BROOKHAVEN BULLETIN
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BROOKHAVEN NATIONAL LABORATORY

DNI Lecture:
Accounting for Nuclear Materials

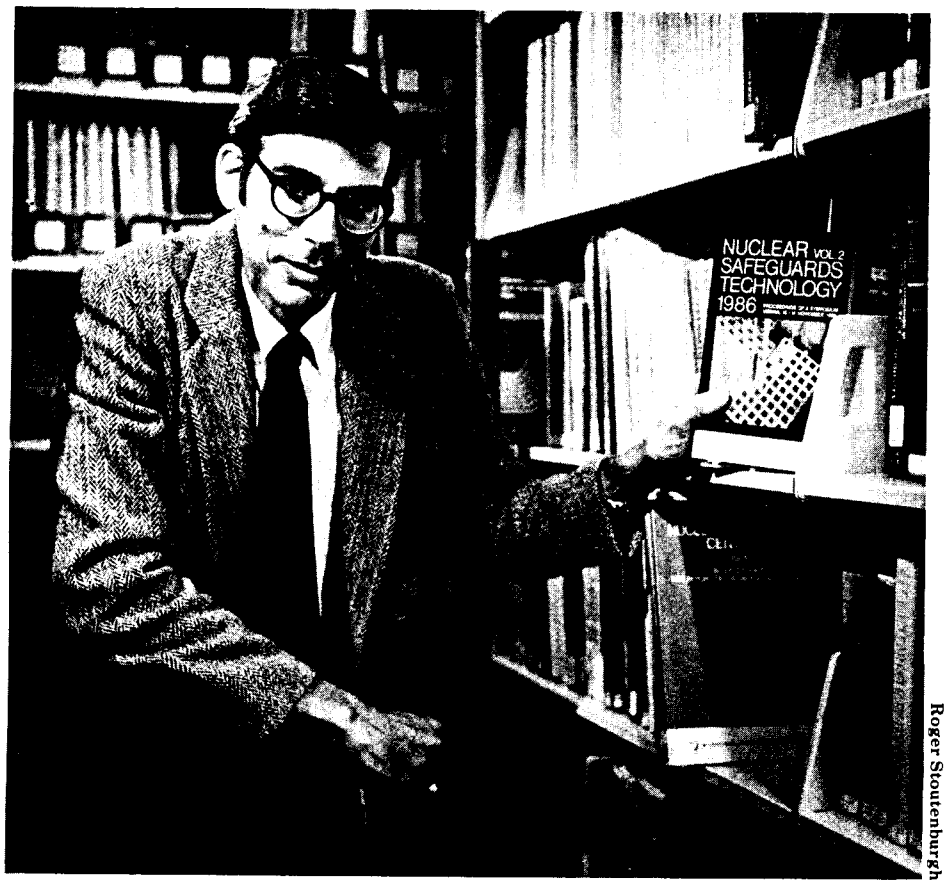
Since the initial signing in 1968, more than 135 nations have become party to the Treaty on the Non-Proliferation of Nuclear Weapons. Except for the United Kingdom, United States and Soviet Union, which already possess them, the countries that have ratified the treaty have therein agreed not to develop or acquire nuclear weapons.

The treaty also mandates that those nations that do not have nuclear weapons must accept International Atomic Energy Agency (IAEA) safeguards inspections, to verify that no nuclear materials intended for peaceful purposes have been diverted for possible weapons use.

How can these inspections make the most efficient use of the IAEA's limited manpower? This is a question that Leslie Fishbone has been grappling with as a scientist in the Technical Support Organization (TSO) of the Department of Nuclear Energy (DNE).

Fishbone will share some of his conclusions in the 245th Brookhaven Lecture, which starts the 1988-89 series season on Wednesday, September 28. His talk on "International Safeguards — Accounting for Nuclear Materials" will begin at 4:30 p.m. in Berkner Hall. William Higinbotham, DNE, will introduce the lecturer.

As background, Fishbone will talk about the Non-Proliferation Treaty and what measures the IAEA employs to verify nuclear materials. These measures are known as safeguards, which are applied to the peaceful nuclear power industry to provide assurance that uranium and plutonium, used or created in the fuel cycle, are not diverted for use in nuclear weapons.



Roger Stoutenburgh

Leslie Fishbone

In the nuclear fuel cycle, raw materials are fabricated into fuel elements. In a typical cycle, uranium is taken from the mine, chemically converted, enriched in the isotope uranium-235, converted once again and incorporated into fuel elements for power reactors. In certain foreign countries, the fuel is reprocessed after being irradiated in the reactors, to recover produced plutonium for further use.

In 1987, as in previous years, the IAEA found no indication of a diversion of safeguarded nuclear material: Though minor anomalies were uncovered, all were satisfactorily resolved.

Fishbone will discuss the safeguards employed at an irradiated-fuel reprocessing plant, as an example. In part, the inspectors are like accountants, verifying that the books are in balance — that the amount of fuel that came into a plant equals the amount that left, though it may be in another form. To complement their book audits, the inspectors perform actual measurements, take samples and service surveillance equipment.

As Fishbone will relate, making the inspections more efficient is an important goal, as treaty nations build more facilities for supplying fuel for nuclear power plants. This has led the Agency to foster the study of advanced safeguards approaches: Thus it has called upon TSO — and Fishbone and his colleagues — as one part of a worldwide research and development effort to enhance IAEA safeguards.

One approach, which Fishbone will describe, is the zone approach, wherein safeguards are carried out for a whole group, or zone, of facilities, rather than individual facilities. There would then be no need to verify materials transfers between facilities within the zone, which would reduce the manpower and equipment required.

Les Fishbone received his B.S. in physics from the California Institute of Technology in 1968, and his Ph.D. in physics from the University of Maryland in 1972. The next year, he spent seven months in the Soviet Union as part of the scientific exchange program run by the U.S.S.R. Academy of Sciences and the U.S. National Academy of Sciences.

In 1974, Fishbone joined the University of Utah as a research associate and associate instructor in physics. In 1976, while still at Utah, he began working on energy problems with the governor's science advisor.

Fishbone came to BNL in 1977 to join the staff of the National Center for Analysis of Energy Systems in the Department of Energy & Environment, now the Department of Applied Science. He moved to TSO in DNE in 1980.

A Brookhaven Lecture Committee member since January 1985 and secretary since 1986, Fishbone became chairman of the Committee this month. He is also a member of the American Physical Society and the Institute of Nuclear Materials Management.

All those interested in getting together with the lecturer are invited to go to a restaurant for dinner. To be part of this group, call Theodor Teichmann, Ext. 2101.

Brookhaven Lectures — 1988-89

The Brookhaven Lecture Series was started in 1960, as a result of the efforts of Gertrude Scharff-Goldhaber, Physics. Today, the lectures continue to introduce Laboratory scientists and others to research by their BNL colleagues who are not necessarily in the same field.

Scharff-Goldhaber has remained the founding member of the Committee that oversees the series. The 24 Committee members include two representatives from each department and one from each research division. The current chairman is Leslie Fishbone, and the secretary is Neil Baggett.

The following Brookhaven Lectures have been scheduled for the 1988-89 series:

Date	Speaker	Subject
September 28	Leslie Fishbone, Department of Nuclear Energy	International Safeguards
October 26	David Welch, Department of Applied Science	Superconducting Materials
November 16	Joanna Fowler, Chemistry Department	Positron Emission Transaxial Tomography (PETT)
December 14	Venki Ramakrishnan, Biology Department	Chromatin Structural Studies Using Neutrons and the Scanning Transmission Electron Microscope (STEM)
January 25	Jan Naidu, Safety & Environmental Protection Division	Impact of BNL Operations on Groundwater
February 15	Peter Takacs, Instrumentation Division	Optics and Metrology of X-Ray Mirrors
March 22	William Morse, Physics Department	Search for Rare K Decays
April 26	Dana Beavis, Alternating Gradient Synchrotron Department	Results from the Heavy Ion Program at the AGS
May 24	James Davenport, Physics Department	Electronic Structure Since Dirac
June 14	Richard Heese, National Synchrotron Light Source Department	Compact Accelerators for Industry

IBM Vice Chairman Tours NSLS

Roger Stoutenburgh

The Vice Chairman of International Business Machines (IBM), John Kuehler (left, front), toured the National Synchrotron Light Source (NSLS) on Wednesday, September 7, to get a firsthand view of IBM's x-ray lithography station on beam line U-6 of the vacuum ultraviolet ring. At that station, the first computer chips in the world were recently made solely using x-ray lithography.

Kuehler and BNL Director Nicholas Samios (front row, second from left) are holding one of those chips. With them are: (front row) Michael Attardo, IBM; Alan Wilson, IBM; (second row, from left) Jerry Silverman, IBM; Dean Eastman, IBM; David Nelson, Department of Energy (DOE); Norman Kreisman, DOE; William Siegle, IBM; (third row, from left) John Warlaumont, IBM; Kermith Speierman, National Security Agency; BNL Deputy Director Martin Blume; NSLS Deputy Director Samuel Krinsky; (back row, from left) Michael Hill, IBM; and Ronald DellaGuardia, IBM.

Three Teams Are First Safety Winners

Congratulations to three Plant Engineering teams: the Steam Shop team, the Heavy Equipment Shop team and the Grounds & Roads team. On September 12, at the end of week eight, these three became the first of the 25 teams participating in the Lab's Team Safety program to have played it safe long enough to meet their time goal.

For their safe work, the 64 team members will be celebrating at deli or pizza luncheons on September 20 and 22. And, they'll be back on the field with a new safety goal — ten weeks. By November 28, these first champs could have a second win. Go for it!

On September 26, five more teams, with ten-week goals, could be winners. The Supply & Materiel teams are still at bat and have two possible winners for that date. Plant Engineering is sponsoring two contenders for the 26th. And, Central Shops may have their first champions then, too.

Word in the dugout is that the teams really dig those green caps — but that not every player has one. According to the commissioner, the hats are back ordered, but expected soon. Hold onto your hat, if you have one.

Remember, teams, it pays to play it safe.

The Plant Engineering Steam Shop team: (standing, back row, from left) Walter Spiers, Fred Izzo, Bill Peterson, Tom Walters, Mike Barrett, Norman Nilsson and Kevin Tisch; (front, from left) Joe Gadbois, Marty Klein, Mauro Squicciarini, Bill Pinto, Mike Tesla and Gary Hanlon. Missing are Plant Engineering Steam Shop Supervisor Ed Erhardt, Kenny Anderson and Walter Schlichtcroll.

—photos by Roger Stoutenburgh

The Plant Engineering Grounds & Roads team: (front, kneeling, from left) Joe Lopez, Bob Metz, Roads & Masonry Supervisor Bud Hulse, Skip Anderson, Phil Sgro, Bob Medina, Antonio McGill and Larry Jones; (middle row, from left) Gary Stoner, Jack Kulesa, Tom Crews, General Supervisor Roy Barone, Jeff Mirando, Howard Bell, Bernard Jasper, Joe Tullo, (on the tractor) Felix Thompson, Mel Bonanno, Dollie Johnson, Bob Callister, Keith Detmer, Jerry Hobson, Grounds Supervisor Tage Carlsson, and Superintendent of Site Maintenance & Services Roy McWilliams; (extreme back, from left) Paul Williams and Frank Gaetan. Missing are Ollie Booker, Earl Dickerson, Hubbard Harris, Clarence Hicks, Lonnie Muldrow, Greg Thompson, John Turner and Frank Zambriski.

The Plant Engineering Heavy Equipment Shop team: (front, from left) Charlie Botts, Heavy Equipment Shop Supervisor John Niemczyk, John Schuller, John Braband, Kerry Botts, John Popielaski, Ray Patuano, George Wunderlich, Jimmy Durham and Richard Kayte; (aloft, from left) Ralph Giordano and Mike Curtis. Missing are Oscar Mirjah and Bill Sassano.

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, VA 22161. Staff members should call the designated contact at the extension listed.

BNL-NCS-52142
Contact: M. Stock, Ext. 2902
The Program Radlst. T.W. Burrows.

NUREG/CR-4920
BNL-NUREG-52070, Vol.1
Contact: C. Conrad, Ext. 2272
Assessment of Severe Accident Prevention and Mitigation Features: BWR, Mark 1 Containment Design. W.T. Pratt et al.

NUREG/CR-4920
BNL-NUREG-52070, Vol. 2
Contact: C. Conrad, Ext. 2272
Assessment of Severe Accident Prevention and Mitigation Features: BWR, Mark II Containment Design. J.R. Lehner et al.

NUREG/CR-4920
BNL-NUREG-52070, Vol. 3
Contact: C. Conrad, Ext. 2272
Assessment of Severe Accident Prevention and Mitigation Features: BWR, Mark III Containment Design. R.G. Fitzpatrick et al.

NUREG/CR-4920
BNL-NUREG-52070, Vol. 4
Contact: C. Conrad, Ext. 2272
Assessment of Severe Accident Prevention and Mitigation Features: PWR, Large Dry Containment Design. K.R. Perkins et al.

NUREG/CR-4920
BNL-NUREG-52070, Vol. 5
Contact: C. Conrad, Ext. 2272
Assessment of Severe Accident Prevention and Mitigation Features: PWR, Ice-Condenser Containment Design. C.J. Hsu et al.

NUREG/CR-5145
BNL-NUREG-52146
Contact: T.Skelaney, Ext. 2484
Failure Investigation of 3M Series 900 Static Eliminators. C. Czajkowski.

NUREG/CR-5158
BNL-NUREG-52086, Vol. 1
Contact: D. Faivre, Ext. 4425
Worldwide Activities on the Reduction of Occupational Exposure at Nuclear Power Plants. T.A. Khan et al.

Update Your ID Card

Employees and guests — check your wallet. Has your BNL identification card expired? If so, please renew your card at Police Headquarters, Bldg. 50, between 9:30-11 a.m., Mondays, Wednesdays and Fridays. For more information, call Hank Raimondo, Ext. 7258.

TFCU Rep on Site

All employees are eligible to join the Teachers Federal Credit Union (TFCU), which operates an on-site branch in Bldg. 179. TFCU representative Charlotte Miltz will be in the Berkner Hall lobby on Monday, September 19, from 10 a.m. to 2 p.m., to provide information about TFCU and to enroll new members.

Look for LINK.bnl

The second issue of LINK.bnl, BNL's new computer newsletter, was delivered to your building this morning. Please be sure to pick up your copy.

Software Demo

On Friday, September 23, at 2 p.m. in the Applied Mathematics Department seminar room, Walter Maclay, of Strawberry Tree Computers, and Greg Basso, of Cascade Control, will present a seminar on analog 1/0, serial RS232/IEEE488 interfaces, interrupts, DMA and signal processing for the IBM PC, Macintosh and other workstations. Discussion will include A/D and D/A specifications on accuracy, resolution, linearity, noise rejection, buffering, input protection and isolation. Software for laboratory process-control and data collection, factory automation, signal analysis and chromatography will be demonstrated.

In Memorium

It has been learned that **Joseph Titmus,** a former principal technician in the Safety & Environmental Protection Division, died on August 31, of complications from a long illness. He was 65.

Titmus came to BNL in 1953 as a technician trainee. After a stint away from the Lab in 1970 and one from 1972-74, Titmus came back in September 1974 and was promoted to principal technician in 1979.

He leaves his wife Beatrice of Sound Beach, his son Mac of Yaphank, his daughter Beth Holle of Wading River, and five grandchildren.

Public Auction Of Motor Vehicles

Thirty-seven motor vehicles, located at Warehouse T-87, will be available for public suction on Thursday, September 29, at 10:30 a.m., at Berkner Hall.

Inspection will be permitted on Wednesday, September 28, from 9 a.m. to 4:30 p.m. Listings should be available at that time for those interested in bidding on a vehicle. The public auction will be conducted by General Services Administration.

For further information, call Ext. 2977.

Arrivals & Departures

Arrivals

Ilan Ben-Zvi	NSLS
Lap-Yan Cheng	Reactor
Mary Ann Drapkin	DNE
Harry M. Hacker	Physics
Robert B. Hee	Accel. Devel.
Florence J. Lin	Chemistry
John W. McCaffrey Jr.	Accel. Devel.
Richard R. Riesen	Accel. Devel.
Alpana Seal	Biology
Frank J. Zafonte	S&EP

Departures

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

Douglas E. Barnett	Plant Eng.
James G. Dunmore	Plant Eng.
Jennifer Grodberg	Biology
Lola E. Kopp	DAS
Lars H. Olsen	Physics
Robert E. Raulli	Chemistry
Ann S. Tebbutt	Biology
Stephen D. Unwin	DNE

PSI Meeting

"Can We Talk" will be the topic of an informal discussion at the next monthly meeting of the Upton Chapter of Professional Secretaries International (PSI). Members and guests are invited to attend the meeting on Thursday, September 22, at 6 p.m., in Berkner Hall, Room C.

Softball

Final Standings of 1988 Season

League I	W	L	League II	W	L
Phoubars	12	2	Scram	11	3
Blue Jays	11	3	Titans	9	5
Six Pax	9	5	AMD Bombers	9	5
Light Source	9	5	Scrambled Legs	8	6
Ravens	8	6	Phase Out	8	6
Bandits	6	8	Bombers	8	6
Cool 'n Gang	5	9	Dirty Sox	6	8
Sudden Impact	4	10	Medical	2	12
Magnuts	3	11	Moles	2	12
Cutting Edge	2	12			

League III	W	L	League IV	W	L
Survivors	12	2	Spacekadets	13	1
Snakebites	12	2	Underalls	10	4
Simply Awesome	8	6	Seventh Inning Stretch	7	7
Kidz-R-Us	7	7	Mudville Sluggers	7	7
Hounds & Foxes	7	7	Turkeys	6	8
Farm Team	5	9	Sandboxers	6	8
Foul-Ups	3	11	Far Side	5	9
Source	2	12	Who Cares	2	12

Cafeteria Menu

Week of September 19

Monday, September 19

Canadian cheese soup	(cup)	.75
	(bowl)	.95
Baby beef liver w/sautéed onions, potato w/1 veg		3.10
Cheese ravioli		2.95
California quiche w/1 veg.		2.95
Hot deli: Baked ham	(bread or roll)	2.85
	(hero)	2.95

Tuesday September 20

Garden vegetable chowder	(cup)	.75
	(bowl)	.95
Orange chicken w/1 veg.		3.10
Beef macaroni & tomatoes		2.95
Fried fish amandine w/1 veg.		3.10
Hot deli: Pastrami	(bread or roll)	2.85
	(hero)	2.95

Wednesday September 21

Chicken Mulligatawny soup	(cup)	.75
	(bowl)	.95
New England boiled dinner w/potato & 1 veg.		3.10
Sausage & peppers over rice w/1 veg.		3.10
Swiss cheese croquette w/Creole sauce, 1 veg.		2.95
Hot deli: Breast of turkey	(bread or roll)	2.85
	(hero)	2.95

Thursday September 22

Cheddar broccoli chowder	(cup)	.75
	(bowl)	.95
Spaghetti w/meat sauce white & red clam sauce, or pesto and bread		3.10
Baked fish w/lemon butter sauce		3.10
Hot deli: Roast beef	(bread or roll)	2.85
	(hero)	2.95

Friday September 23

Egg drop soup	(cup)	.75
	(bowl)	.95
Baked stuffed pepper w/tomato sauce		2.95
Vegetarian chow mein over rice		2.95
Fried clam strips w/potato & 1 veg.		3.10
Hot deli: Corned beef	(bread or roll)	2.85
	(hero)	2.95

Help Wanted At Cafeteria

Marriott Corporation, which now runs the Cafeteria, needs a utility porter for the 3 p.m.-8 p.m. shift. Marriott Corporation is an equal opportunity employer. Anyone interested may apply in person at the Cafeteria, Ext. 3541.

BROOKHAVEN BULLETIN

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Art Auction Tomorrow

Perhaps a work of art, such as this one by G. Rodo Boulanger, will be adorning your wall after tomorrow evening's Art Expo and Auction. Sponsored by Brookhaven Women in Science (BWIS) this Saturday, September 17, the exposition of artwork begins at 7:30 p.m., and the auction, by Marlin Art, gets underway at 8:30 p.m.

Admission is $5, and BWIS's commission will go towards the Renate W. Chasman Scholarship for Women Fund. Bidding will start as low as $40, and checks or credit cards will be accepted for payments. Beginning at 8 p.m., you can enjoy free refreshments while previewing the art. A door prize will be awarded at the close of the auction. The public is invited, and tickets may be purchased at the door. They may also be bought today from:

	Bldg.	Ext.			
Penny Baggett	902B	5154	Mary Kinsley	426	5232
Nicole Bernholc	535A	2027	Ruth Ann Lutz	460	7774
Eva Bozoki	725C	3701	Harriet Martin	477A	3487
Pat Carr	179A	7192	Flo O'Brien	475	4953
Harriet Castro	134D	5152	Cindy Pohlig	459	3301
Maryann Castrogivanni	535A	3898	Sharon Spark	515	4111
Alyce Daly	197D	5203	Jean Stafford	185A	3336
Rae Greenberg	510A	5564	Pat Webster	1005	4628
Louise Hanson	815	7709	Bonnie Wesolowski	555A	4301

Nursery School

The Upton Nursery School is now accepting enrollment for the combination class of three- and four-year-old children for the 1988-89 school year. The school, a cooperative preschool held on site in the Recreation Building, is open to families of BNL employees and their relatives.

For more information, call Karen Indusi, Ext. 2975, or Marian Drummann, 924-6723 after 5 p.m.

Adult Swim Lessons

BERA is again offering a series of eight swimming lessons for adults, after work on Tuesdays, 5:15-6:30 p.m., starting September 27 and continuing through mid-November. The fee is $20, and paid registrations will be accepted at the swimming pool.

Aerobic Dance

If you want to continue your summertime exercise program through the fall and winter, the Aerobic Dance Club (ADC) may have just the thing: A regular program of aerobic dance or stretch classes. Instructor Pat Campbell will lead the classes on the ADC's fall program:

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

Classes in aerobic dance will be held on Tuesdays and Thursday, while stretch classes will be held on Mondays. All classes run from 5:15 to 6:15 p.m. Participants may take any or all of these classes. Mats are recommended for floor exercises.

The fee for each ten-week session (M, T or Th) is $30, payable at registration, which will precede the first classes and be held on the third floor of the Collider Center, Bldg. 1005S, as follows:

- **Stretch** — Monday, September 19.
- **Aerobic Dance** — Tuesday, September 20, and Thursday, September 22.

For more information, call Bill Leonhardt, Ext. 2378; Elinor Norton, Ext. 3455; or Janet Sillas, Ext. 2345.

Astronomical Society

Planets, stars and galaxies will be on view tonight at the Astronomical Society's Open Observation Night. Everyone is welcome. The program starts at 7:30 p.m. at the Observatory, but if it is raining or the sky is very overcast, do not come. There is a fee of $1 for nonmembers. For more information, call Keith Power, Ext. 7772.

Social Club

The Social Club has 25 tickets for sale for the 3 p.m. performance of Walt Disney's World on Ice show at the Nassau Coliseum on Sunday, December 4. The tickets cost $13.50 for adults, $11.50 for children under 12. For tickets or information, call Doris Terry, Ext. 7610.

Trip to Atlantic City

Because the BERA's first bus trip to Atlantic City this July was such a success, BERA is offering a second one — but this time to Trump Castle on the Marina.

On Saturday, November 5, two buses will leave from the Brookhaven Center at 9 a.m. They will make a stop at the Park & Ride off Ext 63 of the Long Island Expressway, if enough participants want to be picked up there. After gambling the day and evening away in the casino or strolling down the Boardwalk, you will return to BNL around 11 p.m.

The price for the bus trip is $22.50 per person — but, as the casino returns $17.50 in coins to each person and a $5 deferred voucher, the actual cost of the trip comes down to $5.

Sign up now at the BERA Sales Office in Berkner Hall, Mon.-Fri., 9 a.m. to 2 p.m. Paid reservations will be taken on a first-come, first-served basis, and, when all tickets are sold, a waiting list will be established. No refunds will be made, though you can sell your ticket to someone on the waiting list.

For more information, call Louisa Barone, Ext. 3347; M. Kay Hunt, Ext. 2873; or Rosalie Piccione, Ext. 3160.

Volleyball

The first Volleyball League captains' meeting will be held on Wednesday, September 21, at noon, in the Hamilton Seminar Room, Bldg. 555, Chemistry. Officers will be elected at that time. If you plan to enter a team, a representative must attend the meeting to submit a preliminary roster. Roster sheets will be sent to last year's captains. To form a new team or join an existing team, contact Kathi Barkigia, Ext. 7661, or Barry Karlin, Ext. 5624.

Bowling

Red/Green League

High games were bowled by R. Mulderig 222, E. Meier 209, L. Jacobson 208, H. Marshall 206.

White League

Joe Sheehan rolled a 225, Gerry Riker 192.

Purple League

Rob Simes had a 219/609 scratch series, Dick Adams 212, Ben Belligan 201, Caryl MacDougall 191.

Couples are still needed for mixed-league teams. Call Fern Simes, Ext. 3969.

Call for BNL Data

If you have generated visually stimulating scientific data, consider entering it for exhibition the BERA Art Committee's "Data" employee art show, October 24-26.

In addition to data from experiments or theory, you can also submit aesthetically pleasing plans and equipment, such as drawings, models, glassware and transistor boards.

If you intend to exhibit a work, please fill out one copy of the Data sheet below for each submission. On it, list the artist's name, department, extension, the title of the work, a description including approximate size and an explanation of its scientific significance.

Return the Data sheets to the BERA Sales Office, Berkner Hall, by Tuesday, October 18. The poster advertising this art show will feature one of the first 20 submissions entered before September 20. So, get your entries in early.

Works will be arranged for exhibit in Room B, Berkner Hall, on Monday, October 24, between 8:30 a.m. and 12:30 p.m. For additional information, call Clare Sheppard, Ext. 3946.

DATA Sheet

Name: _____

Department: _____ **Extension:** _____

Artwork Title: _____

Description, including size: _____

Explanation of Scientific Significance: _____

_____

Complete one Data sheet for each submission. Return completed sheets to the BERA Sales Office, Berkner Hall, by Tuesday, October 18. Works must be ready for exhibition by Monday, October 24.

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 and/or appropriate bargaining unit, with preference to those within the immediate work group; (2) present employees within the Laboratory as a whole; and (3) outside applicants. In keeping with the Affirmative Action plan, selection decisions are made without regard to age, race, color, religion, national origin, sex, handicap or veteran status.

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

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

For further information regarding a placement listing, contact the Employment Manager, Ext. 2882.

LABORATORY RECRUITMENT - Opportunities for Laboratory employees only.

2945. SECRETARIAL POSITION - Requires an AAS in secretarial science or equivalent experience and a thorough knowledge of Laboratory procedures. Will be responsible for various office administration fuctions. Responsibilities will include varied secretarial duties including IPAP/JCARS, travel arrangements and vouchers, and report preparation involving detailed tabular data on IBM PC. Previous experience with WordStar or WordPerfect preferred. (Reposting of Job #2763) Department of Applied Science

2946. OFFICE SERVICES POSITION - Requires good knowledge of office practices. Responsibilities will include distribution of mail, answering telephones, typing, filing, photocopying, cataloging and shelving of books in the department library. IBM PC data-entry experience helpful. Applied Mathematics Department.

OPEN RECRUITMENT - Opportunities for Laboratory employees and outside applicants.

2947. PLUMBER A - Requires completion of 4-year apprenticeship and/or substantial commercial or industrial experience. Will layout, construct, install, repair and maintain water, sewage and gas systems, related facilities and auxiliary equipment. Plant Engineering Division.

2948. EXPERIMENTAL MACHINISTS - Requires a minimum of five years' prototype machining experience in all-around machining, proficiency in job-print interpretation, layout and machine setup. Demonstrated ability in all phases of machine shop work is essential. Central Shops Division.

2949. CNC/NC OPERATORS - Requires a minimum of three years' prototype machining experience on CNC milling equipment. Will be required to complete setups under the guidance of a group leader and input data manually on menu-driven controls. Should also have the capability to select and install tooling as required and show proficiency in job-print interpretation. Central Shops Division.

Motor Vehicles & Supplies

87 FORD BRONCO XLT - loaded, towing pkg., 16k mi., warranty, excel. cond., $15, 900. Ext. 3341 or 981-9474.

87 NISSAN SENTRA - 22k mi., a/t, a/c, am/fm stereo, mint cond., $6,000. 924-6921.

86 CAMARO - fully loaded, custom woodgrain dash, T-top, red w/gray int., alarm, 26k mi. $8,900. Ext. 4962.

86 AUDI 4000 S - 4-dr. sedan, a/c, p/s, am/fm cass., p/roof, 5-spd., 55k mi., $9,000 neg. 281-5565.

86 HYUNDAI EXCEL GLS - 18k mi., a/t, am/fm cass., a/c, 5-dr., leaving, $5,000. Ext. 3089 or 2312.

86 T-BIRD - 5.0L EFI, V-8, a/t, full power, am/fm cass., a/c, silver/gray, excel. cond., $9,500. 928-9136 after 12 noon.

85 S10 BLAZER - 4wd, a/t, p/s, p/b, trailer pkg., $9,500 neg. 698-0574.

85 SUZUKI QUADRUNNER LT80 - low mi., perfect cond. 878-6074 eves.

84 DODGE 600 - convertible, all options, 45k mi., excel. cond., $6,000. 473-6116 or 212-285-0041.

84 SUZUKI RM250 DIRT BIKE - low mi., many extras, excel. cond., $1,300. 878-6074 eves.

83 TOYOTA CELICA GT - liftback, a/t, cruise, a/c, p/s, p/b, am/fm, 65k mi., clean. Witkover, Ext. 4607 or 368-0452.

83 DODGE - 4-dr., a/c, p/s, a/t, am/fm stereo, very good cond., $2,000 neg. Hayashi, Ext. 3889 or 4581.

82 PLYMOUTH RELIANT STATION WAGON - 4-cyl., a/t, p/s, p/b, am/fm cass., excel. cond., $2,350. Ext. 3403.

82 TOYOTA TERCEL - a/t, am/fm, 4-dr., excel. cond., reliable, orig. owner, $1,800. 589-8109 after 5 p.m.

82 CHEVY CAVALIER - a/c, p/s, p/b, stereo, 85k mi., asking $800. Wells, 878-4214 after 6 p.m.

82 COROLLA WAGON - 5-spd., 89k mi., am/fm cass., snows, excel. cond., $2,200. John, 929-6830.

81 FORD MUSTANG - 4-spd., 4-cyl., gauges, good cond., $2,100. 744-9812 after 5 p.m.

81 BUICK REGAL - V-6, a/c, am/fm, velour, maroon, good cond., $1,900 neg. Ext. 2021.

81 SKYLARK - 4-dr., V-6, 100k+ mi., new parts. Ext. 5286.

80 VW RABBIT - 4-dr., diesel, 4-spd., rebuilt engine, new tires, battery, $400. Tang, Ext. 3869 or 5186.

80 BUICK SKYLARK - V-6, rebuilt, a/t, 76k mi., great cond., $1,500 neg. Ext. 3851.

80 CHEVETTE - h/b, 4-dr., 4-cyl., a/t, am/fm, good tires, good cond., orig. owner. Ext. 2055.

80 SUZUKI DS-185 DIRT BIKE - excel. cond., needs nothing, $450. Glenn, Ext. 3464 or 499-6341 eves.

80 FORD FIESTA - 4-spd., 59k mi., a/c, radio, asking $1,000. Ext. 3790 or 3200 after 8 p.m.

80 MONZA - looks good, runs well, door broken, $250. Ext. 2175 or 399-0117.

80 COLEMAN CAMPER - pop-up, excel. cond., $1,200. Paul, 273-6796.

80 MUSTANG - 4-cyl., 4-spd., sunroof, bucket seats, new parts, needs water pump, runs well. Ext. 4194 or 924-1277.

79 MINI MOTOR HOME - fully self-contained, sleeps 5, clean in & out, $7,000. Paul, 273-6796.

79 MERCURY MARQUIS - 4-dr., a/t, p/s, p/b, a/c, cruise, nice body, motor n/g, all or parts. 289-8212 eves.

79 FRANKLIN MOTOR HOME - 25', custom built, Dodge chassis, low mi., sleeps 6, many extras. 265-8093.

79 TOYOTA CELICA GT - 5-spd., a/c, sunroof, am/fm stereo cass., high mi., excel. gas mi., $2,000. 277-2067 after 6 p.m.

79 MALIBU CLASSIC - 4-dr., p/s, p/b, a/c, am/fm, V-6, 57k mi., $1,700. 758-6919 after 5 p.m.

79 MAZDA GLC - hatchback, good tires & engine, standard shift, great radio, $450. 261-2719.

78 AMC CONCORD - am/fm radio, a/c, cruise, new tires, good cond., $975. 874-8646.

78 DATSUN 280Z - 2+2, '82 engine, a/t, a/c, am/fm cass., looks great, runs well, $2,300. 744-7947.

78 BMW 320i - many new parts but needs some work, $1,700 or best offer. Karl, 467-4036 after 6 p.m.

78 OLDS CUTLASS SUPREME - 8-cyl., fully equipped, new trans., excel. cond., orig. owner, $1,900. Ext. 4449 or 751-8403 after 6 p.m.

78 PLYMOUTH HORIZON - 4-dr., 75k mi. on rebuilt motor, excel. transportation, $750. Ext. 4597 or 924-8213 after 5 p.m.

77 OLDS DELTA - 4-dr., fm stereo, new transmission, radiator, water pump, belts, hoses, tires, reliable. Joe Mead, Ext. 2836 or 289-1831.

77 BMW 530i - needs brake work & tune up, otherwise good shape, $2,500. 821-0686.

76 VOLVO - 6 cyl., 4-dr., all power, sunroof, needs brakes, muffler, valve adjustment, must sell, best offer. 696-0838, 12-4 p.m.

75 TOYOTA CELICA - good tires, brakes, battery, etc., orig. owner, excel. cond., $1,200. Ext. 2752 or 751-6571.

74 JEEP CJ5 - 33" tires, new paint, runs excel., asking $2,500. Charles, Ext. 5211 or 582-4858.

74 HONDA CB 360 - rebuilt engine, new tires, crash bar, elec. start, very clean, $550. Pete, Ext. 4100.

73 DODGE DART - 6-cyl., 2-dr., a/t, p/s, good tires, $400. 363-6753 eves.

73 INTERNATIONAL TRUCK - new sides for bed, Northport location, must see. $600. Ext. 4530 or 261-2719.

72 CATALINA - needs brakes, runs well, best offer. 467-8976.

71 FORD TORINO - 2-dr., a/t, p/s, p/b, 76k mi., $450. Pete, Ext. 2498.

71 CAMARO - white w/black interior, $325. Mark, 727-3673.

71 CHEVROLET MINI MOTOR HOME - 350 V-8, a/t, p/b, cruise, stove, refrig., bath, sleeps 6, asking $4,000. Ron, Ext. 2467 or 924-8644.

71 DUSTER - good running cond., great winter transportation, $350 neg. 727-7806.

69 TOYOTA CORONA - a/t, am/fm cass., good tires, high mi., good station car, $175. John, Ext. 7671.

66 JAGUAR COUPE - one owner, Weber carbs, chrome wire wheels, extremely fast, $14,000. Gar, Ext. 4387.

30 MODEL A FORD - town sedan, good cond. Garry, Ext. 5289.

FORD BACKHOE & BUCKET LOADER - Model 400 OHD, ½ yd. bucket, $2,000; trailer tire w/rim, $25. 862-6990 between 10 a.m.-2:30 p.m.

BIKE CARRIER - bumper-mount, $10; large 5'x5' car-top luggage carrier, open style, $20. John, Ext. 3292 or 286-1348.

TIRE - on rim, 75R14, Goodyear radial, new, off 1981 Monte Carlo, $55. Joe, 289-1442.

UTILITY TRAILER - $75. Ext. 2018 or 928-3568.

TRUCK CAP - for short-bed, good cond., $300. Richard, Ext. 4688 or 929-8294.

NOSE MASK - Nissan, 1987-88, brand new, $60. 878-2038.

Boats & Marine Supplies

29' ULRICHSON - wood, excel. cond., f.b., fwc, 327, runs well, sleeps 5, range/oven, elec. head, many extras, must see. 732-2754.

29' EGG HARBOR - 360 Chevy, fwc, fly bridge, p/s, good cond., asking $2,000. 289-1420.

25' MORGAN SAILBOAT - 1968, new sails & motor, $8,000; 18' Catamaran Sol-Cat, w/trailer & beach wheels, $1,875. 821-0686 eves.

24' BAYLINER - 1976, fly bridge, fiberglass cabin, swim platform, new motor, many extras, excel. cond., $8,000. 289-0883.

21' GLASTRON - 140 OMC, cuddy, sleeps 4, galley, ship/shore, head, loaded, trailer, extras, perfect cond., $8,500. 423-3241.

19' YELLOWSTONE - camper, 1974, self-contained, 120 V.-12 V., sleeps 6. 654-1731.

16' RENKEN BOWRIDER - 1976, 40 h.p. Evinrude, galvanized Highlander, like new, $2,000. Kathy, 744-2060.

14' SEARS ROW BOAT - aluminum, good cond., $200. Frank, Ext. 2022 or 399-4480.

12' BOAT - aluminum, w/flotation, $100. Rog, 874-8646.

9' SAILBOAT - w/sails, $650; w/optional 2.7 h.p. motor, $850. 366-0021 after 5 p.m.

RADAR HEAD - Apelco 9900, brand new, no antenna, $225. 981-9474.

THOMPSON - 1987, 290 Daytona, fwc, twin Mercruisers, $51,000. 981-9474.

MOTORS - 6 h.p. Evinrude, twin cylinders, new water pump & prop. $200; 12 h.p. Sear Elgin, old but runs well, $150. 732-6838.

Miscellaneous

WALL UNIT - mirrored, brass/black, must see. 475-8456.

WALL UNIT - cherry finish, 1-yr. old, new $140, sell for $40; dining table, good cond., $20. Ext. 2679 or 472-6922.

CHINA CLOSET - Colonial, 2-top drs. w/ lights, 7-drawers, bottom for storage, $100. 345-5142.

DINING ROOM SET - choice of 4-6 chairs, w/china closet & buffet, $600. 744-0960.

BUFFET - dining, cherry, excel. cond., $250; triple dresser, cherry, Colonial, plus bookcase headboard, bed frame, $125. Ext. 2529 or 473-7902.

BOOK CASE - dark mahogany, 2-glass doors, antique, $200; sterling silver 6-piece, 8-place settings, box & serving pieces, $750. firm. 821-0695.

SOFA & CHAIR - very good cond., $125. 475-0509.

CAPTAIN'S BED - 6-drawers plus matching 2-drawer table, white formica, good cond., cheap. Duke, Ext. 2957 or 289-3586.

DESK - handcrafted, pine, about 5' long, trestle type, 6 tiny drawers + 4 large drawers, $85. 475-4199.

DINETTE - 6 chairs, $75; Captain's bed w/3-drawers & mattress, white, $100. Joyce, Ext. 4215.

WASHER & DRYER - Whirlpool, compact size, 110 V., stackable, good cond., $375. Mel, Ext. 4100.

WASHER & DRYER - Speed Queen, contemporary size, leaving, $250. Ext. 3089 or 2312.

FRANKLIN STOVE - 6" flue, w/grate, $50. 588-8899 after 6 p.m.

LAWN MOWER - Rickels, 21" cut. like new, $65. Dan, Ext. 4987 or 698-7322.

TOP SOIL - fine screened, $18 per yd. delivered, also peat moss, sand, gravel, blend. 924-9427.

HUMIDIFIER - new, Model 2500, 1¼ gal. capacity, asking $15. Ext. 3986.

PAINT - Olympic white, 6 gals., sells for $20+, now $15/ea. Ray, Ext. 2795.

COAL BURNING STOVE - large, brick lined, $50. Frank, Ext. 2022 or 399-4480.

STOVE PIPE OFF SET - 2 pieces, brand new, triple wall, galvanized, 6" ID, 10" OD, $75. Gary, Ext. 4095.

AIR CONDITIONER - Westinghouse, Model AC053JTAI, 5050 Btu, used 2 seasons, perfect, $100. Otto, 744-1057.

KITCHEN SINK - white, American standard, 22x24 w/rim, good cond., $25; fish tanks, 10, 20, 30 gals. w/pumps, filters, 2 stands, $125. Ext. 3762.

POWER BRAKE BLEEDER - Snap-on, $150; 20-ton hydraulic jack, air assist., $300; Snap-on tune-up center, $250. 744-3968.

LAWN MOWER - 30 h.p., 20", as new, $80. Ext. 3790.

LAWN TRACTOR - Huffy, 26", 3-spd., less motor, $30; Huffy snow blade, $20. Walt, Ext. 7154.

POOL - Dough Boy, steel, 18', filter, ladder, 4' deep. 878-0953.

GENERATOR - never used, 4 kW, Niagra, $450 neg.; floor heater, elec., 8', $10. 878-2038.

BICYCLE - Fuji SJ-10, 10-spd., boy's bike, 20" frame, $75. 473-2473.

BICYCLE HANDLEBAR BAG - Cannondale, like new, $10. Louise, Ext. 3988.

BMX BIKE - Peugot, boy's, 20", excel. cond., $60. Walt, Ext. 7154.

WEIGHT LIFTING BENCH - for young adult, good cond., $35. Tim, 281-7873 or Ernie, Ext. 3357.

PIANO - console, Hardman, $700; video, Panasonic, 1½ yr., $100; leaving. Ext. 3089 or 2312.

GUITAR - Marshall Studio-15, amp, $200; Tascam 144 portastudio, $150. Dave, Ext. 4256.

DOLL - Heimrich German import, bisque head, 80-yrs.-old, 30" tall, $400; orig. Madam Alexander Little Women dolls, $65/ea. firm. 821-0695.

COLOR TV - 19", good cond., $60 firm. Ext. 2926.

JUKE BOX - Rock-ola Model 448. Garry, Ext. 5289.

ANTIQUE PHONOGRAPH - Pathe, vibrating cone, circa 1905. $500. Ext. 2965 or 744-0960.

TYPEWRITER - IBM elec., Model C, 14" roller, good cond., $60. Dave, 2694 or 941-9022.

TYPEWRITER - elec., stereo speakers, Cusinart, china dishes, mattress & boxspring, full-size, new. 929-6898.

ANSWERING MACHINE - Radio Shack, $55; stadium coat, new, never worn, dusty rose, size 5/6, $40. Ext. 3699.

FURS - F/L red fox, F/L black mink, F/L beige mink, size 6, all mint, moving south, sacrifice. Ext. 7814 or 475-8456.

NORWEGIAN BLUE FOX JACKET - 28" long, barely worn, medium, paid $650, asking $400 neg. Ext. 2276.

BABY SWING - Fisher-Price, $40; baby bed, $40; high chair, $1. Aoki, Ext. 3748 or 345-3271.

FIREPLACE - free-standing, glass enclosed, complete, red, $150. Mike, 281-6070.

Yard Sales

CENTER MORICHES - corner of Main St. & Railroad Ave., also bake sale, Sat., Sept. 17, 9 a.m.-4 p.m., rain date Sept. 24. 878-2239.

MEDFORD - 6 Redpine Rd., Sept. 17-18, 10 a.m.-6 p.m., rain/shine, previews, furn., wall/unit, misc., moving, everything must go. 475-8456.

Free

BBQ GAS GRILL - decent cond., no tank. 751-8240 eves.

BOAT - 14' Mohawk, molded plywood. 878-0953.

COFFEE CANS - 1 lb., empty. Charlie, Ext. 4758.

SHEPARD/LAB DOG - 6-mos. old, all shots, good w/children. 281-7844 eves.

Lost & Found

FOUND - stroller, in Apartment area. Ext. 2873.

Car Pools

COMMACK - would like to car pool w/1 or more. Conrad, Ext. 4754.

Real Estate

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

For Rent

BELLPORT - 4 bdrm., 3½ baths, Jacuzzi, walking distance of schools, bay & village, avail. unfurnished Oct. 1. 363-8936 eves.

CORAM - 1st floor of a brand new house, 2 bdrm., l/r, d/r, separate entrance, landscaped, 1 acre backyd., 10 min. from Lab, $700/mo. + util. 732-4016 or 563-7067.

E. PATCHOGUE - s. of S. Country Rd., 1st floor, 2 bdrm., l/r, eik, priv. ent., no pets, avail. Oct. 2, $500/mo. + util. Walt, Ext. 2907 or 698-0576.

RIDGE - 3 bdrm. ranch, 1½ baths, country kitchen, l/r, all appl. incl. dishwasher, w/d, fenced-in yd., family neighborhood, 5 min. from Lab, $850/mo. 744-8632 after 6 p.m.

ROCKY POINT - 3 bdrm., 2 full baths, newly remodeled on ½ acre, avail. Nov. 1, $1,100/mo. 929-6898.

SETAUKET - 1 bdrm. apt., l/r-kitchen combo, priv. ent., non-smoker, 1 mo. sec., $550 incl. all. Mary, 473-7793.

YAPHANK - 3 bdrm. ranch, den, deck, quiet neighborhood, $950/mo. 924-4872.

CATSKILLS - 3 bdrm. chalet, fully furnished, w/sleeping loft, near Hunter & Windham Mts., great for fall foliage & hunting. Bea, Ext. 3642 or Kay, Ext. 4501.

HILTON HEAD, S.C. - 2 bdrm. condo, sleeps six, pool, tennis, golf, beach, Sept. & Oct., 350/wk. 585-9149.

N. MYRTLE BEACH, SC - oceanfront condo, 1 bdrm., sleeps 4, golf pkgs., 9/6/88-10/14/88, $47, 10/15-11/12, $42, incl. green fees & breakfast. Bill, Ext. 2377 or 399-6168.

For Sale

CENTER MORICHES - 3 bdrm. ranch, 1½ bath, large gar. & storage shed, ⅓ acre plus on cul-de-sac, $147,900. Ext. 2697/2674 or 878-0175.

FLANDERS - mobile park, 12'x65', 3 expanders to 18'x65', coal stove, all appl., w/w, many extras, $47,500. 369-2689.

HOLBROOK - Timberidge cent.-hall ranch, 3 bdrm., 2 baths, eik, l/r, d/r, gar. w/shop, semi-inground pool, Sachem school dist. #5, many extras, mint, $159,990. 472-3296.

NESCONSET - SD1, 3 bdrm. high ranch, 1½ baths, priv. ¼ acre lot, oak floors, brick patio, Florida rm., l/r, d/r, den, 1-car gar., ext. driveway, $180,000. Ext. 5139 or 979-6569.

RIDGE - 2 bdrm. townhouse, central a/c, appl., 5 min. from Lab, $97,000. Ext. 4676.

SHOREHAM - 4 bdrm. Colonial, 2½ bath, $1,660 taxes, SWR schools, enclosed porch, attic stairway, other extras. 744-0960.

SHOREHAM - 3 bdrm. ranch, carpeted, pool, eik, wood/coal stove, priv. fenced backyd., 2½-car gar., low taxes, SWR schools, clean, move-in cond., $135,000. 744-9677.

SHOREHAM - 3 bdrm. ranch, gar., a/g pool, fenced yd., ½ acre, 10 min. to Lab, SWD school, $137,000 neg. 821-3373.

SOUND BEACH - 2 bdrm., loft, eik, cathedral ceiling, 3 skylights, bsmt., 2-car gar., Miller Place schools, $129,000. 821-6263.

WADING RIVER - 3 bdrm. ranch, excel. cond., 2 baths, l/r, d/r, eik, 3-car gar., bsmt., screened rm., 1 acre, fenced, SWR schools, $175,000 neg. 929-3251.

WADING RIVER - 3 bdrm. ranch, eik, d/r, l/r, solar, ¼ acre, low taxes, walk to Sound, excel., $135,000. 929-3207.

PALM COAST, FL - ¼ acre lot, 80'x125', Greenbelt backyd., 5 mi. to ocean, 24 mi. north of Daytona Beach, util. in, must sell, $3,995 & assume payments. Thomas Nolan, Ext. 5265.

ROCKLEDGE, FL - beautiful, 2 bdrm., 2 baths, 2-car garage, fam. rm., porch, w/w carpet, shades, some drapes, appliances, $64,500. 407-631-2840.

HILTON HEAD, SC - 3 bdrm. condo, sleeps 8, 2 baths, washer/dryer, wet bar, 6 tennis courts, 3 pools, whirlpool, golf, ocean view, asking $89,000, will rent. 929-8912.

Wanted

TWO TICKETS - to any performance of "Waiting for Godot." Sheryl, Ext. 4400 or 689-7725.

TUTOR FOR CH34 - College Chemistry II, student attending Suffolk Community College. 924-5282.

COMMODORE 1541 DISK DRIVE - & color monitor. Ext. 4665.

ROOMMATE - 2 bdrm. Selden apt. to share w/professional male, furnished, pool & tennis, $400/mo. Andrew, 696-1446 eves.

HOUSE - 3-4 bdrm., William Floyd school district, to rent 1 yr. Pat, 399-1349.

BASEBALL CARDS - will buy cards in good cond. 467-0888.

BABYSITTER - for 6-yr. old girl, 2-3 nights, incl. wknds., Holbrook near Sun Vet Mall. 567-7752.

WEIGHT LIFTING EQUIPMENT - bars, shoes, weights, dumbbells. Ron, Ext. 2002.

AIR COMPRESSOR - electric w/tank, any cond. Ken, Ext. 3263.

OUTBOARD MOTOR - 1980 and up, 20-25 h.p., short shaft. 286-3565.

OLD LAWN MOWERS - complete. Dan, Ext. 4987 or 698-7322.

In Appreciation

Thank you to the firemen and security people for their quick action last Thursday, and to all my friends for their concern about my health.

Doris Terry
Dept. of Nuclear Energy

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