

## New Approach to Cancer Radiation Therapy

A heretofore deadly brain cancer may be curable if a new radiation treatment developed by Physicist Ralph Fairchild in collaboration with Brenda Laster and others in the Medical Department succeeds in human beings. In photon activation therapy, Fairchild has non-radioactive iodine do double duty: Iodine makes the brain tumor more sensitive to the destructive effects of x-rays, and, upon activation by photons, it produces tumor-destroying electron cascades within the tumor cells.

The malignant brain tumor, called glioblastoma multiforme, usually causes the death of its victims within a year of its diagnosis. At best, surgery, drug therapy and conventional radiation therapy only temporarily relieve the symptoms, which include a rapid deterioration of all bodily functions. There is no cure — yet.

Photon activation therapy is a possible cure for this deadly brain tumor because it overcomes the limitations of surgery, chemotherapy and conventional radiation therapy. Surgery cannot remove all the brain tumor without damaging the normal brain, nor can all the microscopic extensions of the tumor be located to be removed. It is difficult to improve chemotherapy because drugs toxic to cancerous tumors are generally toxic to normal tissue that also take up the drugs. Conventional radiation therapy is limited by an unavoidably imprecise alignment of the radiation beam, resulting in the irradiation of both cancerous and normal cells; normal cells are about as sensitive to radiation as cancer cells, so they too are adversely affected.

"This brain tumor is a malignant cancer," explains Fairchild. "The cancer extends into the normal brain to such an extent that the whole head is generally irradiated during conventional radiation therapy. The dose is limited because the normal tissue has limited tolerance to the radiation, so the effect is palliative, not curative."

"We are trying to improve radiation therapy," continues Fairchild, "not by developing more precise beams of external radiation, but by using a

physiological pathway to direct a stable isotope to the tumor and activating the stable isotope with an implanted source of radiation."

During photon activation therapy, a patient is administered a drug labeled with non-radioactive iodine-127, which is taken up by the brain tumor, as well as other rapidly proliferating tissues in the body such as bone marrow. Samarium-145, a source of 33 to 60 thousand electron-volt photons, is surgically implanted in the brain tumor. Photons from the source cause the iodine to emit electron cascades within the tumor; normal brain tissues are unaffected because they do not incorporate iodine-127.

Iodine within the tumor makes the cancer more sensitive to electron cascades. Therefore, a combination of radiation sensitization and localized x-rays are able to kill the tumor without affecting the surrounding normal brain tissue or any part of the body that has taken up iodine as well. The x-rays cause strands of tumor DNA to break, which damages the tumor cells and makes them unable to divide.

While photon activation therapy uses one form of radiation, photons, to evoke a more energetic form, electron cascades, it does not involve radioactivity. "Iodine does not become radioactive," explains Fairchild. "What happens to iodine is an atomic reaction, not a nuclear one." A photon from the samarium source excites the iodine to a higher energy level than normal. An electron from one of the two innermost shells of electrons around the iodine nucleus is knocked out, and the electrons from the outer shells drop down to fill up the inner shell. As the electrons drop down, they give off an x-ray, which knocks out other electrons. One photon causes a shower of approximately ten electrons in an iodine-127 atom, and this electron shower is called an Auger cascade.

"It is already known that Auger cascades are biologically very toxic," says Fairchild. "We are able to stimulate Auger cascades in iodine by removing inner electrons with an external photon from the samarium source." Fairchild showed theoretically that the halogen to use was iodine, not bromine as had been previously thought.

The iodine is attached to deoxyuridine, which is an analogue of thymine, one of the four bases of DNA. The iodinated deoxyuridine is intravenously administered and taken up by tissues synthesizing DNA. After a few days, the only tissues having substantial amounts of the drug are the brain tumor, bone marrow and lining of the intestines.

Photon activation therapy circumvents the high uptake of the potentially lethal drug in normal tissues. Says Fairchild, "High uptake of this stable isotope by normal tissues is not harmful because only the brain tumor is irradiated, and therefore, the isotope taken up by the other cells won't be activated."

"The DNA in normal brain tissue does not divide, so it does not take up the iodinated deoxyuridine," continues Fairchild. "This makes the brain tumor ideal to treat because the normal brain tissue is not affected by the implanted source because it has not incorporated the drug."

To substantiate Fairchild's theory, Medical Associate Brenda Laster performed cell culture studies using Chinese hamster cells and is proceeding



(From left) Brenda Laster, Ralph Fairchild and Edwin Popenoe.

with the animal model work involving Harding-Passey melanoma in mice. She has been able to replace thymine with iodinated deoxyuridine in culture and in animals. For each experimental trial, Medical Scientist Edwin Popenoe has determined the amount of iodine successfully incorporated, by using DNA extraction techniques. Laster's next step will be to irradiate the melanoma tumor using external beams of photons and, possibly, implanted sources.

"While we are continuing with the animal work, we have generated interest in proceeding with clinical trials of photon activation," says Fairchild. For this, he is collaborating in a two-part study with Reinhardt Gahbauer, head of radiation oncology of University Hospital, Ohio State University, and Joseph Goodman, a neurosurgeon also of University Hospital.

Human brain tumors are currently treated with the conventional radioactive source iridium-192. The first study of photon activation, which will begin shortly, uses iodinated deoxyuridine but the source is iridium-192; this will test the radiation sensitization effect of iodine. After about a year, samarium-145 will be substituted for the iridium, and radiation sensitization combined with photoactivation of iodine will be tested. John Kalef-Ezra, a physicist visiting BNL from Greece, is working on determining the proper radiation dosage for human beings using both sources.

"The really exciting part of this research is that we have a possibility of improving the clinical outcome for patients who have this brain tumor," concludes Fairchild.

— Marsha Belford

## NATO Institute On Labeled Antibodies

A two-week NATO Advanced Study Institute on "Radionuclide-Labeled Monoclonal Antibodies for Imaging and Therapy: Potential, Problems and Prospects" will be held next summer, from July 20-August 1, in Castelvecchio Pascoli in Lucca, Italy.

The Institute is being organized and directed by Suresh Srivastava, head of the Radionuclide and Radiopharmaceutical Research Division, Medical Department. Because of the Division's internationally recognized work in the area of labeled monoclonal antibodies, Srivastava was awarded a NATO grant to conduct the Institute. He will be assisted by Richard Reba, George Washington University Medical Center, and by additional members of an international organizing committee.

Participation in the institute is by invitation and will be limited to about 20 faculty members and 80 senior level researchers/students from countries of the NATO Alliance. Interested persons should contact Srivastava on Ext. 4459.



(Left) Light areas represent rapidly proliferating tissues, which incorporate iodinated deoxyuridine immediately after it is administered to the animal model with a brain tumor.

(Right) Forty-eight hours after it is administered, iodinated deoxyuridine remains in the brain tumor, gut and backbone. Only the iodine in the brain tumor will be activated by an external beam of photons, which will release tumor-destroying electron cascades.

(Autoradiograph courtesy of Dr. Irwin Fand, SUNY at Stony Brook.)

## Sutin Wins Photochemistry Award

The New York Academy of Sciences recently announced that BNL Senior Chemist Norman Sutin has won the Polychrome Corporation Award in Photochemistry for 1985. The award consists of \$1,000 and a certificate of citation for his outstanding contributions to the field of inorganic photochemistry.

Sutin will receive his award at the annual meeting of the Academy on December 12, in Manhattan. The Polychrome Corporation, which sponsors the award, is located in Yonkers, New York.

Sutin is well-known for his research on ground and excited state electron-transfer reactions. Two years ago, he received the American Chemical Society Award for Distinguished Service in the Advancement of Inorganic Chemistry, sponsored by Mallinckrodt, Inc. He is presently serving on the Chemistry Review Panel of ERAB,



Norman Sutin

the Energy Research Advisory Board to the U.S. Department of Energy.



What are these S&EP employees doing that could lead to back injury? At left, Santi Leon is twisting and lifting at the same time. At right Sandra Dozier is sitting on a chair with no back support. Below, Jim Gilmartin is trying to lift something too far from his body. Can you identify what other bad practices these photos illustrate? Come to the movie and find out what these practices are and how they can be corrected. "Minimizing Back Strain on the Job" will be shown at 11:30 a.m. and 12:15 p.m., December 10 through 12 at Berkner Hall.

—photos by Horton



## Use Your Head and Save Your Back

In the process of evolving to *Homo sapiens*, one of the ancestors of humankind stopped walking on all fours and assumed an upright position. Since then, our lower backs have borne weight and anything else we choose to pick up and carry. As a result, back injury has plagued even the fittest and is the number one injury in the industrialized world resulting in time lost from the job. In an effort to reduce the number of back injuries occurring at BNL, a prevention program is being implemented by the Safety & Environmental Protection (S&EP) Division and the Occupational Medicine Clinic.

As an example of the problem, BNL employees have lost over 600 days each year for the last three years as the result of back injuries incurred at work. It is obvious that the pain and discomfort suffered by Lab employees is enormous, and the cost to the Laboratory is also substantial. At present, Compensation Administrator Robert Young, S&EP, is gathering data on the financial cost of each injury, but in general he has found each "expensive for the Laboratory in terms of Workmen's Compensation, disability payments, medical care costs and replacement labor."

Most occupations and all departments are represented in back injury cases. While employees engaged in manual labor have the most risk for back injuries, anyone who bends down, turns around and lifts anything during the workday has been found to be vulnerable to back injury. Among the injured are scientists who stoop to adjust gauges, and secretaries who remove stationary from cabinets.

As a result of these concerns, a back injury prevention program was developed. About the program, Bob Casey, S&EP Deputy Division Head, says, "We want to make employees more aware of proper use of their backs and what they can do to prevent back injuries. We also want to review the tasks that workers have to do. Some-

times employees are inadvertently asked to do things that have an unnecessary risk of back injury."

Beginning this month, every back injury that occurs in the workplace will be investigated by the safety representatives in that department or division. The reps will use a detailed accident report, which asks whether the injury was caused by twisting, lifting, pulling, etc., so that back injuries can be more accurately reported and analyzed by Young, and the information used to prevent future such cases.

In addition, the Occupational Medicine Clinic will recall back injury patients on a regular basis. The Clinic staff will talk with these employees about the status of their back injuries and the need to use their backs properly at work and home.

Safety Engineer Roy McWilliams will receive special training on workplace factors that influence the risk of back injury. In turn, he will train S&EP safety representatives and departmental and divisional safety coordinators. They will learn how to evaluate the layout of work areas, the equipment used on the job and the motions employees go through in doing their jobs with an eye towards preventing back strain.

"We will also rely on the supervisor to identify conditions in the workplace, which could cause back injuries and need to be corrected," says Head of Operational Health & Safety Otto White, "but we are also relying on all employees to correctly use their backs in doing their jobs."

The first part of this program will be the showing of "Minimizing Back Strain on the Job." The 30-minute film can be viewed at Berkner Hall, Tuesday through Thursday, December 10 through 12, at 11:30 a.m. and 12:15 p.m. In addition, employees will have the opportunity to read pamphlets and attend future workshops on the subject.

## Service Awards

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

### Thirty Years

Haskell Frei ..... Reactor  
Donald L. Horne ..... Applied Science

### Twenty-Five Years

William A. DeVito ..... ADB  
Harald Hahn ..... ADB  
William P. Lehman ..... Medical  
Claire J. Shellabarger ..... Medical

### Twenty Years

Robert D. Cunningham ..... Central Shops  
Franklin C. Densing ..... Instrumentation  
John C. Herrera ..... ADB  
Raven B. McKenzie-Wilson ..... DNE  
Ruth K. Merker ..... MIS  
Peter E. Pyne ..... Physics  
Edward H. Pultz ..... Pl. Eng.  
Raymond M. Zaharatos ..... AGS

### Ten Years

Jack Allentuck ..... DNE  
Maria C. Beckman ..... Applied Science  
Jiri Cizinsky ..... Medical  
Samuel Cortes ..... Supply & Mater.  
Andrea L. Eppe ..... S&EP  
Dennis J. Fuzie ..... Staff Services  
Edward C. Jackle ..... Central Shops  
Frederick D. Kobasiuk ..... AGS  
Vincent Lettieri ..... Reactor  
Keith F. Lewin ..... Applied Science  
Samuel G. Logan ..... Central Shops  
Stephen C. Mercier ..... Pl. Eng.  
Arthur N. Otis, Jr ..... AGS  
Beatrice E. Pyatt ..... Medical  
Henry J. Schnakenberg ..... Medical

## Inside Info

David Warner, physicist in the Neutron Nuclear Group, Physics Department, has been awarded an Alexander von Humboldt research fellowship for one year in Germany. He will spend it at the University of Cologne, where he will do research in nuclear structure physics, with emphasis on symmetries and super-symmetries in nuclei.

The Alexander von Humboldt Foundation was established in 1860 under the Board of Trustees of the Prussian Academy of Sciences. The Foundation's capital disappeared during the period of inflation that followed World War I, but in 1925 it was reconstituted and financed by the German government as an independent foundation. It was dissolved in 1945, and re-established in 1953 by the Federal Republic of Germany. Among its present aims is the promotion of scientific cooperation among scholars in the Federal Republic of Germany and foreign countries.

Ling-Lie Chau, Senior Physicist, Physics Department, has been elected a Fellow of The American Physical Society. She was cited for "contributions to a broad range of elementary particle theory including Regge phenomenology, weak decays, W production and Yang-Mills theory."

## Deer Watch

It is time, once again, to be on the alert for deer, particularly when leaving the site in the evening. They are hard to see at that time so take it easy on the accelerator. There have already been some accidents near the south gate.

## To Your Health

To help employees get over the holiday hurdles, the Laboratory's new Health Promotion Program is sponsoring two lectures. Both will be held in Berkner Hall, Room B, from noon to 1 p.m.

• December 17 — Clinical Psychologist Daniel Lucas will discuss "Relaxation and Stress Management." In addition to his private practice, Dr. Lucas is associated with the Northport Veterans Administration Hospital.

• December 19 — "Low-Calorie Holiday Feasting" will be the topic covered by Maria Museler, Director of the Dietetic Technician Program at Suffolk County Community College.

## \$15,000+ To Go

So far, 23% of BNL's employees have pledged a total of \$54,713 to the 1985-86 United Way Campaign. That's about 78% of the Lab's goal of \$70,000.

According to Campaign Chairman Bob Jansson, 100% of the people in the Fiscal and the Technical Information Divisions have made pledges, as have 99% of those in the Division of Contracts & Procurement. If you're among the 77% of the Lab population who have not yet given, why not show that your group also has the holiday spirit? If 23% can donate 78% of the Lab's goal, surely the other 77% can muster the remaining 22%.

## Parking Regulations To Be Enforced



The Laboratory is concerned about any inconvenience caused to authorized persons parked in handicapped spaces. It is concerned, as well, about illegally parked vehicles that may block emergency vehicle access to an area. Therefore, beginning December 16, the BNL Police Group will start using an auto clamp on illegally parked vehicles. This device will be placed on the front left tire of those vehicles parked illegally in handicapped or other critical no-parking areas. A ticket will be issued, and the driver will then be required to call Police Headquarters to notify the Security Inspector to remove the device from the car. New York State or any other authorized handicapped identification will be honored.

## Coming Up

Paul Reardon, Associate Director for High Energy Facilities, will give the next Brookhaven Lecture on December 18 at 4:30 p.m. in Berkner Hall. He will speak on "The SSC and BNL's Role in It."

# BROOKHAVEN BULLETIN

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## WIS Meeting

Mary T. Kinsley, who is on the staff of the Environmental Chemistry Division, Department of Applied Science, will be the speaker at the next luncheon meeting of Women in Science, on December 12, at noon, in Room A, Berkner Hall. She will talk about atmospheric chemistry and the acid rain dilemma.

Kinsley has spent most of her professional career at Brookhaven doing analytical chemistry, radiochemistry and environmental studies. Among other things, she developed methods for the production of isotopes for nuclear medicine using the Brookhaven cyclotron and also developed methods to measure environmental pollutants in aerosol and acid rain samples. Currently, she is pursuing kinetic studies of hydrogen peroxide and nitrate reactions in ice and water vapor.

All those interested are welcome to attend. Bring your lunch.

## Seminar Leads Off New Computer Group

A users group for software and hardware development is being organized. The group's intent will be to share information of general interest so that everyone may profit from what others have already developed.

The first meeting of the group will be on Wednesday, December 11, at 1:30 p.m. in the Applied Math seminar room. Dennis Weygand, Applied Math, will give a seminar entitled "Accelerator Controls and Database Management," which will be an overview of the control system currently being designed for the Heavy Ion Transfer Line, as well as a description of the database for that control system.

Weygand's talk will be followed by a discussion of work done by others in various departments.

For information, call Carmen Benkovitz at Ext. 4135.

## Astronomical Society Tracks Halley



Robert Mills, president of the BNL Astronomical Society, has some observations on viewing Comet Halley.

Comet Halley is back on its second visit to the earth's vicinity in this century, and the Astronomical Society at the Lab is busy tracking, observing and answering questions about it. The accompanying photograph shows the comet as seen through the telescope on the night of November 8, 1985. It was taken by Rick Jackimowicz using his five-inch aperture, short-focus refractor and an exposure of several minutes. (The comet is in the center of the photo; at the top, to the right, is a star near the limit of naked-eye visibility).

Although this was the occasion of the first visual sighting by the Society, Jackimowicz was also able to photograph it in early October using larger instruments. In early November, Comet Halley was an easy binocular object and it may reach naked-eye visibility this month or next.

The best times for seeing the comet are evenings during the beginning of December and January and mornings in March and April. The closest approach will be during the second week of April, but the view for observers at our latitude will be much hampered by the very low southern elevation of the comet at that time.

For those who wish to view the comet, the Astronomical Society's open viewing nights correspond to periods when bright moonlight will not interfere. The public night at the observatory this month is scheduled for tonight, December 6, beginning about 6 p.m., with the following Friday as the rain date. This month will probably afford the best view of Comet Halley until March. Anyone planning to attend should call Bob Mills, Ext. 5043, or Rick Jackimowicz, Ext. 3803, during the afternoon.

## Singers Wanted

More singers are needed for the choral group that is now in rehearsal for the annual Christmas concert. Next week's rehearsals will be held on Monday and Friday at noon in Berkner Hall.

Tenors and basses would be especially welcome.

## Singles Club

Good news! Both ski trips — Lake Placid, January 24-26, and Mt. Snow, February 21-23 — are still available for reservations. Thirty-one skiers have signed up for Lake Placid. If we fill a bus (49), we can leave directly from the Lab to the ski area. Call your friends; everyone is welcome. \$143+ lift per person, for a 4-person room, covers the weekend's expenses. Call Doris Terry, Ext. 2228.

## Golf Wrap-up



Peter Horton

The Bera Golf Association (BGA) team league championship was won by Artie Dick and Mike Zguris (left and center). They defeated John DiNicola and George Leskody in the final match. Regular season winners of the four groups which make up the team league were: Dick and Zguris (Group 2); Joe Roecklein and Howard Vetter (Group 3); and Paul Mohn and Ralph Taylor (Group 4).

The individual league championship was won by Bob Mills (right), who defeated Vinnie Racaniello. Regular season group winners were: Racaniello (Group 1); Jim Desmond (Group 2); and John Nagy (Group 3).

The year-round awards for best overall performance in BGA tournament went to Doug Sweely (gross score competition) and Joe Mayeski (net score competition).

## Science Shop Open

The Science Shop in Bldg. 701 will be open today and the following two Fridays, from 10 a.m. to 3 p.m. You can be sure to find fun stocking stuffers and unusual presents for people on your holiday gift list from among the assortment of items offered. And while you're there shopping, pay a visit to the Exhibit Center, which will be open during store hours.

## Motorcycle Club

Don't forget the Monday, December 9, holiday get-together at the Recreation Building starting at 5:15 p.m. Refreshments will be served.

## Apprenticeship Deadline

Today is the last day to submit an application for the Apprenticeship Program. The trades available are: Machinist, Cabinetmaker, Plumber and Steamfitter. Applications can be obtained from Personnel, Bldg. 185.

## Arrivals & Departures

### Arrivals

David G. Bingham	Reactor
Malcolm S. Capel	Biology
Diane C. Carlson	Medical
Jose F. Cevallos-Candau	Appl. Sci.
Gustavo A. Cragnolino	Appl. Sci.
Michele M. Dickerson	P. & Gr. Arts
Richard T. Greves	Medical
Chris F. Masullo	Appl. Math
Hossein P. Nourbakhsh	DNE
Mark W. Ruckman	Physics
Nicholaos Tsoupas	DNE
Stephen F. Tyler	Safeguards & Sec.
James T. Veligdan	DNE

### Departures

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

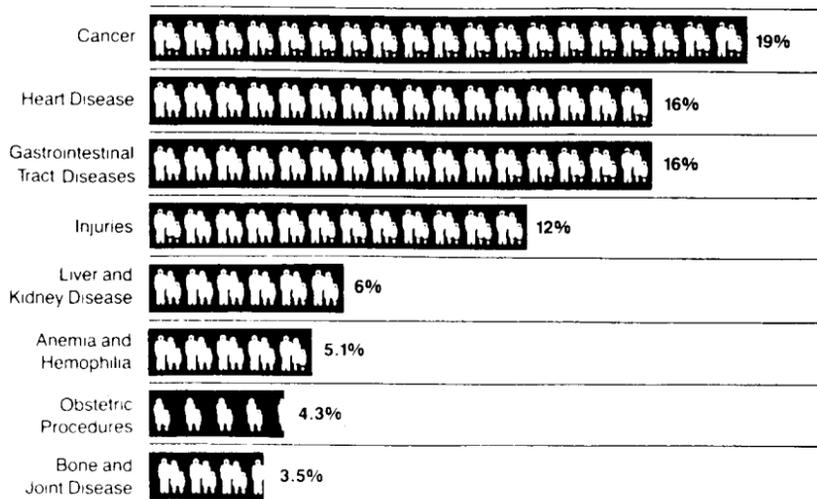
Harry J. Colleran	Instru.
Cornell P. Davis	S&EP
Michael J. Mallon	Safeguards & Sec.

## Note to Diners

The Cafeteria will be closed on Saturday, December 7. On that day, snack bar service will be available from 9 a.m. to 2 p.m. at the Brookhaven Center.

## BNL Winter Blood Drive

### SOME USES OF THE TRANSFUSABLE BLOOD SUPPLY



Approximately 44 percent of the transfusable blood supply is used to treat patients over the age of 65. As our population ages, more blood and blood products will be required. Progress in the treatment of conditions such as Cooley's and sickle cell anemias will also necessitate increased blood collections.

## The Goal: 300 pints The Dates: December 17 & 18

Direct questions and return pledge cards by December 9 to:  
 Chairperson Susan Foster, Bldg. 185, Ext. 5126, or

### Blood Program Captains

Dept./Div.	Bldg.	Representatives	Ext.	HEF	902A	Ann Flood	4779
AGS	911B	June Herbert	4692		902B	Vera Mott	7108
AMD	515	Art Harris	4115	Med.	490	Peter Heotis	2304
	515	Les Lawrence	4107	MIS	459	Jim Birtle	3290
AUI	134A	Monique Toler	5174	NSLS	725	Eileen Pinkston	4194
Bio.	463	Richard Sautkulis	3381	Pers.	185	Marsha Kipperman	2871
Cent.	462Z	Oscar Sanchez	3498	P&GA	197B	Terry Jones	2950
Shops	462A	Sheldon Martin	4986	Phys.	901A	Sandy Asselta	4550
	462U	Christine King	3352		510A	Liz Mogavero	3940
Chem.	462W	Richard Savoy	2957	PE	134C	Ed Byrne	2477
C&P	555A	Sophie Kostuk	4302		326	Slim Blevins	3084
DAS	355	Joan Lankford	7908		422	Bruce Laakmann	3254
DNE	179A	Pat Taylor	2452	Mech.	-452	John Connelly	4639
	197C	Jean Ramirez	2119	Elec.	-452	Steve Waski	7592
DO	130	Sharon Moore	3513	Reactor	750	Randi Vogt	4421
DOE	701	Virginia Diebel	4057	S&EP	99	Michael Carroll	2351
Fiscal	134A	Marge Stoekel	2459	S&S	50	Elke Dedner	2238
Inst.	535B	Doug Sweely	4237	S&M	211	Lou DiCarlo	2302
HEF	1005	Ruth Ann Lutz	7774	Staff	211	Barbara Boerjes	4956
				Serv.	179B	Henry Boyd	2553
				TID	477A	Juanita Heyliger	3490

## Cooking Exchange

On Wednesday, December 11, members of the International Cooking Exchange will demonstrate a menu of Christmas recipes from other countries.

Cooking Exchange meetings are held in the Recreation Building on the second and fourth Wednesdays of each month, from 12:30 to 2:30 p.m. Meetings are open to employees and their immediate family members. A \$1.25 donation entitles those present to a copy of the day's recipes, samples of the prepared dishes, and coffee or tea. Babysitting is provided at 50¢ per child.

Call Susan Sears, 744-7831, or Sara Morse, 288-1712, for more information.

## Cafeteria Menu

### Week of December 9

#### Monday, December 9

Chicken rice soup	(cup)	.65
	(bowl)	.85
Ham & noodle au gratin w/ 1 veg.		2.45
Beef teriyaki over rice		2.45
Hot Deli: Sloppy Joes		2.35
Top your own baked potato special served with chili and cheese sauce with 2 extra toppings		1.50

#### Tuesday, December 10

Lentil soup	(cup)	.65
	(bowl)	.85
Pot roast of beef w/ potato pancake		2.45
Chicken & vegetable stir fry		2.45
Hot Deli: Hungarian burger		2.40

#### Wednesday, December 11

Potato Leek soup	(cup)	.65
	(bowl)	.85
Spaghetti & Italian sausage		2.45
Smothered round steak w/ 1 veg.		2.45
Hot Deli: Eggplant parmesan hero		2.45

#### Thursday, December 12

Tomato vegetable soup	(cup)	.65
	(bowl)	.85
New England boiled dinner w/ 1 veg.		2.45
Sweet & sour pork over rice		2.45
Hot Deli: Top round of beef	(bread)	2.30
	(roll)	2.45
Top your own 1/2 lb. burger served from the grill area		2.25

#### Friday, December 13

Seafood gumbo	(cup)	.65
	(bowl)	.85
Skewered fillet of fish w/ 1 veg.		2.50
Pepper steak over confetti rice		2.45
Hot Deli: Turkey croissants		2.40

## Holiday Hams

Holiday hams are available at the Cafeteria. They are fully cooked and decorated for Thanksgiving or Christmas at \$2.00/lb. plus tax. Call Ext. 3541 to place your order.

December 20 — Last day to place an order.

December 23 — Last day to pick up hams.

## Classified Advertisements

### Placement Notices

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

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

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

For further information regarding a placement listing, contact the Employment Manager, Ext. 2882.

**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.

**POSTDOCTORAL RESEARCH ASSOCIATE** - To study a DNA-activated protein kinase found in human and other eukaryotic cells. Research background in enzyme purification or protein phosphorylation desirable. Contact Carl W. Anderson, Biology Department.

**POSTDOCTORAL RESEARCH ASSOCIATE** - To study the anaerobic microbial transformations of toxic metals and organic compounds in energy wastes disposed of in subsurface environments. Candidates should have background in anaerobic microbiology, biochemistry and trace metal geochemistry. Contact A.J. Francis, Department of Applied Science.

**LABORATORY RECRUITMENT** - Opportunities for present Laboratory employees

2323. **DATA SERVICES ASSISTANT** - Requires AAS in data processing or in a pertinent field, or equivalent work experience and good typing and clerical skills. Will assist division with data processing and secretarial needs, including data entry and retrieval, travel arrangements and telephones. Experience using an IBM PC very desirable. Must be willing and capable of learning various programming languages. Department of Applied Science.

**OPEN RECRUITMENT** - Opportunities for Laboratory employees and outside applicants

2324. **CENTRAL SHOPS FABRICATION ASSISTANT** - Requires working knowledge of machining, welding and a thorough knowledge of materials. Individual will prepare job orders for fabrication, materials and shop supply orders and numerically controlled machine tool programs. Central Shops Division.

### Autos & Auto Supplies

84 JEEP CJ7 - special pkg., h/t, sunroof, stereo, Clarion speakers, carpeting, chrome, blue, console, mint, 17k mi., \$9,700. 924-6613 or 924-1056.

73 FORD LTD WAGON - runs well, new tires, exhaust, brakes, \$600. Neil, Ext. 2023.

73 PINTO - clean, am/fm, new parts, 4 spd., 26 mpg; new Michelin 13" radial on rim; (4) rims for Datsun or Toyota, 4x4s, new, 6 lugs. 226-1828 after 5 p.m.

80 CHEVY MONZA - 2+2, 4 spd., 4 cyl., new parts, reliable, good engine, body, interior, asking \$1,150. 751-4822.

84 BUICK REGAL LTD - excel. cond., 40k mi. 928-0777.

80 OLDS ROYALE 88 - loaded, 4 dr., new diesel motor, w/warranty, new tires, shocks, rebuilt trans., brakes, \$2,900. 286-0904.

75 VEGA - for parts, good engine, transmission, bad firing wall but all other parts are new or like new, any fair price will be considered. 654-9094.

75 PLYMOUTH VALIANT - reliable, 4 dr., a/t, a/c, rebuilt trans., new brakes, radials, \$400. Ext. 4776.

**TIRES** - new Firestone, P-235x15, all terrain, Ford wheels and hub caps. 924-9212 after 6 p.m.

74 GOLD DUSTER - a/t, p/s, 112k mi., runs well, \$800. Dave, Ext. 4360 or 269-5319.

74 DODGE PICKUP - club-cab, cap, 318V8, excel. cond., clean. Bill, 586-8202.

75 AUSTIN MARINA - 4 dr., sedan, 4 cyl., 4 spd., am/fm, stereo, good running cond., 25 mpg, \$800; snow tires, (2) SR12, new, \$40. Pan, Ext. 3537.

GM MAGS - (2) stock factory, 15", asking \$25 pr. Ext. 4739 or 473-0037 after 4:30.

72 CHEVY MALIBU - motor runs well, needs body work, \$200. 878-6528.

84 TOWNE & COUNTRY WAGON - 30k mi., mint cond., fully loaded, must sell. 477-2262 after 6 p.m.

78 HONDA CIVIC - 12k mi., new engine, new brakes, am/fm stereo cassette, \$1,500. Ed, Ext. 3293 or 477-2880.

74 NOVA - 2 dr., V8, a/t, a/c, p/s, p/b, 49k mi. 473-2473.

81 CITATION - 4 dr., hatch, a/t, p/s, a/c, p/b, cruise cont., am/fm stereo, excel. cond. Bob, Ext. 3172/5308 or 878-1731 eves.

**MOTORCYCLE FAIRING** - Vetter model, Quick-silver w/mounting hardware, brand new, \$100. Frank, Ext. 3120.

**TIRES** - 2.15 radial, M&S, 2.25 radial M&S, 14" Datsun wheels. Ken, 289-8212 eves.

**AUTO PARTS** - 15" steering wheel, \$10; Penske timing light, \$15; tires, (1) L78-15, (2) G78-14 snow, \$10; 67 Chrysler convertible, new top, p/s, p/b, p/w, a/t, 383 V8. Tony, 698-9274.

76 CAPRI - 64k mi., new exhaust, am/fm tape, a/t, Ext. 2577 or 473-6429.

78 HONDA CIVIC - clean, rebuilt motor, 20k mi., stereo, \$1,100. Ext. 3649.

68 CHEVY CHEVETTE - 4 dr., good body, parts, no eng. or trans. 744-2528 eves.

82 CHEVY - SW, very good cond., \$4,900, 78 Cadillac Fleetwood Brougham, 4 dr., like new, \$4,900. 475-4596.

**SNOW TIRES** - mounted on Ford Pinto rims, good cond., \$30 pair. Ext. 4605 or 281-5456 eves.

80 CHEVY CITATION - 4 dr., V6, a/t, p/s, p/b, a/c, am/fm radio, excel. cond., \$2,750. Barry, Ext. 5624 or 727-5956.

80 CHEVY MONZA - 2 dr., sedan, am/fm cass., a/c, a/t, p/s, p/b, 53k mi., reas. 878-6664.

75 SAAB LE - w/GLE int., excel. in/out, a/t, am/fm cass., radials, new shocks, \$1,650 or best offer. Damian, 924-8686 days or 744-5079 eves.

**TIRES** - 75R14 radial, on Dodge rim, good cond., \$15. Victor, Ext. 2395.

77 CHEVY - Caprice Classic, body/int. excel., 4 dr., a/t, a/c, am/fm stereo, needs cam. Ext. 3605.

80 CHEVY - Citation Sports Coupe II, low mi., new eng., great cond., a/c, \$3,150. Ext. 3440.

80 OLDS OMEGA - 4 dr., sedan, 4 cyl., p/s, a/t, 85k mi., \$1,500. Randy, 751-2634 after 6 p.m.

**TRAILER** - axle, wheels, etc. OK, bed rusted, \$75. Ext. 3861 or 286-1975.

76 AMCHORNET - a/t, hatchback, white, 2 dr., 80k mi., good running cond., \$500. Ext. 3850.

81 VW RABBIT LS - 2 dr., manual, 67k mi., muffler, good cond., \$2,500. Uli, Ext. 5508.

### Boats & Marine Supplies

23' FRIENDSHIP SLOOP - wood, 1983, 2 bunks, icebox, stove, head, diesel, V P 2 cyl. monel tanks, \$27,000. 298-4985.

83 CRUISERS HOLIDAY 25 - 260 Mercury, 110 hrs., full camper, options, sleeps 6, excel. cond., \$24,500. 585-8904 eves.

### Miscellaneous

**MEXICAN HANDCRAFTS** - clay, glass, ceramics, blankets, etc. Ext. 3222, mornings and eves, Ext. 3755 afternoon.

**UNICEF CHRISTMAS CARDS** - Ann. Ext. 2022 or 744-8386 eves.

**SAMSONITE SUITCASE** - w/lock, Royal Traveler, 3-suiter, good cond., \$25. Dan, Ext. 7518.

**GUITAR** - electric, Memphis Destroyer, metallic blue, 1 yr. old, asking \$125. Eileen, Ext. 4194 or 924-4922.

**EARTH STOVE** - coal, wood, w/stack kit, used one season, must sell, \$375. 588-4703 after 5 p.m.

**WEIGHT BENCH** - 3 position incline, w/scott curl, dip and squat stations, welded steel, like new, \$130. 878-2233 after 6 p.m.

**COFFEE TABLE** - round, marble, \$25; (4) sets outdoor Christmas Lights, \$10; redwood table, (2) benches, \$20. 751-4822.

**METROPOLITAN OPERA TICKETS** - (2) second row, balcony, "Jenufa", Jan. 6, 1986, \$20 ea. Carmen, Ext. 4135.

**GEPORTABLE DISHWASHER** - \$25; 16" children's bike, \$20; 20" boy's bike, \$15; 5' sled, \$5. 751-4868.

**MATTRESS** - king size, Sears, best, good cond., w/platform, you pickup, \$20. ext. 4745 or 722-4076.

**DINING ROOM SET** - 1925, 5 chairs, wide table, china cabinet, mahogany, \$350. 744-3792.

**SKI BOOTS** - ass't sizes, child & adult, \$15; canopy bed, \$50. Jim, Ext. 3372.

**WOOD DESK** - and chair, \$20; cot bed, thick mattress, good cond., \$50; chrome bench, w/gold fabric, \$25; large print typewriter for sight impaired, \$30. Ext. 2007 or 751-1474.

**COLOR TV** - 16", RCA, \$75; G.E., air conditioner, good running, \$80. Pan, Ext. 3537.

**MEMORY EXPANSION BOARD** - 64/256 KB, for IBM PC, \$120; bed, dresser, Sealy mattress & box, spring, old but excel. cond., \$200. Ext. 2981.

**LOVE SEAT** - TV, Hitachi, black and white, 17", excel. cond., sofa, sleeper, \$50. 286-2493.

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

**KEROSENE DRUM** - 55 gal. and pump, \$30. Linda, Ext. 5141.

**TABLE SAW** - 7", w/radial arm-type conversion, \$50; Oster juice extractor, new, \$40; 7" table saw w/motor, \$30; Melnor walking sprinkler w/75' hose, \$30. Victor, Ext. 2395.

**CAMERA** - Fuji, 35mm, 1.7 Fuji lens & 70-200mm Vivitar zoom, many extras, \$200; Troybilt rototiller, 5 hp, less than 1 yr. old, 10 hours, paid \$1,300, sell for \$650. 589-7229.

**SPEAKERS** - pair, original lg. Advent, excel. cond., \$150. 473-8387.

**HOCKEY SKATES** - size 5, new, \$15; Xmas ornaments, wood, excel. cond.; toys & games; snow boots, size 3. S. Spark, Ext. 4111.

**WESTERN SADDLE** - Bonner Allen, good cond., \$125. 288-3104 after 6 p.m.

**REFRIGERATOR** - GE, 19 cu. ft., good running cond., \$75; playpen \$15; TV antenna, \$15. Ext. 7505 or 689-8605.

**SKIIS** - Dynastar, 200 cm w/Marker bindings, \$20; Nordica boots, 10/10-1/2, \$25 good. Ext. 4745 or 722-4076.

**WATERPROOF COATING** - Thoroseal, heavy duty, 35 lb. container, new, unopened, orig. \$28, sell for \$15. Ext. 2384.

**COAL STOVE** - Haas & Sohn, Pluto model 121u, autofeod, thermostat, brand-new in crate, \$400. Ext. 2922.

**DINETTE SET** - wrought iron and formica table, (4) wrought iron chairs, \$100. 669-0549.

**MAPLE TABLE** - 48x36, never used, \$80. Carmen, Ext. 4135.

**TERMINAL** - Decwriter II printer, \$300. Skalyo, Ext. 2509.

**COLOR TV** - remote cont., \$250; stereo JVC, \$70; plates, cutlery, kitchen utensils, 10 mo. old, red. 30%. Uli, Ext. 5508.

**POINSETTIAS** - red, several sizes, low prices, locally grown, del. around Dec. 10th. 727-6818.

**RINGS** - necklaces, coral, shells, wind chimes. Whitey, Ext. 2913.

### Free

**KITTENS** - (3) for Christmas stockings, can be seen on site. Tom, Ext. 3592.

**DOG** - 1 yr. old, male, mixed Collie markings, needs love & attention. Ext. 2877 or 289-8428.

**SIAMESE CAT** - seal point male, neutered, 2 yrs., shots, good w/people, one-pet home; husky cat, gray & white, adult, neutered, shots. 286-5879 after 6 p.m.

### Car Pools

**BAYSIDE** - share driving to Lab beginning January 1986, 8 to 5:30 p.m. Gus, FTS 8-233-4742.

**HEAD OF THE HARBOR** - off Rt. 25A or vicinity, to start new or join existing pool, 8:30-5:00. Donna, Ext. 2907.

**BABYLON/W. ISLIP** - driver needed for on-time car pool, 8:30-5:00. Mike, Ext. 2705.

### 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

**ROCKY POINT** - Tides ranch, 3 bdrms., 2 baths, den w/tp, 1/3 acre, priv. beach rights, \$129,900. Ext. 3823 or 744-4205.

**MIDDLE ISLAND** - secluded 3 bdrm. custom ranch, 1r w/tp, den w/wood stove, eik, oak floors, 2.26 acres, barn, out buildings, organic gardens, \$159,000. Ext. 7234.

**ROCKY POINT** - 4 bdrms., 2 baths, executive ranch, low taxes, gas heat, central a/c, walk to beach, huge kitchen, fenced yard. Ext. 3123 or 821-1039.

**SAYVILLE** - 3 to 4 bdrm. California ranch, brick front, 2 full baths, garage, full bsmt., central a/c, full bsmt., eik, d/r, l/r, fam./rec. rm., lg. patio w/outside shower, can be made mother/daughter, \$147,000. 589-2681.

**FLORIDA** - Port Charlotte, w. coast property, 120x125, high dry land, walking distance to Peace River w/direct access to Gulf, \$18,000. 732-8216 after 5 p.m.

**N. CAROLINA** - Cooperstown, 190 acres adjoining state forest, \$425 per. 363-7032.

**MILLER PLACE** - school dist. north, 100x120 wooded lot, health approval, survey, plans, building permit all included, \$45,000 ready to build. 473-0178 eves.

**AQUEBOGUE** - 3 bdrm. ranch, 20 min. to Lab., 5 min. beaches/golf course/marinas, city water, all appliances, ohw heat, fireplace, brick BBQ, asking \$125,000 neg. 722-4644.

### For Rent

**STRATHMORE RIDGE** - 2 bdrms., 1-1/2 baths, central a/c., all appl., avail. 12/1/85, \$650 mo. plus util. Ext. 3541 or 924-4070.

**PORT JEFFERSON STATION** - new, 2 bdrms., full bath & kitch., w/w carpet, priv. ent., \$600 plus util. 928-3033.

**LAKE RONKONKOMA** - 1 bdrm. cottage, minutes to SUNY & Smithtown, 20 min. to Lab, \$500 incl. elec. & water. Ext. 2674.

**ROCKY POINT** - furn. 3 bdrm. house, lease Oct. to June, \$750 plus util. 821-3553 or 821-0767.

**YAPHANK** - 3 bdrms., l/r, d/r, quiet cul-de-sac on stream, fishing, boating, \$600 mo. 924-3755.

**MASTIC BEACH** - studio apt., fully furn., kit., priv. ent., quiet, 10 min. from BNL, avail. 1/1/86, \$350 incl. util & cable. Ext. 7144.

**RONKONKOMA** - close to LIE, beach/recreational facilities, 2-3 bdrms., l/r, eik, full bath, yard, \$600 plus. Ext. 2676 or 543-0487 eves.

**PATCHOGUE** - furn. 1 bdrm. garage apt., privacy, \$450 mo. plus util. Ext. 4214 or 475-5543.

**BROOKHAVEN HAMLET** - sunny furn. apt. in country home, priv. ent., lg. l/r, bdrm., bath, kitchenette, responsible person. 286-9181.

**SHOREHAM VILLAGE** - 4 bdrm. house, fully furn., lg. l/r, eik, lg. garden, \$675 plus util., avail. 12/1. 744-4792.

**FLORIDA** - Spring Hill, 75 mi. West of Orlando, 2 bdrm. fully furn. house, avail. Oct./Dec. 14, \$350 mo. plus util. Ext. 4530 or 261-2719.

**WINDHAM** - chalet, 3 bdrms. w/loft, near Hunter & Windham Mts. for skiing and hunting, fully furn. Judy, Ext. 3595 or Bea, Ext. 3642.

**FARMINGVILLE** - 1 bdrm. apt., single, \$500 incl. all util. plus cable. 732-2141 before 1 p.m.

**BROOKHAVEN HAMLET** - furnished house, 2 baths, 4 bdrms., den, garage, l/r, eik. Ext. 3861 or 286-1975.

**SOUTH CAROLINA** - two bdrm. condo, Hilton Head, golf and tennis, tournaments w/the pros., winter rates \$300 wk. 585-9149.

**CENTER MORICHES SO.** - 3-1/2 lg. rms., priv. ent., full bath, refrigerator, carpet, no children/pets, 1 mo. security, 12/1 occupancy, \$550/mo. pays all. 878-0480 eves.

**N. SHIRLEY** - large furn. studio apt., w/kit., priv. ent., utilities included, 5 min. from Lab & stores, 1 person only, non-smoker, no pets, security, \$400 pays all. 281-8044.