

Gene Signals

"Biological Traffic Signals" will be discussed by John Dunn, Biology Department, in the 151st BNL Lecture on Wednesday, November 2, at 8 p.m. in Berkner Hall.

The genetic information contained in DNA is expressed through RNA intermediates into proteins by a process called gene expression. Just as a busy highway has traffic signals to control the cars, DNA and RNA have signals for controlling the molecules involved in gene expression. These biological traffic signals determine where a gene begins and ends, how large a particular protein will be, and when and how often any given gene will be expressed. Therefore, in order to understand gene expression, it is necessary to learn to recognize nature's traffic signals. Recent developments in determining the nucleotide sequences of DNA and RNA have now made it possible to begin to decipher many of the signals that have key roles in gene expression.

"In my laboratory," says Dunn, "we are studying the signals that control gene expression of T7 virus. One advantage in using T7 is the ability to introduce, in the laboratory, changes in the viral DNA (mutations) that affect how certain genes are expressed. By studying the regions affected by the mutations, we not only can



John Dunn —photo by Reben

determine their location within the DNA but also can gain insight into their function. Some general principles involved in gene expression obtained from these and similar studies elsewhere will be the subject of this lecture."

John Dunn is a microbiologist in the Biology Department. He received his Ph.D. from Rutgers University in 1970 and spent the following two years as an American Cancer Society Postdoctoral Fellow at the University of Heidelberg, Germany. He has been on the scientific staff of the Biology Department since 1972. In addition, Dunn is an Adjunct Assistant Professor at SUNY, Stony Brook and a Visiting Associate Professor at Rockefeller University. His research interests include protein-nucleic acid interactions, especially the recognition of promoters by RNA polymerases; transcription of viruses, specifically the controls involved in selective transcription of different genes during viral development; and processing of RNA molecules and their translation.

A buffet supper will be served in the Brookhaven Center before the lecture beginning at 6:30 p.m. Reservations should be made in advance by calling Ext. 3541 before 5 p.m. Refreshments will be available in the lobby of Berkner Hall immediately after the lecture.

CREF Values

1977

January	\$40.27	February	\$39.30
March	38.73	April	38.73
May	37.96	June	39.91
July	39.91	August	38.56

September \$38.65

Renate Chasman Dies At 45

Renate Wiener Chasman, a Brookhaven physicist for 14 years and well known throughout the world for her contributions to accelerator science, died Monday after a five-year battle against cancer.

Renate Wiener was born in Berlin in 1932. During the Nazi regime her family moved first to Holland, then to Sweden where she spent her early youth. She told us that, on occasion, she travelled the three miles to school on skis.

For her university training she went to the Hebrew University in Jerusalem where she received an M.Sc. in 1955 and a Ph.D. in 1959. Her thesis, in cooperation with Professor Cohen, was on an experimental problem - a difficult measurement of the circular polarization of electrons with a view to the possible existence of pseudo-scalar interactions in beta decay.

After receiving her Ph.D., Rena accepted a position at Columbia University as a research associate, working with Professor Wu. Here she married a fellow physicist, Chellis Chasman, and moved with him to Yale University where she continued to work on nuclear spectroscopy with Professor Bromley.

In 1963 the Chasmans moved to the Laboratory where Rena became a member of the Sigma Center, compiling data on neutron cross sections. She became intrigued, however, by the problems presented in the design of particle accelerators and, in a couple of years, arranged a transfer to the Accelerator Department.

Here she began a brilliant but all-too-brief career as an accelerator theorist. She felt challenged by the increase in emittance that is mysteriously experienced by intense beams in linear accelerators and set about analysis of the phenomenon.

Others had studied the effect without clarifying it, but at a linear accelerator conference in 1968 she announced theoretical results completely in agreement with the observations.

Rena was an active member of the group that designed and built the 200-MeV AGS linac injector. Not only was she the chief theorist of the group, but when the linac was coming into operation, she was to be found even in the early morning hours helping at the controls.

From the linacs she turned her attention to storage rings and specifically to ISABELLE and its various problems. She worked particularly on other options which could supplement the main proton-proton colliding beam system, including electron-proton systems and proton-antiproton systems, devising schemes which made both quite feasible. Previous work on the anti-proton option had led to quite pessimistic results; Rena's work changed the aspect completely.

Her last days were spent on the design of an electron storage ring to be used in the production of synchrotron light. This machine was to become the "National Synchrotron Light Source" whose construction at Brookhaven has just been approved. For some time she and the late Ken Green were the whole team doing this design. The results of their work were quite remarkable; a design emerged which was a vast improvement on similar designs being evolved elsewhere in the world. Other machine designs were based on electron storage rings built for use in high energy physics. Rena recognized the different requirements for this machine and devised an arrangement of components peculiarly suited for use as a light source. Many other prob-



Renate Chasman

lems associated with the light source and its special components were solved either by Rena alone or in association with others who later joined the project.

She was a serious and conscientious but charming person and was held in deep affection by all of her associates. She combined technical brilliance with a rare brand of good sense that speedily rejected incorrect answers or unsound ideas. To work with her was a great pleasure. We are very sad that she will not be with us to see her latest ideas built into the new synchrotron light source. Rena was a tower of technical and personal strength - we shall miss her very much.

She is survived by her husband, Chellis, a son Daniel, a daughter Deborah and a sister, Edith Rosenburger of London.

— John Blewett

BNL Cable Vision To The Rescue

Brookhaven's innovative x-ray technique for locating damage to power cables was called into emergency service last month. Consolidated Edison Company of New York had a problem and they asked the Laboratory to help. Al Muller and Art Minardi, the team that developed the technique for our Power Transmission Project, and technician Jack Scrofani, loaded up their new underground cable mobile x-ray unit and off they went.

Con Ed is laying 7300 feet of cable from Sands Point to a lighthouse on Execution Rock in Long Island Sound. They also plan to connect another 8400 feet of cable from the lighthouse to Pelham in Westchester County. The job is being done for LILCO as part of the northeast power grid.

Because of the distance to be covered it is a difficult job. A trench has been dug at the bottom of Long Island Sound and pipe 10 inches in diameter placed in it. In a tent on the beach at Sands Point are three reels each containing about 7300 feet of the biggest underground cables in existence - rated for 345 kilovolts and about four inches in diameter. The problem is to pull the cables from the reels into the pipe. The Con Ed people had pulled several hundred feet when they noticed that the cable seemed thin and stretched in spots. This indicated damage but just how long and how deep it was impossible to tell from their own examination. That's where the Brookhaven team came to the rescue.

Conventional power cables have a copper core around which are wrapped many layers of paper tapes impregnated with oil. The tapes are wrapped spirally leaving small spaces in between, known in the trade as "butt spaces." When a radiograph is taken, the damage is indicated by the distribution of the butt spaces on the film. If these spaces are out of line, that's where the trouble lies.

With the cable still on the reel and by using the x-ray camera, the Brookhaven unit was able to locate the extent of the

damage. This technique allows the defective tapes to be excised and replaced and gives assurance that the rest of the cable is in good condition. Al Muller likens it to filling the cavity of a tooth instead of taking out the whole tooth. In the past, it would have been necessary to unwrap all the layers of tape to find the damage and in so doing destroy the cable. In this case, because of the inaccessibility of the cable after installation, the decision was made by Con Ed to defer using the cable at the site and order a replacement.

Brookhaven was pleased to have been of assistance, and, in a letter to Laboratory Director George Vineyard, Con Ed Vice President Peter Zarakas wrote:

"On behalf of the Consolidated Edison

Company I would like to convey our thanks for the help we have received from the staff of the Power Transmission Project at Brookhaven. The new methods of cable analysis which they developed have materially assisted in resolving some problems which arose during the installation of the 345 Kv cable under the Sound from Sands Point.

"It is commendable to see a National Laboratory engaged in the kind of research which has such a direct impact on the practical problems of the electric utility industry. Please extend our appreciation to all at the laboratory who assisted in the creation and practical realization of the mobile x-ray cable task facility."



Art Minardi (right) and a member of Con Ed at Sands Point with the new Power Transmission Project van which is fully equipped to detect damage to power cables in the field.

USSR Delegation Discusses Concrete Polymer



The first official Russian delegation under the US-USSR exchange on concrete polymer technology visited the Laboratory for a two-day meeting last week. They talked with their American counterparts in the Process Technology Division of DEE about the work being done at BNL and also visited the Greenport Bridge which is now being reconstructed using concrete polymer materials. At the Process Technology Division, Jack Fontana (far right) shows some members of the delegation a piece of pipe lined with polymer concrete. From left are Dr. P.S. Kovalenko, Ukrainian Scientific Research Institute of Hydraulic Engineering and Land Reclamation; Dr. J.M. Bajenov, Moscow Institute of Civil Engineering; Dr. Sh.M. Machmudov, Central Asian Scientific Research Institute; and Mr. Nicholas Berkoff, U.S. Department of State. —photo by Reben

Meeting on Educational Programs



Twenty-eight education directors from national laboratories, university consortia, and the Department of Energy gathered at BNL October 13 and 14 to discuss their educational programs and to hear the speakers shown from left to right: R.C. Anderson, BNL; G.F. Tape, AUI; J.C. Kellett, DOE; B.I. Spinrad, Oregon State U., and K.G. Picha, U. of Massachusetts. The conference was organized by Glenn Price, Head of the Office of Academic Affairs. —photo by Rosen

See It On Saturday

The public tour of the Laboratory on Saturday, October 22, will highlight some aspects of the work of the Safety and Environmental Protection Division. On view will be their environmental surveillance truck and various shipping and storage containers for radioactive wastes. Visitors will be shown methods for sampling and analysis of stable and radioactive materials in the aquatic, terrestrial and atmospheric environments. In addition, there will be a brief discussion of the Marshall Islands radiological monitoring program.

The complete tour includes a guided bus tour of the site and a stop at the Exhibit Center which houses exhibits and models of the Laboratory's research. Tour hours are from 10 a.m. to 4 p.m.

Detour

The road off Bell Ave. in and around to the delivery area of the Medical Department (where construction is now in progress) will be closed as of Monday, October 24. However, access to the Medical Department delivery area will be possible by taking Rochester onto South Harvard and back into the delivery area. From Bell Avenue there will still be access to Biology. Any questions about the area to be closed can be directed to Al Delph in the Medical Department, Ext. 3650.

Nature Note

The large flocks of birds that have been very much in evidence around these parts in the last week or two are grackles stopping over on their way south. According to Gil Raynor, our resident nature expert, they feed on acorns and whatever else they can find at this time of year. They used to be partial to the duck farms but there aren't enough duck farms around anymore. As there are so many birds traveling together, they exhaust the food supply in any one place and move on rapidly. Once down south, the redwings and starlings join the grackles and they all settle in tremendous roosts which are a bane to bane to the Southerner.

Cooking Exchange

On Wednesday, October 26, at 12:30 p.m., the next stop in our culinary wandering will be Southeast Asia. With a little help from our friends, we will visit Burma, Indonesia, Thailand, and India. An admission charge of 75¢ a person and 25¢ a child for babysitting will be asked.

We hope to see all our friends and to welcome some new ones. The Cooking Exchange is held on site in the Recreation Building. If you wish to contribute your recipe, please call Elaine Lowenstein, 286-2788.

Strolling Minstrel To Perform At Berkner

Martin Best, the 20th century troubadour, will present the second concert in the 1977-78 series on Tuesday, November 1, at 8:30 p.m. in Berkner Hall.

Like his roving predecessors, he tells his stories and sings his songs – to the accompaniment of lute and guitar – as he goes from place to place. Unlike the fabled troubadours of old, he travels neither by mule-back nor shank's mare; the whole globe is his terrain and the jet plane is his conveyance.

The art of the troubadour may be uncommon, but it is not unappreciated. In Los Angeles, The Times wrote that "Best revealed a warm, involved sense of style and a voice that consistently met the demands of the music. With utmost respect for the nature of each song, Best expressed a wide emotional range, at times deeply moving. Alternately thunderous and lyrical, the artist never lost sight of the dramatic context and his attention to the verses drew the listener into the narrative. With more recitals like this one, unrequited love may become fashionable again."

Martin Best was born in Hampshire, England, of musical parents, descended from what he calls the "English Squirearchy." After completing his studies at Bradfield College and the Guildhall School of Music, Martin enrolled in the Royal College of Music in London to concentrate on the classical guitar. He also studied voice with Florence Norberg and attended the Segovia masterclasses in Compostela, Spain.

At twenty-three, he joined the Royal Shakespeare Company as guitarist and lutanist in their resident ensemble. After a short apprenticeship he was put in charge of all music for the company – composing, arranging and performing for such productions as "The Hollow Crown," "The Beggar's Opera" and the Peter Brook production of "A Midsummer Night's Dream."

Mr. Best's special expertise in the music of many periods of history has led to his collaboration in a number of historical dramas. His lecture-recitals of poetry and song include such diverse and all-encompassing examples of the minstrel's art as songs and lute music of medieval Europe, music of the Italian Renaissance, chansons of the French trouvères, English balladry from the 11th century to the 20th, the musical world of Shakespeare, Scotch and Irish folksongs, Scandinavian rococo court music, medieval Spanish music, the Seph-



Martin Best

ardic Jewish music of Spain and Portugal, Zarzuela and Flamenco music, solo sacred cantatas of Heinrich Schuetz, songs of Monteverdi and of Schubert.

With this vast repertoire, it is not surprising that Martin Best is in great demand on university campuses, for his material interests the language and literature departments as much as the schools of music. Among the summer music festivals at which he has been a featured performer are: the Edinburgh Festival, the Bath Festival, the Corfu Festival in Greece and the Spoleto Festival in Italy. He was a resident artist for several weeks at the Lenox Arts Center in Massachusetts.

Mr. Best's BNL recital will consist of a wide sampling of his art, ranging from the 12th century to the present time.

General admission	\$4.00
Students with ID	
and persons over 65	\$2.00
Persons under 18	\$1.00

Arrivals & Departures

Arrivals

Kunmo T. Chung	Nuclear Energy
John T. Fraser	Energy & Environ.
John N. Galayda	Accelerator
Ronald J. Graeser	Nuclear Energy
Arnold R. Moodenbaugh	Physics
Patricia A. Pecchio	Staff Services
Michael J. Sansone	Energy & Environ.
John F. Svandrik	Nuclear Energy

Departures

Fulvio Cacace	Chemistry
Ned E. Cipollini	Chemistry
Jeffrey F. Croston	Applied Math.
Jung J. Pyun	Nuclear Energy
Daniel P. Serwer	Energy & Environ.

Pantomime From Poland

The Warsaw Mime Company of the Warsaw Chamber Opera will appear at Berkner Hall, under the auspices of BERA, on Friday, November 4 at 8:00 p.m.

This famous company is just completing their second annual engagement at the Slavic Cultural Center. They will present a classical program which will include a segment of "Voice of Silence," their much-acclaimed new work which premiered in Warsaw last October. Mime is one of the oldest arts and is something that every member of the family will enjoy.

The members of this Polish Company were trained under the direction of Henryk Tomaszewski, the renowned founder of the Wroclaw Mime Theater. Years of work

have given the company of four men and one woman a mastery of mime. They are not only actors and dancers, they are the very "sculptures of their own bodies." The five mimeists: Rajmund Klechot, Stefan Niedzialkowski, Zdzislaw Starczynowski, Andrzej Szczuzewski and Jolanta Kruszewska express themselves in a dramatic form of their own. Their artistic talents harmonize with the music of leading Polish composers. . . their poetic movements are inspired by nature, paintings, sculpture and theater.

General admission is \$4; \$2 for students and senior citizens.

For further information please call Don Lazarus on Ext. 4723.



The Warsaw Mime Company

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In Memoriam

Alphonse P. Laurine, Telephone Service Supervisor, Staff Services, died in Mather Hospital on October 13, 1977, at the age of 62. He had been employed at the Laboratory since April 18, 1960. Laurine lived in Yaphank and is survived by his wife, Florence. Services were held at Transfiguration Roman Catholic Church in Maspeth, Queens and burial was at Pinelawn Cemetery.

Insulation Warning

Confronted with increasing home heating costs over the last several years and President Carter's proposed tax credits for home insulation, homeowners across the country are installing insulation.

Many reputable firms provide quality insulation service at reasonable prices. However, FEA's regional office in Kansas City recently uncovered an apparently fraudulent scheme to sell insulation to homeowners in Missouri and Kansas, a scheme that could appear in other parts of the country as the winter heating season approaches.

Regional Administrator James Newman described the operation as one in which homeowners are phoned by a caller posing as a representative of the President's Energy Conservation Council, as a government official or inferring association with the government. The homeowner is told that he or she will receive a \$100 to \$400 tax credit following completion of an inspection by a representative of the company. An appointment is made as soon as possible.

The "salesman" arrives at the residence and may or may not conduct an attic inspection. Without specifying the exact quantity of insulation the firm would install, the representative arrives at a cost estimate, usually in excess of \$1,000. He assures the homeowner that, following completion of the work, a certificate would be presented guaranteeing a \$400 tax credit.

Newman pointed out that legislation providing tax credits for home insulation has not yet become law. He also noted that the Administration's insulation proposal does not require certificate verification for tax purposes. Finally, Newman emphasized that no insulation contractor or installer may claim an association with any government agency.

Homeowners who plan to insulate should consider seeking references from local home builders associations, gas and electric utilities and the Better Business Bureau. Homeowners should also obtain a number of estimates for the work they want done, and are advised not to sign any contract until they are completely satisfied with the contractual arrangements and the guarantees provided.

—Energy Reporter

Rambling Around

These are bits and pieces picked up from here and there with occasional observations by the Editor:

- **Maeir's Law**
If facts do not conform to the theory they must be disposed of.
- **Horner's Law**
Scientific experience varies directly with the amount of equipment ruined.
—from the *Observer* (NRAO) Sept. 1977.

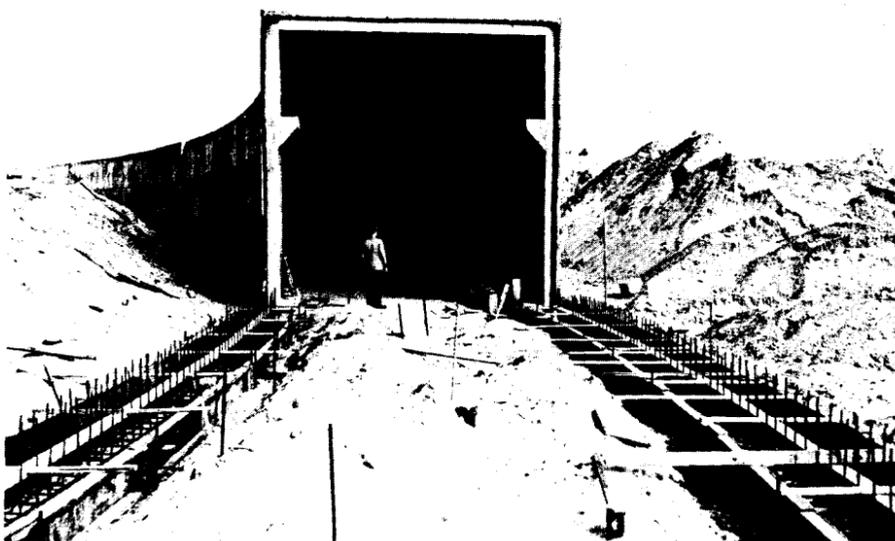


Exhibit Center Raffle

②

Name Lab. Ext. Home Tel.

This photograph is:

- A photographer's concept of "the light at the end of the tunnel."
- The Holland Tunnel (and you thought it was under water).
- The 33-BeV Alternating Gradient Synchrotron which went into operation in 1960.

Clip out and save. Another photograph will appear on October 28. Save this coupon along with the one that appeared in last week's Bulletin. When all three are identified, staple them together and bring them with you to the Center on October 30. The drawing for dinner for two at the Dining Car 1890 will be held late in the afternoon and the winner notified by telephone.

Theater Group Meeting

There will be a general meeting of the Theater Group on Friday, October 21, at 8 p.m. in Stage II. All interested newcomers as well as our old friends are invited to attend. The presentation for the evening will be a short play entitled "Charade" by local playwright Claire White. We hope to see some new faces for the upcoming season, so please come and join us.

French Club Program

Le Cercle Francais du BNL will sponsor the appearance of the Stellar Consort in a Program of French folk songs, and French and English songs of the Medieval and Renaissance periods. The concert will be in Berkner Hall on Friday, October 28, at 8:30 p.m. This program will provide an opportunity to hear beautiful and rarely performed music by composers such as de Lassus, Dufay, and Dowland.

The Stellar Consort is a flexible and ever changing group of singers and instrumentalists formed seven years ago by Ingeborg and Johannes Hardorp, who had successfully led similar groups in Germany and England, where they performed in concerts, radio broadcasts, and recording sessions. Here on Long Island, the Stellar Consort has performed at the Garden City Cathedral, The Hofstra University Playhouse, the Frick Estate Center for the Fine Arts in Roslyn, Sunwood at Stony Brook, and recently at Berkner Hall.

In their performance next week, the singers - Ingeborg Hardorp (soprano), Sandra Goodman (alto), Stephen Sturk (tenor), and Johannes Hardorp (bass) - will be joined by Jerry Willard, lutanist and guitarist. Mr. Willard performs often in New York, and teaches there and at SUNY at Stony Brook.

For non-members of the French Group, the admission charge will be \$3, (\$1 for students).

NYC Train Trip

The Hospitality Committee is planning a group railroad trip to the city Wednesday, November 2. Departure will be at 8:32 a.m. from the Patchogue LIRR station. Round-trip fare for adults is \$2.45, children under six years ride free.

Reserve a ticket by sending your fare through the U.S. mail to P.O. Box 322, Upton, New York 11973, no later than Friday, October 28. Make checks payable to "Brookhaven National Laboratory." Your tickets will be given to you at the train station. Refunds will be made only if cancellations are received at least two days prior to the trip.

Cafeteria Menu

Week Ending October 28, 1977

Monday, October 24	
Tomato vegetable soup	
Keilbasy & sauerkraut	1.15
Grilled ham steak & 1 veg.	1.30
Hot deli - pastrami	
Tuesday, October 25	
Cream of potato soup	
Southern fried chicken & 1 veg.	1.15
Macaroni, cheese & 1 veg.	1.05
Hot deli - veal & peppers	
Wednesday, October 26	
Beef barley soup	
Tuna noodle casserole	1.10
Hot deli - corned beef	
Special	
Cup of soup, tacos, refried beans pie or jello	
Small beverage	\$1.87 plus tax

Thursday, October 27	
Chicken noodle soup	
Chili dogs & rice	1.05
Sausage meat & shells	1.20
Hot deli - baked Virginia ham	
Friday, October 28	
New England clam chowder	
Broiled filet & 1 veg.	1.15
Roast sirloin of beef & 1 veg.	1.35
Hot deli - meatballs & peppers	

Sports News

Gym Schedule

Due to a temporary shutdown of electrical power in the general area of the building on Saturday, October 22, the gymnasium will open at 1:00 p.m.

There will be no badminton and general activities on that day only.

Bowling

Pink League

Pink League has come alive! High games for the night were Marie Brenner 206, Marge Stoeckel 178, Dot Marelli 167, Colleen Holland 166, Helen Keeley 166 and Alice Trubisz 164. The Lickey Splits are still in first place followed by the Odd Balls and the Pinsplitters. Tied for fourth are the Gutter Getters and Fiscal Assets. The Personnelities sparked by Joyce Wund's 150 (her average is 110) showed that they are determined to get out of the cellar. Congrats also to Noelwah Netusil for her 155 and Susan Vander Kolk for a 154.

Purple & White League

The Alley-Oops and the Pin Pickers are tied for first place with the Woodchucks trailing by one point. High games were Ken Asselta 208, Joe Ferrante 208, Ben Belligan 201, Gail Thompson 160. Ben Belligan had high series for the men with a 543 and Sharon Smith for the ladies with a 445.

Red League

The 76'ers took 11 from the Freon Loaders with some great team bowling (3034 pins). J. Scesny (226/211/620 scratch, 668 gross) led the way and R. Larsen (211/578 scratch) and J. Petro (214/546 scratch, 642 gross) followed right along. The Freon Loaders had two games over 1000 but couldn't capitalize.

The Sandbaggers took 8 from the Sparks with E. Meier (224/553 scratch) and R. Jones (203/555 scratch) bowling well. The Old Timers came out 7-4 winners in their match with the Cosmos.

The Anachems took only 4 from the Pick-Ups, with E. Gill having a 212. The Designers took only one game and 3 points for the night. E. Sperry had a good night (548 scratch). The Bubble Boys had an off night but managed to take three from the Trouble Shooters.

Green League

The Blue Jays could only manage four points from the Old Timers II to stay tied for first place. For the Blue Jays, A. Carsten had a 200 and J. Berech a 212. The Dynomites moved to a tie for first place by taking eight points from the Designers. The Got-A-Hit-Ums took eleven from the hot bowling Pinball Wizards. J. Spraggins rolled a nice 208. The Pick-Ups took seven from the Anachems while the Sparks only took three from the Sandbaggers. The Trouble Shooters won eight from the Bubble Boys.

Tennis

This season the BNL Tennis Team finished in fourth place in the LIIRA League's Red Division. Final standings are given below:

	Won	Lost
Photocircuits	12	2
Grumman Gold	11	3
Grumman Blue	10	4
Brookhaven	8	6
Powers Chemco	7	7
Lufthansa	5	9
Hazeltine	2	12
Sperry	1	13

This was BNL's second season in the tennis league, and our first in the top (Red) division. We had a number of tough defeats, including a one-point loss to league champion Photocircuits, but all in all, it has been a satisfying season.

Badminton

Rain, sleet, hail, or snow cannot stop badminton tournaments. We are planning for our men's singles, men's doubles, and women's singles ladder tournaments to begin on November 8. We urge all newcomers, oldtimes, beginners, and experts to participate. Give John Binnington a call at Ext. 3489 if you are interested.

Classified Advertisements

Placement Notices

The Laboratory's placement policy is to select the best-qualified candidate for an available position, with consideration given to candidates in the following order of priority: (1) present employees within the department, with preference to those within the immediate work group; (2) present employees within the Laboratory as a whole; and (3) outside applicants.

Each week, the Personnel Office lists new personnel placement requisitions. The purpose of these listings is, first, to provide open placement information on all nonscientific staff positions; second, to give employees an opportunity to request consideration for themselves through Personnel; and, finally, for general recruiting purposes. Because of the priority preference policy stated above, each listing does not necessarily represent an opportunity for all candidates. As a guide to readers, the listings are grouped according to the anticipated area of recruitment, as indicated below. Except when operational needs require otherwise, positions will remain open for one week following publication date.

For further information regarding a placement listing, contact the Personnel Placement Supervisor, Ext. 2874 or 2882.

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

353. DEVELOPMENT ENGINEER - Requires MSME or equivalent having substantial background in stress analysis, cryogenics and superconducting magnet design. Accelerator Department.

354. DEVELOPMENT ENGINEER - Requires BSME or equivalent having background in general machine design and manufacturing processes. Knowledge of vacuum technology desirable. Accelerator Department.

355. CHEMISTRY ASSOCIATE - BS or its equivalent in chemistry or its equivalent would be desirable. Good knowledge of chemistry and working familiarity with Fortran are required. To work on a chemical data base. Grant-supported, half-time position which may entail some travel. Chemistry Department.

356. PERSONNEL ASSISTANT - Wage and salary area - having strong skills in statistics, data analysis, etc. Good typing skills also necessary. Personnel Division.

357. TECHNICIANS - AAS or equivalent in electro-mechanical technology with background relating to vacuum systems is required. N.S.L.S. Physics Department.

358. COMPUTER OPERATOR - Shift work. Applied Mathematics Department.

359. MASTER WELDER - Central Shops Division.

360. EXPERIMENTAL MACHINIST - Central Shops Division.

Autos & Auto Supplies

70 GREMLIN - Deluxe model, lg 6 cyl, luggage carrier, new brakes/clutch/alternator/exhaust sys. \$750. 821-1317 after 5 p.m.

72 SAAB 99 - Clutch work required, excel body, am/fm stereo. \$650. Rich, Ext. 2501, 924-4237.

71 PINTO RUNABOUT - 2000 cc, auto trans, new paint job, orig owner. \$925. 928-2803.

70 OLDS 98 - Creampuff, luxury sedan, 59,000 mi, 4 dr, vinyl roof, ac, 8 track fm stereo. \$1450. Ext. 4137, 473-4583.

69 BUICK ELECTRA - 4 dr, r & h, power, high mi, runs great. \$600. Frank, Ext. 4095.

75 CAMARO - 6 cyl, auto, am/fm 8 track stereo, excel cond, ps/pb. \$3,100. 589-9240.

CAMPER - 11½ coachman camper, good cond. 289-9813.

TIRES - Snow tires, C78-14, like new. \$30. 727-7515.

TIRES - (2) snow tires, E78-14 w/rims. Roni, 586-3631 after 6 p.m.

71 FORD MAVERICK - Auto, 6 cyl, 4 dr, new battery/muffler, hood & trans needs work. \$250. C. Nauman, Ext. 3412, 286-3764 eves.

73 PLYMOUTH - Road Runner, 318 auto, headers, new tires, 45,000 mi, like new, excel cond. \$2,600. Linda, Ext. 3199, 727-7304 after 5:30 p.m.

TIRES - Snow tires, (2) 6.00 x 12" on Simca rims, almost new. \$30/pr. Ron Ondrovic, Ext. 3238.

65 VW BUG - Sunroof, snow tires on wheels, runs. First \$95 takes! Harbottle, Ext. 4387.

72 VEGA SEDAN - 3 sp stick, 25 mpg, good cond. \$450. 654-0559, after 6 p.m.

72 BLAZER - 4 wheel dr, rear positraction. Best offer. 283-2390.

73 VEGA - Manual shift, 56,000 mi, new clutch/muffler/tailpipe, excel cond. \$650. Yoshikuni Doi, Ext. 3029.

C-4 AUTO TRANS - B & M built, 1,000 mi, plus hole shot converter & drive shaft, set up for Mustang. Chris, Ext. 4612.

76 GMC PICKUP - 4 whl dr, auto, ac/pc/ps, 2 gas tanks, wired F/camper, cb & beach equip. Ext. 3085.

71 PINTO - Good transportation. \$600. Steve, Ext. 2012.

71 WINNEBAGO CHIEFTAN - 24' motor home, 413 Dodge eng, new tires, 2-A.C., slps 6. \$9,800. 475-4190 after 5 p.m.

69 RENTAL 10 - 66,000 mi, good mech cond but may need clutch, good mileage. \$300. Ted, Ext. 2324, Fridays.

72 MERCEDES BENZ - 2 dr deluxe sedan, excel cond, fully equip. \$6,000, firm. B. Timm, 288-1223 after 6 p.m.

TIRES - New Dunlop & used tires, rims, repairs, snows, reg radials, free installation. Low prices. Fred Usack, Ext. 4597, lunchtime, 475-4935 eves.

75 FIAT-128 - 2 dr excel cond. Ext. 3514, 286-8814 after 6 p.m.

SNOW TIRES - Goodyear surburbanite, 2 H78-14 w/Olds rims. \$50. Ext. 3392, 475-8330.

TOOL BOX - Custom, all fiberglass for pick-up truck, 5' x 2' x 2', key locks, waterproof, excel. Walt, 369-7383 between 8 a.m. - 3 p.m.

RIMS - 5-14" Chrys rims, \$5 ea; (1) H78-14 whitewall tire on Chrys rim, \$12. Bob Monaghan, Ext. 4688, 744-5089.

64 FORD PICKUP - ¾ ton, V8, automatic, body straight, no rust, needs paint. \$650. Laird, Ext. 4539/4540, 734-7307 after 6 p.m.

TIRES - (2) GR78-15 steel belted radial whitewalls, very good cond. \$25. Ext. 4701, AR1-2877.

68 FORD STA WAGON - Country sedan, 8 cyl, 390 eng, ac, new trans, very good cond. \$550. Ext. 4762, 345-3192 eves.

72 FORD GALAXIE - 4 dr, auto, ps/pb/ac, extras, excel cond. \$975. Bob, Ext. 3386, 878-1471 eves.

70 JEEP - CJ5, 6 cyl, enclosed cab, air shocks, good cond. 744-5018.

69 FORD GALAXIE - Ac/ps/pb, 2 new front tires, water pump, must sell. \$400. Steve, Ext. 3822, 929-6527.

64 CHEVELLE STA WAGON - Ps, 283-V8 eng, good running cond, 8 pass, blue. \$300. Jim, Ext. 4040, 289-0876.

74 VEGA - 38,000 mi, new tires, 4 sp, custom interior, 29 mpg, garaged, new paint, excel cond. \$1,375. 331-2779.

70 CHEVY - 9 pass, sta wagon, runs well. Reasonable. Gil, Raynor, Ext. 2268, 727-5194.

68 FORD FALCON WAGON - 6 cyl, new brakes/muffler/tailpipe, good cond. \$450. Ext. 3499, 929-6156.

73 PLYMOUTH DUSTER - Std, radials, new brakes, excel mech, minor dents. \$1,600. Farid, Ext. 3395, 345-2862 eves.

64 FALCON VAN - Needs some work. Make offer. 744-0296.

Boats & Marine Supplies

17' COBIA - Fiberglass, 55 hp, Chrysler O.B., fl elec, both 1971, excel cond, extras. \$1995. 281-3122 after 6:30 p.m.

16' FIBERGLASS BOAT - 85 hp, Evinrude motor, new galv trlr, ski equip. \$1,000. 473-1833.

21' VENTURE - 4 hp Johnson, 3 sails, trlr, port head, slps 4, many extras. \$3,600. 928-2954 after 6 p.m.

25' OWENS - 1960, 283 eng, slps 5, good cond, extras. 281-6468 after 5 p.m.

27 FT CUSTOM BUILT SLOOP - Mahogany & teak, sleeps 3, 22 hp Palmer auxiliary just rebuilt. \$2500. Jeff, Ext. 2953, 9-5, Ext. 2512 after work.

Miscellaneous

YARD SALE - Oct 21 & 22, rain or shine, collectables, misc, 369 Washington Ave. Patchogue.

YARD SALE - Household furn, sports & auto items, Oct 22 & 23, 10 a.m. - 5 p.m., 19 Antioch Drive, Shoreham.

BASEMENT SALE - Furn, household items, Oct 21 & 22, 10 a.m. to 4 p.m., rain or shine. 928-7344.

HANDYMAN SPECIAL - Sears washer-dryer combo; washer works but does not spin or dry. Free if you haul. Single bed, Hollywood style, \$10. Ext. 3482.

BABY CRIBS (2) - One brown wood, like new \$35; one white, good cond, \$25. Ext. 2952, 289-1855.

CAMERA - Single lens reflex, Kalimar SR200 w/f2 lens. \$49 firm. Les, Ext. 4074.

POTTERS WHEEL - And wedge board, combination stone base, excel balance, continuous revolutions. \$75. 924-6582 after 6 p.m.

RANCH MINK COAT - Matching hat, very good cond. Reasonable. 589-0644.

FURNITURE - 3 pc med sect, \$100; kitchen set, 4 chairs, \$35, 3 coffee tables, \$5 ea. Tom, 325-1033.

LIVINGROOM SOFA - 78" w/slipcover. \$100. Ann, 286-2280.

PACHYSANDRA - Good ground cover, 50 plants for \$5, 100/\$9. 744-5448.

SOFA - 6' autumn tweed Herculon, modern stuffed style, almost new. \$300. Ext. 3623, 286-1944.

TREES - (2), 6' hemlock trees. \$5, if you dig. Claire Hull, 281-2002.

REAR SEAT - For van, snow blade for lawn mower, lg dog house. \$25 ea. 473-9180 after 3:30 p.m.

GLASSES - Set of 8, Libby's silver leaf, \$4; movie screen w/slide, lenticular, 40 x 40. \$20. Ext. 3690.

HOUSEWARES - New dinnerware, 45 pc Kensington ironstone, olive green, service for 8, \$40; 32 pc semi-vitreous, white w/floral, service for 6, \$35. 928-1127 after 6.

CRAFTSMAN - 18" belt driven jig and band saw w/stand. \$75. Micky, Ext. 3218.

BICYCLE - Lady's 26", 3 speed, good cond. \$35. Ext. 2590.

HORSESHOE SET - Regulation. \$5. 289-6490.

FIREPLACE SCREEN - Brass frame 38" x 31¼, black draw screen, tarnish proof, used few times, \$30; antique iron shovel. \$5. 289-6490.

SUNBEAM MIXMASTER & JUICER - \$10; 6-cup Wear-ever coffee pot, \$4; electric hot plate tray, \$5; rowing exerciser, \$8; wooden fold-out server, \$5; bathroom seat cover & rug, \$3. Walt, Ext. 2907 or 698-0576.

FOOD SLICING MACHINE - National Jumbo elec, like new, \$20; old fashioned milk cans & baseboard radiators, cast iron. Reasonable offer. Cheryl, Ext. 2345, 286-1057 after 6 p.m.

TRAVEL TRAILER - 24' Shasta, slps 8, comp equip, mint cond, 298-4155 after 5 p.m.

BICYCLE - Man's Raleigh sports, 3 spd, excel cond. \$70. Robert, 286-2265.

POST HOLE DIGGER - Up to 6" dia hole. \$15. 289-6490.

TWIN BED FRAMES - 2 maple head & base board, \$10 ea; 1 metal frame on casters, \$5. Hank, Ext. 4428, 727-7515.

BEDROOM SET - Blonde wood, lg drsr w/mirror, headboard & high dresser, \$100; dining rm set, 60 x 30 table w/4 chairs, like new, \$60. 734-7584.

BABY ITEMS - Lg drsr, carriage, like new, bucket car seat, elec sterilizer, stroller, toys, ski boots & rack. Joan, 751-6569.

WINTER COAT - Woman's black borgana, gray collar, cuffs, hemline, new, size 16. \$75. Ext. 2003, 472-0086.

FREE KITTENS - While they last. 732-3135.

WELBUILT DRYER - Portable elec, 110 V, like new, \$35; 2 lg table lamps w/shades, \$20/pr. 289-5607.

SLIDING DOOR - Glass, double pane insul, white alum, screen, new, compl in box, 6' x 6'8". \$180. 331-2779.

MATTRESSES - (2) twin size & box springs, clean, good cond. \$40/set. 289-1883, HR2-1371.

WOOD STORM WINDOWS - (2) 23¼" x 37"; (9) 30¾ x 55". \$1.50 ea. Dave, Ext. 4520.

CHILD CAR SEAT - GM love seat. \$10. Tony, Ext. 3658.

FURNITURE - Cocktail table & 2 matching end tables, used less than 6 mo, beautiful cond. \$140. 286-8517 after 5:30 p.m.

VEGETABLES - Cabbage, onions, 10/25/50, pumpkins 4/\$1. Isie, Ext. 3696 lunchtime.

MAN'S JACKET - Brown suede, size 46, worn twice, \$40; green leather, XL, \$15; tan leather, XL, \$15; men's pants, size 40, \$5 ea. 981-5993 after 6 p.m.

ELECTRIC RANGE - GE, good cond. \$50. Jim, Ext. 4513.

CAMERA - Kodak, Retina III S w/50 mm xenon lens. \$35. Bill, Ext. 4743.

ANTIQUÉ CRAWFORD PARLOR - Wood/coal stove, excel cond. \$225. 727-6504 after 5 p.m.

DEHUMIDIFIER - Fedders, 22 pt capacity, auto. \$65. 878-0717.

KLH 55 RECEIVER - W/pioneer turntable #12D, excel cond, 2 yrs old. \$200. 289-3598.

BANJO - Tenor banjo, Harmony Sovereign, brand new w/case & all acces. Cost \$145, asking \$80. Ext. 3357, 929-4949.

CANVASES - Artist, only 20 pks left, 6 x 8 & 7 x 9, mostly 3/pk, some 6/pk. Pk of 3/50¢ or \$10/box. Ext. 3609.

CRIB - Dark wood, excel cond, \$40; girl's size 4, ice skates, new, \$5; white china lavatory sink 17" x 19", new, \$15. 924-3492.

OUTDOOR LIGHTS - For Christmas tree, 2 sets of 20 w/all bulbs. \$2.50/set. Bob Monaghan, Ext. 4688, 744-5098.

AKI TAPE DECK - Reel-to-reel, internal speakers, portable. 878-1895.

HOSPITAL BED - W/trapeze & railings, modern walnut headboard, very good cond. Grace, Ext. 2529.

APPLIANCES - Black Angus sandwich grill & waffle iron, new, \$16; Sunbeam 4 slice chrome toaster, new, \$18. Angie, Ext. 3156.

GIRL'S BIKES - 16" Schwinn, pink & white, \$10; 20" maroon flower banana seat, basket, \$15. Sarah, 475-2629.

WIG - Eva Gabor "Elegant Lady," dark brown, orig cost \$25, worn twice. \$10. Fred, Ext. 4095.

SKI BOOTS - Lady's 6M, Kolfack leather buckle. \$25. Georgia Irving, Ext. 2318.

FURNITURE - Early American table, \$350; 21" TV, \$25; head skies, 6' & poles, \$15; ski boots, size 5½, \$10. 654-4394.

TOY BOX - 30" x 15" x 15", padded top, \$3; mahogany child's stool, 8" high, \$2. Joan, 744-3919 or Jack, Ext. 4447.

FIR & SPRUCE TREES - 24" tall, 2/\$5; Presto 4 qt pressure cooker, \$7.50; American flag, 5 x 8, new, nylon, \$12. 272-1617.

HEATER - Electric hot water heater, "John Wood," 52 gal w/fittings. \$25. Ext. 3361, 878-0717.

HASSOCK - Beige, 36" round, \$10; rug, 9 x 12, red w/pad, \$40; draperies, yellow & green print, 144" x 84", \$12; plastic plant ladder, \$6; punch bowl set, \$3. Ken, Ext. 4003/4581.

VACUUM CLEANER - 9 mo old Kirby and all attachs. \$150. 475-8456 after 6 p.m.

STORM DOORS - Wood combination, sizes 30½ x 81½, 37" x 81", brass hardware, locks, hinges incl. \$15 ea. 289-6490.

FREE - Physical Review Letters, Vol. 1, #1 to Vol. 31, #27, you pick up. R. Louttit, Ext. 4745.

Real Estate

Real Estate advertised for sale or rent is available without regard for the race, color, creed or national origin of the applicant.

For Sale

MASTIC BEACH - 4 bedrm cape, fi bsmt, new roof/paint, garage, 100 x 100 lot, fenced, shed, storms/screens. Taxes \$800. \$29,900. Ext. 3842.

3 BEDROOM - 1 guest rm, porch, hd wood floors, lg yard, near village & water. Less than \$40,000. Vis, Ext. 3512/3513, 878-4889 eves.

UPSTATE FARM - 153 acres, good road frontage, water, elec, bldgs. Reasonable. Ext. 3688, 363-7032.

BELLPORT VILLAGE - 3 bedrm, 2 baths, 2 car garage, ½ acre, screened porch, attached greenhouse. 286-2724.

S SHIRLEY - 3 bedrm, fin bsmt, plus storage bsmts, storm windows, hot water heat, 50" x 285", near water. \$29,500. 281-5328.

MANORVILLE - 4 bedrm cape cod, 2 baths, fi bsmt, lr w/fp, above grd pool, 5 appl, 2 acres. 878-1895 after 5 p.m.

MASTIC BEACH - 3 bedrm ranch, 1½ baths, 100x100 corner lot, nr water, covered patio, fenced. \$31,000. 281-7531.

MILLER PLACE - Rustic acres, 7 rm splanh, 3 bedrm, 3 baths, fp, in-wall vacuum sys, w/w carpeting, in gdr pool, landscaped. \$70,000. 473-1175.

ROCK POINT - 4 bedrm colonial, eat in kitch, 2½ baths, fp, w/w carpeting, all appl, garage, wood deck, ½ acre, priv beach. 744-1156.

MASTIC BEACH - 2 bedrm, newly decorated, 50' x 200' landscaped, beach rights. \$600 taxes. \$25,000. 281-6630.

CENTER MORICHES - Building lot, 15 min to Lab, 100' x 175', nr marina, town. \$12,500. Ext. 3361, 878-0717.

BUILDING PLOT - Mastic, 120' x 100' nr shopping, schools. \$8,200. Frank, Ext. 4095.

EAST PATCHOGUE - 2 bedrm, full bsmt, fenced, alum siding & windows, new roof, oil h/w heat. High 20's. 289-8212.

Rentals

BELLPORT VILLAGE - Unfurn 1 bedrm apt, suitable for couple, no children or pets. \$200/mo util incl, 1 mo security, yr lease. 286-8850.

COTTAGE - 1 bedrm, nr boating, fishing. \$225 + util. 281-7844.

2 BEDRM APT - Ground flr level, priv entr. \$285/mo util incl. 924-8264 after 5 p.m.

ROCKY POINT - 4 rm house, furn, nr beach, prefer single gentleman. \$200/mo + util. 744-6437 after 5 p.m.

CORAM - 3 bedrm ranch, 2 fp, Florida rm, wet bar, carpet & slate flrs, 2 car garage, 10 mi to Lab, option to buy. \$450/mo. 331-1045.

ROCKY POINT - 3 bedrm ranch, fp, walk to everything, new home, 10 min from Lab. \$375/mo + util. Bob, 3121, 744-5261.

Wanted

ROOMMATE - To share 5 rm apt in Mastic Beach. \$125/mo util incl. Ed, Ext. 3535, 698-9059.

RIDING BOOTS - Used English riding boots, ladies size 9. Joann, Ext. 3565.

SMALL BIKE - For beginner, 12" or 16". Ext. 3134.

BROWNIE UNIFORM - Size 8. 732-8241.

SMALL HOUSE - Or apt to rent for working mother & 2 children. Easily accessible to BNL, util incl. Reasonable. 281-0274 after 6 p.m.

HOUSEKEEPER - 5 afternoons or 3 full days per wk. Middle Island. 924-7044.

AIR COMPRESSOR - Heavy duty, auto body grinder & polisher. Scott, Ext. 4526.

TYPING - Lite, sewing & babysitting, Medford area. 475-0144 after 6 p.m.

HOUSEKEEPER - 2 or 3 afternoons/wk, for working mother w/teenage son. 744-8765 after 6 p.m.

HOME - For 5 mo old dog, female mix, obedient, good with kids. 286-8229 after 5 p.m.

TAPE - N48761 if it was delivered to you by mistake. Regina, Ext. 2259.

HAND TRUCK - Chris, Ext. 4278.

Services

LOG SPLITTER - W/operator, no job too small. Russ, 589-0750.