars & oar locks. \$50. Bill Dieffenbach, Ext. 2434.

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

MASTIC BEACH - 3 bedrm ranch, 1½ baths, 100 x 100 corner lot, near water. \$31,000. 281-7531.

CLEARWATER BEACH - 100 x 150 bldg lot, near Gardiner's Bay, marina rights, priv beach. \$13,000. Ext. 3469, 281-4371.

E PATCHOGUE - 4 bedrm colonial, landscaped, rock garden, gazebo, 1¼ acres, full bsmt, 2 garages, low 60's. 475-0168.

SHOREHAM - 4 bedrm colonial, 2½ baths, extras, full acre. \$58,500. 744-2821.

HOLBROOK - 2 bedrm house, garage, lg lot, low taxes. 585-4741.

4 BEDRM SPLANCH - 9 mi to Lab, 2-car garage, furn or unfurn, many extras, top cond, must sell. \$45,000 reduced to \$36,900, must be seen. 732-2720

SHOREHAM N - 4 bedrm lg colonial, 2½ baths, den w/fp. \$55,000. 744-3660.

S SHIRLEY - 3 bedrm, sun porch, finished bsmt, storms, hot water heat, landscaped, 50 x 300 lot, near water. \$29,500. 281-5328.

SAYVILLE - Near bay, 9 rm, 2½ baths, 2-car garage, decorator interior, 2-zone heat, extra blt-ins, w/w, ac, 5 appl, lovely landscaping. Asking \$56,000. 589-3269.

STONY BROOK - Wooded, 3 lg bedrms, 9 rm colonial, slate foyer, w/w, 2-car & more, must see. Low 40's. Ext. 4663, 751-5479.

FLORIDA - West coast, Cape Coral, 80 x 125 lot, developed area. Ext. 2311, 567-5131.

MEDFORD - 1 bedrm, w/w carp, appl, ac, recreational facilities. \$29,500. 732-5252, 286-0838.

E MORICHES - Custom colonial cape, 6 bedrms, 3 baths, fp, fam rm, 2-car, priv beach, marina, ¾ acre, secluded. \$69,000. Ext. 3950, 878-1540.

For Rent

POCONO CHALET - Priv community, near Lake Wallepaupack, \$175/wk; \$70/weekends avail in Aug. Fran, 289-2159.

WADING RIVER - Bsmt apt, lg 3 rm furn, ac, on beach. \$250/mo incl util. 929-8443.

ROCKY POINT - Newly decorated, 1 bedrm house, near LI sound, no pets. 744-9724.

VT CHALET - Furn, fp, hike, swim, canoe, fish, near theatre, music, antiques, 757-5599 for rates.

BELLPORT - Near bay, 3 bedrm, 2½ bath colonial, 2-car garage, bsmt, center ac, gas heat, all appl. \$400/mo. 286-1366

MEDFORD - 1 bedrm apt, partly furn or unfurn, priv entr, w/w carp, all appl, no children, no pets. \$235/mo incl util. Ext. 3336, 475-8456.

PATCHOGUE - 3 bedrm apt, all util, priv home. \$315. 289-9192.

Miscellaneous

GARAGE SALE - Aug 13-14, 10-4 p.m. 30 Lacebark Lane, Corner of Scotchpine, Medford. Holtzman, 289-8182.

MOVING - Large bunk beds, \$50; kitchen table & 5 chairs, \$25; 2 dressers, \$15 ea; chifforobe, \$20. Many other items. Ext. 2385 or 289-2382.

"ANNIE" - 5 tickets to Broadway play, Wed, Aug 17, 2 p.m. Excellent seats. 286-1454.

BICYCLE - Girl's 20", excel cond, extras. \$35. 744-3569.

BICYCLE - Girl's 26" Raleigh 3 spd, new tires, pump & kick stand. \$35. Ted, Ext. 2043.

BICYCLE - Girl's 20", banana seat, hand & coaster brakes. \$25. Holtzman, 289-8182.

MINI BIKE - Sears w/3.5 hp Tecumseh engine. \$70. Holtzman, 289-8182.

CIBI - In good cond. \$100. 878-0201.

CAMPING TRAILER - Apache Mesa II, sleeps 6, sink, stove, ice box, excel cond. \$925. 289-0413.

73 ACE TRAILER - 18½' self cont, sleeps 6, 6 cu ft gas/elec refrig, extras, mint cond. \$2590. Pete, Ext. 3297, 586-3579.

68 INTERNATIONAL - Travel-All w/snow plow, 3 sets of tires, mint cond, 4 wheel drive, am/fm stereo. 286-8758 after 5 p.m.

VACUUM CLEANERS - 3 mo Hoover canister and all attachments; Premier upright vac. \$50 ea. Ext. 3336, 475-8456.

(2) HEATERS - Elec hot water. 286-8758 after 5 p.m.

DISHWASHER - Westinghouse & electric stove. \$60. 286-8758 after 5 p.m.

CHEST - 3 drawers, might be able to use as a desk, 42" x 20" x 28" high. \$10. Joan, 744-3919.

TOY BOX - 30" x 15" 15" high padded top, \$5; mahogany stool 8" high \$3. Joan, 744-3919.

BUFFET - Thomasville 8' custom drawers & shelves; walnut corner desk. 399-1954.

COFFEE TABLE - 8' glass top ¾", Kenmore washer; 1 lg upright freezer; 2 mirrors 3' x 5' & 4' x 6'. 399-1954.

DINING TABLE - Black African oakwood, webbed chairs, 2 capt 4 side. 399-1954.

BEDROOM SET - Modern white, bookcase, headbrd 9 drawer dresser & mirror chest of drawers. 399-1954.

OLD FASHIONED BAR - Glass & ice drawers, marble top, 4 bar stools; old baby furniture & clothes. 399-1954.

CAMERA - Mamiya C330 T.L.R. w/80 mm F2.8, 55 mm F4.5 lens, W.L. Finder, C.D.S. Porro Finder, filters & camera bracket. Irv Meyer, Ext. 3038, 929-4326.

SHEET FILM - Developing tank, handles up to 4" x 5", as new. \$10. Ext. 4240 or 286-0295.

PANASONIC - Mini Cassette tape recorder, used twice. Make offer. Ellen, Ext. 3725 after 4 p.m.

PIONEER TAPE DECK - 8 track, mint cond. \$120. Ext. 4309, Paul.

AMPEX - Reel to reel tape recorder stereo, #767, S. on S. echo effects, removable speakers. \$125. Irv Meyer, Ext. 3038, 929-4326.

TV ANTENNA - 20' mast, S.S. mounts. \$45. Gil, Ext. 4043.

FREE TV - 21" b&w for parts or learning purposes only. Ext. 3601.

COLOR TV - 25", new Heathkit GR-295, in kit form, p.c. boards, complete tube type, complete with manual, less cabinet, orig. price \$450, sell for \$250. 475-2557.

AIR COND - 11,000 Btu. \$100. Joan, 744-3919.

CANNING JARS - Glass top qts. Dolores Janes, Ext. 2907.

ACCORDION - Woman's Hohner, good cond. Sharon, Ext. 3312.

RECORDS - "Ella Fitzgerald Sings the Duke Ellington Song Book," \$25; "Art Tatum Solo Masterpieces," \$35; "Greatest Jazz Concert in the World," \$15; "The Swing Era," 10 boxed 3 LP sets, \$6 per set. 289-2116 after 6 p.m.

POST HOLE DIGGER - Makes 6" dia hole, turning handle type, goes to 3½ ft deep in 5 min. \$30. 289-6490.

BILCO DOORS - Size C with 12 in extensions. \$90. Ext. 2023 or 2497.

FIREPLACE - Screen with brass tarnish proof frame, free standing or can fix permanent, \$30; iron grate, \$8; new 5 piece set of black iron utensils with brass handles, \$15; tongs, scissor type black iron, \$5; wood box, black metal, for logs & kindling, \$5. 289-6490.

MATTRESS - Simmons with built in bed board. Best offer. 744-7587.

YOUTH BED - Sears maple for 33 x 66 mattress, mirror 36 x 60. Cumming, Ext. 4343.

HEADBOARD - For full or queen size bed, mahogany, new. \$40. 924-7262.

SOFA - Contemp, 3 yrs old, excel cond, must sell. \$250. Stu, Ext. 3227 or 567-2917 after 6 p.m.

DINING RM SET - Duncan Phyfe, end tables, picnic table, humidifier, mattresses, box springs, oak dresser. AT 6-8945.

PORTABLE WASHER - Westinghouse twin tub, like new. \$80. 744-7587.

DRYER - Kenmore gas, complete with vent kit, 5 yrs old, excel working cond. \$50. Sanchez, 4489, 698-3145.

DIVING BOARD - \$50. 286-8758 after 5 p.m.

CIBI - Good cond. \$100. 878-0201.

BICYCLE - 3 spd, girl's 26", good cond. \$35. 281-1419.

Ads left out of this issue because of lack of space need not be re-submitted in order to run in next week's issue.

BABY ITEMS - Detecto scale, \$4; Pride-A-Matic swing, \$8; car bed, \$3; No Legs Walker, \$4. Carol, 586-3579.

DOZEN - Quart mason jars, \$1.50; safety gate, \$1.50 camera tri-pod, \$9. Carol, 586-3579.

SCREEN DOOR - Wood 1½" thick, 81" x 30½", good screen, enough border of wood to make any size smaller, good cond, no splits, no hinge cutouts, good buy at \$12. 289-6490.

25' ALUM - Step ladder. 286-8758 after 5 p.m.

12' DIVING BOARD - 286-8758 after 5 p.m.

COACH CARRIAGE - Good cond. \$20. Larry, Ext. 2024, 281-2136.

Car Pools

ROCKY POINT - Ride needed, will share expenses. Pat, Ext. 2540, 744-0374 after 6.

CORAM - Seek member to join existing carpool. Alan, Ext. 2252.

SAYVILLE - Existing carpool needs another driver. Ext. 2311.

STRATHMORE EAST CORAM - Interested in joining or forming carpool from west section of Strathmore East Coram off Rt. 112/Wedgewood Dr. Naresh, Ext. 2073.

SMITHTOWN/HAUPPAUGE - Want to start or join carpool. Ext. 3268.

CORAM - Join existing or start new carpool, vicinity Rt. 112 & 25. Peter, Ext. 4340, 698-2088.

Wanted

HOME - For small cocker-husky mixed dog, 1 yr old. Free. Gail, Ext. 3653.

COLEMAN STOVE - Lamp, ice chest. Bob,