BROOKHAVEN BULLETIN
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BROOKHAVEN NATIONAL LABORATORY

IMB Gives First Report On Proton Decay

On occasion, Maurice Goldhaber has been known to propose the toast: "To the proton, may it live forever. But if it has to die, let it die in our arms." Proton decay is predicted by present theories. Does it decay?

A preliminary answer to that question has now been found, according to Goldhaber. He is part of a team of experimental physicists known as the IMB Collaboration (for University of California at Irvine, University of Michigan, and Brookhaven Lab) who have been conducting an experiment on proton decay.

The group reported its first results this Tuesday, January 18, at the 20th Orbis Scientiae Meeting at the University of Miami, held in honor of Professor Paul Dirac's 80th birthday. They found that the lifetime of the proton is greater than 6.5×10^{31} years (mathematical shorthand for 65 followed by 30 zeroes), significantly longer than what was previously thought.

Evidence of proton decay would have profound implications for the ultimate fate of the universe. Matter consists of protons and neutrons, and if these particles decay, the universe ultimately would disintegrate.

Already, candidate events for proton decay have been reported by an Indian/Japanese team doing an experiment in the Kolar Gold Field in India and a European collaboration working in the Mont Blanc tunnel. Both groups have been gathering data for about a year, but the lifetime inferred from those experiments is much shorter than the lower limit on the proton's lifetime as found by the IMB experiment.

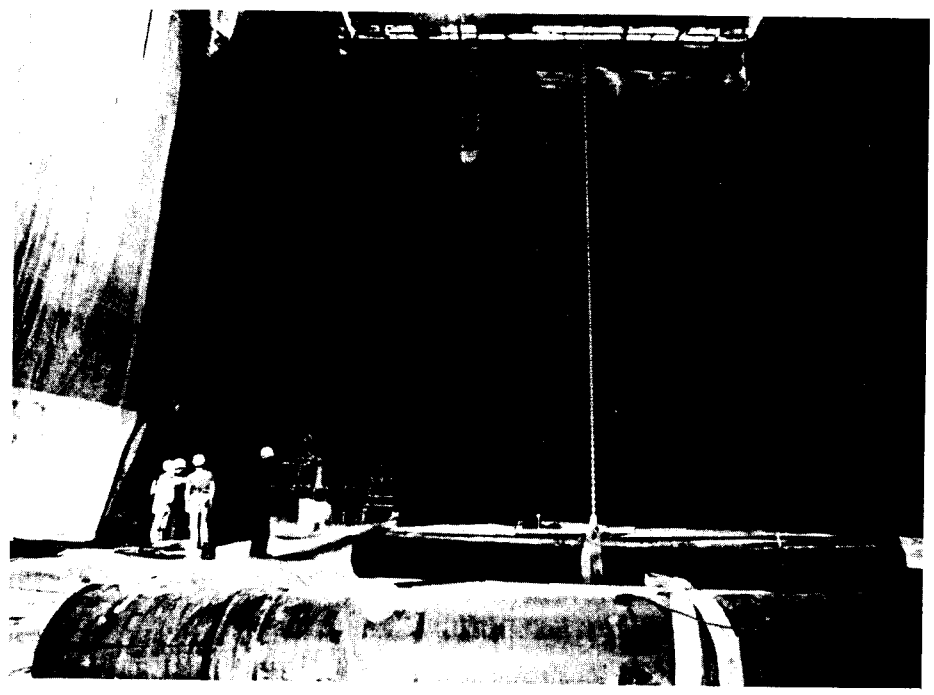
All told, 13 proton decay experiments are now under way or under consideration. They are part of a great rush to test the grand unification theories that have sprung up since the mid-1960s.

For decades, physicists have believed that everything is governed by four basic forces: gravity, which binds the universe; electromagnetism, which makes possible everyday substances like water and hair; weak nuclear force, which controls radioactive decay within the atom; and strong nuclear force, which holds the atomic nucleus together. Recently, theorists have unified the weak force and electromagnetism into what is called electroweak force. The next step would be a melding of the electroweak with the strong force into a grand unified theory, dubbed GUT.

A leading GUT theory, proposed by Harvard's Sheldon Glashow and Howard Georgi, predicts that protons fall apart over enormous intervals of time. But until the recent spate of experiments, no one had found evidence of proton decay.

The first experiment searching for proton decay was done in 1954 by Goldhaber, with Frederick Reines and Clyde L. Cowan, then at the Los Alamos Scientific Laboratory. They concluded that the average lifetime of a proton must be greater than about 10^{22} years. Later experiments by others gradually pushed up the lower bound on the lifetime of the proton. The most recent theoretical predictions suggest that the average lifetime of a proton is about $2 \times 10^{29\pm2}$ years.

That poses a problem to experimenters, who can't wait the lifetime of a proton to see one die.



The Irvine-Michigan-Brookhaven proton decay experiment uses a detector housed in a Morton salt mine 2,000 feet below ground, near Cleveland, Ohio. This photo shows the underground cavity, 60 by 70 by 80 feet, before it was filled with water and lined with photomultiplier tubes. The experiment is funded by the Department of Energy.

The solution, in theory, is simple. If it takes on the average 10^{30} years for one proton to decay, then in a collection of 10^{30} protons, one should decay every year.

Crucial to the IMB experiment is a chamber filled with about 8,000 tons of water, containing about 10^{33} protons. Goldhaber says with a mass of that size — ten times greater than that of the next largest experiment — the theoretical predictions should be testable.

When a proton decays, it explodes into two or more high speed particles. These particles travel through water faster than light would, and like a sonic boom of a plane traveling faster than sound, their movement creates a cone of blue light called Cerenkov radiation.

To detect the exact time and intensity of any flash of light, over 2,000 photomultiplier tubes line the chamber, hanging in the water.

The chamber is large enough to house a seven-story building. It is located in a Morton salt mine outside Cleveland, 2,000 feet under the shores of Lake Erie. The depth underground is important because the earth serves as a shield against cosmic radiation that can interact with atoms in the chamber and confuse the detectors, covering up evidence of proton decay.

The trouble with proving proton decay is that neutrinos, which are part of cosmic radiation and cannot be stopped from entering the chamber even at these depths, can collide with water molecules and produce a light

(Continued on page 2)

The Weather Beat

What's the weather going to be?

That's a question humanity has wrestled with since the first mammoth hunt was canceled on account of rain. In continuing efforts to find an answer, people have searched for signs. Some have claimed to feel weather changes in their bones, while some have used the habits of groundhogs and other animals as indicators. Others have relied on sayings, such as "Red sky at night, sailor's delight; red sky in the morning, sailor take warning!"

Although these signs and sayings are still with us, they now play second fiddle to science. When it comes to weather forecasting today, most people look to meteorologists

This is especially true at BNL where the weather is an important consideration for many groups. Those with computers are concerned about lightning storms, while Plant Engineering must plan for snow emergencies. Biology needs to know how the temperatures will affect their crops, Safety and Environmental Protection needs data on wind speed and direction for emergency planning.

Other groups at BNL have different concerns, but many of them share a need for very precise and very local weather information — the kind of information provided by the meteorologists at DEE's Atmospheric Sciences Division.

This week's forecaster is Bob Brown, one of six meteorologists who take turns supplying the Laboratory with forecasts. Others are Dwight Dieterle, Mark Hjelmfelt, Martin Leach, Aristides Patrinos and Gil Raynor. The forecasters take one week stints because, Brown said, "it gives us a chance to follow the weather for a period of time."

BNL's meteorologists follow the weather in the forecasting room in Bldg. 51 where they stay in close contact with the National Oceanic and Atmospheric Administration (NOAA), often called the Weather Bureau. Surface maps are received by facsimile machine every three hours and NOAA's forecast maps provide the outlook for periods of 12, 24 and 48 hours, as well as five-days. It is also possible to plot and analyze maps every hour from data received by teletype from observations taken by NOAA throughout the country. Radar facsimile also connects the forecaster to many of NOAA's radar facilities for up-to-date radar maps.

The forecasting room is also connected to meteorological instruments on site. Some of those are positioned on the tower known as "Ten" where wind speed and direction are monitored at 37′ and 290′ elevations. Instrumentation there also provides data on vertical wind speed and temperature.

Information on total solar radiation and direct solar radiation is measured by two sensors on the roof of Bldg. 51. "We also have a fairly elaborate system for measuring precipitation," said Brown, who explained that

Doug Humphrey

Meteorologist Bob Brown and his weather maps.

the division started collecting rain samples about ten years ago to study acid rain.

Most of the data collected on site comprises a climatological record for this area spanning 35 years. And the record shows that BNL is unique. "There's a slight valley between Manorville and Yaphank," explained Brown. "When the nights are cold the air settles in the valley and we often have the lowest temperatures on the

(Continued on page 3)

Colloquium On Design By Computer

The growing influence of the computer was exemplified when Time Magazine bypassed its usual Man of the Year and chose, instead, the computer as Machine of the Year. One of the least understood ways in which computers are used is that of computer aided design, or CAD. This is an interactive process between the designer and the computer. For example, the computer can convert two-dimensional line drawings into a three-dimensional representation which can then be viewed from any angle by the designer. When the design is complete it is possible to have the computer generate the necessary information for machining or assembly, a process known as computer aided manufacturing, or CAM.

An expert on the subject, Professor Peter P. Silvester of McGill University, will present a Laboratory Colloquium sponsored by the AUI Lectureship Committee, on "From Concept to Construction - The Role of Computer Aided Design," on Thursday, January 27 in Berkner Hall. A reception will be held at 3 p.m. and the lecture is scheduled to begin at 3:30 p.m. Professor Silvester will outline the principles of CAD so that the process can be understood by a wide audience.

Professor Silvester has written many papers on the use of computers as an interactive design tool and has authored three books. He has served as a consultant in this field in Canada, the U. S., Europe and South America.

TID-Bits

We of the Technical Information Division (TID) have become more and more aware of the need of our many users for information about the information businesses at BNL. This occasional column will serve to keep Laboratory staff informed of TID activities.

One of the most used information services at BNL is the Research Library. There have been many recent changes here which have only fairly recently become visible to the users. With the addition of an Annex immediately across the street from the Research Library, in Building 184 or "Stage II," the library has been able to make major and much needed shifts in the journal and book collections to relieve the overcrowded conditions there.

Nearly 20,000 volumes of journals had to be removed from the shelves, accounted for, boxed and relocated to temporary storage. When shelving was installed in the Annex, librarians began to recall journals from storage, box by box, and place them on the new shelves. When this task is complete (within six weeks), long backruns of journal subscriptions will be available for general use in the Annex. Current issues (generally the last five to 10 years) of active subscriptions will be available in the Research Library. Journal holdings and location information will be given on the master list in the Research Library.

The Annex collection is arranged the same as the main collection, alphabetically by journal title, or by the name of the organization which publishes it, if that organization's name is in the title. The Annex will have the same hours as the Research Library. A self-service copier will be available in the Annex, and the current photocopying service provided by the Research Library will remain.

Changes in the Research Library itself include the addition of some new stacks in the main area. These stacks house the Reference collection which surrounds a new service counter staffed by senior reference personnel available during working hours to handle your reference and information research needs. At one end of this area is a growing collection of library and information science, writing/editing and office automation journal and book materials. At the other end, opposite the circulation desk, is a self-service photocopier, and a service counter for leaving and picking up materials for photocopying.

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Coordinate all library material purchasing with your division/department librarian; otherwise, contact a Research Library staff member. Anything you do to ensure accurate documents will greatly expedite your order.

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Subsequent columns of TID-Bits will highlight various activities at TID and the people who make them run. In addition, we will point out various procedures which should be followed to successfully get information materials published,ordered or delivered. Address any comments on, suggestions for, or contributions to this column to Ken Ryan, Building 477A, Ext. 3489.

— Ken Ryan, Manager
Technical Information Division

Lecture Reminder

Stephen Schwartz, Environmental Chemistry Division, DEE, will give a Brookhaven Lecture on "Both Sides Now - The Chemistry of Clouds," on Wednesday, January 26 at 8 p.m. in Berkner Hall.

May Day, May Day

It was cloudy and wet, perfect weather for the flight. It was also 5 p.m., after dark, and the crew had collected enough cloud water samples for a BNL study of how cloud chemistry affects acid rain. Time to quit and come down out of the clouds.

That was when they heard the first call for help. "November Bravo calling Birmingham air traffic for assistance." For the next 30 minutes, they were players in a mini-drama that unfolded in the skies.

BNL chemist Dan Leahy and meteorologist Bob Brown, with pilot Bill Humphrey and co-pilot Bob Caccavalla of Mid-Island Air Service, had taken off earlier in the day from Alabama's Birmingham airport in weather conditions that were rated for instrument flight rules. Now they were about 3,500 feet off the ground, flying between two layers of clouds.

Dan Leahy recalled, "From the time we first heard November Bravo, we were fixed on the radio. Apparently, he had taken off from Montgomery, Alabama, and was on his way to Shelby. When he left Montgomery, the weather was clear, but becoming overcast. When he got over to Shelby, the weather had turned so bad, he couldn't see enough to land. And that's why he was in trouble — he was only licensed for visual flying conditions."

Birmingham air traffic requested the BNL plane to stand by while they sorted out the problem. Montgomery had also clouded up, so November Bravo couldn't return there, and he didn't have enough fuel to make it to Columbus, Georgia, where the weather was still clear.

It was decided to have the BNL plane fly down to Shelby, find November Bravo, and escort him back to Birmingham, which has a big runway, good lights, and an instrument landing system.

Leahy said November Bravo was told to turn on every light on the plane and ascend to 2,800 feet. With radar help from Birmingham, the BNL crew finally spotted him.

The two planes flew alongside each other, between cloud layers, back to Birmingham. When they lined up on the runway, November Bravo went down through the clouds first on a radar-controlled approach. The cloud ceiling was about 600 feet at the time. Again, the radio told the story.

"November Bravo, do you have the runway in sight?"

"Negative."

"You are now one mile from the end of the runway. Can you see it yet?"

A pause.

On a previous out-of-state sampling trip, chemist Dan Leahy (left) and meteorologist Bob Brown were photographed in flight by meteorologist Cy Fink. A licensed pilot, Fink was in the co-pilot's seat that day taking aerial photographs. Leahy and Brown are smiling broadly because they had been having a rough ride and were relieved to have just flown into clearer weather.

"There. I see it now."

Leahy says they all breathed a sigh of relief when they heard that November Bravo had landed. Then it was their turn to go down through the clouds.

"Bill Humphrey is a veteran, instrument-rated pilot with more than 15,000 hours of flying time." said Leahy. "Bad weather conditions don't bother our operations at all. In fact, we fly in these conditions routinely for the cloud study."

"Although November Bravo's pilot sounded calm, I'm sure he knew he was in trouble. He could have run out of fuel before he made it anywhere safely. He could have hit a transmission line or TV tower if he tried to land blindly," Leahy commented.

"The time he first spotted us and later when he finally saw the runway as he came in to land, we could hear a bit of 'whew' in his voice. We felt good being able to help someone."

The BNL team was in Birmingham, Alabama, for a two-week sampling program in November. Other Brookhaven scientists who were also down there were chemists Peter Daum and Tom Kelly, and meteorologist Cy Fink.

—Mona S. Rowe

Black History Month Events

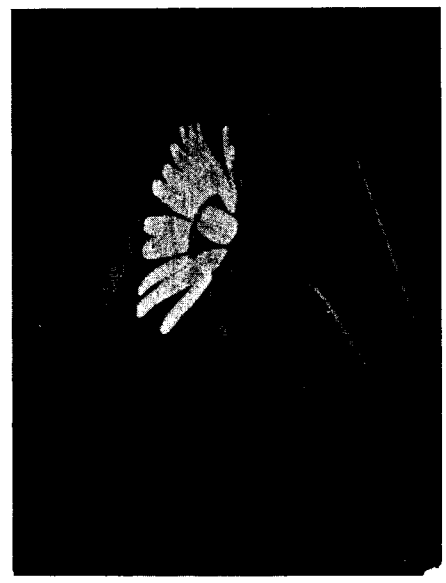
Black History Month will be celebrated at BNL throughout the month of February, as the Afro-American Culture Club presents an exciting variety of black talent.

• **Photography Exhibit** (weekdays, February 1-11, noon—1:30 p.m; also February 5, 6:30—10 p.m., February 9, 7:30—9 p.m.) — The works of Walker Turner, Jr. will be on display in Room C, Berkner Hall in a show entitled "Creative Photography by Sonny Day." Turner, who often uses the name Sonny Day professionally, calls his work "creative photography" because he has perfected various techniques to achieve unusual effects. Turner hails from Riverhead and has won many local awards.

• **A Gospel Extravaganza** (Saturday, February 5, 7 p.m., $5) — The Allen ARC Singers will be featured in this year's roundup of gospel groups. ARC stands for the Addict's Rehabilitation Center, founded 25 years ago by James Allen, a former addict. The Center's choir has performed *a cappella* gospel for hundreds of churches and community groups in and out of the Harlem community. Joining the Allen ARC Singers on the stage at Berkner Hall will be the Young Peoples Choir of 1st Baptist Church of Somerset, New Jersey, a 40-member group with a 15-year history; the Abyssinian Baptist Church Male Chorus, whose 30 members have been singing together since 1981; the C.B. Ensemble, a choir in the Community Baptist Church, Southampton, for 14 years; and the Galileans, eight young people from Riverhead's Galilee Church of God in Christ who have joined voices since 1982. (Sponsored by BERA.)

• **Lecture by Gil Noble** (Wednesday, February 9, 8 p.m.) — From the podium in Berkner Hall, WABC-TV correspondent Gil Noble will speak about blacks in the field of journalism. Noble is well known for the weekly program "Like It Is," for which he is both producer and host. This public affairs series has earned Noble more than 60 community awards, as well as Emmy Awards for the presentations "Adam Clayton Powell, Jr.: An Autobiographical Documentary" and "El-Hajj Malik El-Shabazz," a tribute to Malcolm X.

• **An Evening of Blues and Jazz** (Saturday, February 26, 8 p.m., $9) —



In this example of "Creative Photography by Sonny Day," Walker Turner, Jr. superimposed a photograph of a daisy, taken in Riverhead, over a picture of the World Trade Center.

Son Seals and his Blues Band will headline the program at Berkner Hall. Robert Palmer of The New York Times called Seals "...the most exciting young blues guitarist and singer in years." Appearing with Son Seals and his Blues Band will be Doug "Harmonica" McLean and his five-piece Blues Band. A Long Island musician, McLean has been playing blues harmonica for 20 years and has appeared with such notables as B.B. King and Odetta. The MJB Jazz Trio will round out the program. Margaret Fonville (piano), Billy Sells (drums) and Jim Brown (bass) have been performing with vocalist Jean Sells for 25 years in the Long Island area. (Sponsored by BERA.)

There is no admission charge for either the Photography Exhibit or the Gil Noble Lecture. Tickets for both **A Gospel Extravaganza** and **An Evening of Blues and Jazz** can be purchased from any of the following people:

Name	Bldg.	Ext.
April Donegain	197	2903
Mary Durham	464	3427
Sandra Green	535	4933
Michele Henderson	555	4303
Frances Ligon	460	3316
Mac Thomas	318	2959

Or send a check, payable to BERA, to Afro-American Culture Club, P.O. Box 441, Upton, N.Y. 11973.

Proton Decay (Cont'd)

pattern which must be distinguished from that of a decaying proton. This is a problem shared by all proton decay experiments.

The Indian/Japanese and Mont Blanc experiments can distinguish neutrinos from proton decay only by energy. According to Goldhaber, the IMB experiment is sensitive to energy and direction.

In the next few years, the IMB team will continue to collect data to improve the limit on the lifetime of the proton. And of course, the search will continue for definitive evidence of proton decay.

For now, anyhow, there is no cause for alarm. The universe has been in existence for a little more than ten billion years, a mere blip in time when compared to the lower limit on the lifetime of the proton.

— Mona S. Rowe

New Record Set For United Way

Those BNL employees who contributed to the Lab's 1982 United Way campaign were more generous than ever before. In all, 786 people donated an impressive total of $50,555, the highest ever and an increase of $248 over 1981.

Although fewer employees contributed in 1982 than in 1981, those who did gave more, for an average donation of $64.32. In contrast, 1981's United Way donations averaged $57.28.

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Service Awards

The following employees received service awards during the month of January:

Thirty-Five Years

Arthur C. Dick ..... Accelerator

Thirty Years

Donald W. Huszagh .... Energy & Env.
Alfred E. Lukas ... Safety & Env. Prot.
Barbara I. Still ..... Physics
John R. Weeks ..... Nuclear Energy

Twenty-Five Years

Alfred W. Delph ..... Medical
Adolph E. Densieski ..... Accelerator
Seymour Fink ..... Energy & Env.
Eugene S. Kaplan ..... Accelerator
Joseph M. Savino ..... Nuclear Energy
Stanley Seltzer ..... Chemistry

Twenty Years

Richard A. Dickhoff ..... S&M
Stanton Ehrenson ..... Chemistry
Chia-Jung Hsu ..... Nuclear Energy
Edward C. Iberger ..... Plant Engrg.
William E. Lebitski ..... S&M
Roberta J. Samaritter .. Photog & GA
Bernard L. Stepnoski ..... Accelerator
Marie A. Susa ..... Medical
Victor J. Vitkun ..... Plant Engrg.
Janet C. Whitehead ..... Personnel

Ten Years

Fred F. Stahman ..... Plant Engrg.

Arrivals & Departures

Arrivals

James A. Morris, Jr. ..... Plant Eng.
Garry A. Nintzel ..... Accelerator
Vijay Murgai ..... Physics
Nira Noy ..... Energy & Env.
Nikola Popov ..... Nuclear Energy
Donald A. Shea ..... Central Shops
Johan Tafto ..... Energy & Env.

Departures

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

Keelin M. Fendler ..... Energy & Env.
Michael J. Levine ..... Medical
Angelo J. Rafaniello .... Central Shops
Robert W. Siemon ..... Accelerator

Committee Named For Nominations

The BERA Executive Board has appointed a nominating committee to select a slate of candidates for the 1983 BERA election which will take place during the month of March. Those appointed are:

Elinor Adams, AUI Internal Audit
Roseann Chiuchiolo, Contracts & Procurement
Anthony Fainberg, Nuclear Energy
G. Alanson Greene, Nuclear Energy
John Guthy, Physics
Robert Marascia, Accelerator
Betty Pergan, Energy & Environment
Fred Pond, Supply & Materiel
Jeannette Thiede, Light Source
Bonnie Wesolowski, Chemistry

As noted in the BERA nominating process, any employee who wishes to propose a candidate for consideration is encouraged to do so by contacting any one of the people listed above before Friday, January 28. The committee will meet on February 2 to discuss and judge the qualifications of candidates chosen by the committee members, as well as those proposed by employees. The final election slate, consisting of four candidates, will be announced in the Bulletin on February 11.

IBEW Meeting

Local 2230, IBEW will hold its regular monthly meeting on Monday Jan. 31, at 6 p.m. in the Knights of Columbus Hall, Railroad Ave., Patchogue. There will also be an afternoon meeting at 2 p.m. for shift workers in the Union office at 31 Oak Street, Patchogue. On the agenda will be regular business, committee reports and the president's report. Please note date.

Tax Tip

Working parents should be aware of the tax credit given for child care expenses. For earnings of $20,000 or less, parents may claim as much as $1,440 to offset the cost of child care expenses for two or more children. For earnings of $28,000 or more, the maximum tax credit is $960 for two or more children. To claim this credit, Form 2441 should be submitted with your tax return.

Weather (Continued)

East Coast. In the summer, if a high pressure system moves in and the air is cold and dense, we can get temperatures lower than anywhere else in the country."

While NOAA's information and the Lab's instruments help provide clues as to what to expect weatherwise, the job is still full of surprises. Last weekend was a good example. Like forecasters throughout the area, Lab meteorologists were calling for a healthy snowfall, and division members organized a pool to see who would guess the actual accumulation most accurately. The guesses of the 17 participants ranged from 0" to 12". Eight measurements taken Monday showed the average accumulation to be 2" and secretary Lola Kopp won the pool.

Brown was philosophical about the puny snowfall. "Our forecasts tend to be pessimistic because we'd rather go overboard than not inform people sufficiently," he said. And he refuses to blame forecasting errors on our locale. "Wherever you are, people will say it's the worst place to forecast. Long Island may be surrounded by water, but there are peculiarities everywhere. That's what makes forecasting so much fun — it's not an exact science. But we're right far more often than we're wrong and we render a good service to the Laboratory."

— Anita Cohen

Deer Watch

Perhaps it's because the weather stayed warmer longer than usual. In any case, there are still a large number of deer roaming all over the site, and they have been the cause of several accidents in recent weeks. Drivers are urged to be on the alert to the presence of deer, particularly in the morning and early evening.

Cooking Exchange

The theme of the January 26 Cooking Exchange meeting is "Food for Kids to Grow On," featuring food children like to eat and prepare. Among recipes planned for making and tasting are crunchy chicken, and banana-orange cup cakes.

Cooking Exchange meetings are held in the Recreation Building between 12:30 and 2:30 p.m. A fee of $1 per person is collected to help cover costs of recipe ingredients. Babysitting is provided at a charge of 50¢ per child.

Call Adrienne Usher, 289-7658, or Dee Polychronakos, 744-3578, for more particulars.

NYC Train Trip

The Hospitality Committee is planning a group railroad trip to New York City on Wednesday, February 2. Departure will be at 7:55 a.m. from the Patchogue LIRR station. Round-trip fare for adults is $3.50; children under five years ride free.

Reserve a ticket by sending your fare through the U. S. mail to Hospitality Committee, P.O. Box 322, Upton, New York 11973. Please do not send cash. Checks or money orders, payable to BNL, must be received by Thursday, January 27. Put the date of the trip, your BNL life number and your phone number on the back of the check or money order. Your tickets will be given to you at the railroad station. Refunds will be made only if cancellations are received by the Monday morning preceding the trip.

Bowling

Purple League

The Good Times are the winners of the first half. High games were bowled by K. Riker 215/583 series, E. Meier 206, K. Jellett 204, B. Jellett 212/548 series.

White League

B. Belligan rolled a 246, D. Adams 236, J. Griffin 204/224/600 series, K. Asselta 200/222, B. Sells 210, R. Scheidet 203, S. Smith 201, N. Tyler 202, P. Lebitski 188, N. Erickson 188. The Old Timers are in first by 1 point followed by the Pinsplitters and the Gropers.

Red/Green League

R. Larsen had games of 228/215/220 for a 663 scratch, 681 gross series, E. Meier 222/220/720 gross series, C. Bohnenblusch 252, J. Morris 207/201, J. Scandizzo 211, H. Marshall 208, T. Holmquist 204, A. Pinelli 201, A. Almasy 200.

Pink League

High games were bowled by K. McNally 167, E. Kristiansen 169/167/164, M-G Meier 163/165, H. Keeley 163/165, S. Long 177.

Cafeteria Menu

Week Ending January 28, 1983

Monday, January 24		
Cream of chicken soup	(cup)	.65
	(bowl)	.75
Pork chow mein on white rice		1.85
Beef liver w/onions & bacon & 1 veg.		1.80
Hot Deli: BBQ top round of beef	(bread)	1.95
	(roll)	2.05
Tuesday, January 25		
Pork & cabbage soup	(cup)	.65
	(bowl)	.75
Baked lasagna w/1 veg. & garlic bread		1.85
London broil & 1 veg. w/mushroom gravy		2.10
Hot Deli: Hot pork sandwich w/country cream gravy	(bread)	1.85
	(roll)	1.95
Wednesday, January 26		
Turkey rice soup	(cup)	.65
	(bowl)	.75
Meatcakes & onions & 1 veg.		1.80
Chicken cacciatore & 1 veg.		1.95
Hot Deli: 8-foot hero		.90/in.
Thursday, January 27		
Split pea soup	(cup)	.65
	(bowl)	.75
Roasted turkey w/stuffing & giblet gravy		1.90
Stuffed cabbage & 1 veg.		1.85
Hot Deli: Veal pattie & pepper hero		1.95
Friday, January 28		
Manhattan clam chowder	(cup)	.65
	(bowl)	.75
Ham & broccoli crepes & 1 veg.		1.85
Beef burgundy on white rice		1.85
Hot Deli: breaded fish fillet hero		1.95

Volleyball

as of 1/17/83

A Division

Dinkers	14-1
Teddybares	10-5
EPO's	9-6
Mixed Ups	9-6
Nuts & Bolts	2-13
Nuclear Wastrels	1-14

Congratulations to the Dinkers as winners of the second quarter.

B Division

TNT	21-6
Phoubars	20-7
Semi Tough	17-7
Up Fagrabs	17-7
Puff n'Stuff	15-12
Chungas Revenge	11-13
Screwballs	10-14
KMA	8-19
Nuke Yorkers	8-19
Quirks	2-25

Congratulations to TNT as winners of the first half. The final standings will depend upon February 9th matches.

Open League as of 1/17/83

Phoenix	12-0
Raiders	11-1
FRE8D	5-7
Brewmasters	4-8
Half Lifes	2-10
Random Errors	2-10

CREF Values

December	48.33	January	47.49
February	44.88	March	44.48
April	46.32	May	44.53
June	43.34	July	42.41
August	47.05	September	47.32
October	52.59	November	54.78

December $55.73

Call For BNL Artwork

The 9th BERA Members' Art Exhibit opens on Monday, February 14 at 4:45 to 7:00 p.m. in Berkner Hall. All BERA members including employees, immediate family 16 years of age and over, and retired employees are invited to contribute their work to the exhibit. Two categories, pictures and sculpture, will be displayed in the exhibit which runs from February 14 — 25, noon to 1:00 p.m. Contributions done in water color or oils, drawings and graphics will be accepted under the picture category. No crafts may be submitted for this exhibit. A craft show is planned for 1984. The Committee can accept only two works from each contributor. All works must be suitably framed and ready for hanging; otherwise they will not be accepted.

In order that a printed catalogue can be ready for the opening, the Art Committee requests that you complete two forms for each work you intend to exhibit, and return them to the BERA Sales Office in Berkner Hall no later than February 1. Additional forms may be picked up at the BERA Sales Office, should you need them. Works should be delivered to Room B, Berkner Hall, February 14 between 8:30 a.m. and 12:30 p.m., and picked up there between 1:30 and 3:00 p.m. on February 25. The Committee will not be responsible for works left after that time.

Return To BERA Sales Office - Berkner Hall

Name of Artist ..... Phone .....

Title of Art Object .....

Medium .....

Laboratory Contact: .....

Classified Advertisements

Placement Notices

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

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

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

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

The vacancies listed below have been exempted by the Director's Office from the current freeze on open requisitions.

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

1820. STEAMFITTER A - Requires substantial experience in the commercial/industrial sector as a steamfitter. Will be responsible for the layout, construction, installation, maintenance and repair of heat, steam and water distribution systems, related facilities and auxiliary equipment. Plant Engineering Division.

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

MEDICAL PHYSICIST - Ph.D in Medical Physics or Nuclear Sciences to perform research in the development of nuclear techniques for clinical applications. Contact: Dr. S.H. Cohn, Medical Department.

POSTDOCTORAL RESEARCH ASSOCIATE - Ph.D with strong background in biochemistry, molecular biology or biophysical chemistry to study the biochemistry and biophysics of DNA photoreactivating enzymes. Contact: Dr. B.M. Sutherland, Biology Department.

Autos & Auto Supplies

69 PLYMOUTH VALIANT - 6 cyl., auto., 4 dr., runs good, good cond., $375. Rick, 727-7626.

77 BUICK STATION WAGON - 73K, excel. cond., $3,300. Luis, Ext. 2700 or 3180.

75 VALIANT BROUGHAM - 6 cyl., auto., 4 dr., p/s, p/b, plush int., clean in & out, $2,500. Joe, Ext. 7961 or 878-2655 eves.

71 FORD VAN - stand., reg. gas, $600. Ext. 4105.

TIRES - (2) E-78-14, mounted on Ford 4 lug rims, good cond. Billy, 924-8689.

WHEELS - (4) 15" white spoke, chrome centers, excel. cond., for Chevy Blazer, $125. Lou, Ext. 4540.

81 HONDA ACCORD - hatchback, 5 spd., am/fm 8-track, 22,000 mi., excel. cond., $6,000. 727-7081 after 5 p.m.

68 BUICK SPECIAL WAGON - 350, V8, auto., it runs, $250. Lloyd, Ext. 3381.

68 CHRYSLER NEWPORT - 54,000 orig. mi., new tires, trans., brakes, $450. 698-5353 after 4 p.m.

67 PLYMOUTH - runs but needs work, $250 or best offer. John, Ext. 3612 or 744-9827 after 5 p.m.

RIMS - (2) 14", Mercury/Ford, $7.50 ea. Tony, Ext. 3637 or 3658.

72 CAPRI PARTS - good cond., 2 drs., and trunk lid, $30. Tim, Ext. 3496 eves or 281-7873.

79 AMX - 6 cyl., auto., 35,000 mi., am/fm cassette, sharp, moving - must sell, $4,250 or best offer. Lou, Ext. 5212 or 2034 or 475-2598.

80 SUZUKI - GS1000L, lugg. rack, c/c, custom seat, many extras, mint, must sell, $2,500. Ext. 7187 or 981-9474.

74 IMPALA - a/c, p/s, p/b, 4 new radials plus 2 good snows, some rust, runs well, $850. Tom, Ext. 4524.

76 FIAT - 131S, 2 dr., a/c, 5 spd., 26 mpg, asking $1,400. Ext. 2521 or 928-8379 eves.

66 HARLEY DAVIDSON - 1200 FLH, full dresser, all orig., mint cond., $4,500 firm. Rick, 727-7626.

OLIVER LOADER - OC 46 track machine with excel. bucket, back-hoe, and fork, rebuilt eng., needs left clutch, $1,500. Tom, Ext. 4084 or 878-1060.

CAR AMPLIFIER/EQUALIZER - Pioneer AD-50, 50 watts total power, excel. cond., $90 or best offer. 744-8063 days.

75 PLYMOUTH DUSTER - factory 4 spd. overdrive, radials, vinyl top, excel. cond., asking, $2,195. 588-7058 or 289-8479.

79 HONDA - CM400T, 2,000 mi., garaged, must sell, $1,000. Ext. 7125.

78 DATSUN - B210, blue, 4 dr., auto., immac., 16K mi., 32-34 mpg, $6,200. Frank, Ext. 4113.

77 HONDA SUPERSPORT MOTORCYCLE - 400cc, excel. running & cond., must sell, only $700. 281-2257, after 5 p.m.

81 CHEVY CHEVETTE - 1.8 diesel, 4 dr., auto., p/s, p/b, rust proofed, 45 mpg, 6,500 mi., $5,400. Gary, 928-0107.

81 CAMARO - 5,600 mi., V6, auto., p/s, p/b, T-top, Ralley wheels, am/fm stereo, charcoal grey, silver interior. Ext. 2272

CARBURETOR - Carter thermo quad 4 barrel fits AM, Ford, Chrysler, $30. Jim, 588-0677 eves.

74 CAPRI - V-6, manual, new brakes, radials, clean, tan color, $1,200. 941-4011 eves.

72 VOLVO - 1800ES sport wagon, 30,000 mi., collectors car, $5,800. Mary, 473-2614.

75 MONTE CARLO - a/c, p/b, p/s, am/fm, cassett, good cond. in and out, $1,900. 399-5916.

81 HONDA - GL1100 Goldwing, metallic dk. bl., crash bars, luggage rack, garaged, excel. cond., 3,000 mi., full face Bell helmet, $3,000. 744-6892 eves.

79 HONDA DIRT BIKE - model Z50R, 50cc, excel. cond., $375. 878-0516 after 6 p.m.

73 AMC HORNET - 6 cyl., good economy, engine good, many new parts, no dents, some rust, asking $340. Harriet, Ext. 4581.

82 SUZUKI DIRT BIKE - RM125, new tires, sprockets, chain, water cooled, excel. cond., $1,000. Ext. 4679.

73 DATSUN 610 - station wagon, 4 spd., new clutch, good transp., $750. Ronald, Ext. 4679.

68 FORD FALCON - 6 cyl., auto, some rust, runs excel., $500. 732-1913.

71 PINTO - 2000cc, std./t., new muffler, starter, battery, inspected, $375. 744-2783.

77-81 HOOD - for Formula Firebird, good cond., asking $125. Dan, 585-4176 after 5 p.m.

SNOW TIRES - Pirelli, Cinturato steel belted radials, 185/705R13, both for $60. Al, Ext. 4397.

69 CAMARO SS - disc brakes, spoilers, 12 bolt rear rally wheels, all black, no motor, extras. Ext. 4460 or 475-1469.

63 FALCON CONV. - engine good, top great, some body work, restorable, make an offer. 929-3455.

TRUNK LID - med. blue for Toyota Corolla, make an offer. Judy, 489-0543 eves.

70 VW BUG - semi-auto, rebuilt engine, new brakes, $625. 543-4531.

77 VEGA - good running cond., am/fm, cassette stereo, asking $1,500, negotiable. Janice, 698-2537 after 6 p.m.

76 OLDSMOBILE CUTLESS SUPREME - orig. owner, excel. cond., auto., p/s, p/b, a/c, am/fm cassette, $2,795. 929-6765 after 6 p.m.

70 RIVIERA CLASSIC - excel. cond. in/out, $1,300. Ext. 4303 or 878-1688 eves.

VW PARTS - muffler, $28; bumper, $27; repair manuals, $16; 009 distributor, $36; all brand new. Augie, Ext. 2419 or 325-0594 eves.

Boats & Marine Supplies

20' O'DAY SAILBOAT - 1978, KCB, 3 sails, eng., many extras, like new. 289-0925.

TRAILER - galv. steel. for 2100# boat, very good cond., $375. Bob M., Ext. 2514 or 757-3178 eves.

Miscellaneous

CUB SCOUT UNIFORM - complete, worn twice, best offer. Anne, Ext. 2456.

COLOR TV - 19", Sharp, $280; humidifiers; plants. Ida, Ext. 3180.

FIBER OPTIC VIEWER - flexible, 165 cm, remotely articulated, fine optics, $300, Variety radio-control components, best offer; movie film copier, 8 or 16 mm, $75. Ext. 4058 or 286-0436.

GATE - 5' high walkway, self closing, green vinyl, chain link incl. all hardware, $40. Victor, Ext. 2395.

DISHWASHER - portable, good cond., copper tone, butcher block top, $150; upright freezer, very good cond., 19 cu. ft., $175. 289-2467.

CAR SEAT - Strolee, perfect, $15; Charger rocking horse, large, needs 1 dowel, good cond., $10; child's ice skates, size 12, double blade, $3. 399-0537 eves.

EAMES CHAIRS - (4) danish, $20 ea.; formica dining table, 40x60, $25; HiFi cabinet, mahogany, speaker, $35. 265-0501.

LOVESEAT - Herculon plaid; dark pine end table; maple rocking chair. 289-7852 after 6 p.m.

VELOUR COUCH - brown, excel. cond., $100; TV/stereo stand on rollers, $20; 13" color TV, $175. Linda, Ext. 7745.

LENS - 400 mm Spirotone, Bayonet mount, $75. Ext. 7772.

LP GAS FURNACE - 49,000 BTU, recess in floor or free-stand, like new, $100; children's portable phonograph, G.E., 2 spd., like new $20. Susan, Ext. 7235 or 399-1736 after 5 p.m.

FREEZER - 8 cu. ft., like brand new, $190. 281-2899.

WING BACK CHAIR - and ottoman, hardly used, $150. Ext. 7690.

JACKET - Mouton lamb, fits sizes 14-16, brown, $75. 475-1044 after 6 p.m.

VACUUM CLEANER - powerful, upright, very good cond., $35. Ext. 4058 or 286-0436.

COMPACT WASHER/DRYER - Sears, $250 pair; pine end tables, $50 ea.; combined lamp table, solid pine, $55. 363-6121.

TYPEWRITER - IBM correcting selectric, 3 yrs. old, rarely used, many extra typing elements, ribbons, correcting ribbons, asking $750; ladies bike, 10 spd. Sutton (Royce Union), dual hand brakes, white, 4 yrs. old., hardly used, asking $120. 981-9584 eves.

FIREWOOD - oak, 18"x30"x12', $20; folding bed, good cond., $15. Jim, 744-3792.

BLANK CASSETTE TAPES - BASF C-90, CrO_2, Pro II, 2.75 ea. Ext. 2521 or 928-8379 eves.

ROTARY SNOW BLOWER - Sears, for 12 HP tractor, $250. Ext. 3992 or 298-4937.

SHARP PORTABLE STEREO - fm/tape recorder, auto. program search system, 18 mo. old, mint cond., $125 was $225. 929-6374.

SLIDE ON CAMPER - for 8' pick-up, sleeps 4, sink, stove, ice box, $800. 567-8811.

ZENITH TV - 19" B&W w/stand, $30; men's car coat, sz. 42, blue, $25. Sal, Ext. 2460 or 744-9822.

TABLES - 3 contemp., good cond., fruitwood $150. Jerry, 475-5591 after 5 p.m.

KITCHEN SALE - dishes, pots, glassware, utensils, food processor, wok, and more. 821-1039.

LADIES BIKE - Ross Gran Tour II, new, light weight, 10 spd. $160. Ext. 3890 or 924-4250.

SPEED AIR COMPRESSOR - 1/2 horse, 11 gallon tank, good cond., $150. Dan, 585-4176 after 5:30 p.m.

EXECUTIVE DESK - 60x36, 5 drawer & file drawer, black w/wood grained formica top, $175. 363-6121.

PIANO - upright, ivory keys, excel. mech. cond., $375. George, Ext. 4227 or 751-0894 eves.

SKI PANTS - men's dk. blue, 34R EKO, Bart stretch wool & polyester, never worn, $80. Ext. 4727.

TRASH COMPACTOR - Sears Kenmore, gold, automatic deodorizer, new, used 3 mo., orig. price $400, asking $175. Ext. 4089 or 475-8219.

FUEL OIL - converted to natural gas heating, will buy your unused fuel oil. Don, Ext. 4167.

DESK - childrens, w/attached swivel seat, excel. cond., $35. 821-1042.

ATARI CARTRIDGES - w/orig. boxes, Missile Command, $18; Air/Sea Battle, $15; Asteroids, $18; Skiing, $15; Pac Man, $22; Grand Prix, $20. 878-0516 after 6 p.m.

SOFA & CHAIR - Early American, Herculon, wood trim, ideal for playroom, $150. Bruce, Ext. 5091.

CARPET - wall to wall, 12'6"x10', plum, very good cond., $80. Ext. 2909 or 473-3202.

FREEZER - 20 cu. ft., good cond., $175. Paul, Ext. 4156.

WASHER AND DRYER - General Electric, good cond., asking $125.00/ea. Ext. 2304 or 744-1334.

CITRUS FRUIT - pink & white grapefruit, $7.25/box.; Temple or Valencia oranges, $7.75/box, delivery Feb. 21. G. Price, Ext. 3336.

KEROSENE HEATERS - Radiant King, discount prices, factory sealed cartons, guaranteed. Jim, 924-7665 eves.

LAWN TRACTOR - John Deere, 11 HP, 5 spd., 38" cut, 42" snow blower, attachment chains, weights, dump cart, electric start, used one season, $1,800. 929-4716 after 4 p.m.

LADIES GOWN - pale yellow, pleated, sz. 9, worn for wedding party, excel. cond., paid $75, now $45. 744-9677.

DRYER - Sears elec., 17 lb. capacity, moving, must sell, $125. Rich, Ext. 4482 or 581-0932.

CABLE TV DESCRAMBLER - new, $169. 654-1731.

SINGER SEWING MACHINE - $75, toaster-oven, $15; bookcase headboard, $25; quartz heater, $30; pole lamp, $25; 2 table lamps, $25 each. 744-6874.

FIREWOOD - full cords 4'x4'x8', delivered, $115. 467-8976.

TOASTER-OVEN - new, never used, $25. 821-1042.

LAMP/TABLE - one piece marble table and lamp, Italian provincial design, good cond., $20; chairs, two straight-back upholstered, wood & padding, excel. cond., tear in outer fabric, best offer. Ext. 4153 or 732-5829 after 6 p.m. OIL BURNER - Beckett, retention head, asking $100; two circulators, best offer. Barry, Ext. 4118.

RAIN HAT - Dunn & Co., sz. 7-1/4, never worn, $10; ice skates w/boots, sz. 4, $10 or best offer. Ext. 2914.

LAWNMOWER - electric, Sunbeam, $50; lawn spreader, $25; crib, $15; carriage, $10; table, $10. Ext. 3637 or 473-4991.

ORGAN - Thomas, double decker, 13 pedals, keyboard that lights up, beautiful walnut cabinet, w/bench, $795. 878-1688 eves.

Free

TV - b/w, RCA, 24 console, needs work. Augie, Ext. 2419 or 325-0594 eves.

WALL OVEN - Caloric, natural gas. 928-0281.

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

PATCHOGUE - 3 bdrm. house, garage, avail. March, $400/mo. plus util. John, Ext. 3300.

SOUND BEACH - spacious 1 bdrm. apt., full bath, sun porch, yard, walk to beach, $430/mo. incl. util. Rose, Ext. 7908 or 744-3160 after 6:30 p.m.

PATCHOGUE - 1 bdrm. apt., 4-1/2 rms., includes heat, hot water, laundry, garbage pickup, cable TV, dock space avail., first floor, full end apt., $460/mo., immed. avail. 286-8368.

BLUEPOINT - 2 bdrm. cottage, eik, cozy and private. 363-2736 after 5:30 p.m.

MANORVILLE - Pine Hills, 1 bdrm. chalet, avail. Feb. 1, extras incl. f/p, dishwasher, garage & prime location, 10 mins. to Lab, $420/mo. incl. heat, golf, tennis, pool. 654-3041.

BELLPORT - studio apt., separate entrance, separate kitchen, patio, $300/mo. utilities included. 286-9051.

ONE ROOM - w/two beds, females or couple preferred, $25 ea. or $40 for one. 924-0960.

SHIRLEY - St. George Terrace, private area & beach, 4 bdrm., 2 full baths, l/r, family rm., mod. kitchen, dbl. oven, dishwasher, ceramic cooktop, city water, good neighborhood for children, short drive to Lab. 281-3445.

N. SHIRLEY - mother/daughter house, 3 bdrms./2 bdrms, priv. entrances, garage, avail. March 1, 2 mo. security, reasonable rent. Bob, 281-5605, 6-8 p.m.

MASTIC BEACH - 3 bdrm. house, 1/2 mi. to water, encl. porch, large fenced property, 2 mo. security, $450/mo. plus util. Bob, 281-5605, 6-8 p.m.

For Sale

WADING RIVER - custom built, 4 bdrm. colonial, 2 baths, d/r, den, f/p, 2 car garage, full basement, private beach. Ext. 7727 or 929-4631.

Car Pools

RONKONKOMA - driver to join 3-person pool, L.I.E. exits 59, 60, and 61. Victor, Ext. 2395.

PATCHOGUE - additional members needed, 8:30-5:00. Joe, Ext. 4477.

BABYLON/WEST ISLIP - driver needed for 4-person on-time carpool. Ext. 2500.

HUNTINGTON/GREENLAWN - driver wanted for existing carpool. Jim, Ext. 5057.

ROCKY POINT - would like to join or form a carpool. Chris, Ext. 3744.

RIVERHEAD AREA - would like to join existing carpool, will drive any day but Tuesday, 8:30 to 5:00. Harriet, Ext. 4581.

PATCHOGUE/MEDFORD - Rt. 112 to Waverly, 495 to 27A, 8:30 to 5:00, fourth rider/driver needed. John, Ext. 4615 or 475-6981.

Wanted

WATCHDOG - to adopt, good disposition, preferably German Shepherd or equal, housebroken, about 1 yr. old, assured good home. Ext. 2492 or 475-8658 after 6:00 p.m.

LAWN MOWER - Bobcat or Bunton, 22-36-48 with or w/out eng. Mike, 585-5870.

TRAINS - Lionel, any "O" gauge or "027" gauge cars, track and equip. Frank, Ext. 3120.

SMOKE EATER - (electrostatic precipator), need for alergies. 924-3281.

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

PARTS - for 67 Chevelle, also small block Chevy 6-pack carburetor and manifold. Jim, 588-0677 eves.

ROOMMATE - share comfortable 3 bdrm. condo. in Ridge, w/w, washer/dryer, cable TV, $210 per. mo., plus 1/2 util. 924-0309.

MATURE PERSON - for childcare and housekeeping in our home, 20/30 hrs./week. Patchogue. 286-2155.

NUTRITION MINDED PEOPLE - to form nutrition study group at Lab, plans include discussions, guest speakers, discounts on vitamins, etc. If interested call Fred Usack, Ext. 4798.

Lost & Found

LOST - gold "loop" earring, on E. Fifth Ave., Friday, Jan. 7th. Sharon, Ext. 3513.

FOUND - Shoreham/Wading River area, female Shepherd Husky mix, mostly Husky features, very affectionate, black/gray, cannot keep. 744-3289.

Services

*Services are listed as a courtesy to BNL employees. They are neither screened nor recommended by the **Bulletin**.*

BABYSITTER - fenced yard, lunches, snacks, playmates, continuous supervision and TLC, reasonable rates, refs. 399-5407.

WATERPROOFING - 15 yrs. exp., all work guaranteed in writing, free estimates, Lab discount. 281-5445.

TRUCK FOR HIRE - moving and odd jobs, no job too small. 281-5445.

EXTERMINATING - licensed men, pest control and termite specialists, work guaranteed in writing, Lab discount. 281-5445.

GENERAL CONTRACTOR/CARPENTER - extensions, dormers, garage conversions, basements, kitchens, decks, licensed. Jim, 698-2501.

CARPETS INSTALLED - repaired, quick dependable service, free estimates. Jim, 821-0187 after 5 p.m.

BLINDS - verticals, minis, wovenwood shades, discount prices, complete installation. Tony, 928-9241.

TAXES - prepared by tax consultant, your home or mine, reasonable. John, 732-2472.

TILE SETTERS - ceramic, quarry tile, no job too small, free estimates. E. Harris, 475-6460.

HOUSEKEEPER - seeking work in north area, thorough, reliable. Ext. 3744 or 821-9781.

WALLPAPERING - house painting professional, free estimates, reasonable rates, BNL references. Audrey, 475-7272 after 6 p.m.

PLUMBING AND HEATING - Lab discount. John, 654-8189.

HOUSE PAINTING - interior, winter discount, professional, insured, many BNL references. Bob, 289-7657 after 6 p.m.

82 INCOME TAXES - prepared by expert tax accountant, low fees. Bob, 286-5829.

WATCH REPAIR - no Timex, no electric. George, Ext. 3536.

PAINTING - paneling, wallpaper, carpentry, free estimates, ref. upon request. John, 924-5012.

HIGH SCHOOL JUNIOR - looking for steady miscellaneous jobs in Bellport area. 286-3742 evening & weekends.

VW PARTS - & machine work, full line at wholesale prices, heads rebuilt, cases lineboard, other services available. Augie, Ext. 2419 or 325-0594 eves.

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