

DOE Region II Visitors



Warren Winsche, Associate Director for Energy, discusses the solar heat pump system with members of DOE's Region II office who were on an orientation tour of the Laboratory last week. Region II comprises New York, New Jersey, Puerto Rico and the Virgin Islands. From left to right are Lenore Ledman, Emmet Gavin (in charge of Region II at DOE headquarters), Robert Lowe, David Schweller (Manager of DOE's Brookhaven Area Office) and William Wood.

Advanced Nuclear Energy Systems

[Meyer Steinberg, head of the Process Sciences Division, has just returned from Graz, Austria where he participated in the First International Workshop-Thinkshop Meeting on Emerging Concepts in Advanced Nuclear Energy Systems, held at the Institute for Theoretical Physics and Reactor Physics at the Technical University of Graz. Here is his account of the events leading up to the meeting and the advanced concepts which were presented there.]

The precedent-setting meeting was prompted by a growing effort in laboratories around the world to provide solutions in response to criticisms of various groups concerning the proliferation of nuclear power. The development of nuclear power has gone through a series of difficult cyclic ups and downs in the last several decades, and is currently being strongly challenged as a basic energy source.

First, it was necessary to develop a sound reactor technology base. This was done in the 1950's. Then it was necessary to show its economic attractiveness. This was accomplished in the 1960's. Safety of the reactors was then questioned and this has been largely overcome due to the efforts of nuclear regulatory and licensing agencies of the government. Now the challenge is to prevent the possible proliferation of weapons materials from power reactor operations, (in addition to providing adequate supplies of nuclear fuel for these reactors) and to solve the problem of disposal of radioactive waste.

The Carter administration last year instituted a policy of delaying indefinitely the reprocessing of nuclear fuel until further notice because of the concern of possibly facilitating the diversion of nuclear materials for weapons purposes. Although this policy applies to the United States and its exporters alone, it has become of great concern to many other countries. The elimination of nuclear fuel reprocessing reduces the total supply of useable nuclear fuel and tends to eliminate the development of breeder reactors. Fast breeder reactors promise an inexhaustible supply of nuclear power but they depend on nuclear fuel reprocessing. The United States has been accused of being unfair in this policy because it has a larger natural nuclear fuel resource than other countries, and does not have to rely on nuclear power as much as other countries because of its coal and oil reserves.

Because of these challenges, a number of scientists and engineers have begun to devote their attention to more proliferation resistant nuclear fuel cycle systems and, particularly, alternatives to the fast breeder reactor. The United States has set up a program called the Nuclear Alternatives Systems Assessment Program (NASAP), and several countries have joined a group called the International Nuclear Fuels Cycle Evaluation (INFCE) to study these matters.

The meeting in Graz, Austria brought together 60 scientists and engineers from ten countries who have been investigating various advanced techniques for production of nuclear fuel for the existing thermal

power reactor economy, as well as other concepts involving fusion. The question is, how are we going to supply nuclear fuel for the more than 200 power reactors now operating in the world? There are 65 operating nuclear power reactors in the United States alone.

Brookhaven, in its long tradition of developing nuclear power technology, as well as safety and safeguard technology, has become active in the nuclear alternative systems studies in a rather unique way. The provisions of nuclear fuel depends on the production and use of neutrons. Inside a reactor this is performed by the critical mass of nuclear fuel through self sustaining chain reactions. Another way is to provide an outside source of neutrons which can then be used to make fissionable material. This can be accomplished by use of a high energy proton (about 1 to 3 GeV) from a linear accelerator impinging on a lead or uranium target. The neutrons produced by the spallation of the lead is then absorbed in fertile, naturally occurring uranium, or thorium fuel, forming fissionable fuel which can be used in nuclear power reactors. Brookhaven is especially interested in this development because it has been in the forefront of the development of linear accelerators in the construction of high energy machines.

In principal, fuel can be produced in a fabricated natural uranium or thorium fuel element which can be used directly in a power reactor. After use, the fuel can then be regenerated in a linear accelerator-target assembly for further power production, without the need for fuel enrichment or fuel reprocessing. It may also be possible to destroy waste fission products by transmutation reactions with the use of a high energy proton linear accelerator. These and other related concepts and systems were presented in our paper at the meeting in Graz.

Concepts presented at the meeting by others included fusion-fission hybrid reactors, developed by Lawrence Livermore Laboratory, to which Brookhaven is also contributing due to its fusion blanket research program in the Department of Nuclear Energy. Other emerging concepts included generation of neutrons in dense plasma focus presented by French investigators, and the microexplosion of fusion-fission pellets, presented by Spanish and German investigators. The consensus was that, although at an early stage, there is adequate evidence of other nuclear power alternatives which would be more acceptable from a weapons non-proliferation and waste disposal point of view.

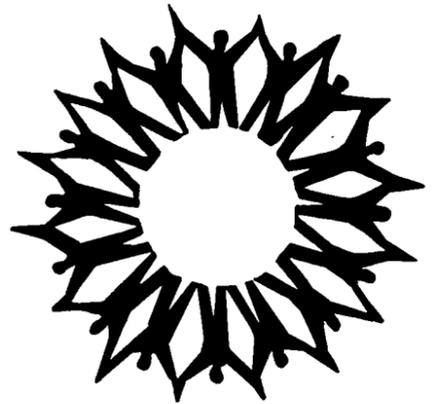
Sun Day On Sunday

The first day of Daylight Saving Time will be Sunday, April 30. The first event of Suffolk County's celebration of Sun Day will be an open house for employees and the public at Brookhaven from 9 a.m. to 4:30 p.m. on Sunday, April 30. Sun Day, which evolved from Earth Day celebrations several years ago, will officially be held on Wednesday, May 3.

At Brookhaven's open house a special program will be arranged which will carry out the theme of the Suffolk celebration... Decide for tomorrow today! Brookhaven will display several of its energy research projects at the exhibit center, and will have a special tour of the solar research project. In addition, scientific answer men will be on duty to answer questions in laymen's terms about all forms of alternate energy such as solar, wind, fossil fuels and new energy sources.

Conservation will not be overlooked, nor will some of the more exotic forms of energy production. For demonstrating solar uses, visitors will see hot dogs cooked on a solar stove, and will see how fresnel lenses can be used to concentrate the sun's heat for cooking or heating.

The Cooperative Extension Bureau will be on hand at Berkner Hall to give advice on winterizing homes, and will show video tapes of various solar projects. LILCO will provide a solar display as well as the premier showing of their new film on solar energy. Grumman will have a solar panel on display as will Arnold Roesch, a BNL employee who has built his own solar heating unit. Buses provided by LILCO will shuttle people between the Lab and Wading River where several solar homes are being built.



Several times throughout the day there will be a 45 minute stage show on energy in Berkner Hall. The Exhibit Center will feature special demonstrations of the Energy-Environment Simulator, hydrogen storage of fuel, and generation of electricity by light falling on chemical solutions.

The Suffolk County Sun Day Steering Committee, under the chairmanship of County Legislator John Donahue, has been meeting at Brookhaven for the past month to plan for the April 30 open house and events that will take place all over the county in the following week. On May 3rd there will be a dawn celebration at Montauk Point, followed by a breakfast at Southampton College, a tour of the 17th century Hook Mill windmill at East Hampton, a tea at Dowling College, and a sunset ceremony at Bald Hill.

In addition, day-long programs will be held at the campuses of Southampton, Stony Brook, and Suffolk Community Colleges.

All employees, their families, friends and neighbors, as well as the general public, are welcome to salute the power of the sun's energy on Sunday, April 30, from 9 a.m. to 4:30 p.m.

Easing The Space Problem

As many are aware, office space at the Laboratory is at a premium, and how to solve this problem has been a pressing issue for the Plant Engineering Division.

Trailers have provided temporary relief. Currently, there are over 200 trailers scattered throughout the site. But their usefulness as office space is limited.

Rather than dot the landscape with more trailers to take care of expanding needs until permanent buildings are completed, seven prefabricated modular structures will

buildings by means of a corridor or vestibule.

The 10' x 30' modules that will be erected here were built to Laboratory specifications. As the BNL standard size for an office is 10' x 12', one module contains two offices and six feet of corridor.

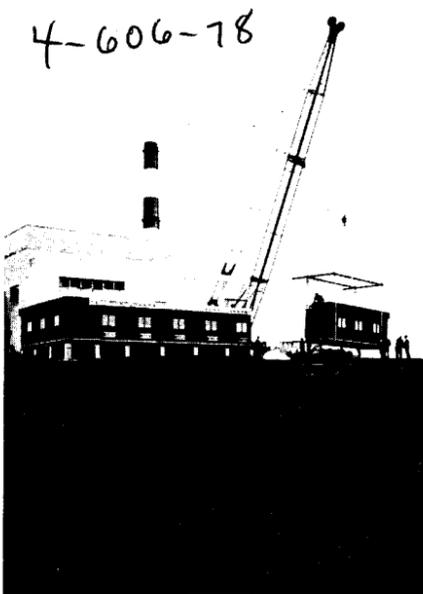
After the concrete foundations are installed, individual units are lifted by crane and anchored in place. The modules are then bolted together. When the joints and roofs are sealed and the electrical circuits connected, they are ready for occupancy. The whole procedure takes about two weeks.

The wood frame modules have an exterior finish of textured wood and black aluminum, and prefinished interiors. Energy conservation features incorporated in the structures include the use of heat pumps and the insulation of walls, floors, roofs and interior partitions.

According to Principal Architect, Lou Harson, who is responsible for this project, the modules are infinitely better than the trailers and considerably better than the barracks-type buildings. Harson conducted a comprehensive study of various types of temporary office buildings and the Laboratory administration decided that these modular structures were the most fitting and economical for current and projected office space needs.

Other onsite buildings which will have increased office space with the addition of new modular units are 120, 197, 480 and 815. Project ISABELLE is in line for a 5600 sq. ft. building which is currently in use in Danbury, Connecticut. A principal feature of these buildings is that they can be moved from one location to another with little difficulty. They are similar to those which have been in use for a number of years as portable classrooms.

The units were shipped by ferry from New London, Conn. to Orient Point and, because of their manageable size, could travel on the road without escort, thus saving the Laboratory shipping dollars.



The last of seven modular units is set in place adjacent to Bldg. 703. The operation was accomplished in one hour and 55 minutes.

be set in place during the next three months. Three have sprung into view this week.

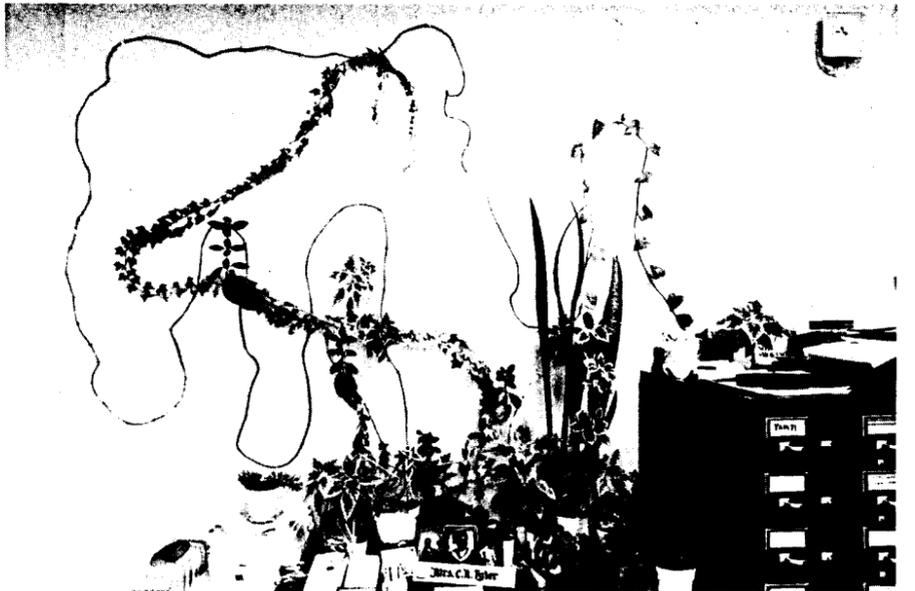
A 1500 sq. ft. building has been placed adjacent to Atmospheric Sciences (Bldg. 51), a 1620 sq. ft. unit will be added to Bldg. 318 (Oceanography), and the Corrosion Science Group of DNE will soon be able to move out of their trailer and into 1945 sq. ft. of office space next to Bldg. 703. The modules are attached to the existing



A *Senecio herreianus* from S.W. Africa, commonly called the bead plant, thrives in the Burrs' lab in the Biology Dept.



Ann Mauro can be glimpsed behind the eight-year old philodendron which threatens to take over R.C. Anderson's office in Administration.



In the Medical computer room, Claude Tyler has an unusual arrangement of English Ivy, coleus and pothos.

4-574-78

Green Thumbs At The Laboratory

Walk into nearly any office on site and, along with the standard office equipment and computer printouts, one will see at least a single potted plant, if not a whole collection of greenery. The plants are of infinite variety and are not only brought in by individual plant lovers, but sometimes are the collective enterprise of a whole group. Photographer Doug Humphrey has recorded a few samples of the exotic and the familiar which are flourishing indoors.

4-575-78



John Svandrlik checks one of the plants in Bldg. 703. The Corrosion Science group has devoted 80 feet of window sill to its collection - everything from prayer plants to zucchini.

4-577-78



Again, in the Burrs' lab, Marji Newberger tends a *Streptocarpus saxorum* which, in Tanganyika, grows out of the sides of cliffs.



Claire Hull watches over the plants in the Medical Dept. lobby. In the foreground is the Kaffir lily (*Clivia miniata*) which blooms once a year in the spring. It was given to her by a patient in the research hospital.

4-579-78



In Berkner Hall, Terri Rowland sits behind the grass tree, or, *Xanthorrhoea preissia*. In its native habitat, Queensland, Australia, it grows for thousands of years.

4-573-78

BROOKHAVEN BULLETIN

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BERA Sales Office

Effective Monday, April 17, the BERA Sales Office in the Cafeteria will be open from 10:00 a.m. to 1:00 p.m., Monday through Friday.

Bicycle Touring

The Beginner's Tour last Sunday was blessed with clear skies, but a brisk chilly wind kept attendance down to seven cyclists, including John and Nancy Magy, Mary Pat O'Brien, Bob Monaghan, Gerry Morgan and two young ladies who left the group at Wading River.

This Sunday is the Riverhead Run, which begins at 9:00 a.m. at the town parking lot in the center of Riverhead (this is the lot just north of the river from the traffic circle on which is a Howard Johnson's). The tour is 65 miles and generally goes out the south fork to Sag Harbor, crosses to Shelter Island and to Greenport by ferry (75¢ each), and returns via the north fork. Most riders lunch at a restaurant in Greenport.

The following Sunday, April 23, is the tour of old houses in the vicinity of Sound Ave. in Jamesport, sponsored by the Riverhead and Landsmark Society. The tour starts there tentatively at 2 p.m.; the exact time and meeting place will be published next week. A group will leave from the lab at about 11 a.m., and arrangements will be made for the transport of riders back from Jamesport by car, since the tour will finish too close to dark to bicycle back. Contact Gerry Morgan, Ext. 4841 for additional information.

Pool/Gym Closing

The pool/gym complex, including locker and shower rooms, will be closed for general maintenance on Saturday, April 22.

Stony Brook Events

Recital: Clarinetist Jack Kreiselman, composer-pianist Peter Winkler, & Stony Broke Jazz Ensemble, "An Evening of Early Jazz and Ragtime," April 14, 8:30 p.m., Lecture Center 105. General public \$2.50, \$1 students.

Continuing Events: Now through April 16: Jewish Arts Festival, for info call 246-6842; Theatre, "Godspell," 8 p.m., Calderone Theatre, S. Campus Bldg. B.

Career Conference: Info about job opportunities on L.I. and N.Y. metropolitan area, April 17-20 from noon to 9 p.m.

Seminar: Prof. A. Berlad, "Local and Regional Impediments to Energy Conservation," April 18, 7:30 p.m., room 412, Grad. Chemistry Bldg.

Concert: Contemporary music "Mostly from the Last Decade," April 19, 8:30 p.m., Lecture Center 105.

Poetry Reading: French Canadian poets Jacques Brault and Robert Marteau will read their own works (with translations), April 20, 8 p.m., Lecture Center 102.

Concert: Roy Ayers, April 21, 9 p.m., University Gym. Info call 246-7085.

Delay No Longer
Taxes Due By April 17.

Sing Out

The first meeting of the new chorus group will be held at 12 noon, April 27, Room A in Berkner Hall. All those interested in joining are invited to attend. Bring your ideas for songs, performances and a name for the fledgling group.

Volleyball

Employee's League

Final Standings

Spikers	44	10	.815
Bumps	41	13	.759
Phoenix*	38	13	.745
Cool Tools*	27	24	.529
Atom Spikers	17	37	.315
Biology	10	44	.185
Easy Aces	9	45	.167

*Postponed game not included

Results of championship match - 4/5/78: Spikers spiked Phoenix: 21-15, 21-7. Spikers are Employees' League Champions! BNL All-Stars play against outside teams on April 19 and 26. Come and cheer.

Mixed League

Division A

On April 10, the Assorted DO-E-Nuts glazed the LeMufs: 15-7, 4-15, 15-6. The No Names beat the Nads: 15-10, 15-6, 15-13. Lookin' Good popped the Popovers: 15-6, 8-15, 15-5.

Standings

Lookin' Good	12	3
No Names	12	3
Popovers	9	6
Nads	6	9
Assorted DO-E-Nuts	4	11
LeMufs	2	13

Division B

The Leftovers rified Riffraff: 11-15, 16-14, 15-13. Oceanography sank the Diamonds: 8-15, 15-9, 15-6. Cowturkey forfeited three games to the Nuts & Bolts.

Standings

Oceanography	13	2
Diamonds	11	4
Nuts & Bolts	11	4
Leftovers	5	10
Riffraff	3	12
Cowturkey	2	13

Camping Club

The regular monthly meeting of the Brookhaven Family Camping Club will be held on Thursday, April 20th, at 8 p.m., in the Recreation Hall. Refreshments will be served. All are welcome.

Bowling

Green League

The Sparks continue on their winning way as they took eleven from the Bubble Boys. For the Sparks, J. Cockrane had a 200 and B. Kristiansen a 220. The Old Timers II are still clinging to second place as they took seven from the 76'ers. For the Old Timers II, B. Galen had a 206 and G. Fales a 201/215. The Pinball Wizards moved back into third as they took eleven from the Cosmos, with G. Meinken having a 216. The Got-A-Hit-Ums took eight from the Blue Jays. For the Blue Jays, H. Haller had a 213. The Dyno-Mites managed eight points from the Anachems, as R. Lingg rolled a 207. The Pick-Ups were downed for eleven by the Sandbaggers while the Trouble Shooters were buried for eleven by the Freon Loaders.

Pink League

Three ladies broke the 500 barrier and are to be congratulated. Cathy Van Noy 181/186/164/531, Lindora Boyd 182/168/163/513 and Marge Stoeckel 169/159/180/508. Also deserving of congratulations are Pat Oster 186/167, Sue Vander Kolk 186, Judy McNamara 178, Marie Brenner 175, Kay Sherry 171, Renie Rosati 170 and Marie Grahn 163/160. Honorable mention to Helen Keeley for making her first ever 4-7-10 split.

The Lickety Splits gained 2 points and are now leading by 15.

Red League

Great team bowling by the Freon Loaders. 3047 pins gave them an 11-0 win over the Trouble Shooters. A good night for J.

Pool Schedule

The spring/summer season of the swimming pool will begin on Monday, May 1 and extend through August 31, 1978. Season tickets will be sold at the pool during open hours starting on Monday, May 1.

Effective immediately, and until further notice, the pool schedule is as follows:

Monday through Friday

11:00 a.m. - 1:30 p.m. - employees only
5:00 p.m. - 9:30 p.m. - employees/family members/guests

Saturday and Sunday

1:00 p.m. - 6:00 p.m. - employees/family members/guests

Admission Prices:

Season tickets \$15.00 Individual
\$25.00 Family
Daily admissions \$1.00 Employee/
family member
\$1.50 Guest

One guest per employee may be admitted to the pool. An employee may have more than one, but not more than five guests at any one time by making advance arrangements at the Recreation Office in Personnel. Employees will be responsible for the conduct of their guests or children, or both.

Cafeteria Menu

Week Ending April 21, 1978

Monday, April 17

Tomato vegetable soup (cup) .30
(bowl) .40
Kielbasa w/sauerkraut 1.15
Knickerbocker sandwich w/cole slaw
and potato chips 1.25
Hot Deli - Pastrami (on bread) 1.15
(on roll) 1.25

Tuesday, April 18

Cream of potato soup (cup) .30
(bowl) .40
Meatloaf and 1 veg. 1.20
Macaroni and cheese and 1 veg. 1.10
Hot Deli - Veal & peppers hero 1.25

Wednesday, April 19

Hot borscht (cup) .30
(bowl) .40
Tuna noodle casserole 1.20
Lemon baked chicken and 1 veg. 1.20
Hot Deli - Corned beef (on bread) 1.25
(on roll) 1.35

Thursday, April 20

Chicken noodle soup (cup) .30
(bowl) .40
Sweet and sour pork on rice 1.30
Salisbury steak w/1 veg. 1.25
Hot Deli - Baked Virginia ham (on bread) 1.25
(on roll) 1.35

Friday, April 21

New England clam chowder (cup) .40
(bowl) .50
Broiled filet w/1 veg. 1.20
Roast sirloin of beef and 1 veg. 1.40
Hot Deli - Meatball & peppers hero 1.25

Kelczewski 219/545/647 series (74 over average). The Sandbaggers also won 11-0 over the Pick-Ups with R. Meier having a 211. The Designers had a great night (3051 with a 1087 game) to down the Old Timers 8-3. E. Sperry 224 (573) 666 gross was 87 pins over average. J. Ferrero also bowled a 200/212/562/637 series. R. Adams had a 200/207/546 scratch and W. Reams a 213.

The 76'ers lost to the Old Timers II 4-7. J. Connelly had a 215/564/624. The Anachems lost 8 to the Dynamites. C. Bachsmith had a 528/633 series. The Bubble Boys were shut out by the Sparks 0-11. R. Barberich had a 204 and W. Kollmer a 546 series. The Cosmos were also shut out 0-11 by the Pinball Wizards.

Purple & White League

With only 4 weeks left, a close race for first place with five teams exists. The Diamonds and the Pen Mac's are tied for first, and in second place and only 1 point behind are the Sea Gulls, The Flounders and the Plutoniums.

High game for the night went to Ed Sperry with a 254. Larry Musso rolled a 204/575 scratch 710 gross.

Other good games were Jim Petro 225, Ben Belligan 216, Ove Kyhl 211, Jim Griffin 209, Jeanne Penoyar 191, Ellie Murgatroyd 188, Betty Roche 186, Mickey Haller 176, Sharon Smith 170. There has been some interest expressed in starting a BNL woman's bowling league at Brunswick Lanes in Coram in addition to the league presently at Port Jeff Bowl. A minimum of six teams would be required to form a league. If you would like to enter a team, please notify Carol Beckner, Bldg. 477A, Ext. 3483, as soon as possible, as lanes are now being reserved for next fall.

Runners Corner

Among 1,750 starters, seven BNL runners completed the 26 miles, 385 yards course of the Nassau County Marathon. The marathoners and their times are:

Place	Name	Dept.	Time
44	Dick Fuller	DNE	2:55:41
90	Tom McMahon	DEE	3:08:42
248	John Beerman	DNE	3:29:10
370	Jerry Sbarra	Medical	3:43:05
611	Carl Dover	Phys.	4:05:37
658	John Duggan	Plt Engr.	4:11:23
921	Arthur Harris	AMD	4:44:50

As he came in under three hours, Dick Fuller has qualified for next year's Boston Marathon. For McMahon and Dover, it was their first marathon competition. In the meantime, Ted Landry and Gus Prince are preparing for this year's Boston race which will be run on Monday.

Basketball

In the final game of the regular season Jerry Hobson showed the fans what he could do, pouring in 62 points as the Dribbles beat the Road Runners 130-102. Dennis Nordstrom added 32 points for the winners while Wayne Smith with 22 points paced a balanced team scoring effort for the RR's. The Dribbles finished comfortably in first place with the RR's in second place. A battle for third place ended with the Unicorns sneaking past the Spuds in the final 2 weeks of the season.

The season's new single elimination playoff starts this week with the Dribbles' three man attack of Hobson, Nordstrom and Jeff Gaffney facing the potentially power-packed lineup of the Spuds, led by Stan Gilbert, Jim Rowehl and Bob Doty. The second game pits two well-balanced offenses against each other as the Road Runners, led by Wayne Smith, Fletcher Johnson and Clarence Campbell, attempt to subdue the resurgent Unicorns, led by Gary Mosley, Leroy James and Rich Sapienza.

Final Standings (Half-game penalty losses included in standings)

Team	W	L	Pts.
Dribbles	11	4	.733
Road Runners	7	8.5	.452
Unicorns	6	9	.400
Spuds	6	10	.375

Individual Scoring Averages

Player	P/G	Player	P/G
Hobson	45.1	Noell	9.9
G. Mosley	29.5	Albright	9.8
Gilbert	28.3	B. Johnson	9.0
Gaffney	23.8	Lawrence	9.0
W. Smith	23.5	Mark Williams	8.0
Nordstrom	22.5	Rayhart	7.0
Rowehl	21.5	Snead	6.2
James	21.3	Griffin	6.0
F. Johnson	20.2	Walcott	5.3
Campbell	19.6	Kayte	5.3
Frak	18.4	Levitt	5.3
Sapienza	17.5	Webster	5.0
Costa	15.6	Fraser	3.5
Hulse	15.4	Kowalski	3.3
Rowley	15.2	Heotis	3.1
L. Smith	14.8	Jasper	2.9
Doty	14.5	Ehrenkauffer	2.8
Shepherd	14.1	O'Brien	2.1
J. Mosley	14.0	Baltz	2.0
Tarrrd	13.5	Schuman	1.7
Malone	13.0	Koo	1.7
Mitch Williams	11.2	Lehmann	1.6
G. Smith	10.0		

Arrivals & Departures

Arrivals

Peter Brown	Accelerator
Richard K. Dilg	Plant Engrg.
Mary C. Dodge	Energy & Env.
Paul W. Frame	Biology
Ernestine James	Staff Services
James A. Johnson	Staff Services
Joseph M. Savino	Nuclear Energy
Richard H. Vogel	Safety & Env. Prot.
Fred A. Wunder	Ph. & Gr. Arts

Departures

Gerg Borner	Medical
Theodore F. Haarke	Reactor
Daniel A. Hawkins	Central Shops
Colleen T. Holland	Personnel

Garden Planning

A meeting to discuss garden plot distribution, sponsored by the Hospitality Committee, will be held tonight at 7:30 p.m. in the Recreation Building.

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. 2882.

LABORATORY RECRUITMENT: Opportunity for present Laboratory employees.

574. OFFICE SERVICES ASSISTANT - Requires good office and communications skills. Reactor Division.

575. MESSENGER - Staff Services Division.

576. LABORATORY CUSTODIAN (2 POSITIONS) - Plant Engineering Division.

577. MASON - Temporary (May 1 - June 30). Plant Engineering Division.

578. MATERIAL HANDLERS (12 POSITIONS) - Temporary (May 30 - September 1). Supply and Material Division.

579. LAUNDRY OPERATOR B (2 POSITIONS) - Temporary (May 15 - September 15). Plant Engineering Division.

580. LABORER (6 POSITIONS) - Temporary (May 15 - September 15). Plant Engineering Division.

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

581. SYSTEMS ENGINEER - BS (MS preferred). Requires analytical and communications (both oral and written) skills, familiarity with modeling techniques. Department of Energy and Environment.

582. OPERATIONS ENGINEER - BS or equivalent in physics or electrical engineering. Experience with power supplies, computer controls, computer peripherals and/or rf systems desirable. Rotating shifts. Accelerator Department.

583. BIOLOGY ASSOCIATE - BS in Biology, Chemistry or Physics. Work involves preparation of samples for electron microscopy and x-ray diffraction, operation of equipment and data analysis. Biology Dept.

584. REACTOR OPERATOR - Reactor Division.

585. EXPERIMENTAL MACHINIST (2 POSITIONS) - Central Shops Division.

586. OFFICE SERVICES ASSISTANT - Requires good office and communications skills. Half-time position. Department of Nuclear Energy.

587. STEAMFITTER A - Temporary position (May 15 - September 15). Plant Engineering Division.

588. PLUMBER A (2 POSITIONS) - Temporary (May 15 - September 15). Plant Engineering Division.

Autos & Auto Supplies

74 CHEVY - Pick-up C-10, 8' bed, 6 cyl, 3 spd, good cond. Bill, Ext. 2011 or 281-7665.

NEW & USED TIRES - Rims, repairs, reg, radial, Dunlop-Michelin, free installation, balance avail. Fred Usack, Ext. 4597 lunchtime or 475-4935 eves.

70 VOLKSWAGON - Needs trans & carb. \$225. Joe Ash, Ext. 2983.

TRANSMISSION COOLER - Heavy duty, \$25. Joe, Ext. 4204 or 588-3146.

67 FORD VAN - Good running cond, needs some body work. \$375. 878-2545.

71 NOVA - 2 dr, 8 cyl, std trans, new clutch, battery, alternator, plus 2 mounted good snows and am/fm cassette. Leaving state, must sell. Deena, 589-0461.

70 FAIRLANE 500 - V8, p/s, p/b, a/c, power tail gate window, new tune up, CB, am/fm stereo. \$850. Tom, 325-1033.

70 CHRYSLER - 2 dr, a/c, p/s, p/b, p/w, bronze, snows, good cond. Ext. 3319 or 751-7140.

AM CAR RADIO - 72 Gremlin, good cond. \$12. John, Ext. 3292.

71 MG MIDGET - Mint cond, beige w/tan interior, wire wheels, low mileage. Ext. 4486 or 758-9673 after 5:30.

BACKSEAT - For Chev carryall 49" across \$35; roof-rack for same vehicle. \$30. John, Ext. 4425 or 744-4386.

76 HONDA CB200T - New (20 mi) \$750; 72 HONDA 450 - \$700. Bob, Ext. 3313 or 981-3965.

73 BUICK REGAL - Auto, p/s, p/b, a/c, am/fm stereo, radials, landau top, excel cond, well maintained. \$1500. Brian, 757-1581.

71 CHEVROLET - Wagon, Brookwood, good running cond, new trans, fuel pump, just tuned up, good tires. \$550. Ext. 4452 or 289-1705 after 6.

72 BUICK - Estate wagon, loaded, excel cond, 6 pass, 51,000 mi, \$1950. 587-3192.

427 BLOCK - Started to rebuild, many new parts. 928-3088.

UTILITY TRAILER - Covered, U-haul type, good cond, 8'x5'x5 1/2'. \$350. 286-2889.

76 HARLEY DAVIDSON - 125 cc, on-off road, low mileage. \$500. 286-8758 after 5.

75 CHEVY VEGA - Hatchback, auto trans, 16,000 mi, well kept. 929-4540 after 5.

73 HONDA - S/T 90 road and track, low mileage, excel cond. 286-8448 after 5.

70 FORD WAGON - Auto, p/s, p/b, good mech, but rusty. \$600. Don, Ext. 2026.

69 VOLKSWAGEN - W/1971 eng, new clutch, five good tires, brakes recently done, mech good cond. Bill, Ext. 4173 or 929-3029.

65 HARLEY DAVIDSON - 900 cc, sportster, custom seat and paint, very clean. 924-8264 eves.

74 FORD GRAN TORINO - Station wagon, 8 pass, V8, a/c, am/fm 8 track, roof rack, 2 way tail gate, brown. \$2,200. 744-0811.

TIRES - (4) 9.50x16.5 Firestone highway tires for 3/4 ton pickup, low mileage. 924-8264.

66 DODGE DART - 2 dr, 6 cyl, p/s, p/b, auto, mech excel. \$350. Steve, Ext. 3822 or 929-6527.

69 BUICK LESABRE - 4 dr, auto trans, a/c, runs well, suitable car pool. \$300. Silkworth, 473-1578 eves.

74 MERCURY - Montego, 43,000 mi, p/s, p/b, am/fm stereo, excel cond. \$2100. Murdock, Ext. 4731.

72 BUICK OPEL - Wagon, 2 dr, 4 cyl, Lafayette CB, 90,000 mi, \$800; 1970 Ford Fairlane, good running cond. \$400. 281-6130.

66 PONTIAC - LeMans, \$150. H. Rhodus, Ext. 3284 or 924-3522.

SSB TRANSCEIVER - Sears, 23 am/USB/LSB channels, mobile/base, S/RF/SWR meter, NB, RF gain, fine tune, PA, excel cond. \$150. Ext. 4425 or 345-3178.

TIRES - (2) 855-14 snow tires and rims. \$30. Don, Ext. 2043.

74 MAVERICK - Lite blue, w/white vinyl top, p/s, p/b, a/c, 6 cyl, auto, excel body and interior, 38,000 mi. \$2,200. Cliff, Ext. 3514 or 585-6811.

76 FORD VAN - V8, auto, p/s, a/c, am/fm cassette, captains chairs, fin. int, roof vent, more. 399-0836.

67 SUZUKI - 250 cc, X-6 Hustler, clean, orig, runs well, \$400. Paul, 878-2847 after 5.

70 CHEVY - Carryall, series 10, good cond. \$800. Betty, Ext. 3671 or 281-8343.

Boats & Marine Supplies

CANOE - 16' aluminum, Delhi, double ender, 2 paddles, like new. \$150. 929-8105.

15' MFG RUNABOUT - Fiberglass, perfectly dry, w/35 hp Chrysler outboard, elec start, only 2 seasons, must sell. \$550. Ext. 2032 or 286-3455.

FLYING JR - Fiberglass sloop, aluminum spars, spinnaker, trailer, many extras. \$650. Walt, Ext. 4597.

15' TRAILER - 400x8 wheels, good axle, winch, bearing buddies, frame and rollers, rusted. \$50. Ext. 4058 or 286-0436.

75 STEURY - 18' fiberglass cabin cruiser, 1975, 65 hp Mercury outboard, excel cond. \$2500. Betty, Ext. 3671 or 281-8343 after 5:30.

23' COLUMBIA - Fiberglass, sleeps 4, head, galley, fabric cushions, bow, stern pulpit w/life lines, 4.5 merc, 2 sails, main cover. 286-1076.

16' SKIFF - Navy top, center console w/steering wheel and cable, good cond. 325-0447 after 5.

12' RUNABOUT - W/6 hp Evinrude, good cond. 325-0447 after 5.

18' LONE STAR - Boat w/cabin, 1973 85 Evinrude. \$2,000. Bob, 281-7641.

Miscellaneous

YARD SALE - April 22, 10 am, tools, camera equip, household items, old records, etc. Central Ave., (between Oak & Northside) Wading River. 929-6172.

YARD SALE - April 21 & 22, 10 to 4, 369 Washington Ave., Patchogue, rain or shine.

YARD SALES - Woodville Rd, Middle Island, April 15 and 16, April 22 and 23. H. Rhodus, Ext. 3284 or 924-3522.

SKIS - Hexcel bundance 195 cm, excel cond w/solo-mon 444 binding, \$130; Ostryker 300's, never used, 205 cm, \$25. 821-1148 eves.

LHASA APSO - Golden female, 10 mos old, champion sired, pedigreed, excel disposition, gentle, lovable, friendly. \$175. 929-8105.

BICYCLE - 20" girls bike, good cond. \$15. 744-9498 after 6.

RACING SLICKS - M/H, excel cond, \$75/pr; 23 channel base CB Midland, excel cond. \$30; 200 watt linear amp, used 1 hr. \$150. Ext. 4289 or 283-2417.

PIANO - Upsight w/cracked sounding board, but otherwise OK, to highest offer, will not deliver. Sidney Fiarman, Ext. 2925.

HAM RCVRS - Lafayette HA-350; also Radio Shack DX-160, very good cond, best offer. John, 931-0840 after 6.

FLOKATI RUGS - New, (2) 4 1/2'x6', off white, \$20 ea; tape recorder made by Ampex, needs repair, \$50. Ext. 4333.

YORKSHIRE TERRIER - Puppy, male, sacrifice, vet certificate, health guarantee, \$175. Daly, 475-2627 after 6.

POOL - Above ground 24' round, w/expandable liner 4 to 7' deep, plus extras, good cond. \$600. Paula, Ext. 4702.

MOVIE PROJECTOR - Bell & Howell 8 and Super 8 zoom lens, \$75; Muffler and exhaust pipe for 72 Pinto 2000 cc, new, \$25. Bob Cook, Ext. 4592.

SLIDE PROJECTOR - Kodak carousel, w/zoom lens, \$115. F. Wyche, Ext. 3725.

LAWN MOWER - 30" riding reel w/riding seat, 5 hp motor. 475-4199.

WINCHESTER - Bolt action, clip fed, 22 rifle, new cond. \$35. A. Campbell, Ext. 3354 or 727-7115.

WASHING MACHINE - Kenmore, good cond, \$50. Ext. 4688 or 924-8213.

CAMPER - Pop up, sleeps 8, ice box, portable heater, porti-potty, stove, power converter, \$1250. 585-3004.

ACCOUSTIC BASS AMP - 220 head, 406 speakers, lifetime guarantee, 3 months old, \$500. Rip, Ext. 4672.

REDWOOD - Picnic table, round, good cond, \$20; Mahogany lamp table, round w/leather top, \$25; pressure type, hand operated water pump, \$10. 286-0246.

AIR CONDITIONERS - (2) 6000 BTU, 11 amps, \$70; 5500 BTU, 5.5 amps (high eff.), \$110; twin bed, dresser, night table (no mattress) \$35; four abstract figures on mirror frames, \$10. George, Ext. 4460 or 4453.

CONVERTIBLE BENCH - For dinette or bed to fit in vans. \$75 ea or 2/\$125. Chuck, Ext. 4481.

75 COX CADET CAMPER - Like new, \$825; Evergreens, spruce and fir, 20" to 26" tall, you dig. 2 for \$5. 727-1617.

CAR SEATS - (2) sturdy seats for children, \$5 ea; one Sears safety strap, \$5. Ext. 3501.

BOY'S BIKE - Hi-rise Columbia, black and chrome, very good cond. \$25. 286-1278.

REFRIGERATOR - GE, excel cond, 12 cu ft. \$50. 289-1705 after 6.

PACHYSANDRA - Good ground cover, 55 plants for \$5, 110 for \$9. 744-5448.

TV - 21" color, table model, \$90. Ext. 2386 or 924-3072.

SCUBA REGULATOR - Sherwood 4000 w/3000 octopus second stage, excel cond, \$100. Will sell separately. Gerry, Ext. 2963 or 924-5089.

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

SHOREHAM - North of N Country Rd, 4 bdrm Cape, deeded beach rights, 1/2 acre, fp, eik, fin bsmt. \$49,500. 744-5801.

BROOKHAVEN HAMLET - 3 bdrm ranch, 1 1/2 acres, oversized garage, barn, prof landscaped, many extras too numerous to list. 286-0246.

CENTRAL ISLIP - Condominium, 3 bdrm, town house, on corner near pool, all appl incl, central air, exit 57 LIE. \$31,000. Ext. 2517 or 234-5951 after 6.

N PATCHOGUE - Mod ranch, l/r, din rm, kit, 3 bdrms, 1 1/2 baths, huge fam rm, garage, landscaped lot, prime area, walk to schools, 6% mortgage, low taxes, immac. \$39,000. 654-4394.

S SETAUKET - 3 bdrm ranch, fin bsmt, greenhouse, 5 appl, 1/2 acre, 3 Village School Dist, \$1,100 taxes. \$32,500. 331-1798.

MILLER PLACE - 4 bdrm Colonial, d/r, fam rm, fp, 1/2 wooded acre, low taxes. \$56,500. 331-1798.

BRENTWOOD - 3 bdrm ranch, 1 1/2 car garage, fin bsmt, enclosed patio, new cesspool, washer and dryer, carpeting, must sell, relocating, original owner. \$35,000. 273-6634.

MIDDLE ISLAND - 3 bdrm, 2 baths, full bsmt, fam rm, w/w carpeting, fp, deck, wooded, all appl, 1 1/2 acres, many extras. \$65,000. Ext. 3929 or 924-3761.

MASTIC BEACH - 4 yr old house, 6 rms, full bsmt, 80x125. \$28,500. 281-5328.

BAITING HOLLOW - 4 rm summer cottage (furn), for rent or sale, adj priv beach and golf course. 286-8356 days or eves.

ROCKY POINT - 4 bdrm Colonial, eik, 2 1/2 baths, fp, w/w carpeting, all appl, garage, wood deck, 1 1/2 acre, priv beach. 744-1156.

MIDDLE ISLAND - 4 bdrm expanded Cape Cod, 24 ft l/r, d/r, eik, screened patio, fin bsmt w/bar, 2 car garage, 3 zone oil heat, low 40's. 732-5338.

SOUND BEACH - Cape Cod, 3 bdrm, eik, d/r, fp, rec room, reinsulated, low taxes, 100x100 lot w/small pool. \$41,500. 744-5479.

MASTIC BEACH - Sale or rent, compact 3 bdrms, near water. Sell under \$20,000, rent negotiable. 281-7531.

N SHIRLEY - Mother-Daughter house, 5 min from Lab, oil heat and hot water, garage, \$3,000 cash over, \$28,000 mortgage at 8%. 585-1575.

PORT JEFFERSON VILLAGE - Suassa Park, 4 bdrm, 2 bath, fp, fin bsmt, wooded. \$62,000. 473-9556.

N SHIRLEY - Custom ranch, large l/r, new country kit, full bsmt, hot water heat, 2 car garage, appl, 2 mi from Lab. \$30,000. Ext. 2021 or 286-9685.

BELLPORT VILLAGE - 1/2 acre, 3 bdrms, 2 baths, 2 car garage, screened porch, attached greenhouse, many extras. \$49,500. 286-2724.

E PATCHOGUE - Brick cape, 4 bdrms, l/r, d/r, patio, full cellar, storms & screens, garage, storage shed, 75x187 lot, 3 appl. \$38,000. 286-8224.

E MORICHES - Custom built, 3 bdrm, 2 bath, Cathedral l/r, & d/r, fp, fin bsmt, separate ent, oversized 2 car garage, priv beach and marina rights. \$57,500. Ext. 4786 or 878-2603 after 5:30.

SETAUKET - 2 1/2 yr old Mother/Daughter hi-ranch, 3 Village Schl, 1/2 acre, 4 bdrms, 2 baths, furn downstairs apts, many extras, 3 mi to SUNY, 16 mi to BNL. \$46,990. Martha, Ext. 3307 or 751-8649.

BELLPORT VILLAGE - 7 rm, an older very special extended cape, up to 4 bdrms, fp, garage, full bsmt, well planted 1/2 acre w/privacy, cedar shakes, appl, high 30's or rent \$400. Ext. 2032 or 286-3455.

SETAUKET GABLES - 4 bdrms, den, 2 1/2 baths, eik, d/r, central a/c, und sprinklers, 2 fp, sod lawn, beautifully landscaped, fully carpeted and insulated, 3 Village Schl. \$61,500 neg for quick sale. 751-1296 or Ext. 2902.

COPIAGUE - 2 bdrm Condominium, central a/c, ref, stove, w/w carpet, balcony terrace, tennis, pool, marina, clubhouse. 887-1811.

SHOREHAM - Raised ranch, 3 bdrms, 1 1/2 baths, fam rm, eik, d/r, l/r, garage and screened patio, 1/2 acre, low taxes. \$38,000. 744-5322.

CAPE CORAL - Florida's west coast, property 80x125, developed area. \$5,000. Frank, Ext. 2311 or 567-5131.

For Rent

MASTIC BEACH - Large 2 1/2 rm apt, near beach, no lease, \$200/mo incl util. 281-8343 after 5:30.

PATCHOGUE VILLAGE - Furnished rm, priv home, off-street parking, village conveniences, suitable congenial mature woman. 475-2627 after 6.

VERMONT - Beautiful furn chalet, stone fp, mt lake and pond swimming, canoeing, fishing and woodland trails, nearby tennis, golf, horseback riding, music festivals, summer stock and antiques, rent weekly and monthly. 757-5599 after 4.

SHIRLEY - 3 bdrm, small, cozy, clean, \$260/mo + util, near beach. 281-9237.

ORIENT POINT - Lovely 100 yr old house, beautiful view overlooking bay; 3 bdrms, (twins), walk to beaches, July - Aug, \$850/mo; June or Sept, \$450/mo. Security. Ext. 3561 or 421-9373 eves.

YAPHANK - Large 3 bdrm house w/2 car garage, large property, for rent mo of July. 924-3303.

MASTIC BEACH - 1 1/2 rm studio, furn, priv ent, rent negotiable, incl util, near water, pleasant location. 281-7531.

RIVERHEAD - 2 story house, 3 bdrms, 2 baths, l/r, d/r, kit, w/w, bsmt, garage, hot water basebd heat, prime location. \$300/mo plus sec. George, 475-1023 or 281-7676.

MILLER PLACE - 3 bdrm house on secluded 3/4 acre, convenient location, available Aug for 12 mo, \$400/mo plus util. 928-0821 after 5.

POCONOS - Plan your summer vacation early, or call for pre-Labor Day rates, Chalet near Lake Wallenpaupack, swimming, tennis, sauna, etc. 289-2159.

MASTIC BEACH - 2 bdrm house, walk to beach, children and pets OK, avail in May. Ron, Ext. 4636 or 281-6630.

YAPHANK - Duplex apt, 2 bdrm, l/r, d/r, full bsmt, available July 1st, \$340/mo, heat incl. Ext. 3503 or 581-2909.

Wanted

GUITAR CASE - For standard size folk guitar, inexpensive, for teenage beginner. Bob Monaghan, Ext. 4688 or 744-5098.

LEGO BLOCKS/SETS - No longer used for children on Israeli Kibbutz. 286-1213 after 5.

OLD HOME - With personality for young, ambitious couple. 878-4261 after 7.

ROOMMATE - For furnished 2 bdrm house, in Rocky Point near the water, \$175/mo incl all util, male or female. Don, Ext. 4346 or 821-9125.

BASEBALL GLOVE - For left handers, also a left hand set of golf clubs. Don, Ext. 4346 or 821-9125 after 5.

MANUAL TRANSMISSION - Transaxle for 65 YW beetle or similar, cheap. Bill, Ext, 2292 or 286-0243.

TIRE - 165 15" Michelin steel belted radial, fair to good cond. 475-0144 after 6.

YACHT CLUB STEWARD - Light cleaning, building supervisor, considering senior citizen, for summer season, sailing experience desirable. 286-1754.

SAFE - Fire proof type, also old comics, top prices paid. 473-7042.

CART OR TRAILER - To pull behind lawn tractor, utility use. Paul, 878-2847 after 5.

KITTEN - Very young, black and gray tabby kitten, preferably female. 286-0284.

ROOMATE - To share 2 bdrm, furn apt, at Medford, all util. \$150/mo. Paul, Ext. 4375 or 475-4944.

TYPIST - For PhD thesis in chemistry, requires some Greek symbols, formulas, etc. Pay neg. Oak, Ext. 4369 or 3208.

ANCHOR - Danforth, medium size. W. Schlichteroll, Ext. 3284 or 924-6172 after 5:30.