BROOKHAVEN BULLETIN
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BROOKHAVEN NATIONAL LABORATORY

Goldhaber Recalls Chadwick

In 1933, Maurice Goldhaber, a student at Berlin University, left Germany for England, where he was accepted at Cambridge University's Cavendish Laboratory. There, he was one of the last students to work closely with Sir James Chadwick, who had discovered the neutron in 1932.

Goldhaber, who is now an AUI Distinguished Scientist, came to the U.S. in 1938. He returned to Cambridge last September to attend a Conference Commemorating the 50th Anniversary of the Discovery of the Neutron. At the opening session, he was one of several scientists who reminisced about their associations with Chadwick, who died in 1974. These extracts from Goldhaber's talk reveal some aspects of Chadwick's work and his personality.

About Their Research

When an atomic nucleus is bombarded by gamma radiation, the nucleus can break into two or more fragments. Called photodisintegration, this process is also known as the Chadwick-Goldhaber effect. Here, Goldhaber explains how this came about.

"On one occasion, in the spring of 1934, when I discussed my work with Chadwick, I found the courage to suggest the photodisintegration of the deuteron. Chadwick was interested in this as a way to obtain a precise mass for the neutron. At that time the Joliots claimed a rather high mass for the neutron. Ernest Lawrence argued for a small one and Chadwick's value was in between, though lighter than the proton.

"About six weeks after this conversation, Chadwick said to me, 'Were you the one who suggested the photodisintegration to me? Well, it works. It worked last night. Would you like to work with me on this?' I immediately said yes.

"We worked intensely for about two months, and found that the neutron was definitely heavier than the proton, even heavier than the hydrogen atom."

The Speculation Question

In writing up their measured photodisintegration cross-section, Chadwick and Goldhaber noticed a conflict between their results and earlier ones obtained by D.E. Lea, who had bombarded paraffin with fast neutrons, discovering γ-emission. This led to yet another discovery.

"We realized that the effect Lea observed could not be due to the primary neutrons from his source. Early drafts of our paper — which I still have in Chadwick's and my handwriting — contained a speculative interpretation in which we assumed that the fast neutrons are first slowed down and then captured as slow neutrons. But a day or so later Chadwick said, 'Let us not speculate.'

"Because of Rutherford's influence, speculation was somewhat frowned upon at the Cavendish [Ernest Rutherford had headed the Laboratory since 1919]. So we merely pointed out the puzzle we had encountered and ended with the bland statement, 'It therefore seems very difficult to explain the observations of Lea as due to the capture of neutrons by protons for this effect should be extremely small. A satisfactory explanation is not easy to find and further experiments seem desirable.'

"A few months later, when Fermi and his collaborators discovered slow neutrons, the paradox we had noticed was resolved. Rutherford sought me out, uncharacteristically agitated about the fact that this discovery had gotten away from the Cavendish. A psychohistorian of science might suspect that it was he who talked Chadwick out of our speculation."

And More Discoveries

Although they did not discover slow neutrons, Chadwick and Goldhaber used them to find reactions in lithium (Li), boron (B) and nitrogen (N).

"When we exposed uranium (U) to slow neutrons, we hoped to find long range α-particles. We therefore 'cleverly' covered the U target with an aluminum foil thick enough to stop the naturally emitted α-particles — but it was also thick enough to stop fission particles!

"The Li, B and N reactions have had an impact out of all proportion to the ease with which they were found. Reactors have made it possible to use the Li reaction to make large quantities of ^3H, important as a tracer and for fusion reactions; its daughter product ^3He is critical in low temperature research. The B reaction is useful as a neutron detector and also holds promise in the treatment of some tumors. The N reaction leads to the important tracer ^{14}C, made in reactors and naturally by cosmic-ray neutrons in the atmosphere."

Other Conference Comments

Goldhaber also made these observations:

On the development of physics — *"Chadwick was 20 years older than I, and he in turn was 20 years younger than Rutherford. Twenty years is a long time in the development of physics. It covers something like five successive generations of research students, with each generation confronting physics in a different state of development."*

On Chadwick's lack of nostalgia — *"When Chadwick was packing up to leave for Liverpool, he told me that he used a simple principle to decide what he would take along. If he would not need it for the next two weeks, he would leave it behind. He came across the paraffin wax he had used to knock out protons when he discovered the neutron and said to me, 'Do you want it? I don't need it.' I was glad to get this historical memento which is now on loan to the Science Museum in Kensington [England]."*

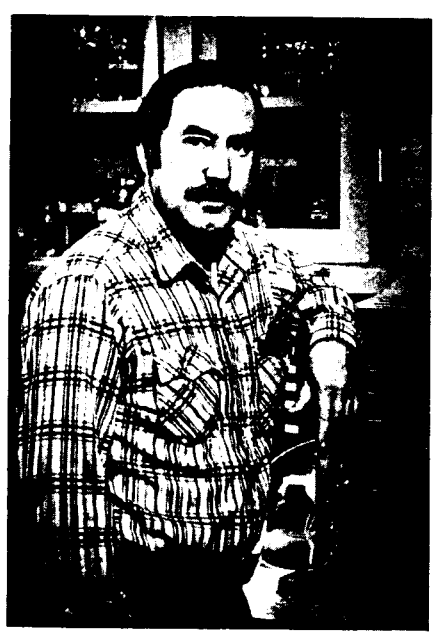
On the significance of Chadwick's discovery — *"The Cavendish Laboratory has the distinction of having started the electronic age with the discovery of the electron in 1897 by J.J. Thomson and what one might call the 'neutronic' age which started there in 1932 with Chadwick's discovery of the neutron. The electronic age extends our senses, and the neutronic age may still bring us to our senses."*

Sir James Chadwick

Maurice Goldhaber

BNL Lecture Agent 002

Understanding the way in which human cells express the information stored in their genes is a major goal of molecular biology. One way to find out is to study how viruses interact with cells. Viruses are small, nonliving packages of information that are capable of reproducing themselves once inside an appropriate cell. To reproduce themselves, viruses depend upon the machinery of their cellular hosts. Because viruses contain only a few to a few hundred genes, they can be studied, understood and manipulated with relative ease.



Mort Rosen

Carl Anderson

Geneticist Carl Anderson has been studying human adenoviruses, in particular, for the last 12 years. He will describe his work in the next Brookhaven Lecture "Adenoviruses: Spies That Came From A Cold," on Wednesday, November 10, at 8 p.m. in Berkner Hall.

First isolated 30 years ago, about 40 similar but distinct types of human adenoviruses have been found. They are responsible for a small fraction of respiratory illnesses, primarily in young children. The adenovirus most commonly studied in the laboratory is called type 2. Its chromosome is small (about .00044 inches long and contains about 40-50 genes), compared to a cellular chromosome (about 1.5 inches long and containing many thousands of genes). Because its chromosome also has the same basic form as a cellular chromosome, the adenovirus makes a particularly useful spy for studying how human cells work.

One of Anderson's methods is to study cells in which the virus grows poorly in comparison to its growth in its normal laboratory host cell, the HeLa cell. (The HeLa cell is a cancer cell derived from a woman, Helen Lane, about 30 years ago. The cells are used in the laboratory to grow many kinds of human and some nonhuman viruses). The theory is that if the virus fails to grow because some virus gene is not properly expressed, then this cell lacks or has an altered component which is necessary for the expression of some types of genes. "The trick," says Anderson," is to identify this component." He has been using cells derived from an African green monkey and admits that they are a long way from identifying the missing component in the monkey cell, but that they are learning a lot about cells and viruses along the way.

Carl Anderson is a geneticist in the Biology Department who joined the Laboratory in 1975. He holds a B.A. from Harvard College in chemistry and physics, and a Ph.D. from Washington University in microbiology. He was a postdoctoral fellow with the Tumor Virus Group at Cold Spring Harbor Laboratory from 1970-73 and a staff scientist at the same laboratory from 1973-75. He has held an adjunct appointment at the Department of Microbiology, State University of New York at Stony Brook since 1976.

On the evening of the lecture, a buffet supper will be served at the Brookhaven Center at 6:30 p.m. The price is $7.50 and reservations should be made by calling Ext. 3541 before 5 p.m. that day.

Evacuation Drill Coming Up

Sprawled over 5,265 acres, the BNL community boasts a population of more than 3,000 people engaged in many activities.

Despite its uncommon complexity, BNL, like any other community, has anticipated and prepared for various emergency situations. At the Lab, these could relate to such diverse things as severe acts of nature (snowstorm, hurricane, brush fire, etc.), the chemicals or toxic substances used for research, or the two nuclear reactors included in our research facilities.

A problem in any one of these areas could range from a minor incident, to a serious event which might require an evacuation. That is why the Lab's emergency preparedness plan includes evacuation procedures, and why these procedures are tested in annual Lab-wide evacuation exercises.

This year's drill is scheduled for Wednesday, November 10. Like the first exercise of this kind, held last November, one important emphasis will be on completing a total evacuation in an orderly fashion. This year's evacuation, however, will be part of a nuclear emergency response to a simulated event at the High Flux Beam Reactor.

For the exercise to go according to plan, it is essential that employees be

(Continued on page 2)

Property

BNL is a government owned, contractor operated facility and, as such, everything from the AGS to a paper clip is U.S. Government property and subject to Federal Property Management Regulations. In order to try and keep tabs on everything, BNL established some years ago a system of property records and property representatives within each department and division. All items of tagged capital equipment and controlled sensitive property are identified by location on the master property records. Sensitive property, such as hand-held calculators and typewriters are assigned specifically to individual users.

Whenever any property is moved for whatever reason, there is a procedure to take care of the action. The overall rule is that every movement of equipment should be made through the appropriate property representative to ensure that the record accurately reflects the move.

Employees should also be aware of other rules that pertain to the movement of BNL property:

• A property pass is used to record the short-term loan (less than 30 days) of equipment for the off-site accomplishment of Lab business. The pass should be approved by the person having signature authority commensurate with the value of the equipment involved, and distribution made in accordance with instructions on the form.

• Property which would otherwise be out of service for temporary periods (and not excess) may be loaned to other Federal agencies and contractors for official purposes. Such loans are processed on a Loan Agreement and should not exceed a one-year period.

• When property is worn out, or damaged beyond economical repair, a request for retirement should be processed through the Property Management Section, Building 211. Equipment cannot be cannibalized for spare parts until an approval is received.

• Equipment that is lost, stolen, or destroyed is to be reported immediately to the property representative and to the Security Group. Employees should be aware of the equipment assigned to their work areas and report any unauthorized movement of same.

Brookhaven's facilities and equipment represent a sizeable investment by the government and employees can help the property representatives protect this investment. If you wish any further information, contact the appropriate representative on the following list:

Dept./Div.	Property Reps.
Accelerator	J. Becker, W. Buckes
CBA Project	W. Hobson
H.E.E.P.	W. Sims, P. Oster
Applied Mathematics	S.S. Rideout, B. A. Morgan
Biology	H. Marshall
Chemistry	N.B. Munhofen, P. Davis
Contracts & Procurement	A. Lewis, R. Piccione
Director's Office	J. Desmond, T. LeMaire
Energy & Environment	E. Pergan, G. Neuhoff
Fiscal	B.J. McAlary, B. Campbell
Instrumentation	G. Tiller
Management Information Systems	J. Birtle
Medical	K. Mohring, T. Smith
National Synchrotron Light Source	B. Jones, B. Fenner
Nuclear Energy	A.J. Romano, D. Detmer
Personnel	D. Marelli
Photography & Graphic Arts	J. Laurie, W. Bottinger
Physics	F.W. VanDervoort, E. T. Bailey
Plant Engineering	E. Byrne, A. Mahlmann, J. Rose, J. Iulo, J. Hennessey, S. Golden
Reactor	R.J. Fuchs
Safety & Environmental Protection	H. Kalbach, G. Hughes
Shops	R. Lehn, E. Jackle
Staff Services	W. Webster, E. Skrezec
Supply & Materiel	M.A. Guacci, N.E. Tyler, F. Rizzo
Technical Information	K. Ryan, A. Blake
U.S. DOE	G.J. Ogeka, B.F. Fitzgerald

Mort Rosen

B.J. Carreras, DEE, (left) observes typesetting done in the print shop at the Association for the Help of Retarded Children, in Bohemia, one of the facilities visited by BNL department representatives last week.

People Helping People

This year's United Way campaign at BNL gets under way next week, when all employees will receive pledge cards in the mail. By contributing, you help support the wide range of services provided by the voluntary agencies and hospitals affiliated with United Way.

The BNL campaign, which will run from November 1 through November 12, is being coordinated by Trudy Neuhoff, with the help of department representatives. Pledge cards and contributions can be returned to your department representative or to Betty Pergan, who is financial coordinator for this campaign. You may also send pledge cards directly to Payroll.

Mort Rosen

BNL staff psychologist Judith Katsin (right) watches an employee of the Association assemble a box to package a badminton set.

Mort Rosen

Janice Lamb, DO, and Jane Bennett, DEE, (center) get a demonstration of an old-fashioned mimeograph machine which had been modified for use by the handicapped.

Doug Humphrey

Department representatives for BNL's United Way campaign this year are: Ed McFadden, Applied Math; Elinor Adams, AUI; Helen Kelly, Biology; Elaine Rowland, Chemistry; Janice Lamb, Director's Office; Jane Bennett, B.J. Carreras and Toni Fridae, DEE; Joe Cardamone, Medical; Barbara Jones, NSLS; Bonnie Bittner and Joan Goetschius, DNE; Robin Scarola, Physics; Cheryl Goldin, Reactor; Jim Birtle, ASDP; Ed Jackle, Central Shops; Rosalie Piccione, Contracts and Procurement; Fran Hydoski, Fiscal; Gasper Perry, Instrumentation; Kay Hunt, Personnel; Karen Hartman, P&GA; Dick Allen, Ben Belligan and Patty Bender, Plant Engineering; Roy McWilliams, S&EP; Howard Fales, Staff Services; Lou DiCarlo, Supply and Materiel; and Maria Apelskog, Technical Information.

Drill

(Continued)

familiar with the signals that would be used to alert them to an emergency which might require evacuation. For this purpose, there are six warbling air horns and three sirens on site. The warbling air horns would signal an emergency alert (not an evacuation) and are tested every other Thursday at noon. The site sirens, which would signal a total site evacuation, are tested every Monday at noon.

Last week, employees received instructions on how to proceed upon hearing the emergency signals. This brief description of the Lab's evacuation procedures was issued to all employees by the Safety & Environmental Protection Division. Employees should read it carefully and be prepared to carry out their roles on the day of the exercise. In addition, details of the drill will be spelled out in next week's issue of the Bulletin.

APS Fellowships

The American Physical Society has announced its 1983-84 Congressional Scientist Fellowship Program, under which Fellows will spend one year as a member of the staff of a Congressman or of a Congressional committee, thereby contributing an assessment of the technical aspects of public policy issues to the political process. Prospective Fellows are expected to have demonstrated competence in some area of physics, have a background in science and technology, and have a strong interest and some experience in applying scientific knowledge toward the solution of social problems.

Deadline for applications is December 10, 1982. Additional information is available from the Office of Scientific Personnel (Ext. 3338), or from Dr. Mary L. Shoaf, Administrator, Congressional Scientist Fellowship Program, The American Physical Society, 335 East 45th Street, New York, N.Y. 10017 (Tel. 212-682-7341).

BROOKHAVEN BULLETIN

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BROOKHAVEN NATIONAL LABORATORY

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AUI Scholarships

AUI has modified one of the eligibility criteria for the Trustee Scholarships that were recently announced to employees. It is no longer necessary for the parent to have been employed by BNL no later than January 1, 1982. The new requirement is employment before December 1, 1982, the due date for filing initial applications. Winners' parents must be employed by BNL at the time the award is announced.

Application forms and further information can be obtained from the Office of Scientific Personnel, Building 460.

Engineers Review

Suffolk County Community College will offer Part A of the Professional Engineers Licensing review course on site starting Wednesday, December 1. Classes will be held from 5:15 to 9:15 p.m. and will run for 15 consecutive weeks.

The course will include such topics as: math, mathematical modeling, engineering economics, computer programming, statics, dynamics, mechanics of materials, materials science, chemistry, fluid mechanics, thermodynamics and nucleonics.

Registration is scheduled from Monday, November 1, through Wednesday, November 10, in Room 112, Bldg. 460. The tuition fee of $128 can be paid with Visa or Mastercard or with checks/money orders payable to S.C.C.C. Students will be eligible for 75% tuition refund upon satisfactory completion of the course. Books will cost approximately $15 and will be sold the first night of class.

For further information, call Renee Flack, Ext. 3316.

Hospitality News

The Hospitality Committee's next morning get-together will be held on Tuesday, November 2, from 9:30 to 11:30 a.m. at the Brookhaven Center. All wives of Laboratory employees and guests are welcome. Please come and bring the children. Babysitting will be provided free of charge. Coffee, tea and danish will be served.

A formal program will not be presented in order that the time may be spent meeting newcomers and visitors to the Laboratory, and in greeting old friends.

Arrivals & Departures

Arrivals

En-Hua Cao ..... Biology
John E. Foley ..... Plant Eng.
Arnold Kreisberg ..... Accelerator
Clovis A. Linkous ..... Energy & Env.
Robert J. Maglione ..... Accelerator
Dennis J. Malloy ..... Central Shops
Till H. Metzger ..... Energy & Env.
Rollins J. Otten ..... Accelerator

Departures

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

Joseph A. Bamberger ..... Accelerator
Ann P. Tanzabel .. Safety & Env. Prot.
Asko E. Vehanen ..... Physics

Service Awards

The following employees received service awards during the month of **September:**

Thirty-Five Years

John A. Bunt ..... Plant Eng.
Robert J. Fuchs ..... Reactor
Julius M. Hastings ..... Chemistry

Twenty-Five Years

Basil DeVito ..... Accelerator
Charles B. Meinhold ..... S&E Prot.
Howard R. Pate ..... Medical
Claire C. Schiro ..... Central Shops
William E. Swatton ... Central Shops
Warren E. Winsche... Director's Office

Twenty Years

George E. Arnold .... Nuclear Energy
William L. Barker, Jr. .... Plant Eng.
Donald F. Bastedo ..... Accelerator
Bernard F. Belligan ..... Plant Eng.
James P. Birtle .... Mgmt. Info. Syst.
Louis W. Blum ..... Accelerator
Theodore E. Erickson ..... Physics
Mabel Evans ..... Cont. & Proc.
Frank G. Heimroth ..... Accelerator
Richard W. Hogue ..... Physics
Leonard C. Kalmar ..... Accelerator
Robert O. Rasmussen .... Plant Eng.
Keith H. Thompson ..... Biology

Ten Years

Harold L. Bolling .. Supply & Materiel
Peter D. Bond ..... Physics
Michael J. Creutz ..... Physics
Charles E. Hyde ..... Plant Eng.
Serban D. Protopopescu .... Physics
Mcharrell Z. Thomas ..... DEE
Craig E. Thorn ..... Physics

The following employees received service awards during the month of **October:**

Thirty-Five Years

Harry Bieselin ..... S&M
Harold H. Hicks ..... S&M
Marjorie K. Homan ..... Physics
Robert A. Lindgren ..... Physics
Bernard Manowitz ..... DEE
Harvey McChesney, Jr. ... Accelerator
Joseph C. Trebing ... Instrumentation
Walter D. Tucker ..... DEE

Thirty Years

Helen R. Connell .... Nuclear Energy
Frances R. Hydoski ..... Fiscal
Rita F. Straub ..... Medical

Twenty-Five Years

Patsy A. Andrisani ..... S&M
J. Robb Grover ..... Chemistry
Robert L. Monaghan ..... Accelerator
Robert Smol ..... DEE
George W. Starke ..... NSLS
Arie van Steenbergen ..... NSLS
Robert G. Wilson ..... DEE

Twenty Years

Charles Briening ..... Accelerator
Ralph Brown ..... Accelerator
Jacob L. Haufman ..... Accelerator
Rodger A. Hubbard ..... Accelerator
John T. Keane ..... Accelerator
Alfred Mahlmann ..... Plant Eng.
Viola D. Malloy ..... Fiscal
Mario A. Manni ..... Physics
Otto R. Medeck, Jr. ..... S&E Prot.
Francis J. Mottl ..... Accelerator
Nicholas F. Pisco ..... Staff Services
Alan R. Schmidtchen ..... P&G Arts
Robert W. Spencer ..... S&M
Frank Toldo ..... Accelerator

Ten Years

Walter J. Hughes ..... Plant Eng.
Robert R. MacGregor .... Chemistry
Peter N. Palamidis ..... Plant Eng.
Maria T. Pavlova ..... Medical
Lowell A. Ross ..... Plant Eng.
Charles V. Seaton ..... S&M
Alan J. Stevens ..... Accelerator
Paul D. Williams ..... Plant Eng.

End Of Season

Today is the last day to get your cauliflower, squash and other produce from the Farmers Market. Local farmers who have been selling fruits and vegetables on site every Friday since July 2, will pack up for the season at 1:30 p.m. today. If all goes well, it is expected that they will be back next year.

Theater Group

The Theater Group will hold a general meeting at 8 p.m. on Wednesday, November 3, in Berkner Hall auditorium. Anyone who is interested in getting involved with the BNL theater program is warmly welcome.

Booooh!

Halloween is Sunday, October 31, when many children will dress in costume and go from door to door asking for treats.

If you live on site in the housing area and want children to come to your door, please turn on your porch light.

A costume contest for on-site children will be held at 4 p.m. at the Lollipop House in the main playground. Prizes will be given to winners in two categories -- six years and under, and seven through fourteen.

For some on-site foreign visitors, Halloween may be an unfamiliar custom. It has its roots in the religious rites of the Druids, an order of priests in ancient Gaul and Britain. The Druids celebrated a harvest festival called Samhain, or summer's end, and bonfires were lit to scare away ghosts of the dead. From the Druids comes the present-day use of witches, ghosts and cats in Halloween festivities.

In the ninth century, Christians set aside November 1 as All Saints' Day, to honor all saints. The evening before was called "All Hallows Eve," which means "holy evening." This was eventually shortened to "Halloween."

Halloween customs were brought to this country by Irish and Scottish immigrants. The first jack-o-lanterns were carved by the Irish from large potatoes or turnips.

Today, Halloween has lost its religious and supernatural symbolism. It is now a time of merrymaking and treats for children.

Tennis

The gym is available for indoor tennis on Tuesdays from 5 p.m. to 9:30 p.m., and on Sundays from 1 p.m. to 5:30 p.m.

Sign-up starts on October 29. Reservations can be made in person at the BERA Sales Office between noon and 1 p.m. on Monday for play the next day, and between noon and 1 p.m. on Friday for play the following Sunday.

Players are reminded that they are limited to one hour of court time each per week for singles, or two hours each per week for doubles.

NYC Train Trip

The Hospitality Committee is planning a group railroad trip to New York City on Wednesday, November 3. Departure will be at 7:55 a.m. from the Patchogue LIRR station. Round-trip fare for adults is $3.50; children under six 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, no later than Thursday, October 28. Please make checks payable to Brookhaven National Laboratory, and put the date of the trip, your BNL life number and your telephone number on the check. Your tickets will be given to you on the train. Refunds will be made only if cancellations are received by the Monday morning preceding the trip.

Bowling

White League

B. Lebitski rolled a 209, D. Adams 203, J. Griffin 201, K. Griffin 192, F. Brown 189, M. Scheidet 178, S. Long 176, L. Petro converted the 6/7/10 and B. Belligan the 4/6/7.

Purple League

D. Hall bowled a 232, E. Meier 215, P. Calligari 218, J. Connelly 213/568, N. Carter 207/545, D. Penoyar 204, C. MacDougall 210, W. Milian 199, G. Riker 188/514. The Pen Macs had an 871 gross game and J. Penoyar converted the 4/7/9/10.

Red/Green League

R. Wiseman had games of 237/238 for a 652 scratch series, M. Israel 233, T. Holmquist 224, L. Schairer 217, J. Ferrante 216/605 scratch series, C. Bohnenblusch 213/201, E. Meier 210, E. Sperry 209, H. Arnesen 209, H. Marshall 201.

Pink League

High games were bowled by M. Grahn with a 178/493 scratch series, R. Rosati 177, E. Kristiansen 166.

Soccer

Indoor soccer games will be played every Friday starting at 5:30 p.m. at the gymnasium. Pick-up games will be held for the next two weeks with regular league games starting on November 12. All are welcome to play and organize their own teams. The annual meeting will be held at noon on Wednesday, November 3, in Room D, Berkner Hall. Please attend if you want to know more about the club's activities. For further information, call David Cox, Ext. 3818, or Enrique Abola, Ext. 4383.

Diners Note

The cafeteria will be closed on Saturday, October 30. On that day, snack bar service will be available from 9 a.m. to 2 p.m. at the Brookhaven Center.

Cafeteria Menu

Week Ending November 5, 1982

Monday, November 1

Corn chowder	(cup)	.65
	(bowl)	.75
Southern fried chicken & 1 veg		1.90
Roasted pork loin & 1 veg w/applesauce		1.95
Hot Deli: Italian Phillie steak w/marinara sauce	bread	1.95
	roll	2.05

Tuesday, November 2

Chicken vegetable soup	(cup)	.65
	(bowl)	75
Fillet of turbot Florentine & 1 veg		1.90
Spinach lasagna & 1 veg		1.85
Hot Deli: Monte Carlo		1.90

Wednesday, November 3

U.S. Senate bean soup	(cup)	.65
	(bowl)	.75
Breast of turkey madeline & 1 veg		1.95
Shrimp cakes & 1 veg		1.85
Hot Deli: Corned beef	bread	1.85
	roll	1.95

Thursday, November 4

Minestrone soup	(cup)	.65
	(bowl)	.75
Veal in mushroom sauce		1.85
Fresh mushroom crepes & 1 veg		1.85
Hot Deli: chicken pattie parmesan hero		1.95

Friday, November 5

Manhattan clam chowder	(cup)	.65
	(bowl)	.75
Fish & chips		1.85
Spanish macaroni & 1 veg		1.85
Hot Deli: Sausage & pepper hero		1.95

Fall Back

It's that time of year again. Set your clocks back one hour at 2 a.m. on Sunday, October 31.

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.

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.

ASSISTANT CHEMIST - Seek Ph. D. in physical or analytical chemistry with experience in identification and analysis of inorganic and/or organic compounds, to develop sampling techniques and analytical methods for gaseous and particulate combustion products present in obscuration smokes generated specifically for toxicological evaluation. Contact: L. Newman, Environmental Chemistry Division, Department of Energy & Environment.

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

1787. ELECTRICAL ENGINEER - Requires BS in electrical engineering and a minimum of three years' design experience or equivalent. Engineering skills in power electronics, feedback control, precision measurements and testing procedures are essential. Individual will work on electrical systems for the CBA Magnets. Accelerator Department/CBA.

1788. MEDICAL ASSOCIATE - Requires BS in biology or equivalent. Duties will include media preparation and sterility testing, routine subcultivation of cell strains and cell survival of colony-formation following physical and chemical treatments. Medical Department.

1789. EXPERIMENTAL MACHINIST (two positions) - Requires experience in job print interpretation, layout, and machine set-up. Candidates must demonstrate ability and imagination in all phases of machine work. Will function as all-round machinist for nonproduction work in research and development shop. Project assignments range from raw material work in research to final assembly. Central Shops Division.

1790. RESEARCH ENGINEER - Requires a BS in electrical or mechanical engineering (MS desirable). Should have knowledge of the function, operation, testing and maintenance of light water reactors (BWR's and/or PWR's) plant systems. Responsibilities will include the review of specific nuclear power plant licensing issues in the areas of safely shutting down a plant unit. Department of Nuclear Energy.

Autos & Auto Supplies

78 CAMARO LT - new cond., mags, 350V8, p/s, p/b, a/t, a/c, am/fm/tape, must sell, $4,850. 473-2473.

75 TOYOTA CELICA - good condition, high mileage, $1,475. 878-4128 after 5 p.m.

74 VW - Super Beetle, good cond., $1,700. 878-8459 after 5:30 p.m.

81 PONTIAC - T-1000, 11,000 mi., a/c, tint windows, 4 speed, w/b pinst., 4 w/w radials still under 12 mo./12,000 mi. plan, $5,300. Ext. 2964.

SNOW TIRES - (2) studded on beetle rims, good cond., $45. Mike, 289-0494 after 6 p.m.

CADILLAC PARTS - window motor, remote mirror, misc. tune-up material, all for $10. Walt, Ext. 7154.

70 DODGE WAGON - Coronet, 72,000 mi., 4 steel radials, new muffler, $500. Tony, Ext. 3658 or 3637.

79 FORD GRANADA - burgandy/white, a/c, p/s, p/b, w/w, am/fm stereo 8-track, excel. cond. Ext. 3490.

SNOW TIRES - (2) F-78-14 w/rims, good cond., both for $40. Noreen, Ext. 2815 or 727-9016.

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

71 SUPER BEETLE - semi auto, 7,000 mi. on new engine, new tires, dependable, $975. 331-1665.

72 DATSUN - 240Z, brown, engine excel., body needs work, $600. Ext 7672 or 399-0376 after 4 p.m.

73 PLYMOUTH - 4 dr. sedan, auto, a/c, new tires. Ext 3036 or 427-0768 after 6 p.m.

81 HONDA CIVIC - 2 dr., 4 sp., am/fm stereo cassette, 4 new radials, low mi., clean, $4,600. Janet, Ext. 4049 or 744-8087 eves.

TIRES - (4) radial, Toyo-Z, steel belted, 145SR13, very good cond., $75 or best offer. Ext. 2830 or 543-0487 eves.

74 OPEL MANTA - a/t, am/fm radio, rebuilt engine, new tires & muffler system, good gas mi., $1,100. 475-3262 after 6 p.m.

75 TRIUMPH - TR6, good cond., $3,000. Ext. 5053 or 472-1735 after 6 p.m.

81 TOYOTA COROLLA - 5 spd., 4 dr., sedan, 23,000 mi., 33 mpg, excel. cond., must sell, $5,500. Ghosh, Ext. 4372 or 582-6826.

TIRES - Uniroyal steel belted radials, 175-75R-14, excel. cond., $60. Bob, Ext. 4551 or 475-3612.

79 HONDA HAWK - 400cc, better than new, asking $995. 588-0805 eves.

80 HONDA ACCORD - brown, $5,300. Joyce, 929-4268 after 5 p.m.

72 CHEVY - sta. wagon, good mech. cond., asking $600. Ext. 2939 or 732-1243 after 5:30 p.m.

76 DODGE VAN - p/s, p/b, air, cruise control, many more extras, excel. cond., 57,000 mi. 884-2868 after 5 p.m.

70 RIVIERA CLASSIC - excel. cond. in/out, rebuilt eng., new exhaust, brakes, shocks, all power, new plush carpet, extras, $1,900. 878-1688.

78 VW RABBIT - am/fm, radials, 30 mpg, excel. cond., must sell, $3,200. Bernardo, Ext. 3419.

TIRES - (2) H78-14, $7 each; (2) 7.35/6.85-15 studded snows, $10 ea., all on Ford rims. 981-4419.

69 OLDS - high mi., runs, new brakes, $200. 878-2179 after 5 p.m.

74 DATSUN - B210 hatch, runs, $450. Steve, 924-4826.

56 JEEP - C-J5 w/64 V8 Ford eng., good running cond., $950. 473-3312.

73 DODGE POLARA - 4 dr. sedan, 80,000 mi., 2 snows, asking $1,000. 288-1663.

73 HONDA - 350CL, rebuilt eng. from Honda, needs tune-up, $495 negotiable; Tires, HR78-14 on chrome slot Ford rim; GR78-15 on Ford rim, $35 ea. Ron, Ext. 2043, 281-3149.

71 PINTO PARTS - John, Ext. 4976 or 744-4386.

74 MG MIDGET - runs well, 46,000 mi., asking $2,000. Marty, 246-2003 or 751-5601.

75 TOYOTA COROLLA - wagon delux, stereo, a/c, 4-spd., lug. carrier. Ext. 2475, 751-4539.

Boats & Marine Supplies

KAYAK - fiberglass, with airbags & paddle, $180. Ext. 2521 or 928-8379 eves.

GAS TANK - 6 gal. for Johnson outboard, excel., $15. Joe, Ext. 7961 or 878-2655 eves.

12' BOAT - aluminum w/trailer, 7 HP motor & extras, $850. Vince, 744-9429.

19' SAILBOAT - 68 Cougar Catamaran, good cond., great family sailboat, $2,900. 473-3312.

12' CANOE - 82 Sears fiberglass, value over $300, will sell for $225. 286-9354.

20' O'DAY '78 - engine, 3 sail's, complete, many extras, $6,699. 289-0925 eves.

Free

PUPPIES - small mixed breed, adorable. B. Azzara, Ext. 2050.

Yard Sales

FARMINGVILLE - 59 Hanrahan Ave. near Keibl's Farmstand, Oct. 30 & Oct. 31.

STONY BROOK - 43 Hargrove Dr., aquariums, gas grill, chaises, bookcases, clothes, toys, luggage, dining rm. chairs, house items, Sat. & Sun., Oct. 30 & Oct. 31, 9-4 p.m.

PATCHOGUE - 231 N. Prospect Ave., Oct. 30.

Miscellaneous

CASSETTE TAPES - BASF, ProII, blank, CrO_2, C-90, $2.75 ea. Ext. 2521 or 928-8379 eves.

FIREPLACE SCREEN - w/andirons, 38"w x 31"h, pull chain to open, $12. Bill, Ext. 2906 or 929-6189.

SEAL-A-MEAL - brand new w/ample plastic bags and filling collar, large size, $15. Walt, Ext. 2907 or 698-0576.

DINING ROOM SET - trestle table, 8 hi-back chairs, dark pine, $250. 581-7656.

BABY ITEMS - stroller $8; back carrier, $6; high chair, $5; car seat, $6. Ext. 3294 or 751-4868.

DOUBLE BED - bookcase; headboard; dinette set; couch; tiffany style lamp; Garrard turntable; upholstered chair. 744-6874.

AIR CONDITIONERS - (2) used 1 season; 55 gal. drum lined w/stand for kerosene. 924-4054.

WOODEN STAIRCASE - used, 8-1/2 rise, $75; Franklin wood stove, 40", used 1 season, $75. 728-2104 after 6 p.m.

DEEP WELL PUMP - 1 HP, 2 stage, $95. 924-3565.

WOODEN VALANCES - (10) scalloped for windows, $1 ea.; (10) original wooden slated roll-up blinds, $1 ea; Honeywell heating thermostat, $5; new emergency wheel w/tire for Chevette; traction kit for whiplash or arthritis, $10. 281-2002.

G.E. ELECTRIC RANGE - 2 ovens, 1 self-cleaning, automatic timer, top light, good cond., $150. 286-8833.

COUCH & CHAIR - antique willow wicker, new cushions, excel. cond.; (2) end tables from Sloans; (2) bedrm. sets, 1 single, 1 twin; maple rocker; sewing machine; all in mint cond.; ping-pong table; bar stools; gas grill; picnic table w/umbrella. Ext. 2145 or 584-6019.

CAMERA - Olympus, 35RD, 135 mm, range finder, automatic or manual operation, $65. Steve, Ext. 4211.

MOUTON LAMB JACKET - brown, fits size 14-16, good cond., $75. 475-0144 after 6 p.m.

DRAPES - 2 pr., custom made, gold Schumacher print, floor length, fully lined, fit 36" window, complete w/colonial wooden rods. Walt, Ext. 7154.

RECLINER - white velour, new $160, asking $60. LT9-2100.

DART BOARD - professional, wood cabinet, must see, excel. cond., new $90, asking $50. 289-2289 eves.

HEAD SKIS - 190 cm, binding straps, carrying case, poles, woman's boots, size 8, boot press. Carol, Ext. 4398.

EMERSON STEREO - am/fm, multiplex receiver w/built-in turntable & stereo cassette recorder, $100. Don, Ext. 5373 or 286-0999.

GAS TANK - for Mercury outboard, $15; Girl Scout uniform, size 10-12, pants, jumper, blouse, shorts, $10. 581-7656.

BUNK BEDS - rarely used, good cond., $75. Ext. 2939 or 732-1243 after 5:30 p.m.

LAWNMOWERS - Toro Power Reel & Clemson hand mower; antique Schwinn bike. John, Ext. 7611.

BEARCAT SCANNER - 4 chan., for fire, police, weather, etc., new, $95; wicker baby changing table w/storage compartments, good cond., $15; new LCD watch pens, perfect gift, $5. Paul, Ext. 4665 or 727-4859.

DINING ROOM SET - table and 6 cane chairs, contemporary design, beige material on seats, walnut hutch included, excel. cond., 2 yrs. old, $650 or best offer; kitchen set, oval woodtone top, 4 bucket seats, Naugahyde tan, asking $250 or best offer, must sell, relocating. Ext. 3139 or 585-5256 Mon.-Fri. after 6 p.m.

ROHN 25G - 9' top and 10' center, tilt over baseplate; also Wilson tribander, 2 yr. old, best offer. 744-9677.

AIR CONDITIONER - 4,000 BTU, Hot Point, $50. 475-2989.

FIREWOOD - 4' x 4' x 8', 100% hard wood, split and delivered, $115 cord. Harold, 467-8976.

LaMACHINE - never used, $30; set of dishes, repro. Depression glass, amber color, extra pcs., service for 4, $25. Theresa, Ext. 2907.

ATARI VIDEO GAME - $60; asst. cartridges, $10 ea.; new Atari 16K ram, $50; OMC Johnson outboard control box & cables, $20. 744-5161 eves.

AQUARIUM - 20 gal., stand, $5 each; single bed w/headboard, $35. Ext. 3600 or 289-8182 eves.

AQUARIUM - 55 gal. w/accessories, $75; 10 gal. set up w/accessories, $25 or both for $90. 929-3209 after 6 p.m. or weekends.

TELETYPE - and modem, recently overhauled; both for $300. Bernie, Ext. 4842 or 331-2298.

COFFEE TABLE - $10; bookcase, $10; sewing machine, $50; 13" color TV, new, $190; mattress foams (3 pcs.), 54" x 27" x 3"; chair, $7; other things. Ghosh, Ext. 4372 or 582-6826.

LEAF SHREDDER - 3 cu. ft., $50; pair of Fisher MS127 speakers, $50. Bob, Ext. 4551 or 475-3612 eves.

MEN'S SKI PANTS - stretch, dk. blue, 34R, never worn, $80. Ext. 4727.

QUARTZ HEATER - electric, used one season, $45; 5' tub enclosure glass, $20. Bill, Ext. 3355 or 472-4684 after 7 p.m.

DINING ROOM SET - Haywood Wakefield, blonde oak table, 6 chairs, china, buffet, $275. 281-8044.

UPRIGHT FREEZER - full size, excel. working cond., asking $50. Mike, Ext. 2242 or 589-3705.

G.E. FREEZER - 14.8 cu. ft., manual defrost, good cond., $150. Dave, Ext. 7922 or 369-1792 before 8 p.m.

PEN WATCHES - $ ea.; credit card calculators, $8 ea., nice Christmas gifts. Pete, Ext. 3516 or 399-2813 after 5 p.m.

PUPPIES - English Cocker, born 9/26/82, ready for Christmas, 1 male, 1 female, Blue Roan, b&w, champion & show bloodlines. 286-1662 eves.

BEDROOM FURNITURE - dresser & night table, good cond., $130. Sandy, Ext. 3369 or 286-1022.

SOFA BED - colonial hide-a-bed, Castro type mechanism, like new, $425. Vivian, 744-9429.

CASTRO COUCH - matching recliner, gold velvet, mint, $400. 878-2421.

SNOW BOOTS - ski boots; skis; knit hats; bowling ball; books; crutches. St. James Church, Brookhaven.

RUG - oval braided, $15; room size humidifier, $25; 3-1/2 blackboard, $20; electric broiler, $5. Judith, 698-3150.

LADIES SHOES - new, silver, size 6-1/2; Silex Juicit (juice squeezer) new, electric, $5. 281-5792.

DRAPERY TRAVERSE ROD - 8' expands to 14', black metal, finials, draw cord, like new, $20. Ext. 2366.

FISH TANKS - (2) 20 & 10 gal. w/iron stand, stow-a-lite covers, filters, cut glass, etc. George, Ext. 4227 or 751-0894 eves.

ATARI CARTRIDGE - Video Olympics, $12. 744-8063 days.

15" COLOR TV - new picture tube and tuner, 3 yr. warranty, $150; Whirlpool upright freezer, 20 cu. ft., 5-1/2 yrs. old, asking $250. 751-6418.

15" COLOR TV - new picture tube and tuner, 3 yr. warranty, $150; Whirlpool upright freeezer, 20 cu. ft., 5-1/2 yrs. old, asking $250. 751-6418.

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

CONDOMINIUM - Waverly Park Townhouse, 2 bdrms., 1 bath, w/w carpeting, brand new appliances, central a/c, gas heat, cooking & hot water, 20 min. from Lab. Roseann, Ext. 3199 or 399-3797 after 5:30 p.m.

MASTIC - large 3 bdrm. ranch, family rm, l/r, laundry rm., 1-1/2 baths, 1-1/2 attached garage, patio, fence, 2 zone h/w heat, low 40's, ten minutes from Lab. Ext. 7672 or 399-0376.

STRATHMORE RIDGE - 2 bdrm., 1 bath, kitchen & dining area, storage attic, shed, washer/dryer, FF refrigerator, a/c, dishwasher, w/w carpet, $32,500. 924-3977.

STRATHMORE RIDGE - 3 bdrm., 1-1/2 bath, l/r, d/r, oak floor, wood burning stove, all appl., central air, patio, 5 min. to Lab. 924-4070.

MEDFORD - condominium, Birchwood at Blue Ridge, 15 min. from Lab., 3 bdrms., many extras, facing golf course, 50's. 698-7213.

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.

For Rent

VERMONT - 3 bdrm. house, f/p, fully equip., beautiful view, alpine slide, woodland trails, x-country and downhill skiing, stores (wood products, doll house, etc.), reasonable vacation, family oriented, avail. weekly or weekends. 732-6499 after 6 p.m.

SHOREHAM - unfurn, 4 bdrm. house, beautiful grounds, garden, walk to beach, well-insulated, avail. 1/1/83. 744-9596 eves and weekends.

MILLER PLACE - 4 bdrm., f/p in l/r, d/r, enclosed porch, beach privileges, quiet neighborhood, $550/month, includes many furnishings. Ext. 4205 or 331-9017.

BAYPORT - 1-1/2 acres, 3 bdrms., l/r, kitchen, 2 car garage, partially furn., oil hot water, Nov.-May, $600/mo. or for sale, $150,000. 472-2633 after 6 p.m.

SETAUKET - immaculate 3 bdrm. colonial, l/r, d/r, family rm., 2 car garage, prime area near SUNY & golf course, avail. Nov. 16, prefer 1/2 year and no pets, $750/mo. plus utilities. Ext. 4138 or 751-9096.

SETAUKET - 4 bdrm. colonial, 2-1/2 baths, 2 car garage, prime area, walk to SUNY, beautiful landscape, rent w/option to buy, 8-1/2% assumable mortage. Ext. 2611 or 751-4098.

Carpools

BABYLON/WEST ISLIP - driver needed for 4-person pool. Ext. 2500.

ELWOOD/E. NORTHPORT - one driver needed for a 5-person pool. Fred, Ext. 4407.

STONY BROOK/STRATHMORE - join existing or form new carpool, 8:30-5:30. Ext. 3294.

PATCHOGUE - on time pool, opening for paying rider, Alyce. Ext. 2902.

Wanted

HOUSEKEEPER - Shoreham. Ext. 3665 days or 744-4611 eves.

CARPET - Can you donate large used rug or carpet to church group? Thank you. C. Hull, 281-2002.

OIL BURNER REPAIRMAN - several houses in Hampton Bays. 728-2104 after 6 p.m.

MOTORCYCLES - bent or broken, any age or cond. Kevin, 281-8031.

SING THE MESSIAH - Rehearsal Nov. 1, 8 p.m., Center Moriches High School on the Bypass. 878-0208 after 6 p.m.

BEDROOM SET - double dresser, chest and mirror. 924-8481.

HUB CAP - (1) 74 Chevy Impala. 473-9223 after 5 p.m.

HOUSE TO RENT - 3 bdrms., W. Hampton base housing, year round, needed immed., ref. avail., can afford $300-350/mo. 288-6367.

LEGO - will pay ea. for any pieces, Lego brand only. 928-1068.

WORKING WOMEN - new members for business and professional women's club, National and International Affiliations. Alyce, Ext. 2902.

SNOW PLOW - power angled, 6-1/2' to 7-1/2', reasonable. Jim, 427-4739.

CAMPBELL'S SOUP LABELS - send to F. Chandler, Bldg. T-89, for St. Mary School, East Islip.

JUKE BOX - good cond., reasonable. Ken, Ext. 5042 days.

MAGAZINES - used for Chips Medical Center, adult and children's, you bundle up, I will pick-up. Joe, Ext. 2897 or 281-7683.

DESK - girl's French Provencial in white w/chair. 281-5792.

STORAGE SHELVES - or bookcase for storage in attic; experienced person willing to teach basic sewing class in eve. Ext. 3565 or 878-2233.

HOUSE - small 1 or 2 bdrm. or apt. to rent, must be through summer, within 15 min. to Lab., prefer north shore area. Amy, Ext. 2369 or 3002.

VIOLIN - for beginning student. Mona, Ext. 2347.

SHARE RANCH HOUSE - Patchogue area, with mature female, util. included, $225/mo. 289-1619 eves.

Services

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

FIREWOOD - split, seasoned oak, 4'x16'x18", $110 delivered. 732-2849 after 6 p.m.

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

ASPHALT PAVING AND SEALING - Bob, 475-4382.

HOUSEKEEPER - Mon.-Thurs, excel. references. 369-1624.

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

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

WELDING - electric and gas, cutting, fabrication jobs, repairs. 929-3209 after 6 p.m. or weekends.

PAINTING - wallpapering, paneling, carpentry, refs., free est. John, 924-5012.

CLEANING SERVICE - office, home, apt., work by owners, free est., refs. Ray, 732-4885 eves.

LOSE WEIGHT - 10-30 lbs./mo., 100% guarenteed, nature's sensible way to weight loss. 744-2715 for more information.

SECRETARIAL SERVICE - one day service, letters, resumes, forms, telephone dictation, reasonable rates, accurate. Colette, 744-2816.

WATERPROOFING - 15 yrs. in the business, we "guarantee" all of our work in writing, free est., Lab discount. 281-5445.

EXTERMINATING - licensed men, all phases of pest control and termite specialists, no job too small, free est., Lab discount. 281-5445.

TRUCK FOR HIRE - moving, clearing, cleaning, and other misc. jobs, Lab discount. 281-5445.

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