BROOKHAVEN BULLETIN
Vol. 38 - No. 20 May 18, 1984
BROOKHAVEN NATIONAL LABORATORY

What's In a Comet's Tail?

Comet tails, volcano dust and micrometeorites are some of the more exotic materials that will be studied in a new research program in geochemistry. The program gets under way at the National Synchrotron Light Source (NSLS) this summer.

The project is being supported by an $870,000 grant from the National Science Foundation, which will pay for salaries, experimental equipment and detectors in the study of trace elements in geological materials. The NSF grant comes from the Division of Earth Sciences, Program for Instrument Development.

Critical to the geochemistry program is an instrument called a microprobe, a focusing device so advanced it can detect minuscule amounts of trace elements in a sample too small to be seen with the naked eye. The microprobe is now being developed and built with U.S. Department of Energy funds, and it will be installed at the NSLS X-ray ring, where the experiments will take place.

Collaborators on the project are Joseph Smith, University of Chicago; Mark Rivers, also from Chicago; Keith Jones, BNL Physics Department; and Barry Gordon, BNL Applied Science Department. They have already done complementary work using other machines — a microprobe installed at BNL's 3.5-MV Van de Graaff accelerator and a synchrotron radiation source at Cornell.

Work at the NSLS will include the following specific projects:

- Examine the volcanic contribution to polar ice, to obtain information related to climate. Volcanoes emit dust or sulfate aerosols which have different effects on the atmosphere. Characterizing debris from ancient volcanoes will provide insight on climate variation during the past few centuries.
- Investigate the chemistry of quartz grains (sand). Quartz grains grow at different temperatures in different rocks, and this should be reflected in the trace element content. Such information may provide insight into the source regions of sediment, which is important in finding reservoirs of petroleum.
- Determine the chemical composition of sulfide minerals in rocks such as ocean basalt and ore deposits. This will give information on the way important elements like zinc, platinum and gold are concentrated in useful deposits.
- Identify trace elements in zeolite minerals. Commercial zeolites are used as catalysts in the chemical industry. They are made ineffective by trace elements in chemical feedstocks.
- Determine the composition of comets. This can be done by flying a metal plate through a comet tail and analyzing the dust particles that adhere to the plate. Related to this work is a study of micrometeorites, sand-grain-sized particles that come into the earth's atmosphere.

Basic to all of these projects is the measurement of trace element concentrations in the material being studied. In each case, the experimental technique is the same. A sample is put into the machine, photons from the NSLS ionize atoms in the sample, and the ionized atoms emit x rays whose energies are characteristic of those elements present. The amount of the various x-ray energies can be related to the concentrations of the trace elements.

Right now, the X-ray ring at the NSLS is being commissioned. When it is ready for experimenters this summer, the trace element studies will begin in a modest way, without the microprobe, which will not be ready until next year. Initial studies will achieve a small beam size by the use of simple pinholes. The microprobe itself will focus the x ray to a tiny spot using special mirrors, which are being designed by Jerome Hastings and Malcolm Howells, both with the NSLS Department.

With the microprobe coupled to the powerful NSLS beam, it will be one of the most sensitive instruments in the world for detecting trace elements.

— Mona S. Rowe

Alex Reben

Collaborators on the new geochemistry project at the National Synchrotron Light Source are (from left): Mark Rivers, U. of Chicago; Barry Gordon, BNL, Department of Applied Science; Keith Jones, BNL, Physics Department; and Joseph Smith, U. of Chicago.

Patents Awarded

U.S. Patent #4,415,265 has been issued to **Anthony J. Campillo**, a former BNL employee, and **Horn-Bond Lin**, in the Department of Appled Science, for inventing a method and apparatus for determining the absorption spectra and other properties of aerosol particles.

Aerosols and their effects are important to many disciplines. For example, in health problems related to particulate inhalation, smoke detection and radiation transport via particles are of concern.

In the invention, a heating beam source provides a beam of electromagnetic energy which is scanned through the region of the spectrum of interest. Particles exposed to the heating beam absorb energy from the beam. The particles are also illuminated by light of a wave length such that the light is scattered by the particles. The absorption spectra of the particles can thus be determined from an analysis of the scattered light, since the absorption of energy by the particles will affect the way the light is scattered.

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Robert Frankel, Accelerator Department, was awarded U.S. Patent #4,432,088 for inventing a novel data transmission system that can transmit and receive data between a number of stations successively arranged along a transmission medium such as a coaxial cable.

Cable communication, for example, cable television, is basically a one-way system, since the user stations cannot send signals back. However, it's becoming common for a firm or corporation to purchase a computer, put into it various information tailored to the company and make the information available to users at a number of locations. These user data stations have both receiving and transmitting capabilities.

A problem arises when two or more users, each at different data stations, want to transmit data along the cable simultaneously or sufficiently close together in time, so that the beginning of one data message from one station collides with another data message originating from a different station along the cable. After the messages collide, the resulting data will be incorrect.

The present invention provides a data transmission system that includes a transmission medium which has a certain propagation delay time over its length. Since no collision of data messages within the transmitted signals can occur, the data messages received and decoded at any of the data stations are always valid and complete.

Lecture Reminders

Science historian Margaret Rossiter will speak on "What's Happened to Women Scientists Since 1940" at 3:30 p.m. on Tuesday, May 29 in the Hamilton Seminar Room. For dinner reservations offsite after the lecture, call Mary Kinsley, Ext. 3064, by May 23.

At the regular meeting of the WIS, Miriam Forman, a theoretical physicist at SUNY, Stony Brook, will talk on "Cosmic Rays in Astrophysics and Geophysics." Dinner will precede the lecture at 5:15 p.m. in Room A, Berkner Hall. For reservations, call Nancy Fallon, Ext. 4530, by May 21.

Alex Reben

Project Engineer Richard Scheidet, Plant Engineering, is standing aside a new 400 ton cooling tower at the HFBR which is being installed to separate the cooling of the reactor itself, and that of Bldg. 750. At present, when the reactor is shut down, the large pumps and fans of the reactor's cooling tower must be run to cool the water used to air condition the building. Scheidet specified a separate two cell cooling tower as a less costly system to discharge the heat from, and cool the HFBR building. In addition to organizing the tower's drawings and specifications, Scheidet designed its piping system. Electrical engineer Abass Wessen, Plant Engineering, specified the tower's power system, and structural engineer Bernard Rifkin, Plant Engineering, devised the tower support. Field engineer Anthony Sturken is supervising the tower's installation; it should be operating by the end of May. The cooling tower costs $191,000, but is expected to have a payback period of 4.4 years.

Last week, Ralph Gens, (center) newly appointed chairman of the Energy Research Advisory Board, and Thomas Kuehn, (left) ERAB Staff Director, made their first visit to BNL. After a briefing in the Director's office, they spent the rest of the day becoming acquainted with BNL's principal facilities. Here, Eric Forsyth, head of the Advanced Technology Applications Division, Accelerator Dept., explains the properties of the superconducting power transmission cable.

An Ounce of Prevention

It's hardly a widespread problem. But the few people who have reported experiencing negative effects from the emissions of dry silver copy paper were uncomfortable. And that was enough to bring the Center for Assessment of Chemical and Physical Hazards (CACPH) into the picture.

Established by the Department of Energy (DOE) in 1979, CACPH operates within BNL's Safety and Environmental Protection Division. The center, which is directed by Otto White and coordinated by James Brower, was created to help the Department of Energy develop in-house health and safety guidelines for potentially hazardous substances. One of the ways CACPH fulfills this mandate is by preparing health hazard evaluations at the request of DOE.

When DOE requested that CACPH investigate a case reported by the Pittsburgh Energy Technology Center, the assignment went to industrial hygienist Nicole Bernholc. By coincidence, Bernholc had already looked into a similar case — at BNL. Though only three people, in two separate incidents, had complained of feeling poorly while working with printers using dry silver copy paper, the use of these devices throughout the DOE community could result in more incidents.

In the Pittsburgh case, the person was using a remote printer of a video display terminal when exhaust fumes caused symtoms of headache, cramps, dizziness, lightheadedness and nausea, after about 15 minutes. At BNL, two people exposed to fumes from a microfiche reader printer developed different sets of symptoms after about a half hour. One reported feeling hot, light-headed and sweaty, then queasy; the other complained of headache, tearing eyes and sneezing.

To determine whether the dry silver copy paper was truly behind these complaints, and what could be done about it, Bernholc obtained product safety and chemical formulation information from the manufacturer and conducted a literature review, by searching several on-line data bases. Only one citation was relevant, a case study of a woman who suffered a recurring allergic reaction when occupationally exposed to the emissions.

Having thoroughly researched the problem, Bernholc wrote a toxic material evaluation report in which she made two recommendations. First, she suggested that machines should be located in a separate, well-ventilated area, away from normal work stations; if possible, in a separate room. Second, she recommended that local ventilation should be used to exhaust vapor emissions to the outside, especially if machines are used frequently for extended periods of time.

Using the above recommendations, the problem has been solved at both facilities. Since then, at BNL, Bernholc said, "There have been no further complaints."

When the investigation into the emissions began, Bernholc had no way of knowing how serious the problem would turn out to be. Fortunately, in this case, the effects were relatively mild and easy to alleviate. And now that the guidelines for handling the emissions of dry silver copy paper have been established, future reports of problems of this nature can be resolved without delay.

Tune In to Tune-In

If there are no orange Tune-In forms in your building, let your department administrator know. For the benefit of newcomers, Tune-Ins are special forms addressed to the editor of the Bulletin which require a confidential reply from management to a complaint or question.

When a Tune-In is received at the Bulletin office, it is numbered and typed without the author's name and forwarded to the appropriate person for reply. The reply is sent to the employee by the Bulletin editor and no record is kept of the identity of the writer. Only letters which are deemed to be of interest to a number of employees are published in the Bulletin. Sometimes Tune-Ins are sent in requesting a reply to a question, but they are unsigned. In this case, obviously, no answer can be sent.

So if you would like to send in a Tune-In and no forms are in sight, the Mail Room has a supply. Call Ext. 2534.

Training managers from all DOE category A reactors met at Brookhaven last week to share information and expertise on the training of reactor personnel. They are part of the Reactor Training Program Coordination Project, sponsored by DOE's Office of Nuclear Safety. In 1981 new standards were set which require considerable additional training at reactor facilities. This group meets semi-annually to discuss how to meet these standards most efficiently. The attendees were: (seated from left) Bruce Klos, Westinghouse Hanford; Richard Adams, BNL; John Ryskamp, EG&G Idaho, Inc.; Gary Lentz, Argonne Nat. Lab.; R. P. McCormick, Argonne Nat. Lab. Standing from left are: Bill McMenamin, UNC; Ed Treat, EG&G Idaho, Inc.; Keith Bonser, UNC; Henry Harper, Argonne West; Don Barnes, DuPont-Savannah River Plant; Duane Hymer, EG&G Idaho, Inc.; Lance Junker, BNL; Berthel Becton, BNL. Not present when photo was taken, John Yoder, Office of Nuclear Safety, DOE.

—photos by Stoutenburgh

Reports Available

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

NUREG/CR-2482
BNL-NUREG-51494
Review of DOE Waste Package Program. P. Soo, Editor.

Vol. 2
Subtask 1.1 — National Waste Package Program Semiannual Report Sept. 1981 - Mar. 1982. Part 1. Near Field Repository Conditions in Basalt and Salt. B. Siskind, D. Hsieh. Part 2. Uniform and Pitting Corrosion Data Requirements for TiCode-12 High Level Waste Containers. J. Shao, P. Soo.

Vol. 3
Subtask 1.1 — National Waste Package Program April 1982 - Sept. 1982. P. Soo, Editor.

Vol. 4
Subtask 1.1 — National Waste Package Program Oct. 1982 - Mar. 1983. P. Soo, Editor.

BNL-51575
Health Impacts of Productive Conservation in Urban Transportation. (Tapcut Technical Memorandum No. 27). M.D. Rowe, M.A. Crowther.

NUREG/CR-2969
BNL-NUREG-51590
Solidification of Irradiated Epicor-II Waste Products. R.E. Barletta, K.J. Swyler, S.F. Chan, R.E. Davis.

BNL-51698
Analysis of Space Heating and Domestic Hot Water Systems for Energy-Efficient Residential Buildings. G. Dennehy.

NUREG/CR-2986
BNL-NUREG-51591
The Use of Performance Shaping Factors and Quantified Expert Judgment in the Evaluation of Human Reliability: An Initial Appraisal. D.E. Embrey.

NUREG/CR-3091
BNL-NUREG-51630
Vol. 2
Review of Waste Package Verification Tests. Semiannual Report Covering the Period Oct. 1982 - Mar. 1983. P. Soo, Editor.

NUREG/CR-3240
BNL-NUREG-51663
Comparison of CRBR Design Basis Events with Those of Foreign LMFBR Plants. A.K. Agrawal.

NUREG/CP-0045
BNL-NUREG-51674
Vols. I & II
Proceedings of the Third Japan — U.S. Seminar on HTGR Safety Technology. BNL June 2-3, 1982. A.J. Weiss.

NUREG/CR-3357
BNL-NUREG-51683
Identification of Seismically Risk Sensitive Systems and Components in Nuclear Power Plants. Feasibility Study. M. Azarm, J. Boccio, P. Farahzad.

NUREG/CR-3382
BNL-NUREG-51690
Estimation of Cesium-137 Release from Waste/Cement Composites Using Data from Small-Scale Specimens. Topical Report. R. Dayal, H. Arora, N. Morcos.

BNL-51695
Advanced Alkaline Electrolysis Cell Development. Final Report. Development of Electrolysis Cell Separator for 125°C Operation. J.N. Murray, Teledyne Energy Systems.

NUREG/CR-3018
BNL-NUREG-51607
Characterization of the Class B Stable Radioactive Waste Packages of the New England Nuclear Corporation. E.P. Gause, E. Veakis, J. Smalley.

NUREG/CR-3096
BNL-NUREG-51633
Review of the Byron/Braidwood Units 1 and 2 Auxiliary Feedwater System Reliability Analysis. R.W. Youngblood, I.A. Papazoglou.

NUREG/CR-3165
BNL-NUREG-51648
Physical Tests on Solidified Decontamination Wastes from Dresden Unit 1. R.E. Barletta, J.W. Adams, R.E. Davis.

NUREG/CR-3168
BNL/NUREG-51649
Technical Considerations for High Integrity Containers for the Disposal of Radioactive Ion-Exchange Resin Waste. P.L. Piciulo,

BNL-51697
1982 Environmental Monitoring Report. L.E. Day, J.R. Naidu, Editors.

NUREG-CR-3444
BNL-NUREG-51699
The Impact of LWR Decontaminations on Solidification, Waste Disposal and Associated Occupational Exposure. Annual Report. M.S. Davis.

BNL-51704
Survey of Alternative Fuels for Residential and Commercial Space Heating. Final Report. Mueller Assoc., Inc. 1401 S. Edgewood St., Baltimore, MD 21227.

BNL-51724
1981 Environmental Monitoring Report. J.R. Naidu, L.L. Olmer, Editors.

BNL-51729
Biological Effects Summary Report DI(2-Ethylhexyl) Sebacate. B.D. Silverstein, O. White, Jr., J.E. Brower, N.M. Bernholc

Correction

In last week's story "Diagnosing Pancreatic Cancer" the name of the technician who handles remote chemistry manipulations is Slawko Kurczak, not Gregory Slovik.

Freshwater Fish

If you fish in freshwater, you might want to order a pocket-sized book called "Guide to Freshwater Fishes of New York." Published by the Cornell Cooperative Extension, the 140-page booklet covers all regulated fishes in New York with a brief description of their habitats, food requirements, natural histories and general distributions.

The nontechnical field guide contains illustrated keys to identifying more than 100 species of fish. Since identification is based on readily visible colors, patterns and external features, a knowledge of fish biology and anatomy is not required. Each copy is furnished with a protective plastic bag to avoid moisture damage under field conditions.

Guides cost $2.50 each and can be ordered from the Cornell Distribution Center-FG, 7 Research Park, Ithaca, New York 14853. Make checks payable to Cornell University.

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International Inspirations

Art and craftsmanship are blended in the unusual exhibits to be presented at the Tea and Sherry Party on Thursday, May 24, from 3:30 - 5:30 p.m.

Not only will Persian rugs be on display, but a film will be shown describing how poetry is woven into the rugs of silk and wool. Visitors will see examples of Wedgewood and Delft, as well as fine china from Denmark and Japan. American paintings will be exhibited and so will jewelry and other elegant objects from many countries. Among crafts to be demonstrated will be the art of candlewicking on pillows, a form of old English embroidery.

And, what must be a first at these events, a drawing will be held at 5 o'clock for an Oriental rug!

Women employees and wives of BNL employees and guests are invited. Babysitting will be provided free of charge in the gymnasium.

NYC Train Trip

In addition to the regular Wednesday LIRR trips to New York City, the Hospitality Committee will sponsor a group trip to the city on Saturday, May 26. Departure will be at 8:31 a.m. from the Patchogue LIRR station. Round-trip fare for adults is $6.50; children under five years ride free.

Reserve a ticket by sending your fare through the U.S. mail to BNL, P.O. Box 322, Upton, New York 11973. Please do not send cash. Checks or money orders, payable to BNL, must be received no later than Wednesday, May 23. Put the date of the trip, your telephone number and your BNL life number on your check. Reservations will be accepted on a first-come, first-served basis. Your tickets will be given to you on the train.

Pool/Gym

The pool and gym will be closed on the Lab holiday May 28.

Starting on May 26 and continuing through September 2, the gym will be closed on Saturdays and Sundays.

CREF Values

April	65.12	May	65.07
June	67.12	July	65.43
August	66.13	September	67.02
October	65.95	November	67.06
December	66.84	January	66.50
February	64.21	March	65.37

April $65.34

Arrivals & Departures

Arrivals

Thomas F. Burns ..... DNE

Departures

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

Dongmin Chen ..... Physics
Lawrence Feldman ..... MIS
Willis R. Sceviour ..... Reactor
Francesco Sette ..... Light Source

BERA News

Runners' Corner

Following are the times of the BNL runners in the Long Island Marathon on May 6:

Name	Time
Joe Bauernfeind	3:43:49
John Brodowski	3:06:43
Ed Gallagher	3:07:10
Art Harris	5:24:28
Frank Marotta	3:41:36
Ed MacDougall	3:17:03
Mike Seidman	4:27:18
Bernie Silverstein	4:06:
Jack Weisenbloom	3:42:33
Half Marathon	
Ed Meier	1:32:22
George Meinken	1:35:45
Ed Gill	1:38:20
Bob Liegel	1:48:43
Terry Whitledge	1:49:53
Jack Brennan	1:51:47
Jeanne Penoyar	2:02:23
Dave Kirby	2:15:15
Jack Laurie	2:06:43
Arlene Laurie	2:15:23
Bill Sherry	2:04:25
Tom Clifford	1:42:43
Dennis Nordstrom	1:33:16
Caryl MacDougall	2:41:56

Other Races

Trevor Sears took 1st place in the 5km race in Dix Hills, with a time of 16:30.

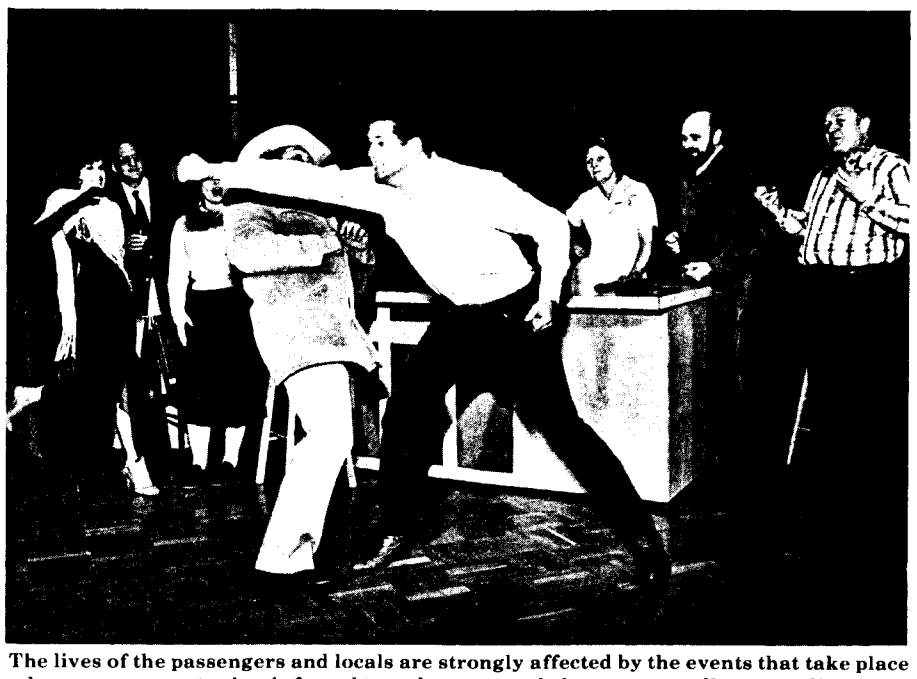
Terry Sullivan ran in a world class 10km race n Monroeville, Pa., finishing in a time of 31:20.

Gus Prince took 1st for 60 and over in Philadelphia with a 63:58 for the 10 mile course.

Cooking Exchange

Strawberries in wine, desserts and main dishes will be the focus of the last Cooking Exchange this season on Wednesday, May 23 at 12:30 p.m.

The fee is $1 per person, and babysitting is provided at 50¢ per child. For more information, call Jane Shero, 286-0925, or Dee Polychronakos, 744-3578.



Roger Stoutenburgh

The lives of the passengers and locals are strongly affected by the events that take place when a cross-country bus is forced to make an extended stop at a small country diner. The action begins tonight at 8:30 p.m. and can also be seen tomorrow night and next Friday and Saturday, May 25 and 26. in Berkner Hall, where the Theater Group is presenting "Bus Stop," William Inge's touching study of the meaning of love. The cast includes Peggie Woody, Neil Baggett, Karl Swyler, Bill Love, Rose Milone, Kurt Fuchel, Jane Love and Bob Kinsey. Advance sale tickets, which are valid for any one of the performances, can be purchased from the BERA Sales Office, or from members of the cast, at $3 for general admission, $2 for senior citizens or students under 18. Tickets will also be available at the door, for $4 and $3, respectively.

Bowling

Pink League

High games were bowled by M. Reynolds 193, E. Kristiansen 189, R. Rosati 180. The Survivors and Squealers wil roll-off for first place.

Red/Green League

R. Larsen had games of 227/213 for a 639 scratch series, A. Pinelli 225/218, F. Griswold 222, L. Jacobson 215, J. Morris 214/207/602 scratch series, C. Bohnenblusch 212, R. Sick 211, L. Schairer 211, K. Riker 210/204, J. Ferrante 210, J. Connelly 209, C. Tomesch 206, E. Sperry IV 202, G. Spira 201, J. Petro 201.

White League

High games were bowled by D. Klein 234, E. Sperry III 224, J. Pinelli 192, R. Sheehan 180, N. Erickson 171. The No Cigar and the Draftecs will roll-off for League championship.

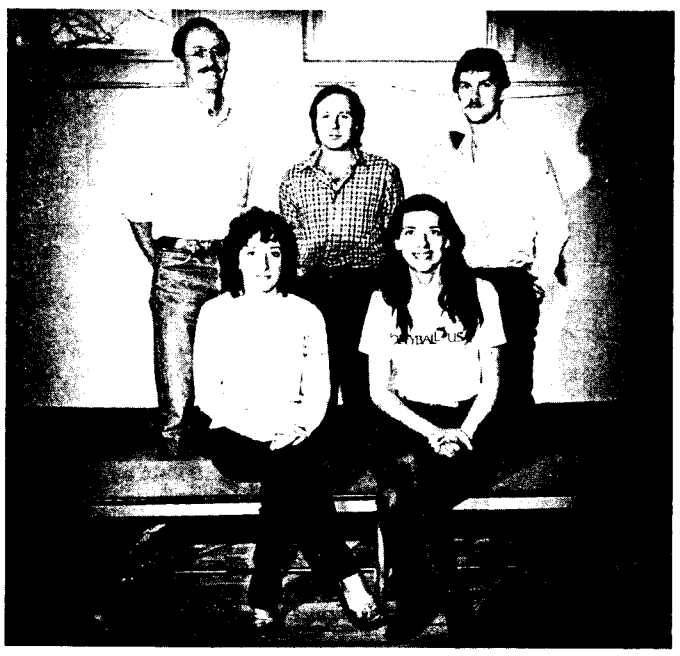
Purple League

High games were bowled by L. Barberich 192, B. Barberich 200, K. Asselta 194, 225, 265, for a gross series of 684, J. Petro 200, B. Belligan 222, C. MacDougall 193, D. Miesell 191, J. Vogel 233, J. Ferrante 207, 213, 244 for a gross series of 664. The Pinsplitters and the Pen Macs will roll-off for league championship.

NOTE: If you wish to attend the 1984 Bowling Awards Party on Friday, June 15, call John Connelly, Ext. 4669.

1983-84 Volleyball Champs

THE PHOUBARS, Division B winners: (seated, from left) Jayne Webster, Patricia Carr. Standing, Jim Rowehl, Payton King, Valerie Miller, Pete Bonti and Al Melo.



THE DINKERS, Division A winners: (seated, from left), Jean Danko and Adrienne Usher. Standing: John Usher, Dennis Weygand and Bob Meier. Not present for photo: Anette Meier, Don Litcher and Sandy Litcher

THE PHOENIX, winners of the Open League: (seated, from left), John Usher, Jim Rowehl. Standing: John Millener, Dennis Weygand and Greg Matthews. Not present for photo: Don Litcher, Sandy Litcher and Bob Casey.

—photos by Stoutenburgh

Cafeteria Menu

Week Ending May 25

Monday, May 21

Chicken rice soup	(cup)	.65
	(bowl)	.85
Beef teriyaki & 1 veg.		2.15
Baked fish fillet & 1 veg.		1.85
Hot Deli: Turkey breast	(bread)	1.95
	(roll)	2.10

Tuesday, May 22

Lentil soup	(cup)	.65
	(bowl)	.85
Spaghetti & sausage		2.05
Fresh roast ham & 1 veg.		1.95
Hot Deli: Top round of beef	(bread)	1.95
	(roll)	2.10

Wednesday, May 23

Corn chowder	(cup)	.65
	(bowl)	.85
Sweet & sour pork on rice		1.95
Salisbury steak & 1 veg		1.90
Hot Deli: Grilled Reuben		1.90

Thursday, May 24

Beef noodle soup	(cup)	.65
	(bowl)	.85
Savory baked chicken & 1 veg.		1.90
Pot roast of beef & potato pancake		2.05
Hot Deli: Beef & bean burrito		1.90
Special:		
Top your own chili bowl		1.85

Friday, May 25

Boston clam chowder	(cup)	.65
	(bowl)	.85
Veal patty scallopine & 1 veg.		1.95
Seafood platter		2.15
Hot Deli: Barbecue meatloaf	(bread)	1.85
	(roll)	2.00

Classified Advertisements

Placement Notices

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

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

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

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

LABORATORY RECRUITMENT - Opportunities for Laboratory employees.

2060. PROJECT ENGINEER - Requires an advanced degree in mechanical engineering or equivalent and a minimum of 10 years' relevant experience. Engineering experience in a research and development environment is highly desirable. Responsibilities include coordination, design, development and construction of a uranium liquid argon calorimeter system and associated project planning, budgeting and scheduling. Candidates should be knowledgeable about mechanical structures, high voltage, electrical connections and cyrogenics. The engineer with supervise engineers, designers and technicians in addition to interfacing with physicists. Physics Department.

OPEN RECRUITMENT - Opportunites for Laboratory employees and outside applicants.

2061. INDUSTRIAL HYGIENE ASSOCIATE - Requires MS or equivalent in industrial hygiene or a related field and several years' of relevant experience. Individual will perform operational industrial hygiene consultation to several Laboratory departments. Responsibilities include assisting in the development of Toxic Material Advisory Reports based upon literature review and on-site visits to manufacturers when appropriate. Safety and Environmental Protection Division.

SCIENTIFIC POSITIONS OPEN: The following staff positions are open. Candidates may apply directly to the department representative named, or through the office of Scientific Personnel, Ext. 3338.

PhD-LEVEL SCIENTIST/ENGINEER - Architectural & Building Systems Division, Department of Applied Science: With research experience in the properties of materials applicable to housing construction, including a background in polymeric materials, fabrication methods, structural applications, and adhesives. Contact John W. Andrews, Ext. 7726.

Autos & Auto Supplies

68 VW CAMPER - fully equipped, rebuilt engine, runs, needs some work, asking $500. Wanda, Ext. 3583 or 821-0754.

TIRES - radial, 13", A-1 cond., $80 takes all 4. Ext. 2964.

75 BUICK REGAL - 4 dr., auto., p/s, p/b, a/c, stereo, 350 cu. in., many new parts, high mi., $1,000. 878-8967 after 5 p.m.

80 TOYOTA PICK-UP - 4x4, w/cap & extras, $6,000. Ext. 4031 or 878-8255 eves.

HONDA DIRT BIKE - XR80, excel. cond., new back tire. Neal, 286-2435.

69 PLYMOUTH STATION WAGON - good, just inspected, $300. Joe, 475-4596.

80 CITATION - V6, 4 dr., shift, p/s, brakes, 42,000 orig. mi., $2,900. Andy, Ext. 2424 or 751-0453.

TIRES - used, 14" & 15". Ext. 2050 or 473-6432.

80 KAWASAKI - 650 LTD, red, crash bars, excel. cond., $1,400. Bob Johnson, 475-2305 or 283-4741 after 6 p.m.

69 CHEVY - 4 dr., a/t, 307, V8, reliable, runs well, $400. Ext. 4219.

81 KAWASAKI - 250 KDX, like new, 300 mi., $900. Dave, Ext. 3344 or 475-7891 after 5 p.m.

76 DATSUN B-210 - a/c, 4 spd., very clean, orig. owner, $1,400. George, Ext. 4460.

ROLLS-ROYCE HOOD - for VW Bug, $100. 475-2873.

68 CHEVY MALIBU - good for racing car, needs engine, best offer. Ext. 3671 or 736-2131 eves.

81 CAMARO - charcoal grey, silver interior, 17K mi., V6, p/s, p/b, a/t, T-top, Rally wheels, am/fm stereo cassette. Ext. 2272.

76 HONDA MOTORCYCLE - CB200T, good cond. Marj, 924-4502.

74 HORNET - sedan, auto., 55,000 mi., good cond., $500. Kale, Ext. 4224.

TIRES - (2), new, 600-12 Tigeras on Toyota rims, $40. Hank, Ext. 3848.

VESPA SCOOTER - 200cc, white, 5,000+ mi., 3 yrs. old, good cond., $800. Nick, Ext. 2490.

72 DODGE SWINGER - 2 dr., auto., p/s, $600; 1972 Opel wagon, $300. George, Ext. 4100 or 727-1789.

80 CHEVY CAMARO - Sports Coupe, p/b, p/s, a/c, am/fm stereo, many extras, $5,000. 689-9204.

81 DATSUN 280ZX - T-tops, GL pack., white/red leather int., like new, $9,995. Ext. 3324.

74 VW SUPER BEETLE - good cond., rebuilt eng., radio, snow tires, $1,100. Ext. 7311 or 286-0918 eves.

74 CHEVY NOVA - some new parts, $100. Chris, Ext. 2907.

RIMS - (3), 15", 5-holes w/tire, $20. Artie Rosenka, Ext. 2957 or 924-3553 after 5:30 p.m.

76 ALFA ROMEO - GTV Sport Coupe, 55K mi., 5 spd., fun, $3,300. Ext. 7590 or 878-1790.

ENGINE & TRANSMISSION - for 6 cyl. Chevy, older L6, runs well, cheap, make offer. Ron, Ext. 7696 or 289-1003.

CHEVY TRUCK WHEELS - 6 lug, 15", new, $10/ea. Paul, Ext. 4665 or 727-4859.

81 SUBARU DL WAGON - new clutch, brakes, stereo-cassette, excel. cond., $4,200, must see. 928-6921.

78 CHEVY NOVA - a/t, p/s, a/c, $2,000. Ext. 2055 or 294-3287.

74 VALIANT SCAMP - 2 dr., a/t, p/s, p/b, a/c, am/fm, 97K, $650. Steve, Ext. 3822 or 929-6527.

76 PLYMOUTH VOLARE - station wagon, p/s, p/b, rust, needs work. Ext. 3592.

CARRYING RACK - made of angle iron for mini-pickups, size approx. 57"x76", $25. Bill, Ext. 2022.

79 MERCURY COLONY PARK - station wagon, full power, seats, windows, 53,000 mi., more, negot., $4,095. 281-8274.

77 HONDA CIVIC - 5 spd., rebuilt eng., good cond., $800. Ext. 7283 or 744-1898.

79 COLEMAN BRANDYWINE TRAILER - sleeps 7, awning, stove, sink, heater, icebox, extras, asking $2,950. Ext. 2957.

73 VW - 22,000 mi., rebuilt eng., new rear brakes & tires, am/fm radio, runs great, $1,200. Jim, Ext. 2050.

72 CADDY SEDAN DEVILLE - all new parts, $750. Ext. 4026 or 744-8567.

76 TOYOTA STATION WAGON - a/c, roof rack, high mi., good tires, needs work, $700. Ext. 3658.

75 PINTO - 4 spd., std., reliable trans., needs body work, rust, asking $500. 331-3766.

GERMAN AUTO PARTS - wholesale prices on parts for VW, BMW, Porsche, Audi & Mercedes. Augie, 821-0379.

80 FORD BRONCO - 302, a/t, am/fm stereo, low mi., $8,495; 1971 VW Bug, 10K on eng., good tires, garaged, $1,350. 924-5419 eves.

MOTORCYCLE HELMET - white, large; heavy duty bumper jack. Ext. 7509.

80 KAWASAKI - 440 LTD, black, mag. wheels, $1,000. 744-2069.

Boats & Marine Supplies

19' O'DAY MARINER SLOOP - new mainsail, new 3 HP motor, jib, genoa, winches, completely equipped, $3,990. 286-0682.

78 HIGHLANDER TRAILER - 900 lb. capacity, good condition, $150. Ext. 3604 or 878-0516 after 5:30 p.m.

14' SAILBOAT - Sunfish type, excel. cond., glass over wood, $200 neg. Harry, Ext. 7578 or 744-2715.

13' AMF PUFFER - main, jib, spinnaker, excel. beginning sailboat, $1,500. Joe, Ext. 7961 or 369-0432 eves.

17' LYMON - runabout, 50 HP Evinrude, $1,100. 878-8847.

30' OLSEN SKIFF - flying bridge, Bimini top, dual controls, new 350 cu. eng., excel., $7,500. 751-7023.

27' OWENS SEDAN - very good cond., in water, 305 Chevy, CB, DF. 744-2552.

26' DODGE CRUISER - 105 HP Nordberg, FWC, sleeps 4, equipped, ready to go, $2,100. 286-2792.

23' SEARAY - fiberglass, 200 HP OMC I/O, sleeps 2, $2,750, in water. Ext. 7590 or 878-1790.

16' LONESTAR - fiberglass, runabout, no motor, heavy duty trailer, extras, $375. Ext. 4502.

Miscellaneous

SEARS UPRIGHT FREEZER - 17 cu. ft., good cond., $150. 878-8967 after 5 p.m.

DRESSER - 4 drawer, painted, 38W x 16D x 35H, $20; large mission oak chair, $10; wooden wardrobe, 36W x 70H, $10. 878-6637.

HAND TRUCK - w/hydraulic lift platform, $100; wooden extension ladder, 24', $35. Joe, 261-7825.

COLOR TV - Zenith console, 25", excel. cond., $200; large dog house, good cond., $25. 325-0447 after 6 p.m.

STROLLER - single seater, $15; exotic sea shells, beautiful specimens. Whitey, Ext. 2913.

BIKE - BMX Mongoose bike, racing parts, zap pads, excel. cond. Neal, 286-2435.

WASHER & DRYER - Sears Kenmore, 18 lb. capacity, heavy duty, white, used only 1 yr., must sell, $600/pr. Ellen, Ext. 4496 or 878-0480 eves.

CEILING LIGHT - hanging, black wrought iron, best offer. G. Williams, Ext. 3338.

GOLF CLUBS - Taylor metal woods, 1 & 4, like new, $90 for both. Jack, Ext. 3040.

FREEZER - 19 cu. ft., white, excel. cond., $100. Harry, Ext. 7578 or 744-2715.

MINK STOLE - w/Launaire collar, beautiful fur, $300 or best offer. 363-6121 after 6 p.m.

ANTIQUE SCHOOL DESKS - (2), $25 ea. 475-2873.

BEDROOM SET - Heritage, walnut, full size bed, women's dresser w/mirror, men s dresser, 2 night tables. B. Stars, Ext. 4278 or 298-9648 eves & weekends.

ELECTRIC RANGE TOP - G.E., used, $20. Ext. 2050.

CASSETTE RECORDER - Panasonic, compact, am/fm radio, battery & AC volts 120 & 240, suitable for Europe, $65. 727-3608 after 5 p.m.

COLONIAL LIVING ROOM SET - sofa, chair, loveseat, $130; sandbox, $10. 744-9677.

OSTER JUICER - $15; hair dryer, $12; chrome & glass ceiling lamp, $40, all in very good cond. Ext. 3701.

CLOTHES LINE - umbrella type, heavy duty, $20; assorted aquarium access., pumps, plants, filters, $10 takes all. Ext. 7509.

MATTRESS/BOXSPRING SET - $530 new, will sell for $150; deluxe ping-pong table, $75; modular couch, $50; 10x8 braided rug, $25; mint audio stand, $40. 929-8560.

OFFICE DESKS - $25 ea.; office chairs, $35 ea.; stacking steel file cabinets, $ ea.; typewriter stand, $5. 878-0717.

BASEBOARD HEAT RADIATOR - used, slant fin, 30', $2/ft.; storm & screen door, aluminum, 32-1/2-33" wide x 80-1/4 long, $20. Ext. 4532.

WURLITZER ORGAN - Spinet, solid cherry, model 4300D, multimatic percussion, excel. cond., $900. Lloyd, Ext. 3381 or 386-1024.

FISH TANKS - (1) 45 gallon, all glass aquarium on wood cabinet, (1) 30 gallon tank & stand. Paul, Ext. 7760.

SOFA - & chair, French Provincial, wood frame, beige, $50; bathroom faucet, gold, brand new, $60. Lola Kopp, Ext. 2265 or 289-0567 after 6 p.m.

EARLY AMERICAN CORNER CABINET - $50; dark pine trestle coffee table & 2 end tables, $100. 757-5478 after 6.

AIR CONDITIONER - used, 11,000 BTU, 220V, $30. Paul, Ext. 4045 or 289-5770 after 6 p.m.

INDOOR/OUTDOOR CARPET - 12x30, burgundy, new, never used, bought April '84, $150. Rod, 751-7023 eves.

WHITE BRICKS - 18. Marj, 924-4502.

DINETTE SET - 4 chairs, very good cond.; kitchen curtains, beige tiers and valances. Ext. 3565 or 924-8594.

JIFFY WEED EATER - $20. Louise, Ext. 3405.

LENS - 1.7 50mm, Minota Rokkor lens with UV filter, in orig. pack., $95. Artie, Ext. 2957 or 331-3185.

GLASS LINED WATER TANK - 55 gal., w/p 75 lbs., w/valves, $65; 1HP pump, 3450 rpm, $125. Ext. 5042.

DISHES - 42 piece service for 8, Meico China, hardly used, $35. Ext. 4695.

PROPANE BAR-B-QUE GRILLS - (1) single burner, $50; (1) double burner, $70, very good cond. 924-6715.

MAGNAVOX STEREO - hi/fi console, good cond., nice piece of furniture, good sound, $150. Lloyd, Ext. 3381 or 286-1024.

BOXSPRING AND MATTRESS - for full size bed, $40. Lloyd Davis, Ext. 3952/4803 or 325-0389.

ELECTRIC STOVE - Bradford, good cond., $35. 878-8847.

ATARI 2600 - with about 15 game cartridges, many exciting games, $120. Divadeenam, Ext. 5076.

FREEZER - 17' cu. ft., white, upright, excel. cond., $300. Ext. 4288.

HEADBOARDS - (2) queen size, oak, never used, $50; solid brass, $375. 589-0663 eves.

NY PHILHARMONIC TICKETS - 2 Orchestra seats, Sat. May 26, Mahler's Symphony No. 3. Ext. 3862.

PORTABLE DISHWASHER - Hotpoint, $40. Ext. 3705 or 862-7998.

QUEEN HEADBOARDS - (1) oak, brand new, $50; (1) solid brass, asking $375. 589-0663 eves.

DECORATOR LAMPS - (2) candlestick bottom, twin arms, w/frosted shades, orig. $110/ea., asking $65 for both. Theresa, Ext. 2907.

PROM GOWN - worn once as bridesmaid, junior size 3-7, best offer. 744-3298 days & weekends or Ext. 2926 eves.

DRESSER - double w/mirror, full size bed w/frame, night table, lamps, reasonable. Ext. 3316 or 698-1362.

TV - 19" color, 6 mos. old., $350. 698-6585.

HERB PLANTS - culinary & old-time, over 50 varieties, for delivery on May 25 and June 1. 924-0092 or 751-8278.

MOVING SALE - sofa, 2 twin mattresses, boxsprings, frames, baby carriage, lamps. Ext. 2341 or 331-4282.

FISHER AM-FM STEREO - w/8 track, 2 speakers incl., excel. cond., $65. Carol, Ext. 2895 or 475-8640.

ANTIQUE BUREAUS - chairs, tables, vanity, beds, kitchen set, china closet, couch, various household articles. Ext. 3929 or 475-0140.

FILE CABINETS - legal size, 3 drawers, excel. cond. Ext. 5102 or 924-6149 eves.

WINDOW BLINDS - verticals, mini's, wovenwood shades. Jim Griffin, 281-2849.

Free

CAT - black & white, affectionate, needs loving home. Carol, Ext. 2907 or 698-8510.

Yard Sales

SHOREHAM - Cooper St., 1 block So. Shoreham Middle School, May 19-20, 9 a.m.

PATCHOGUE - 198 Carman St., May 19-20 & May 26-27, 10-4 p.m., rugs, sofa, lots more. 289-8212.

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

FT. SALONGA (NORTHPORT) - 4 bdrm. ranch on 1 wooded acre, beautiful setting, swimming pool, den, family room, fireplace, asking $208,000. Joe, 261-7825.

FLORIDA - beautiful lots close to Ocala, ready for building, 125' x 262', cool and quiet, perfect for retirees. 281-6099.

CUTCHOGUE - 3 bdrm. ranch, eik, d/r, 2 baths, family room w/stone fireplace, well landscaped, 1/2 acre w/underground sprinklers, much more. 734-7342.

SHOREHAM NORTH - 4 bdrm., 2-1/2 baths, full brickwall f/p, 2 car, 3/4 acre, profess. landscaped. 821-0080.

SHOREHAM - split level, 3 bdrms., 1-1/2 bath, l/r, eik, family room, den, $68, 000. 744-8609 eves.

LEISURE VILLAGE (GREENBRIAR) - 2 bdrms., good location. 744-7140.

CORAM - Birchwood at Bretton Woods condo, 3 bdrms., den, l/r, formal d/r, 1-1/2 baths, patio, 1/2 block to clubhouse, gas heat, central air, many extras. 732-6822.

For Rent

MILLER PLACE NORTH - studio apt., pri. entrance, fireplace, $450 includes all. 928-0293 eves.

PORT JEFFERSON - room for rent, furnished. 473-6432.

PARIS - month of August, 2 bdrm. luxury apt., excel. public transportaion, to exchange for cottage or house near beach. 286-8350 eves.

EAST QUOGUE - house to share, appliances, beach privileges, female only, immediate, $300/mo. 728-2344.

CENTER MORICHES SOUTH - 3-1/2 large rooms, carpet, refrigerator, full kitchen, full bath, pri. entrance, no children, no pets, 1 mo. security, avail. June 1, $475/mo. includes all, must see. Ext. 4486 or 878-0480 eves.

WADING RIVER - sublet, 4 rm. apt., 1 person, non-smoker, no pets, Aug. 1 thru Nov. 30, $400/mo. Janet, Ext. 2345 or 929-8152.

E. PATCHOGUE - near Bellport, June to early July, 300 m from Great South Bay, near Marina, 4 bdrms. 289-9724.

BELLPORT VILLAGE SO. - weekly July 1-21, 4 bdrms., furnished house, short walk to stores & Great South Bay dock, summer resort atmos. 286-5879 eves & weekends.

MOTOR HOME - weekly July 1-21, 20 ft., sleeps 4, bathroom, kitchen. 286-5879 eves & weekends.

Carpools

BELLPORT - individuals needed to increase 2 person carpool, 8:30-5:00. George, Ext. 7654.

W. ISLIP/BABYLON - 4 man carpool looking for 5th driver, 0830-1700. M. Tesla, Ext. 2705.

BAYSHORE - occasional paying rider. Henry, Ext. 2631.

Lost & Found

LOST - tennis racquet, Prince, new, Thursday 10th, eve., 6-7 p.m., tennis courts, or man's locker room. Ext. 2417.

Wanted

SOFTBALL MITT - to be worn on left hand. Mary, Ext. 2926.

VENDORS FOR CHURCH FLEA MARKET - Exit 70, Manorville, June 9, raindate, June 16, $5 space. 878-6637 or 727-1170.

TUTOR FOR MATH - 11R Trig. 732-7288.

TWIN BABY CARRIAGE - any cond. for infant use. Pete, Ext. 4612.

MASON - to lay 1 row of concrete block, 40 ft. long. Victor, Ext. 2395.

HOUSE TO SHARE - Scientist seeks share in cooperative house, St. James to Port Jefferson, less than $300. Robert, 862-6354 after 6 p.m.

ENGINE - 35 HP Johnson/Evinrude, long shaft, manual start, outboard, 1976-1980, will pay top dollar. Sanchez, Ext. 3848 or 281-6498.

81 HORIZON - 4 dr. auto.; 74 Volvo wagon, very good cond. Ext. 4360 or 689-9644 after 4:30.

73 BUICK CENTURION HOOD - 475-8440 after 5 p.m.

SCIENTISTS AND ARTISTS - interested in developing science and art curricula for elementary school level. Ext. 4490/5102 or 289-9724/924-6149 eves.

POWER HEAD - for 70 HP Johnson/Evinrude outboard or crankshaft for same, must be useable. Sanchez, Ext. 3848 or 281-6498.

HOUSEHOLD - professional woman seeks share in singles household between Routes 110 and 111, before July 1. 732-9362.

HOUSEMATE - to share spacious cond., w/w carpeting, 2 bdrms., storage, kitchen, share bath, must be a mature responsible working female, reasonable, refs., write & incl. phone to: Housemate, P.O. Box 367, Ridge, NY 11961.

HOUSE TO SIT - free, responsible, caring individual, any period, any duration, May 25 until Nov. 1. J. Allentuck, Ext. 2412.

APARTMENT - studio or 1 bdrm., w/furnished kitchen, may be willing to share house, need immed. Debbie, Ext. 3420 or 736-4280 eves & weekends.

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

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