BROOKHAVEN BULLETIN
Vol. 40 - No. 7 February 14, 1986
BROOKHAVEN NATIONAL LABORATORY

Spotlight on NSLS Research
X-Ray Scattering

The x-ray ring at the National Synchrotron Light Source (NSLS) is now fully operational. Twenty-four hours a day, it runs at its design energy of 2.52 GeV at a fill current of 150 milliamps. The x-ray ring provides users with beam approximately 24 days per month. Most significantly, the high brightness and stability of the beam allow state-of-the-art experiments to be performed at virtually every experimental station. At present, 300 users from 52 institutions are using 25 beam lines for experimentation. This article is the first in an occasional series discussing the research at the NSLS x-ray ring.

The photons from the x-ray ring of the National Synchrotron Light Source have for the first time revealed the order in a plane of a one-molecule thick organic layer. Results from a weak-diffraction experiment conducted by Guest Scientist Mati Bloch from Argonne National Laboratory, Associate Physicist Dean Chapman and their Exxon colleagues Steven Garoff and Peter Eisenberger on X-18A indicate that a single layer of molecules of what is known as a Langmuir-Blodgett film forms an almost perfect triangular lattice.

Monolayer Langmuir-Blodgett films are models for biological membranes, the thin tissue covering of living cells. "We perform the study of their structure using x-ray scattering not under ultra-high vacuum, but under ambient pressure and humidity," explains Bloch. "These conditions would not be feasible were the electron microscope or other instruments and techniques requiring ultra-high vacuum employed. We hope that using this film model under ambient conditions will add to the understanding of cell membranes in their natural environment."

Beam line X-18A is used to study two-dimensional atomic arrangements using diffuse-scattering techniques. Monolayer films, such as the soap-like Langmuir-Blodgett film, are deposited on flat supporting materials, in this case single-crystal silicon. The x-ray beam comes in at a very shallow angle to the silicon surface, penetrates the film and may reflect off the silicon substrate. By striking the film at this shallow angle, the x-rays see more of the surface and are diffracted in such a way that the molecular arrangement of the film can be determined.

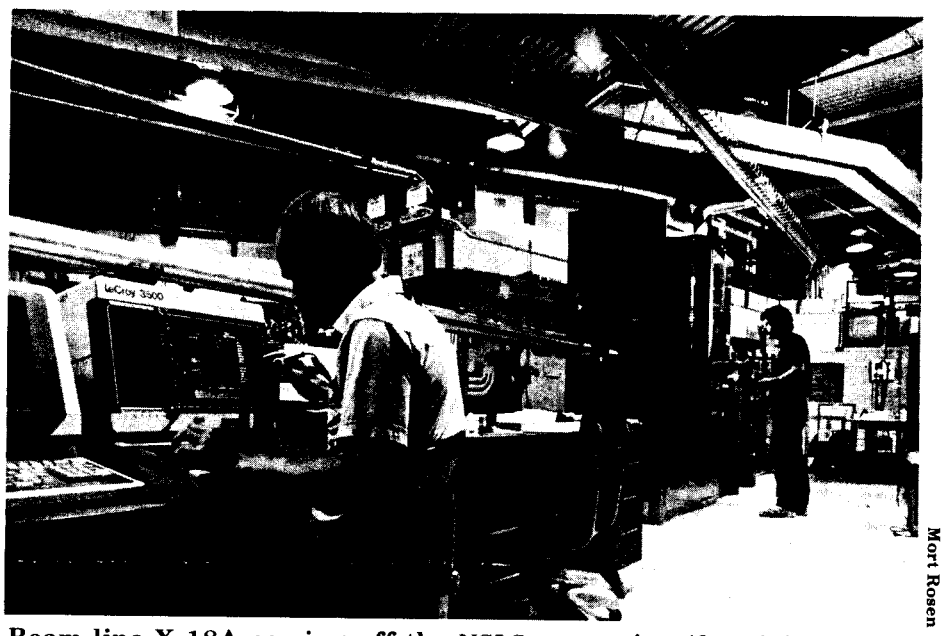
Essentially a film of soap, Langmuir-Blodgett film floats on the surface of water and flattens out to a single layer. Like a cell membrane, the monomolecular layer is composed of hydrocarbon chains with metal ions attached to one end. The metal ions, which are hydrophilic, sit in the water, while the hydrocarbons, which are hydrophobic, stick out of the water. When the single crystal silicon substrate is immersed and pulled out of the water, the monolayer sticks to the silicon's surface. By dipping the silicon in and out of the liquid, the monomolecular layers pile up on the substrate, and the number of layers deposited is always known.

"A monolayer Langmuir-Blodgett film is truly two-dimensional; it is not a three-dimensional crystal, which has periodic arrangement of atoms in space and produces a point-like dif-

(Continued on page 2)

Dean Chapman and Mati Bloch.

Peter Horton



Mort Rosen

Beam line X-18A coming off the NSLS x-ray ring (far right, behind shielding). The beam line goes through a monochromator (to the immediate left of Richard Greene, NSLS), which isolates 1.5-angstrom x-rays. Dean Chapman (foreground) sits before a multichannel analyzer.

BNL Lecture
Detector Trends

While semiconductor detectors are routinely used by the nuclear physics community, they have not played a large role in detectors for high energy physics. New applications in high energy physics, however, have spurred development of new types of position-sensitive silicon detectors that can achieve spatial resolution into the micron range.

Hobart Kraner, a senior physicist in the Instrumentation Division, will discuss this trend on Wednesday, February 19, at 4:30 p.m. in Berkner Hall, in a Brookhaven Lecture entitled "Semiconductor Detectors Revisited."

Producing silicon detectors has required learning many techniques from the semiconductor integrated circuit industry and adapting those techniques to a laboratory scale. For example:

- Adopting manufacturing methods that are compatible with detector-grade silicon.
- Processing silicon wafers using a technique called oxide passivation.
- Forming features on the silicon wafers by a method known as microlithography in photoresist.
- Using the techniques of ion implantation and anneal to form junctions in the wafers.

Work by others in Europe has shown that with high-quality oxidation, as well as careful design and preparation, diode structures should have leakage currents of less than one nanoampere for each segment 25 micrometers wide by one centimeter long. Such a segment is one "strip" of a conventional one-dimensional, position-sensitive detector, known as a strip detector.

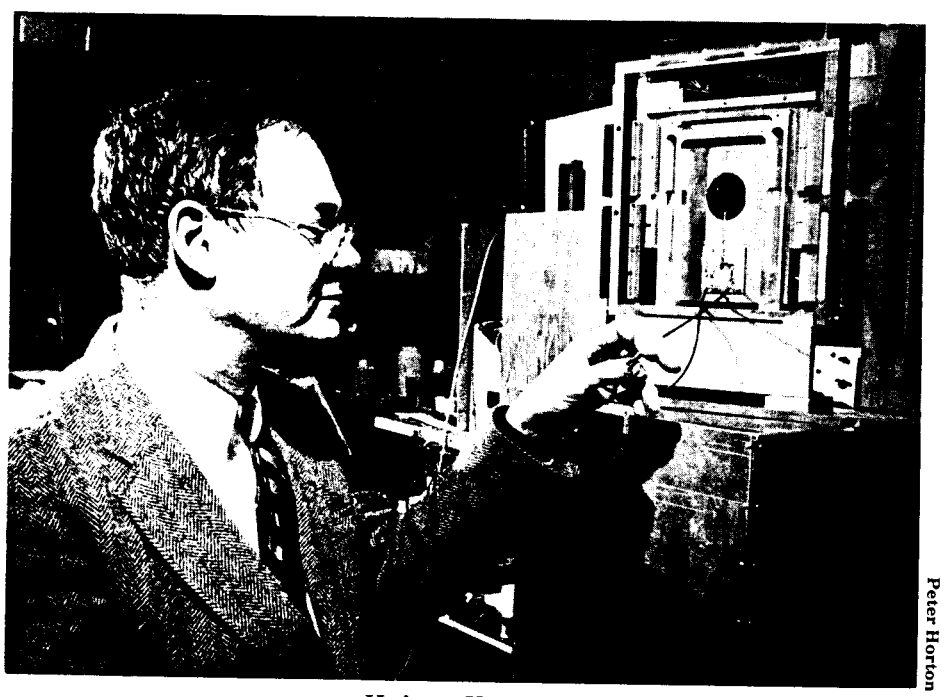
In addition to the problems of producing devices with hundreds of these active junction segments, Instrumentation has been concerned with readout problems associated with large numbers of electronic channels accumulating data.

Configurations of strip detectors based on some intervening "floating strips," rather than reading out data from every strip, have been used sucessfully to reduce the number of readout channels, without affecting the attainable spatial resolution of a detector of a given strip pitch. Newer devices under development provide spatial information by lateral-charge motion.

Some of this technology is already being applied in high energy physics. The NA 34 experiment at CERN, for example, uses silicon detectors from Brookhaven for both cracking and triggering events from the target. And many other applications appear possible, such as position-sensitive x-ray detection, which may have uses at the National Synchrotron Light Source.

After receiving a Ph.D. in physics from M.I.T., in 1959, Kraner remained as a research associate and it was then he first became interested in semiconductor detectors. In January 1966 he left M.I.T. to join the staff of Brookhaven's Instrumentation Division and since that time has produced and developed semiconductor detectors of many types. Since 1974, Kraner also has been active in applying nuclear and atomic techniques to analytical problems in various fields, including materials science and the life sciences.

All those interested in getting together after the lecture are invited to go with the lecturer to a restaurant off site. If you want to be part of this group, call George Rabinowitz, Ext. 7637.



Peter Horton

Hobart Kraner

Brookhaven House Wins Acclaim

In the tenth anniversary issue of Solar Age, a monthly magazine devoted to solar technology, the Brookhaven House was awarded the accolade of Most Influential House, along with three other innovative, energy-conserving homes.

The Brookhaven House was built at BNL to demonstrate that passive solar features (in this case a modified Trombe wall and sunspace), thermal-mass walls and superinsulation can be combined to cut heating costs in a conventional single family home. Designed in a traditional regional style, built without complex technology and completed in September 1980, this two-story, 2,000-square-foot home can be heated for about one-third the annual energy costs of typical modern homes.

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-3091
BNL-NUREG-51630
Vol. 6
Review of Waste Package Verification Tests. Semiannual Report Covering the Period October 1984 - March 1985. P. Soo, Editor

NUREG/CR-3914
BNL-NUREG-51807
Pump and Valve Qualification Review Guide. B.E. Miller

BNL-51832
Potential Health and Safety Hazards Associated with the Production of Cadmium, Telluride, Copper Indium Diselenide, and Zinc Phosphide Photovoltaic Cells. P.D. Moskowitz, et al.

BNL-51854
Characterization of Gas Hazards in the Manufacture of α-Si Photovoltaic Cells. V.M. Fthenakis, et al.

NUREG/CR-4392
BNL-NUREG-51926
Measures of Safeguards Risk Employing PRA (MOSREP): A Methodology for Estimating Risk Impacts of Safeguards Measures. W. Horton, et al.

NUREG/CR-2331
BNL-NUREG-51454
Vol. 5 #1
Safety Research Programs Sponsored by Office of Nuclear Regulatory Research. Quarterly Progress Report Jan. 1 - Mar. 31, 1985. Compiled by A.J. Weiss

NUREG/CR-3837
BNL-NUREG-51786
Multiple-Sequential Failure Model: Evaluation of and Procedures for Human Error Dependency. P.K. Samanta, et al.

BNL-51810
Evaluation of the Low Temperature Heat Exchanger Fouling Problem. Results of Studies on Soot Production and Condensing System Fouling. T. Butcher, et al.

NUREG/CR-4016
BNL-NUREG-51828
Vol. 1
Application of SLIM-MAUD: A Test of an Interactive Computer-Based Method for Organizing Expert Assessment of Human Performance and Reliability. Vol. 1: Main Report. E.A. Rosa, et al.

NUREG/CR-4050
BNL-NUREG-51836
A Review of the Shoreham Nuclear Power Station Probabilistic Risk Assessment. Internal Events and Core Damage Frequency. D. Ilberg, et al.

NUREG/CR-4103
BNL-NUREG-51849
Uses of Human Reliability Analysis Probabilistic Risk Assessment Results to Resolve Personnel Performance Issues that Could Affect Safety. J.N. O'Brien, et al.

NUREG/CR-4364
BNL-NUREG-51912
Management Perceptions of the Health Physics Technician Job. T.J. Mazour, et al.

NUREG/CR-4381
BNL-NUREG-51918
Summary of Comparative Assessment of U.S. and Foreign Nuclear Power Plant Dose Experience. J.W. Baum, et al.

BNL-51922
Detection of Organic Acids in Atmospheric Precipitation. W.A. Hoffman Jr., et al.

BNL-51942
How the Flip Target Behaves in Four-Dimensional Space. A. Antillon, et al.

Social Scientist To Speak Here

Manning Marable, syndicated political columnist and teacher, will speak on apartheid on Thursday, February 20 at Berkner Hall. His talk, "Who Profits from Apartheid?" will begin at 6 p.m. The lecture is free and open to the public.

Marable is one of the most widely read social scientists in America. His column, "Along the Color Line," appears in over 140 newspapers internationally and, in addition to many articles and reviews, he has authored six books. He is currently at work on the second volume of his "Black American Politics: Race, Politics and Power."

Marable maintains a full-time teaching schedule as professor of political sociology and director of the Africana and Hispanic Studies Program at Colgate University. He has also taught at Fisk University, Cornell University, University of San Francisco, Tuskegee Institute and Smith College. In January 1982 and January 1984 he held the Luce Distinguished Visiting Professorship in Political Science at Williams College. He holds a Ph.D. in American History from the University of Maryland and an M.A. from the University of Wisconsin.

Marable is active in politics and is an advisor to members of the Congressional Black Caucus.

Manning Marable

The lecture is sponsored by the Afro-American Culture Club and is in celebration of Black History Month.

Saturday Students Study Chemistry

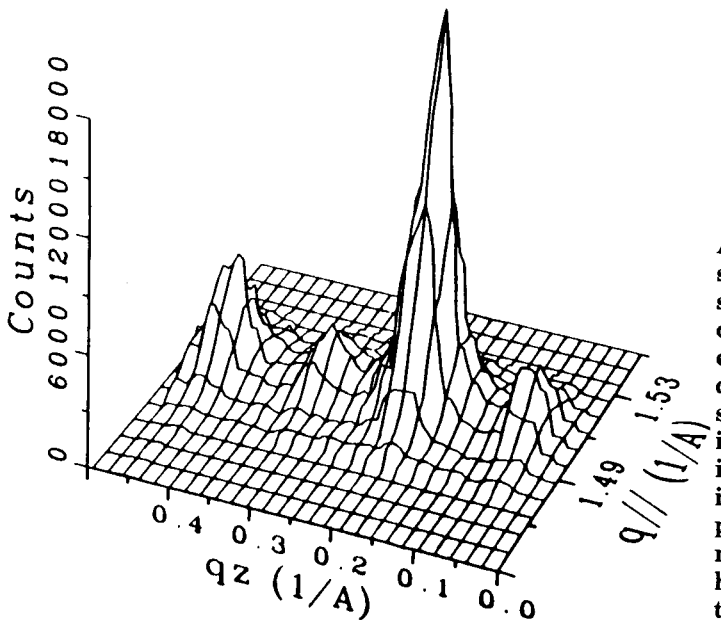
For the next four months, twenty-four senior high school students from Suffolk County will be spending their Saturday mornings studying modern chemistry at Brookhaven.

The Saturday morning classes are being held to inform gifted high school chemistry students about recent developments in chemistry and to encourage them to consider careers in science. Between now and June 7, the students will explore topics such as laser photochemistry, chemical kinetics, radiopharmaceuticals and electrochemistry.

Over 30 Brookhaven staff scientists have volunteered their time to teach the classes. Because these scientists are actively engaged in research, much of the experimental and theoretical material they present to the students is not available in textbooks.

Class time will be spent in lectures, discussions, demonstrations, tours and experiments. No tests or grades are given and the Laboratory does not offer academic credit for the program, but because of the high academic level of these classes, many of the high schools may give credit to those students who participate.

The program is sponsored by the U.S. Department of Energy.



A three-dimensional, reciprocal-space slice of 99 organic monolayers artificially deposited on a silicon wafer. The intensity peaks indicate that the independently deposited two-dimensional layers have correlated their positions.

NSLS (Cont'd)

fraction pattern when bombarded with x-rays," explains Chapman. "The monomolecular layer is periodically arranged within a plane and diffracts x-rays along lines. Where you find these lines determines the molecular arrangement in the plane. The line varies in density, and the density is what tells you about the arrangement of the molecules or atoms perpendicular to the plane."

When many layers are deposited, Bloch finds that the simple triangular arrangement of each monomolecular layer is distorted and a rhombic lattice is created. By adding layers to his film one at a time and controlling the total number of layers, he is studying phase transitions in two dimensions and the transition from two to three dimensions.

"No one expected any correlation between layers and these materials to have three-dimensional structure, but at 99 layers, the system begins to look like a three-dimensional crystal," Chapman says. "There is a lot of physics to investigate as it goes from two to three dimensions and evolves from a plane into a crystal."

— Marsha Belford

Benefit Statements Mailed Next Week

Next week, all regular and eligible part-time employees will receive an annual statement of their present insurance and retirement benefits. The statement will be sent to their home addresses.

The purpose of this statement is to provide employees and their families with a better understanding of their AUI benefits and to insure that their insurance coverages and beneficiaries are correct and up-to-date.

The statement reflects each individual's various group insurance coverages (premiums, beneficiaries, disability benefits), and AUI and employee contributions to the retirement plan.

PC Users Meeting

The PC/Workstations Group will meet on Tuesday, February 18, at 10 a.m. in the Applied Mathematics Department Seminar Room. IBM will give a presentation on the RT, its new 32-bit personal computer, which is known as a reduced instruction set computer.

It's a fact: A big building boom took place at Camp Upton during World War II, from 1940-45, when 25.5% of the Lab's present buildings were erected. Another surge occurred in the 1960's when 23% were built, and the 1980's have already seen 22% of our buildings go up. As for the balance, 1% were built before WWII, 7% date from 1946-1949, 7.5% went up in the 1950's and 14% were built in the 1970's.

HMO Enrollment

A representative of the Blue Cross and Blue Shield Health Maintenance Organization will be at Berkner Hall on Wednesday, February 19, between 11:30 a.m. and 1:30 p.m., to answer any questions about the BC/BS Community Health Plan of Suffolk. Employees are reminded that the deadline for enrollment in the HMO is February 28, with coverage effective March 1, 1986 through February 28, 1987. Those wishing to enroll in the Plan must send their completed applications to Personnel Services, Bldg. 185 (Ext. 2877).

Inside Info

Seymour Baron and **William Wilhelm** will be honored during National Engineers Week (February 16-22) by the Long Island Metropolitan Area's Engineering Societies. They will receive an award for contributions to engineering technology. "Turning ideas into reality" is the theme of this year's National Engineers Week. Baron is Associate Director for Applied Programs and Wilhelm is a project engineer in the Department of Applied Science who developed a strong, thin film solar collector. The awards will be presented at a luncheon on February 21.

NATIONAL ENGINEERS WEEK
Feb. 16-22, 1986
ENGINEERS: TURNING IDEAS INTO REALITY

BROOKHAVEN BULLETIN

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To Your Health

The fourth Health Promotion Seminar, "The Diabetic Diet: A Healthy Plan for Everyone," will be held on Tuesday, February 18, in Room B, Berkner Hall. The speaker will be Carol Molfetta, a registered dietician from Greenlawn in private practice. She will outline the types and causes of diabetes, and recommend a healthy eating plan for diabetics — which turns out to be a healthy diet for all.

PSI News

The PSI Upton Chapter will meet on Wednesday, February 19, in Berkner Hall, Room C. Dinner will be from 5 to 6 p.m. and is available at the Cafeteria. The regular meeting begins at 6 p.m. and features a talk "From WPs to PCs: Expanding Your World," by Kurt Fuchel, manager of the Technical Information and Support Division, Applied Mathematics Department.

Note to Diners

The Center Club will be closed Sunday, February 16, the day preceding President's Day, and will reopen on Monday, February 17, at 5 p.m. The Cafeteria will be open from 9 a.m. until 2 p.m. on Saturday through Monday, February 15 to 17. The vended food service in Bldg. 912 will be in operation continously.

Cafeteria Menu

Week of February 17

Monday, February 17

Cream of chicken soup	(cup)	.65
	(bowl)	.85
Chicken finger basket		2.45
Fried seafood platter w/choice of 1 veg.		2.50
Hot Deli: Meatloaf sandwich	(bread)	2.25
	(roll)	2.40

To commemorate Black History Month, the cafeteria will present a special buffet every Monday in February.

Tuesday, February 18

Turkey noodle soup	(cup)	.65
	(bowl)	.85
Braised short ribs of beef w/choice of 1 veg.		2.45
Seafood Newburg over rice		2.45
Hot Deli: Italian sausage hero		2.45

Wednesday, February 19

Rhode Island broth chowder	(cup)	.65
	(bowl)	.85
Broiled filet of sole w/choice of 1 veg.		2.50
French bread pizza		1.65
Hot Deli: Roast beef garden club		2.45

Thursday, February 20

Chicken gumbo	(cup)	.65
	(bowl)	.85
Salisbury steak w/choice of 1 veg.		2.45
Stuffed filet of turbot w/choice of 1 veg.		2,45
Hot Deli: Ham grinder sandwich		2.45

Friday, February 21

Old-fashioned Dutch green bean soup	(cup)	.65
	(bowl)	.85
Broiled flank steak w/choice of 1 veg.		2.45
Ham and potato au gratin w/choice of 1 veg.		2.45
Hot Deli: Pastrami	(bread)	2.30
	(roll)	2.45

Swim Club

The Swim Club will meet for a graduated workout on Thursday, February 20 at 5:15 p.m. at the BNL pool. All those who can swim two laps of the pool without stopping using the crawl stroke are invited to attend. The Swim Team will hold a relay and medley relay practice on Thursday, February 27, at 5:30 p.m. at the pool. For further information, call Marsha Belford, Ext. 3327, or Mark Catan, Ext. 5060.

Theater Group

The Theater Group will meet in the North Room of the Brookhaven Center on Wednesday, February 19. Socializing will begin at 7:30 p.m. and the business meeting at 8 p.m.

The program includes a series of short readings from member's favorite selections. The Laboratory community is invited to attend. Anyone wishing to suggest reading material or needing further information should contact Karl Swyler, Ext. 7171.

Basketball

Game 1

Runaways - 68		Longshots - 62	
J. Shephard	10	J. Garrison	4
T. James	8	B. Johnson	4
G. Smith	4	L. Walcott	10
R. Moran	12	M. Colon	22
J. Ripka	6	E. Taylor	2
J. Desmond	28	A. Anderson	4
		R. Church	5
		R. Seymore	11

Game 2

Hollywood - 61		Coasters - 54	
G. Mack	11	R. Doty	4
D. Nordstrom	16	B. Allen	25
B. Gunther	6	P. Ratzke	8
R. Domenech	6	R. Rawley	2
R. Kowalski	2	G. Griggs	9
B. Jasper	2	M. Williams	4
K. Rogers	2	L. Snead	2
E. Meier	16		

Bowling

Pink League

High games were bowled by Sandy Asselta 209, Sharon Smith 204, Sharon Zuhoski 184, Donna Cunningham 184.

Red/Green League

K. Asselta had games of 224/205, F. Powers 216, J. Morris 214, E. Sperry IV 211/208, H. Arnesen 209, A. Borrelli 204.

Purple League

Linda Wasson had a triplicate of 139, Betty Jellett 211, Bob Jones 211/208, Ed Meier 240, Bob Barberich 222/610 scratch, Maria Apelskog 206/186, Ken Asselta 201, Sandy Asselta 180, Mary Grace Meier 178, Pat Oster 178.

White League

Jim Petro had games of 259/209/649 scratch, Ed Sperry IV 251/606 scratch, Pete Stelmaschuk 220/215/609 scratch, Fern Coyle 208, Ken Riker 207, Karen Vogel 205, Jim Vogel 203.

Scotch-Doubles Tournament

Entry forms are still available at the BERA Sales Office for the Scotch Doubles scheduled for Sunday, March 2, at Port Jeff Bowl.

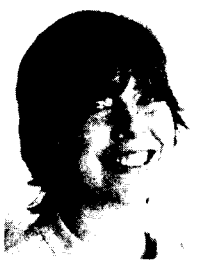
Volleyball

	W-L
League I	
Dinkers	32-3
Up Fagrabs	24-11
Bumpers	18-17
X-Rayted	15-20
Net Results	10-25
TNT	6-29
League II	
Phoubars	35-0
Nuts & Bolts	22-13
Fossils	17-18
Cannonballs	14-21
Chungas Revenge	14-21
Upton-Ups	3-32
League III	
Print-outs	26-13
Screwballs	22-17
Buddys	22-17
Foul-Ups II	22-17
Light 'n Lively	14-25
Couples	11-28

Speaking Out

Reporter: Anita Cohen
Photographer: Peter Horton

Is Valentine's Day a special day for you? What's the real meaning of Valentine's Day? As these employees' responses show, it means different things to different people. To the Bulletin staff it means a chance to wish a happy Valentine's Day to all our valentines — our readers.

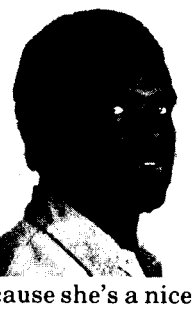


Paula Appling (DAS) — Valentine's Day is very special. It's a time for cherishing your sweetie, and that's more than enough. Sweeties should have their special day because they're special people.

♥

Mike Schwarz (NSLS) — I think Valentine's day is when you can express your love for your wife or your girlfriend or whatever. I'll do that with my wife with some flowers and a big hug and a kiss. (P.S. to Barbara —love from Punk.)

♥



Clarence Wilkins (Plant Engineering) — It really is nice for both you and your sweetheart. I will probably get her a candy heart and an ankle bracelet for Valentine's Day. I want it to be a nice day for her because she's a nice person.

♥

Milind Diwan (Physics) — I suppose it's a nice way to express your appreciation and affection. I mean you should do it every day, but it's a nice thing to have one day reserved.

♥

Ellen Weider (S&EP) — My husband and I always go out to dinner and give little gifts. It's a day that's made special because it's so romantic, and you take time out to keep it that way because not every day is a romantic day. Your anniversary only comes once a year, so it's another day to celebrate.

♥

Hoydoo You (Physics) — I was brought up in a cultural background that does not have Valentine's Day [Korea]. But my wife has been living in America longer than I have, and she seems to care about it. But still, I don't have any feeling for Valentine's Day, so I usually ignore it. I don't seriously think she minds because we have several other occasions, so this one is no big deal.

♥

Bob Jansson (MIS) — I usually buy my wife flowers. It's a nice thing to have once a year. It makes you think about the times you may take your loved ones for granted.

♥

Sharon Moore (DNE) — I consider it a special day, and I enjoy sending cards out to my family and other special people. I will probably send flowers to my mother and father. No candy this year though because everyone's on a diet.

♥

Leonard Newman (DAS) — I don't think it's particularly special. I feel in some sense trapped by the commercialization, but I happily celebrate it gracefully anyway.

♥

Phil Warner (AGS) — I like Valentine's Day; I think it's a very sweet day. I'm not married, but I have several favorites that I send valentines to. I always drop a note to my mother, of course, and to some favorite aunts.

♥

Arrivals & Departures

Arrivals

Michael T. Foran..... Sfgds & Security

Departures

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

Michael B. Coulthart ..... Biology
Gloria A. Jackson ..... Biology
Gary E. McGovern ..... Biology

It's a fact: Nine varieties of shellfish can be harvested from Long Island waters. According to the Long Island Farm Bureau, these nine are bay scallops, clams, lobsters, mussels, oysters, scungilli (conch), sea scallops, soft clams and surf clams.

Generator Notice

Information and order forms for generator options will be available at the BERA Sales Office in Berkner Hall beginning Wednesday, February 19. There are five generator options: a muffler, a multi-fuel operation kit, an electric start kit, an extended run oil kit and an auxiliary fuel tank.

Also, plugs are still available at the Sales Office. If you haven't done so, bring your receipt and pick up your plug as soon as possible.

The BERA Sales Office is open from 9 a.m. to 2 p.m., weekdays.

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

OPEN RECRUITMENT - Opportunities for Laboratory employees and outside applicants.

2400. DRAFTER POSITION - Requires AAS or equivalent experience. Under general supervision will prepare detail and assembly drawings from a design layout, following accepted drafting practices regarding arrangement, line work and dimensioning. May be required to draw schematic diagrams. Must have a thorough knowledge of standard drawing projections and a working knowledge of mechanical and/or electrical drafting procedures. Physics Department.

2401. DESIGNER POSITION - Requires BS plus substantial experience or the equivalent experience performing broad professional-level design functions. Responsible for the design and engineering of complete UHV beamlines. Will provide guidance to the scientific staff in areas of manufacturing, procurement, testing and construction of sophisticated experimental equipment. Will also direct and coordinate the efforts of other design personnel. Physics Department.

Autos & Auto Supplies

76 AMC HORNET - hatchback, a/t, p/b, p/s, snow tires, good cond., $850. F. Miller, Ext. 5317 or 589-5980.

77 OLDS CUTLASS - a/t, bucket seats, console, (5) radials, very good cond., 72k mi., $2,000 firm. 286-1214.

75 SAAB LE - excel. in/out, new muffler, am/fm cass., GLE int., radials, FWD, $1,600. Damian, 924-8686 or 744-5079 eves.

76 BUICK SKYLARK - 4 spd., 2 dr., 100k mi., new clutch, distributor, tires, brakes, excel. cond., $700. Ext. 4072.

80 AMC SPIRIT - squareback, orig. owner, very good cond., stick shift, extra wheels w/snows, 65k mi., $2,300. 286-3374.

68 MUSTANG - 8 cyl., 289 c.i. eng., trans. good, good running cond., needs floor, $650. Joe, 821-3290.

CHEVY TRUCK PARTS - front bumper, $35; rear step bumper, $75; st./st. mirrors, $40 pr.; full wheel discs, $30 set. Tony, Ext. 2462.

78 FORD FAIRMONT - avail. late February, $1,950. Ext. 3755 or 3222.

81 VW JETTA DIESEL - 4 dr., 5 spd., 44+ mpg, a/c, am/fm stereo tape, silv. met./blue int., LTD 75k hwy. mi., excel. cond., $4,500. Lloyd, Ext. 3381 or 286-1024.

80 MAZDA GLC - hatchback, 2 dr., 4 spd., am/fm cass., many new parts, good cond., 96k mi., $890. Ext. 3606.

80 CHEVY CITATION - Sport Coupe II, very low mi., new eng., m/t, a/c, p/s, p/b, 4 spkrs., extras, $2,850. Marv, Ext. 3440.

74 NOVA - 59k mi., eng. good, body needs work, $200. 924-6521 after 5 p.m.

75 CHEVY MONZA - 2 dr., a/t, 85k mi., hatchback, sunroof, am/fm cass., (2) snow tires, (3) spare tires, $580. Ext. 2823 or 3187.

74 CAPRI - 2 dr., 4 spd., 2000 cc, rebuilt eng., brown w/tan int., $700. Bill, 585-2563 eves.

74 F150 FORD PICKUP - w/cap, 300 C.I., std., (6) new tires, runs well, little rust. Joe, 281-5988.

79 PLYMOUTH HORIZON - $1,900 neg. Ext. 3755 or 3222.

78 MUSTANG - a/t, 4 cyl. reb. eng., 82k mi., runs well, $1,300. Maria, Ext. 4570.

79 FORD PINTO - a/t, p/s, a/c, $1,400. Ext. 4846 or 363-6940 after 5 p.m.

77 TOYOTA CELICA GT - hatchback, good cond.; KYB gas, shocks and struts; louver; Pirelli tires; maintained. Angela, Ext. 3571.

70 OLDS VISTA CRUISER - 9 pass., sw, 350 eng., a/t, am/fm, 8 track, a/c, extra 14" & 15" rims, $400. Bob, 286-3280 eves.

75 FORD VAN - body redone, new tires, inside carpeted, w/folding bed, excel. cond., $3,500. Tony, Ext. 4605.

81 FORD ESCORT L - sw, 4 spd., am/fm cass., sunroof, mint cond. Ext. 3293 or 751-7408 after 3 p.m.

74 SUBURBAN - 350 V8, 4 spd., class 3 trailer hitch, runs well, 78k mi., $1,000 neg. Mike, Ext. 4605 or 281-5456.

81 MERCURY LYNX - 4 spd., excel. running and int., $1,850. 724-7354.

GREMLIN PARTS - brake drums, 2 front, 2 rear, $10; radiator, no leaks, $20. Al, Ext. 2043.

80 FORD FIESTA - 2 dr., 4 spd. stick, good cond., $1,500. 669-8710 eves.

74 PLYMOUTH - runs well, a/c, p/s, p/b, new battery, good tires, $470. Michael, Ext. 4707 or 4494.

74 CORVETTE STINGRAY - full power, a/c, all stock, excel. cond., $7,500. Ext. 3313.

75 GRAND LE MANS - 350 eng., snow tires, a/c, 115k mi. David Citrin, Ext. 3870 or 293-7561.

77 OSSA 350 - helmet, boots, gloves, like new, $550. Tony, Ext. 4605.

70 CHEVY MONTE CARLO - mech. sound, very rel., $400 firm. Scott, Ext. 4581 or 727-1429 after 5 p.m.

81 CHEVY CITATION - 4 spd., 4 dr., sedan, new clutch, $2,450. 724-7354.

RIMS - great for snow tires, 14" for Chrysler, Plymouth, Dodge, also 15" for Ford, $10 ea. Frank, Ext. 4584 or 277-0464.

79 TOYOTA CELICA GT - hatchback, sunroof, 5 spd., am/fm/tape, 75k mi., excel. cond., $3,300. 567-8609.

70 NOVA - a/t, new brakes, exhaust, battery, new red paint, $900. 331-2646 after 6 p.m.

72 MUSTANG - 302 CID, a/t, no reverse, high mi. 331-9887.

75 FORD LTD - 4 dr., a/t, a/c, p/s, p/b, am/fm, mech. good, excel. body, $1,200; 75 Dodge Dart, 2 dr., p/s, p/b, am/fm cassette, 85k mi., $600 neg. 286-0601.

78 PINTO WAGON - body excel., new tires, battery, $800. Joe, Ext. 4661 or 878-2203.

81 PLYMOUTH HORIZON - 4 dr., a/t, a/c, p/rack & pinion steering, 50k mi., mint cond. $2,600. 395-1225 days or 399-4256 eves.

79 FORD CAMPER VAN - loaded, sleeps 4, raised roof, capt's chairs, $5,900. 289-5828 eves.

73 CHEVY MONTE CARLO - a/t, p/b, p/s, a/c, body good cond., needs a little work, $200. Tony, 732-6838.

Boats & Marine Supplies

PEARSON 26' - 1972, 15 HP eng., 5 sail, DF. Ext. 3921 or 689-9214.

MOORING - 300 lb., complete w/float, shackles, 40 ft. chain, used 1 season. 732-6838.

Miscellaneous

LA MACHINE II - new, model V588, lg. bowl, attach., $30. Al, Ext. 4615.

SKI BOOTS - Raichle, rear entry, size 10-1/2. Damian, 924-8686 or 744-5079 eves.

COLOR MONITOR - Sanyo RGB Composite, in orig. box, $225. Bill, Ext. 2807 or 281-0557.

CONGA'S - Latin Percussion L/P, w/stand, excel. cond., $325. Tony, Ext. 4605.

BATHROOM SINK - 18"x20", beige ceramic, $20. Les, Ext. 2920.

COCKTAIL TABLE - Basset, hard rock marble, 56"x21", 2-drawers, must see, $125. Al, Ext. 4615 or 751-8462 after 5 p.m.

STORM DOORS - alum., 35"x79" & 31"x80", $5 ea.; water bed w/heater, $75. 286-1712.

FILE CABINET - wooden, 4-drawer, reasonable. 878-0874.

BOY'S SHOES - black leather, Stride Rite, size 9, worn once, orig. $35, sell for $10. Cheryll, Ext. 7716.

TV - b/w, $20; baby stroller, $5; steam iron, $15. Ext 3963 or 928-0516 after 6 p.m.

KITCHEN UTENSILS - house plants; full size mattress; 10 gal. fish tank. Ext. 3755.

ASST. NURSE UNIFORM - BOCES II, size 16, like new, $30. Ext. 2314 or 567-5131.

TYPEWRITER - Smith Corona, manual, portable, w/molded plastic carrying case, perfect cond., $90. 286-8664.

BALDWIN SPINNET PIANO - walnut, almost new, w/bench, $1,200. 744-5964.

SKIIS - Yamaha 190's, w/Tyrolia bindings. Dave, Ext. 7921.

WINDOWS - (2), double wide, double hung, 48"x68", $50 ea.; corner TV cabinet, pine, excel. cond., $70. Sue, Ext. 2050.

HOSPITAL BED - excel. cond., $800 neg. 281-2443 after 5 p.m.

RADIAL ARM SAW - Craftsman, 10", 2.5 HP, 120-240 V, $150, access. avail. 744-4611 after 6 p.m.

COCKATOOS - Muluccan and Goffins, both w/brass cage. 924-3008.

HOCKEY ICE SKATES - sizes 9 & 11; woman's figure skates, size 7, $9 ea. Ext. 3591 or 298-9528.

BLOW DRYER - professional dog groomer, $75. Ext. 2314 or 567-5131.

PIANO - Sohmer, upright, mahogany finish, $800. Bill or Nancy, 585-2563 eves.

COVER PROTECTION - for Atari 400, $4; tele auto converter, new, Pentax screw mount, $8. Susan, Ext. 4267.

FULL SIZE BED - $100; ski & hiking boots, size 7, like new, $20; pot belly stove; drop leaf table, make offer. Ext. 3578 or 878-4864.

PANASONIC KXP-1090 PRINTER - for IBM-PC, full Epson compatible, in box, $150. Ext. 4524.

WEIGHT LIFTING EQUIPMENT - custom built, no frills. Tony or Bob, Ext. 4605.

COLOR MONITOR - Amdec I, Composite video, make offer. Cumming, Ext. 4347.

MOVING SALE - 103 Hilary St., W. Sayville, 10 a.m.-3 p.m., Sat., Sun., Feb. 15 & 16, riding mower, chests, am/fm stereo, a little of everything. Clarence, Ext. 3357.

PEKINGESE - m/f, tiny, shots. trained, all colors. 654-1731 after 6 p.m.

DIAMOND RINGS - .53 ct., solitaire, $1,100; .25 ct., $350; 6-diamond wedding band, $350. 286-3211.

PIANO - Yamaha, upright style II P2FS/E, ebony finish w/bench, 1973, excel. cond., $2,300. Ext. 4853 after 1 p.m.

BUNK BED SET - w/3 drawer unit, heavy pine, showroom cond., $400; child's dresser, w/built-in closet, good cond., $50. Bob, 286-3280 eves.

NECKLACE - 24 in., 14 kt. gold., heavy bevelled herringbone chain, $200. June, Ext. 4692 or 878-2040 after 6 p.m.

TELEPHONE - Odyssey I, 10.1" f4.5 includes Televue, 32 mm Plossel and 2.5 Barlow, 2" spotter Scope, Telrad and Sky Atlas, $475. Ext. 4524.

DRYER - elec., ideal for apt., excel. cond., $100. Victor, Ext. 2395.

HANGING LIGHTS - (1) antique brass, $35; (1) chrome and glass, $25; antique brass fireplace door, w/blower and matching tools, $75. 821-3762.

MULTI-STAGE JET PUMP - Sears, deluxe, 1 HP, 115/230 V, complete less tank, good cond., $100. Walter, 878-8967 after 4:30 p.m.

KEYBOARD SHELF - will fit under and support any terminal, $25. Ext. 4524.

COMMODORE 64 - w/disk drive, Okimate printer, modem, fastload cartridge, 100 disks, $495. 744-6148 after 4 p.m.

FIREWOOD - split, seasoned oak, 4'x16'x20-22" pieces, $110 del. 732-2849.

SCREEN ROOM - 12'x15', copper clad, w/door and lights, ideal for R.F. work, reas. Victor, Ext. 2395.

SPRING COAT - girl's, navy blue, size 4T, excel. cond., $12. 744-9677.

STROLLER - twin, good cond., $40. 567-9025.

WESTERN PLOW - 7 ft., w/motor and pump, $525. Joe, 821-3290.

WOOD STOVE - Upland, holds 2 ft. logs, w/stove pipe, $250. 878-4498.

WEIGHT BENCH - professional, 3 position incline, dip and squat stations, scott curl, welded steel. 878-2233 eves.

DIAMOND HEART PENDANT - 3/4 carat, $600. Barbara, Ext. 3508.

DRAPES - window/wall, 30"W x 8'L, 10 panels, tapestry, elegant, insulating, w/traverse rods, $100. Ext. 2366.

KEROSENE HEATER - Corona, 17,600 BTU, $85; elect. heat, $18; oak swivel desk chair, $50. 331-1583.

MEN'S SKI BOOTS - Caber, size 12, $100, size 8-1/2, $60. Annamarie, Ext. 2352 or 473-9016.

35 GAL. FISH TANK - w/stand, $20. 732-6838.

GENERATORS - (2) 4 KW, elect. start, brand new; transfer switches for motor generators. Medina, Ext. 7632 or 654-3472.

STROLLER - excel. cond. 689-9234.

Free

ELECTRIC RANGE - 30 inch, double oven, good cond., everything works. Ext. 2180 or 286-3937.

Car Pools

EXIT 22/26 LIE - needs two drivers, 8:30-5:00. Vladimir, Ext. 5261.

MATTITUCK - driver needed to fill car pool, 8:30 a.m. to 5 p.m. Ext. 3992.

Lost & Found

LOST - Woman's Waltham wristwatch, in gym or woman's locker room, Mon. 2/3. Adrienne, Bldg. 184B.

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

WADING RIVER - 2 bdrm. house, waterview, big yard, close to all, gas heat, $500 mo. + util. 924-6624.

CORAM - new Bretton Woods condo., 2 bdrms., 2 baths, l/r, d/r, eik, w/w, 5 appl., golf, tennis, clubhouse, $750 mo. + util., 1 mo. sec., no pets. 289-0413.

FARMINGVILLE - furn. 1 bdrm. apt., for single person, $425 + security, avail. March 1. 736-3384 after 6 p.m.

MEDFORD - Birchwood Condo, 3 bdrms., 1-1/2 baths, a/c, w/w, all appl., cable, secluded loc., walk to clubhouse, tennis, swimming, golf, 15 min. to Lab. Ext. 3921 or 698-3216 eves.

WHITE MOUNTAINS, NH - ski Loon, 3 bdrms., 2 baths, deluxe condo., f/p, color tv, w/HBO, clubhouse, jacuzzi, 1/4 mile slopes, free shuttle, easy drive I93, 3 nights, $385; weekly, $600. (914) 232-4039.

E. PATCHOGUE - 3 bdrm. apt., 2 baths, spacious, immac., no pets, S. of South Country Rd., avail. immed., $700 + util. 475-8440.

BELLPORT - 2 bdrms., l/r, eik, bath, 1 fam. house, no pets, $550 mo. + util. 286-2005 after 12 a.m.

N. PATCHOGUE - pvt., 3 bdrm. apt., kitchen, l/r, fenced-in yard, 15 min. to Lab., no pets, $750, + 3/4 util. Carol, 289-3917.

For Sale

PORT CHARLOTTE, FL - W. Coast, 120'x125' property, high, dryland, walking distance to Peace River w/direct access to Gulf, $15,000. 732-8216 after 5 p.m.

VERO BEACH, FL - condo., on golf course, 2 bdrms., 2 baths, Florida rm., mint cond., many extras, $64,000. 698-5046 after 7 p.m.

CATSKILLS - 2 bdrm. house on 1 acre, next to stream on town maintained road, low taxes, great skiing, hunting and summer, $29,500. 736-0651 nights and weekends.

GILBERTSVILLE - Ostego County, 37+ acres, all hardwood on pvt. dirt road, excel. deer hunting in shotgun area, lots of small game, $24,000. Walt, Ext. 3848 or 281-9299 after 6 p.m.

OAKDALE - Idle Hour section near water, 2-story Tudor, 4 bdrms., 2 baths, garage, attached full apt., w/pvt. ent., located on 1/2 acre on dead end street, $210,000. 363-6940 eves.

Wanted

PORT-A-CRIB - bassinet, or cradle, in excel. cond. 286-1214 or 673-4738.

RIMS - Chevy, 15x7, 5-bolt. Jay, Ext. 4994.

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

BABYSITTER - on site, 2/17-2/21, 9 a.m.-6 p.m., $80 wk. LeeAnn, Ext. 3098 or 2671.

HOUSE TO RENT - N. Shore, one year or better, after May, adults, no pets, Ext. 7108.

DRY WALL SCRU GUN - or rent one reasonable. Sanchez, Ext. 3848 or 281-6498.

HOUSE TO RENT - 2 bdrms. min., secure area of S. Country SD. Bill, Ext. 2378.

VOLUNTEERS - 2 hours/week, to deliver meals to homebound in South Shore area. 363-6193.

MECH. WATCHES & CLOCKS - any cond. Al Campbell, Ext. 2043.

CAP - for 1982 Mazda long bed pickup. Joe, Ext. 2898.

ITALIAN LESSONS - Chris, 732-5047 between 6-8 p.m.

UMBRELLA STROLLER - for toddler. Dana, Ext. 2546.

RIDING LAWN MOWER - or tractor, small, any cond. Ken, Ext. 3263.

TO RENT - 3-4 bdrm. furn. house or apt., March & April. Bill, Ext. 2878.

COAL STOVE - Haas & Sohn, will trade new Deville coal stove. Sanchez, Ext. 3848 or 281-6498.

Classified Ad Policy

Deadline is 4:30 p.m. Friday for publication Friday of the following week.

1. The Brookhaven Bulletin's classified section may be used only by active and retired Laboratory employees.
2. All items for sale or rent must be the advertiser's property.
3. Ads for material acquired for resale in association with a full or part-time business cannot be accepted.
4. Ads for the sale or trade of firearms will not be accepted.
5. Ads not carried because of space restrictions will be held for publication in the next issue.
6. Ads are run only once and must be resubmitted if they are to be repeated. One ad per person per week.
7. **Property for sale and rent cannot be accepted on this form. Special Real Estate Ad Forms are available at the office of the Brookhaven Bulletin, Building 134.**

☐ For Sale: Autos & Auto Supplies ☐ For Sale: Miscellaneous ☐ Lost & Found ☐ Free
☐ For Sale: Boats & Marine Supplies ☐ Car Pools ☐ Wanted ☐ _____

Please print your ad below in 15 words or less using one word per block. Include name and phone number to call.

Note: The following must be completed for your ad to appear.

NAME (Please Print) .....

Employee's Signature ..... Life No. ..... Ext. .....

Send to: Brookhaven Bulletin, Building 134 (Ext. 2345).