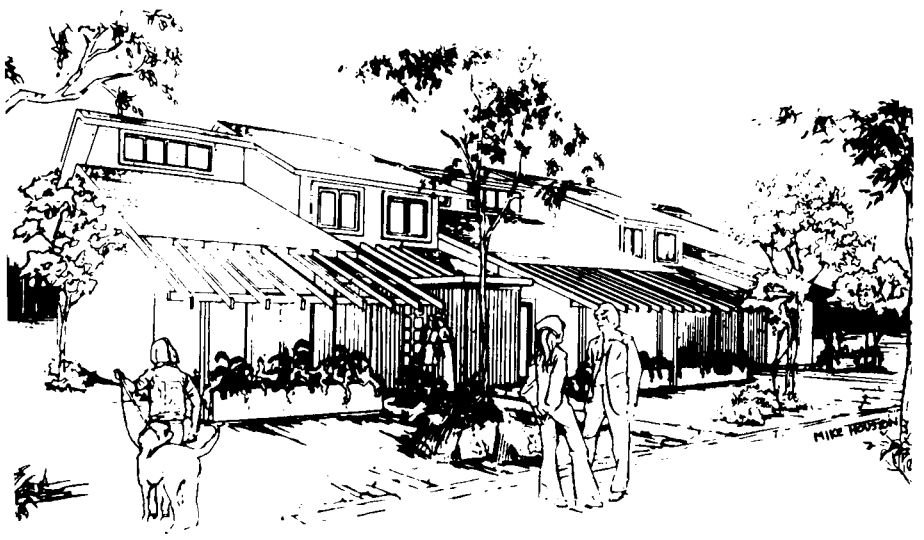
BROOKHAVEN BULLETIN
Vol. 40 - No. 25 June 20, 1986
BROOKHAVEN NATIONAL LABORATORY



Artist's drawing of Rangewood Villas.

A Hot Topic:
Cooling It Down South

Energy-conserving homes built in the South are designed on principles that seem backwards to Northerners —because the idea is to keep southern houses as cool as possible. But southern homes still use insulation — to keep the heat out.

Ralph Jones and Walter Loss of the Architecture & Building Systems Division, DAS, recently found that builders in Florida have been constructing homes with too much insulation and installing it backwards. And they have been installing radiant barriers so that they keep the heat in instead of keeping the sun's heat out.

Since the simple construction changes recommended by Jones and his colleague would save Floridians money on building materials and cooling costs, the Governor of Florida, Florida's Department of Consumer Affairs, builders and insulation manufacturers have become interested in the BNL study. It was done in collaboration with the Florida Solar Energy Center (FSEC) of the University of Central Florida.

Ending last December, the collaborators collected seventeen months of data on two energy-conserving townhouses, one occupied and the other not. The row houses are part of a development called "Rangewood Villas" in Cocoa, Florida, which is on the east coast, about ten miles from the ocean. They were built incorporating energy-conservation features recommended by FSEC. The study's findings are applicable to nine other southeastern states that have similar climates.

Based on the analysis of the data, the Florida Department of Consumer Affairs has produced a video tape for builders reviewing the recommended building techniques. And the insulation manufacturers have lobbied the Governor's office against changing Florida's energy code based on these findings because it would mean less insulation would be sold in the state.

"We have upset the insulation people," says Jones, wryly. He and Loss discovered that an uninsulated wall with a radiant barrier — a thin film that reflects the sun's heat — performs better than a wall insulated with 2-½" thick R-8 insulation.

They also noted that while radiant barriers have no resistance to heat flow, they multiply the R-value by reflecting solar heat. Therefore, 3-½" thick R-11 insulation with a radiant barrier performs as well as one-foot thick R-30 insulation alone, and 5-½" thick R-19 insulation with a radiant barrier does over 30% better than R-30 insulation alone.

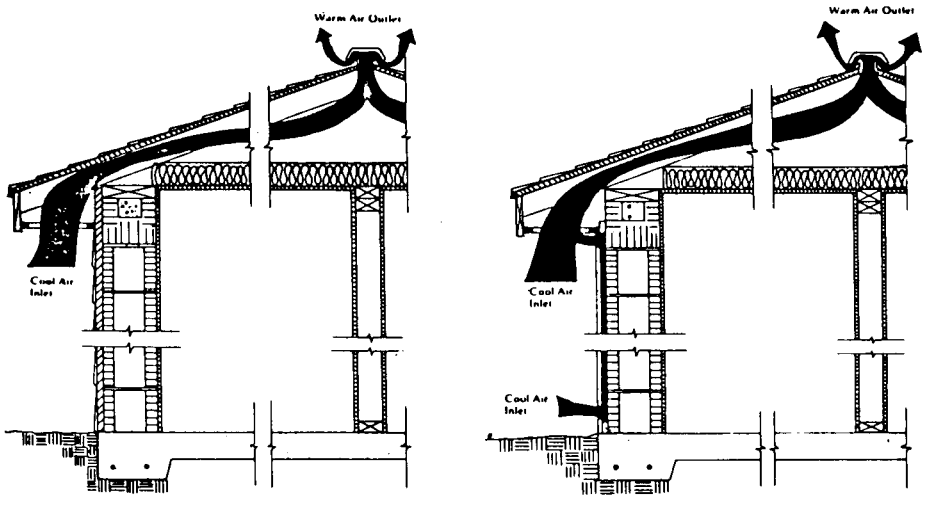
As well, they uncovered that builders have been installing insulation with attached foil radiant barrier backwards — the foil should be towards the outside wall in southern homes. And builders have been incorrectly placing the attic's radiant barrier between the insulation bat and the ceiling — causing heat to be reflected back into the room below. Simply by placing the film on the inside of the roof, the sun's heat is reflected from the roof, and the ceiling insulation can do its job of keeping cool the room below the hot attic.

Jones and Loss found that a less expensive way of keeping rooms cool in Florida is, contrary to popular wisdom, to use smaller air conditioners, and not to turn the ac off and open the windows at night. Large ac units operate inefficiently because they do not work at full capacity in cooling the homes tested. And open windows at night let in the humid Florida air, which is absorbed by the walls and furniture. The accumulated moisture makes the ac work harder the next morning to lower a house's humidity.

"We don't understand moisture," admits Jones. So the Department of Energy is funding further study on how furnishings and wall coverings absorb moisture and to determine what their "moisture coefficients" are. Because humidity was not accounted for, Jones and Loss found that three standard computer programs, used to model thermal performance, did not work. So they are developing one that takes moisture into account.

"We have not finished our initial analysis," explains Jones, "but the information was of such economic importance to people that we got out the initial data.

"A lot of Florida's population is made up of older people who have retired there from the North. They have a hard time adjusting to the heat, so they have to stay cool. As a result, a large part of their fixed income is spent on energy bills. We hope that if our findings are instituted, senior citizens and others will be able to spend less on energy and receive tax credits for energy conservation. Improperly insulated homes and home air conditioners that are too big are counterproductive to their health and pocketbooks," concludes Jones. — Marsha Belford



The figure on the left shows the insulation of the exterior north and south walls of a Rangewood townhouse and the attic ventilation. The righthand diagram shows the "vented skin" construction of the east and west walls, which is connected to the attic vent. The vented skin was designed to carry off heated air to reduce conduction. But Jones and Loss found that the heat was reduced because of the presence of a radiant barrier, not because air flowed throught the vented space. Based on cost, they recommended a conventional roof with a radiant barrier stapled between or on the bottom of the rafters rather than the vent-skin design. The natural ventilation provided by the eave and ridge vents in the roof were found to be sufficient.

Soukas Wins Energy Award

The 1985 In-house Energy Management Conservation Award was recently presented to Anastasios Soukas, senior research engineer in the AGS Department, for his plan to improve the efficiency of power converters used in high energy physics experiments. His project will eventually reduce BNL's electric power consumption by 7.7%, saving approximately $1 million annually.

The Department of Energy, which presented the award, cited Soukas for his "personal initiative, dedication and accomplishment" in the category of Outstanding Individual Efforts. He has been a BNL employee for the past 26 years.

BNL has already begun to implement Soukas' plan for a more efficient system that controls the conversion of alternating current (ac) to the direct current (dc) needed for bending and focusing the beams for physics experiments. The old system, which used magnetic amplifiers, required a substantial amount of power to switch from ac to dc. Soukas proposed replacing the amplifiers with silicon rectifiers, which perform a similar control function. Since the rectifiers are more efficient, they will consume much less energy than the amplifiers.

Soukas' plan calls for a phased modification of existing equipment with minimal disruptions of ongoing experiments. Since most of the power supplies to be converted operate for research, conversions have to be made as the AGS schedule permits. Frank Toldo, George Speidell and Mike Bannon, colleagues of Soukas, led the design, construction, and testing phases of the project. They have already modified more than half of the power converters. The project should be completed by 1989.

The Fixer: Andy Soukas stands next to the prototype of a power supply that has been rewired according to his energy-saving specifications. The retrofit of the power supply's converter will also reduce its size, giving researchers more room for other equipment. For his project, Soukas was awarded the 1985 In-house Energy Management Conservation Award by DOE.

Alex Reben

A June Balloon

It was 3:15, the morning of June 15. BNL Police Officer Robert Abruzzese was completing his shift and heading back to Police Headquarters, when he noticed a silver object, with something dangling from it, caught in the trees ahead. "It's just a balloon," he thought as he drove past it. But then he remembered that, as a kid, he used to try to send messages in balloons. So he stopped, just in case, and retrieved it.

Sure enough, the balloon did carry a message — from six-year-old Jaren Gordon of White Plains, who wanted the person who found his balloon to write to him. Abruzzese did one better. He called the young communicator to tell him he had made contact with someone about 40 miles away, as the crow flies.

A Sunday Golfer at the U.S. Open

It was going to be too hot, it was going to rain, the crowds, ugh. Better to watch it on television and let the golf diehards deal with the hassle of being there.

Then the feeling — maybe you're going to miss out on something. When was the last time a U.S. Open was held on Long Island? In 1896, that's when. And when would the next one be held? Long after you're gone, lady. So let's give it a try.

By the time I got myself into gear, tickets for the last two days of the tournament were sold out, but I managed to get two tickets for Friday.

O.K. Now how are you going to get there without suffering a nervous breakdown. Drive? Good luck, kiddo. Everybody was predicting gigantic traffic jams. You could imagine your old car wheezing as it crawled along and your own anxiety level rising as you watched the car's temperature gauge move up. You'd be lucky if you ever arrived in time to see anything.

Then you heard the L.I.R.R. was sending out special trains from the city and at the last minute they decided to make a stop at Patchogue. Problem solved.

So, on Friday, the 13th, nattily attired and shod in the running shoes you could walk to Canada in, off you went. It was cool and cloudy, and everyone carried umbrellas. You congratulated yourself that you had not chosen Thursday as the day to go to the Open. That day's weather had made everyone blanch. But the forecast for today promised better things to come, even if it was Friday the 13th. And, anyway, though you didn't dare say it out loud, in case the gods could hear you, Friday the 13th had always been a good luck day for you.

On the station platform, everyone was quietly milling around. Golfers, generally, are not raucous types. Seats were guaranteed on this train, but somebody next to me muttered, "Yea, well, there are 30 seats in each car. They probably sold 30 sitting and 30 standing." But such was not the case.

My companion and I seated ourselves next to a friendly looking man who had the intent, self-contained look of a dedicated golfer. It turned out he was, and I asked him: "Any predictions?"

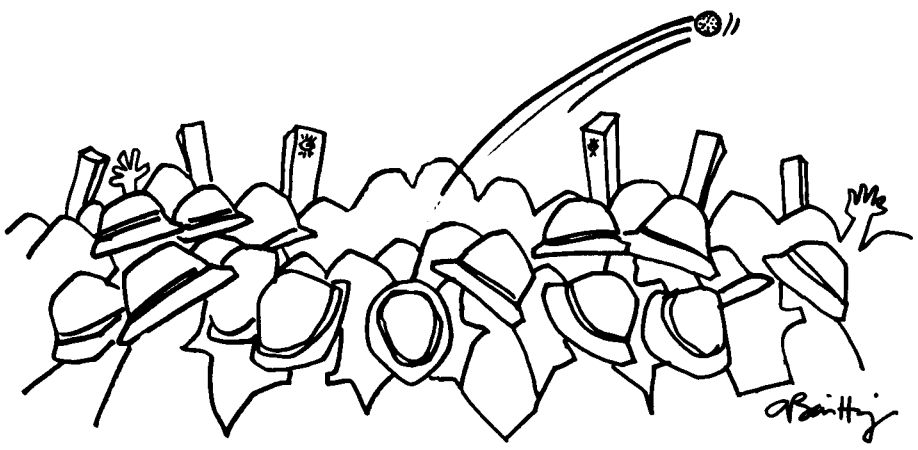
He said, "Well, I'd like Lee Trevino, or Cal Peete but I understand he's hurting."

I said, "I don't want Nicklaus to win again."

And he said, "Neither do I, he's had his time." Heresy. Not Jack's fault, just that he seems to be getting the deification treatment from the media.

At Southampton College station where we disembarked, Suffolk County had built an overpass to enable pedestrians to get to the other side where the Shinnecock Hills Golf Club is situated. The steps were steep and not enclosed, and I clung grimly to the hand rail, desperately trying not to look down, but it was hard because they were "see through" steps. But no turning back now.

On the other side, a low-key carnival atmosphere greeted us. Green and white striped tents, some in which you could purchase golf paraphernalia; some housed the press, in others sat official scorers and the many officials needed to run such an event. Tents where you could buy hot dogs and hamburgers, soda and beer, at somewhat elevated prices. Port-a-potties and trash cans dotted the course. TV cameras hung from cranes and towers, and men shouldered mini-cameras as they followed the players.



Right off the bat, we more or less bumped into the 10th hole and who was there — Fuzzy Zoeller and Hubie Green. Wow! It was star time. There they were in the flesh: Zoeller tossing off his asides to the crowd, and that Green is one handsome fella. Much better looking than on TV; in fact, most of them are much better looking than on TV. They move to the tee, and their powerful drives whoosh past our ears.

Scheduled to come after them in a few minutes are Larry Nelson, John Mahaffey and — Jack Nicklaus. Well, you may not want him to win, but you're not going to walk away. The crowd is quiet: It's like waiting for the curtain to go up at the theater. Then a path is cleared, and in walk the players: Nelson and Mahaffey first, to a trickle of applause, and then the Golden Bear to an ovation. It must be hard on all of them, I thought. For Nicklaus, who must preserve his concentration through all of this hoopla on every hole, and for the players paired with him, who might as well be invisible.

They move on, and so do we to explore some of this lovely, challenging course. As everyone now knows, Shinnecock Indians helped construct it in 1891, and it is still carefully tended by some of their kin. The course flows with the land. No gimmicks. It is undulating and the rough looks rough. The closely cut fairways are better than the greens on the courses I frequent. Looking down the rolling length of the 9th and 18th holes from their respective tees, I shudder to think what my score would be if I were out there.

Off the fairways, you walk through the clover and marsh roses, the wild blueberry and bayberry, and, of course, the Long Island scrub pine is everywhere.

The clubhouse is rambling and somewhat weatherbeaten, wonderfully understated. It's the kind of a club, we hear, that if you have to ask what the fees are, you really don't belong there.

On Friday, the crowd was quiet, courteous, orderly and knowledgable. I heard nothing but golf spoken all day. A few had purchased those cardboard periscopes. I happened to get behind one just as a favorite golfer holed out — up periscope. Curses. (Fashion note: the sun hat to wear this season is a pith helmet, made of what appears to be a light beige straw).

So how do you get to the U.S. Open? Practice, man, practice. We look behind a fence, and there are the biggest names in golf out on the practice tee. They were there before they went on, and they were back when they finished their game. They never stop.

We park ourselves on the ground close to the green on the 3rd hole and watch as David Graham, Hale Irwin and Tom Watson and their caddies walk silently up the fairway to the green. The quiet is broken only by the sound of a small plane overheard, which is towing a banner reading "Sue, Happy Anniversary, I Love You, Walt."

Looking back at the approaching players, I am struck by what a lonely procession it seems. They are looking straight ahead. You get caught up in their concentration, and it is jarring to hear a shout go up from another hole as a player sinks a long one. Watson looks at his ball. He has a bad lie. I think, maybe he'll pull off one of his impossible shots. No, not this time, and he gives his rueful grin.

And so it goes throughout the day. We see more biggies, Cal Peete, the Great White Shark (Greg Norman), the Walrus (Craig Stadler), Tom Kite, and so on. We miss Lee Trevino. We also see many of the lesser knowns: I have a soft spot in my heart for a fella who shot 30 over par for the two days. My kind of guy.

One of the great things about these matches is that it's never over until the last shot of the last day. On Thursday, it was Tway, on Friday it was Norman, on Saturday, it was Norman again, and on Sunday, Ray Floyd won it.

I'm glad I went. Watching the last two days of the tournament on TV was vastly more exciting to me for having seen these well-known names as the men they are, not just the filmed golf idols of before. When they say you are seeing something "live" on TV, you really aren't. The only way you can do that is to be there.

— Bernice Petersen

T-Shirts '86

The response to this year's Lady Liberty T-shirts has been overwhelming. And here's some more good news: All shirts ordered by Monday, June 23, will be received in time for the July 4th celebration.

These "Brookhaven National Laboratory — Summer '86" T-shirts have been made even more striking by the addition of a second color. The basic T-shirt is white, the lettering is navy blue, and the shadowed statue is navy blue and green. T-shirts cost $5, in cash or a money order made payable to "Renee Flack — T-shirts '86," Bldg. 460. The final deadline for ordering T-shirts has been extended to August 4.

Patent Awarded

Meyer Steinberg and **Peter Fallon**, both in DAS, have been issued U.S. Patent #4,563,197 for their work on a process that produces economically significant amounts of chemical feedstocks, in particular, ethylene, from coal.

The coal is reacted with methane at a temperature in the approximate range of 500°C to 1100°C at a partial pressure less than about 200 psig for a period of less than 10 seconds. Ethylene and other hydrocarbon compounds may be separated from the product stream so produced, and the methane recycled for further production of ethylene. Other compounds produced, such as by-product tars, may be burned to heat the recycled methane.

Ground Rules

Don't you wonder how some people grow beautiful, luxuriant plants while yours turn yellow and wilt? With these few simple hints from the Cooperative Extension Association of Suffolk County, you too can make your plants the envy of the neighbors.

Over or underwatering is one of the most common forms of improper plant care. How much water a plant needs partially depends on the type of pot in which it is planted. Clay and hard plastic are the two most common materials used for pots, but they have rather different properties.

Clay pots, which are porous, allow moisture to evaporate through the sides of the pot. Plants in such pots will need extra watering to compensate for the loss of water. Since plastic pots do not lose water through their sides, they require less watering than those in clay.

How much water a plant needs depends upon more than just its pot. The plant's size, the room temperature, light and humidity all affect water consumption. Just remember this rule of green thumb: Water your plants when the surface soil begins to feel dry, and never let them wilt.

Special for Summer Visitors

Great Adventure: Leave 7 a.m., Saturday, August 9. Cost, $35 (cash only), includes transportation, admission (six hours of fun, amusement park and safari) and breakfast, lunch, snacks and beverages. Limited seats. Money due on or before July 15.

For further information and reservations, contact Renee Flack, Ext. 3316, Bldg. 460.

Coming Soon to a Gym Near You

Feel good about yourself . . . give blood. It's not too late to volunteer for BNL's Blood Drive to be held June 25-26 from 10 a.m. to 3 p.m. Just fill out the donor pledge card you received in the mail last week or call the blood program hotline at Ext. 5126, for additional cards or information. Medical questions of eligibility can be referred to Long Island Blood Services through BNL's hotline.

Susan Foster, coordinator of the BNL blood drive, reports that we are approaching our goal of 600 pints, but urges more people to return their donor cards.

The blood you give next week will be used during the July 4 weekend when the demand for blood is unusually high. Remember as you vacation at the seashore, the lake or the mountains, your blood could be saving someone's life.

Members of the Mountain and Canoe Club prepare to canoe down the Delaware River above Port Jarvis, NY. Two near perfect days of canoeing were enjoyed last weekend by a group of 23 people — BNL employees, their spouses and children. The river was about four feet above normal and running fast, eliminating most of the rapids and making paddling easy. All but two of the eight canoes made it through the Skinner's Falls rapids without swamping or capsizing. But the water was warm, and members of the group took frequent swim breaks along the way. For information about future activities of the Mountain and Canoe Club, call Don David, Ext. 3942 or 286-2267.

Hospitality News

Beginning Monday, June 23, the Hospitality Committee will sponsor an afternoon aerobic dance class three times a week, for spouses of employees and guests. The classes will be held from 2 to 3 p.m., Monday, Wednesday and Friday, in the gymnasium, 2 Center Street. The fee for each class is $3/person. Babysitting will be provided free of charge. For more information, call Kathy Barr, 924-0570.

Note to Drivers

If you rent cars for official or personal use and don't recognize this —

A/A 242635				AVIS	A/A 242635				AVIS
WESTERN EUROPE	AFRICA MID EAST	ASIA PACIFIC	LATIN AM CARIB	CANADA	WESTERN EUROPE	AFRICA MID EAST	ASIA PACIFIC	LATIN AM CARIB	CANADA
25	10	20	20	C4	25	10	20	20	C4
US WIZARD AS PER AWD #		AVIS 800-331-1212			US WIZARD AS PER AWD #		AVIS 800-331-1212		

you are missing out. Check with the Travel Office for more information.

PSI News

At a recent meeting, the members of Professional Secretaries, Inc., Upton Chapter, elected the following officers for 1986-87: President, Geraldine Callister, Medical; Vice President, Susan Carlsen, S&EP; Recording Secretary, Nancy Griffin, S&S; Corresponding Secretary, Sharon Moore, DNE; and Treasurer, Cheryll Christie, S&EP.

CREF Values

June	76.40	July	76.69
August	75.94	September	73.77
October	77.12	November	82.20
December	85.78	January	86.50
February	92.83	March	98.20
April	98.28		

May $101.66

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Arrivals & Departures

Arrivals

None

Departures

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

Mary A. Hughes ..... DAS

I.B.E.W Meeting

Local 2230, I.B.E.W. will hold its regular monthly meeting on Monday, June 23, at 6:00 p.m. in the Knights of Columbus Hall, Railroad Avenue, Patchogue. On the agenda will be regular business, committee reports and the president's report.

Cafeteria Menu

Week of June 23

Monday, June 23

French onion soup w/croutons	(cup)	.65
	(bowl)	.85
Veal Parmesan w/1 veg.		2.45
Pork & cabbage crisp w/1 veg.		2.45
Hot fresh vegetable plate (lite weight)		2.25
Hot Deli: Tacos	each	.85
Hot Deli Extra: Corn dogs	each	.85

Tuesday, June 24

Bean soup	(cup)	.65
	(bowl)	.85
Carved loin of pork and stuffing w/ 1 veg.		2.55
Sweet & sour fish w/1 veg.		2.45
Avocado half-stuffed w/chicken salad (lite weight)		2.35
Hot Deli: Kielbasi	(bread)	2.35
	(roll)	$2.50

Wednesday, June 25

Potato & bacon chowder	(cup)	.65
	(bowl)	.85
Beef stew and biscuits w/1 extra veg.		2.55
Shrimp marinade over rice (lite weight)		2.55
Taco & chili plate		2.45
Hot Deli: Monte Cristo sandwich		2.45

Thursday, June 26

Cream of cauliflower soup	(cup)	.65
	(bowl)	.85
Poached chicken breast w/snow peas (lite weight)		2.55
Texas BBQ beef w/1 veg.		2.50
Grill special: Gourmet burger, 1/2 pound meat		2.25
Hot Deli: Roast beef	(bread)	2.35
	(roll)	2.50

Friday, June 27

Seafood chowder	(cup)	.65
	(bowl)	.85
Yankee pot roast w/potato pancake		2.45
Broiled fresh fish (lite weight)		2.65
Melon & fruit plate (lite weight)		2.25
Fried clam plate w/1 veg.		2.50
Hot Deli: Turkey	(bread)	2.35
	(roll)	2.50

BERA News

Tennis

The annual tournament consisting of five events (mixed, men's and women's singles, men's and women's doubles) will begin the weekend of July 19. On this weekend and that of July 26, the tournament will take priority over all other play. Players may sign up at the BERA Sales Office from June 20 through July 8. The draw will be posted by July 10 at the Sales Office and courtside. Competitors are encouraged to play first-round matches as soon as the draw is posted. The tournament is open to Lab employees and spouses, and the entry fee is $2.00 per person, per event, payable at sign-up.

Those interested in playing doubles but who are without partners, should sign up anyway. The Tennis Committee will try to find partners.

Softball

Week of June 9

League I

Blue Jays 20 — Moles 6
Six Pax 10 — SMF 4

League II

Magnuts 15 — Lights Out 5
Medical 10 — Cutting Edge 8
Scram 8 — AMD 1
Binary Bombers 12 — Titans 5

League III

Source 22 — Who Cares 3

League IV

Who's on First 11 — Mudville Sluggers 8
Kidz-R-Us (win) — Mole-Esters (forfeit)

Children's Program

The 1986 Children's Summer Program will get under way on Monday, July 7. Applications are being accepted for swimming lessons. Information sheets and application forms are available at the Recreation Office in Personnel, at the swimming pool and at the BERA Sales Office in Berkner.

Aerobic Dance

It's not too late to sign up for the Aerobic Dance Club's summer stretch classes, held on Monday afternoons, from 5:15 to 6:15 p.m. The fee for the summer session is $30, payable at the next class, which is scheduled for Monday, June 23, in the Seminar Lounge of Bldg. 510, Physics. No aerobic dance classes are scheduled for the summer. For more information, call Anita Cohen, Ext. 5054.

Social Club

The Singles Club has officially changed its name to the BNL Social Club and is now open to all employees of BNL and their families. The club's purpose is to bring together those who enjoy meeting new people and those who enjoy fun activities. We also hope to be able to take advantage of group discounts. Dues are $3 per person, $5 per family a year. Call Doris Terry, Ext. 2228, Bldg. 197C, for an application.

Gym Closing

Because of the BNL Blood Drive, the gymnasium will be closed from Tuesday, June 24, through 5:00 p.m. Friday, June 27.

Play Group For Children

Every Tuesday at 10 a.m., there is a play group for young children who live on site. The group gathers at the playground between apartments 5 and 7 in the apartment area. For more information, call Sue Mou, Ext. 3183.

It's Blatantly Unofficial

You may remember this blatantly unofficial BNL record, set on May 16:

The largest height difference between two people in one corridor of offices (module of Bldg. 130): Bill Gunther 6'5" and Mano Subudhi 5'4"; difference 13".
— Jim Higgins, DNE

Sorry everyone, but you've been deposed —twice. The first challenge came on May 30, almost as soon as the Bulletin hit the stands:

Largest height difference between two people in one corridor (Bldg. 130): John Usher 6'4" and See-Meng Wong 5'2"; difference 14". *— John Usher, DNE*

That record lasted until June 11, when the following was submitted:

The largest height difference between two people in one corridor of offices (Physics 510): Fern Coyle 4'11" and Richard Imossi 6'3"; difference 16".
— Fern Coyle, Physics

Though Usher couldn't keep the height difference record, he did corroborate a record that still stands:

Shortest time between receipt of unofficial BNL record and submission of new record to Bulletin: 20 minutes. *— Jeanne Danko, DNE*

And in another category:

The highest ratio of children "waiting patiently" while their parents attempt to play softball. To the best of our knowledge: 18 kids vs. 10 players on the field during the 1984-85-86 softball seasons. (Ed. note —No wonder the team is called Kidz-R-Us.) *— Gerry Van Derlaske, NSLS*

Entry for "Blatantly Unofficial BNL Records"

(Please Print)

Name .....

Department ..... Ext. .....

Corroborator .....

Department ..... Ext. .....

Proposed Record .....

.....

.....

.....

Date Proposed Record Was Set .....

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.

THE VACANCIES LISTED BELOW HAVE BEEN EXEMPTED BY THE DIRECTOR'S OFFICE FROM THE CURRENT FREEZE ON OPEN REQUISITIONS.

LABORATORY RECRUITMENT - Opportunities for present Laboratory employees.

2450. PUBLIC RELATIONS ASSISTANT - Requires BA degree or equivalent experience. Will research and write copy for various non-technical BNL publications, as well as assist with office phones. Excellent journalistic skills required. Must interact effectively with a wide range of people, and be able to work under deadline pressure. Public Relations Office.

OPEN RECRUITMENT - Opportunities for Laboratory employees and outside applicants.

2451. TECHNICAL POSITION - Requires AAS in electrical technology or equivalent experience, plus at least five years experience in data communications and telephone technology. Requirements also include knowledge of modems, multiplexors, data switches, cabling methods, and communications interfaces. Good oral and written communications skills and the ability to coordinate the work of others is required. Duties will include involvement in the procurement process and installation of diverse types of data communications facilities. Applied Mathematics Department.

2452. TECHNICAL POSITION - Requires AAS degree in electronic technology or equivalent experience with knowledge of accelerator operations. Will be responsible for the safe, efficient operation of the NSLS machines. Knowledge of computers, microprocessors, high power DC & RF equipment is desirable. Must be willing to work on a rotating shift schedule. National Synchrotron Light Source Department.

Autos & Auto Supplies

84 CAMARO - a/t, p/s, p/b, t-tops, white/blue int., new cond. Donna, Ext 2907 or 473-6294, eves.

TIRES - (4) all-season radials, 180 85R13. $25 ea, all for $70. Harris, Ext. 2760.

59 CHEVROLET WRECKER - mechanically sound, cosmetically unsound. $350. 286-1829.

75 VW BUG - fuel inj., good running and mech. cond. $1,000/best offer; 70 VW BUG, excel. running cond., some minor rust. $700/best offer. Fred, Ext. 7947 or 588-2268.

79 FORD LTD WAGON - p/s, p/b, a/c, many new parts, 85k mi. $2,200. Ext. 2245.

75 DUSTER - runs very well, needs repair of k-frame. $400. Barbara, 281-5563.

76 DODGE COLT - station wagon, engine shot, for parts. 929-4446.

78 TOYOTA CELICA - GT coupe, 5 spd., special black edition, a/c, sunroof, am/fm cass., excel cond. Ext. 2085 or 277-7770 eves.

82 DATSUN - 4 dr., a/t, very good cond.; Tires, (4) B78 13, black wall. Ext. 4113 or 399-1307.

72 PONTIAC BONNEVILLE - 455 cu. in., p/s, p/b, a/c, power door locks, window & seats, $750. Gallagher, Ext. 7527.

SLIDE-ON CAMPER - older, sleeps six, bath, stove, ref. Asking $750. 744-9617.

73 T-BIRD - loaded, good cond. $1,000 neg. W. Case, Ext. 2550 or 286-0136.

79 BLAZER - 4 wd, p/s, p/b, p/w, a/c, excel. cond. $6,900. Bill, beeper 923, or 281-0557.

74 OPEL STATION WAGON - runs well but needs battery. $100 or best offer. 929-3662 eves.

68 AMC REBEL - Ext. 5012.

83 PLYMOUTH TURISIMO - 29k mi. 2.2l, 5 spd., sunroof, Shelby sports pkg., stereo, loaded, mint condition. Asking $5,500. Ext. 2368 or 928-6654.

82 DATSUN SENTRA - 4 dr. hatchback, sunroof, a/t, p/s, p/b, a/c, am/fm, excel. cond. $4,800. 298-5821.

75 PLYMOUTH GOLD DUSTER - 2 dr., a/c, p/s, radio am/fm. $550. 924-3236.

79 PLYMOUTH VOLARE WAGON - 71k, p/s, p/b, brand new a/t, roof rack, extras, excel. $1,995. Ext. 7505 or 689-8605.

CAR RADIO - am only, brand new. $15. Les, Ext. 2920.

77 BUICK LeSABRE - luxurious 2 dr., custom sedan, 6 cyl, a/t, a/c, radio & tape deck, fully powered, c/c, velour int., new brakes, $2,300. Al, Ext. 2160 or 273-5574.

74 PLYMOUTH VALIANT - 4 dr., a/t, p/s, a/c, runs well, 50k mi., good body. $450 neg. Sanchez, Ext. 3848 or 281-6498.

71 NOVA - rally sport, p/s, p/b, 400-4 barrel aluminum manifold, headers, wide tires, rally wheels, 350 trans. w/Fairbank shift kit. $1,800 neg. 286-3149 after 5:15 p.m.

TIRES - (2) 875 16 5 LT, 6 ply, Goodyear Tracker Lt. 1 new, $40, the other free. 475-4596.

77 VIKING POP-UP CAMPER - good cond., 2 way, stove, elec., refrig. $1,600. Dan, Ext. 4987 or 698-7322.

79 SUZUKI - 425 cc, new battery, tires, low mi., excel. cond., crash bar, 2 helmets, $650. 585-7762.

82 CHEVY S.W. MALIBU - classic, very good cond. $3,900. 475-4596.

79 TOYOTA CELICA GT - 5 spd., a/c, p/s, am/fm stereo, white/blue int. garaged, no rust, v.g. cond., 67k mi. $2,700. Mark 735-9466.

72 PLYMOUTH DUSTER - 6 cyl, new brakes, shocks, exhaust, tires, alt., very good cond. $800. 331-4281. After 5 p.m.

73 CHEVY NOVA - 4 dr. sedan, V-8, p/s, a/t, just tuned, new tires, new brakes, new battery, good running cond. $500, Ext. 3370 or 751-2469.

84 CHRYSLER TOWNE & COUNTRY WAGON - owner has moved, must sell, excel. cond. in & out, fully equipped. 477-2262 after 6 p.m.

78 CADILLAC FLEETWOOD BROUGHAM - like new. $3,900. 475-4596.

73 VW SQUAREBACK - 4 spd., very good cond., many new parts, 30 mpg., $500. Wolfgang, Ext. 5295 or 744-7006.

ROOF RACK - extra large luggage rack, fits all cars. $25. Ext. 4153 or 732-5829.

79 RENAULT LeCAR - am/fm, new brakes, clutch, 52k mi. $1,500. Ext. 3062 or 669-6090 after 6 p.m.

78 OLDMOBILE STATION WAGON - brown, excel. running cond., new tires. $2,700. Ext. 3737 or 3129.

75 LINCOLN CONTINENTAL - Mark IV, black, moon roof, a/c, p/w, p/l, p/s, 82k mi., garaged, perf. cond. Asking $2,900. 728-2265.

74 PLYMOUTH DUSTER - 6 cyl., manual, a/c, p/s, p/b, good body, Ext. 2787 or 928-5368.

69 BUICK ELECTRA - convertible, high mi., rel. trans., top window broken. Make offer. Ext. 3240 or 744-7127.

73 VW - very good condition. $550. Ext. 2735 or 751-9518.

74 CHEVY VEGA - 64k mi., good for local driving, burns oil. $350. Ext. 3671 or 744-3315.

74 TORINO - new brakes, new all-season radials, new battery, new heater, good deal. $350. 289-5216.

74 CAMARO - for parts. Joe, Ext. 2900 or 289-4734.

73 VW BUS - a/t, 20k on new eng., reblt. trans., very good cond., $2,500. Ext. 4463 or 751-2422.

77 HONDA CIVIC - 4 spd., hatch, rebuilt trans., eng., new brakes, gen., battery, 35 mpg. $575. Ext. 3164.

SET OF 4 RIMS - cast aluminum, will fit Mustang and Capri. Asking $100/rim. Ext. 7112 or 472-1922 after 7 p.m.

73 VW SQUAREBACK - std., new muffler, alt. & batt., reliable, $750. Ext. 4463 or 751-2422.

77 HONDA CIVIC - 2 dr, 4 spd., am/fm, good cond. $1,100. 751-1026.

77 DATSUN B-210 - 4 spd, a/c, am/fm, immaculate, perf. running cond., Florida car. Ext. 3395 or 928-4683.

81 DATSUN 510 - 4 dr. hatchback, 5 spd., a/c, sunroof, perfect looking and running. $3,500. Ext. 3896 or 475-0386.

80 PONTIAC LeMANS - 2 dr., V6, a/t, p/s, p/b, 65k mi. good cond. $3,000. Ext. 2435 or 3035.

82 MAZDA - 626 LX, sunroof, am/fm tape deck, excel. cond. $5,000. Carol, 3630 or 929-3860.

73 PEUGEOT 504 - parts car, motor, drive train, runs well, free. Ext. 4773 or 286-9257.

79 FORD PICKUP - F150, 4x4, 300 cu. in. $2,500. Ext. 2023.

75 CHEVY MALIBU - $250. M. Bonanno, 399-6367.

RADIATOR - Plymouth, Dodge, V8. $20. Frank Rumph, Ext. 5105 or 588-3565.

81 CUTLASS SUPREME - 2 dr. V-6, p/s, p/b, am/fm radio, w/w radial tires. $4,300 or best offer. Ellie, Ext. 3395 or 325-1537 after 6 p.m.

RADIO - am/fm stereo, Delco. $10. Walter, Ext. 3988.

75 CHEVY VEGA - hatchback, new engine, one yr. old. $450; 75 CHEVY MALIBU - good cond., rebuilt a/t & carburetor. $375. Ext. 5111 or 744-8921.

TIRES - (2) P195/75R14 Firestone 721 steel-belted w/w. $30. 727-5912.

75 FORD - V8, a/t, p/b, p/s, am/fm, new trans., tires, rel. trans. $650, Ext. 7901 or 821-9328 eves.

78 CHEVY MALIBU CLASSIC - 2 dr, a/c, a/t, p/s, p/b, excel. cond. $2,100. Ext. 5318.

68 FORD FALCON - wagon, 6 cyl., running cond., and extra engine and parts. $70. Ed, Ext. 3062.

75 HONDA MOTORCYCLE - CB550F, 4 cyl., 7k mi., good cond., $550. Walt, Ext. 4028.

76 FORD MAVERICK - runs well, needs minor work, good first car. 874-2782, after 6 p.m.

82 PLYMOUTH CHAMP - 46k mi. Asking, $2,800 Ext. 2575 or 563-2889.

Boats & Marine Supplies

16' DURATECH - alum. runabout, 25 HP, elec. start Chrysler, depth sounder, trlr., extras, $1,000. Sanchez, Ext. 3848 or 281-6498.

20' MAKO - 175 hp, trailer, winch, full canvas, many extras, like new, $10,500. MERCURY OUTBOARD - 4 hp. $250 286-1829.

TANZER 22 - excel., glass, new sails, roller furling, shoal draft (K/CB), 6 hp Chrysler, $7,700. Ed, Ext 7943 or 589-3992.

Miscellaneous

TRAVERSE RODS - two (1) 6¾ feet, (1) 8 feet long, $7. ea.; Tennis Racket - Tensor $7.50; Baseball glove-1st baseman, $5. 475-4394.

COLOR TV - brand new, 19", Emerson, must sell. $150. Ext. 2245.

CONSOLE PIANO - green velvet chair and loveseat; pine dry sink; 3-speed girls bike. All excel. 286-4515.

POOL - 15'x24', needs liner and filter, U-haul, $350. 472-2457.

ELECTRIC CAR SEAT - 20' track, many extras; misc. toys, games, all excel. cond., reasonable. S. Spark, Ext. 4111.

GENERATOR - 5 kW elec. start B & S motor, never used, $695. Fred. 3259 or 473-8622.

BICYCLE - boy's 5-speed, excel. cond. $50. Ext. 2888 or 286-0422, eves.

COLONIAL STEREO CONSOLE - $75; boy's 20" Huffy bike. $20. Dan, Ext. 4605.

13" COLOR TV - $130; loveseat, $90; sofa, $60; folding bed w/mattress, $40; La Machine food processor, $40. Rajiv, Ext. 5161, or 924-1460 eves.

DOUBLE HUNG WINDOWS - wooden frames, double glazed. $95 for two. Les, Ext. 2920.

LAWN MOWER - reel type, B & S engine, self-propelled, used one season, $150. J. Hanson, Ext. 4030 or 878-2484.

TRASH COMPACTER - Sears, excel. cond., free standing or under counter. $150 or best offer. 758-9197.

HUFFY RIDER MOWER - New 5 h.p. Briggs & Stratton engine, good buy. $200. 281-5532.

STORM DOOR - 36"x79" w/screen hinges; sliding glass shower doors, 26"x70"; covered living room chair; make offer. 475-1254.

ORGAN - electronic, upright, $175; humidifier, $45. Mary 744-7242 after 4 p.m.

CONCERT TICKETS - Jones Beach Theatre, Robert Palmer, 6/28, $17.50 ea.; Jackson Browne, 6/29, $20 ea. Toni, Ext. 5257.

CAMPING INSULATION MATS - like new, $5 ea. Ext. 5295 or 744-7006.

TANK - 80 gallon, w/water pump, like new, $100; 2.5 kW generator, 8 HP, new engine. Sanchez, Ext. 3848 or 281-6498.

STRAWBERRIES, PEAS - U-pick, Meadows Farm, Old Stump Rd., Brookhaven Hamlet, 10-6. 286-1674, eves.

ROTISSERIE - broiler oven, Sears, A-1 cond. $15. 924-3236.

SLIDING PATIO DOOR - 5' wide, alum., frame, single pane w/screen. $50. Ed. Ext. 4447.

COLOR TV - Sharp 19", cable ready, excellent $125. Ext. 4745 or 722-4076.

TI COMPUTER - Never used, includes joy sticks and 4 educational cartridges, $60, neg. 698-9895.

FENCES - turkey wire, 1 roll (1x1x24"); chicken wire, 1 roll (1x1x72"), $20 each; custom rod, Penn Internat'l 30, #50 rod blank, $350. 286-1829.

ORTHOPEDIC GIRDLE - new, never worn, adjustable, top quality. $30. 929-4446.

STORM/SCREEN DOOR - aluminum, wood front, w/weatherstrip jamb, 1¾x36x6'8". 475-0509.

COAL STOVE - Surdiac Southport, McK 512, 44,000 btu, auto-feed, heat area, 13,7000 cu. ft. 475-0509 after 5 p.m.

CHILDREN'S POOL TABLE - small, 4 ft. long, folding-type, $20; curtain rod, for draw drapes, expands to 10 ft., $10. Ext. 4043 or 878-6676.

SOFA - excel. cond. Ext. 4192 or 751-7787.

BOY'S BICYCLE - used one season. $50. David, 758-9268.

PULLMAN COVERTIBLE COVER - fold-out to double bed, $10. Bill, Ext. 2906 or 929-6189.

3M DISKETTES - 5¼", ds/dd, new, best quality, $10/10. Jim, Ext. 3372.

COLONIAL SOFA - chair, rocker, ottoman, pine frames, coffee table, three side tables, excel., $950. Ext. 2529.

CHINA CLOSET - large, walnut, $300; 8' Castro convertible, $150; Amana freezer, $100; all excel. Ext. 2529.

DOUBLE CASTRO CONVERTIBLE - asking $90. Pat, Ext. 4628 or 286-8490.

BABY ITEMS - bassinet with skirt, $25; walker, $10; kangaroo rocker, $10; coach carriage, good cond., $50, Dot, 924-8143.

AIR CONDITIONER - Philco, 6,800 btus. Paul, 924-8143.

BEDROOM - 6-piece, excel. cond., double bed, perfect for teen-room, $325. 928-4068 after 4 p.m.

SOFA SET - 6 pc., $400; bunkbed, 9 pc. $500; single bed, complete $75; dresser w/mirror $60; recliner, $75. 928-5737 after 6 p.m.

VANITY - white w/pink swirls and pink marble top, brand new, never used. Joan, Ext. 2922 or 395-1588.

TOYS & GAMES - puzzles, children's books, huge selection from 10¢ to maximum $5. Ext. 4935 or 928-5737 after 6 p.m.

MICROWAVE OVEN - 1.4 cu. ft., Tappan, $75; Zenith 19" b/w TV, $45; Gerry infant back pack, $20. Ralph, Ext. 4171.

TENNIS RACKET - $5; photo screen, portable, 18"x24", $10; wallpaper, new, 5 double rolls. Susan, Ext. 4267.

COMMODORE BOOKS - comal handbook, compute's mapping the 64, and video/sound. $7 ea. Rich, Ext. 4172.

SANYO MICROWAVE - 1.5 cu. ft., programmable, $150; Philco color TV, $100. Ext. 3823 or 744-4205.

19" COLOR T.V. - works. Dan, Ext. 4987 or 698-7322.

AVON COLLECTORS - disposing of extensive collection, 60s & 70s, mostly MB a few BO. 25% off. 395-1903.

HOTPOINT UPRIGHT FREEZER - frost free, original owner. $200. 744-4611. after 7 p.m.

FRANKLIN MINT COLLECTION - disposing of extensive collection (70s), all in orig. cond. 395-1903.

SANSUI STEREO - rack system w/extras, excel. $500. Mark, Ext. 5350.

Car Pools

SAYVILLE - M. Rosen, Ext. 2382.

PATCHOGUE VAN POOL - 2 seats open, leave name and number. Ext. 4669.

BELLPORT - need ride to and from. Working hours 1 p.m. to 5 p.m. Santi, Ext. 4935.

Free

KITTENS - need a loving home. Ext. 3541.

BABY HAMSTERS - cute, adorable, ready 6/14/86. Ext. 7517.

RABBITS - four, complete with cage. Adam, Ext. 4561/4498.

Yard Sales

BELLPORT - 4 Bayview St. (west of N. Howell's Pt. Rd.), 6/21 from 10-4. Fabric to furniture.

BNL APT - # 3A, bikes, lamps, blankets, toys, household and baby items. Sat., June 21, 10-5.

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 Rent

ROCKY POINT - 3 bdrm. Cape, large rms., modern kitchen, 2 baths, f/p, carpeting, bsmt., near beach, avail. July 1. $750 plus utilities. 744-8659.

PORT JEFF. STATION - 3 bdrm. apt., garage, full bsmt., l/r, kitchen, avail. August 1, $750/mo plus utilities. Peter, Ext. 4094 or 751-6575 eves.

HILTON HEAD, S.C. - 2 bdrm Condo, sleeps six. Tennis, golf, beach & pool, taking fall rentals. $400/wk., $200/4 days. 585-9149.

STONY BROOK - Avail. September, large 4 bdrm., 2½ bath, center hall Colonial, all appliances, pool, central air, 2-car garage, near University and Mall. $1,500/month. 349-0077 eves.

MASTIC BEACH - Avail. late summer, 4 bdrm. Cape across the street from private beach, fenced yard. $750 month. 349-0077, eves.

EASTHAM - Cape Cod, 4 bdrm. home, comp. furn., 2 baths, washer/dryer, dishwasher, deck, short walk to beaches, weeks open July & Aug. 722-3865.

VERMONT - vacation, 3 bdrm. house, f/p, fully equipped, beautiful view, woodland trails, alpine slide, summer theater, boating, etc. family oriented, avail. weekly, 732-6499 after 6 p.m.

PORT JEFFERSON - Belle Terre, furnished, avail. June 26 - Aug. 6, 4 bdrms., 3 baths, l/r, d/r, fam. room, screened porch, large lower level, private wooded acre, principals only. Ext. 3791 or 928-7154.

WADING RIVER - fully furn., beautfiul location, 3 bdrms, newly remodeled, SWR schools, avail. 9/86-6/87. Ext. 3822 or 929-6527.

For Sale

RIDGE - 1.12 acre bldg. lot, 100+ ft. x 400+ ft., level, cleared, partly wooded. $47,900. 924-3236.

SAYVILLE - 3-4 bdrms, cedar ranch, brick front, 2 full baths, gar., cental a/c, eik, d/r, l/r, fam/rec rm. lg. patio w/outside hot & cold shower, appl., w/w, sidewalks, mint cond., walk to golf course and bay. $146,900. 589-2681.

MANORVILLE - ranch house, 3 bdrms, 2 baths, on 1½ acres, extras. 878-6076 after 6 p.m.

POCONOS - Penn Estates resort community, 1/3 corner acre, close to lake, clubhouse, pool. Asking $16,000. Ext. 5061.

Wanted

DEHUMIDIFIER - and closet, wooden or metal for clothes, reasonable. Walt, Ext. 2907 or 698-0576 after 6 p.m.

VIOLIN - for serious young student. Dave, 698-2256.

LAWN MOWER - must have bagger, good/excel. cond. only. Peter, Ext. 4094 or 751-6575 eves.

HOUSE OR APT. - to rent near Lab, 1 or 2 bdrm., immediate occupancy. Ext. 3359.

TRAINS - Lionel, American Flyer, accessories, any condition, brings good price. Carole, Ext. 3362 or 924-4097 eves.

BOAT - small, light weight (e.g., 12' aluminum) that can carry a 15 h.p. motor. Ext. 3401 or 744-6229.

TABLE SAW - 10", good cond., moderately priced. Dick, 878-1450.

In Appreciation

I would like to thank my friends and co-workers for being so kind to me during my stay in the hospital. Your thoughtfulness made all the difference.

— Frank Corbin

My family and I would like to thank everyone at BNL who expressed their condolences at the death of my wife Barbara.

— Henry F. Peters

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