

Protons Used In Cancer Therapy

Brookhaven National Laboratory was recently awarded a grant by the Department of Health, Education and Welfare for research related to clinical applications of proton beams. The project will involve scientists from the State University at Stony Brook and Nassau County Medical Center, as well as five departments within BNL. The immediate goal is development of a practical technique to map the location of a proton cancer therapy beam in a patient. The necessary beam line and experimental facility is being installed at the 200 MeV linac.

The grant, administered by the National Cancer Institute, is for \$500,000 over a two-year period. Personnel include Gerald W. Bennett, DAS; John O. Archambeau, Director of Radiation Oncology, Nassau County Medical Center, coprincipal investigators; Victor P. Bond, Associate Director for Life Sciences; Harold L. Atkins, Director of Nuclear Medicine; Gerald Levine, Health Physics and Safety; James Alberi, Instrumentation, all of BNL and Catharine Wingate, SUNY at Stony Brook.

A practical beam localization procedure is required to take full advantage of charged particle beams in radiation therapy. The use of heavy charged particles for cancer therapy has several advantages over methods presently in use, such as X-rays and gamma rays. X-rays cannot be confined and deposit decreasing amounts of radiation with increasing depth. Consequently, overlying tissues receive more radiation than the tumor, while tissue beyond the tumor receives a lower but unnecessary dose. In contrast, a proton beam deposits more radiation as it penetrates deeper into the body and at a particular depth the beam stops abruptly. More dose is deposited at the end of range than at the beginning. As a result, overlying tissue receives a lower dose and tissues beyond the tumor are not irradiated.

Where the beam stops depends on the beam energy and the densities of the materials it passes through. If the beam goes through bone dense material, the protons will not penetrate as deeply as in soft tissue (muscle), whereas if protons pass through air which has a very low density, they penetrate further. This results in an unequal distribution of protons with some portions of the tumor not being adequately irradiated. To compensate, a suitable tissue-like "bolus" can be placed near the skin where the beam enters. The bolus will regulate the depth of the beam in the body. In areas where the beam goes deeper than desired, the bolus would be thicker. Conversely, where the beam does not penetrate sufficiently, the bolus would be thinner. At present even unsatisfactory approximations require many calculations at multiple levels across the treatment volume. The method which shows most promise is detected.

(Continued on page 2)



Bob Bergoffen makes final checks before the spent fuel shipment is sent on its way.

—Photos by Rosen

Year's Last Shipment On It's Way

It was 9 a.m. Monday morning when the huge airlock doors at the HFBR hissed open to admit an awaiting truck. Once inside the reactor, the truck's cargo, a shiny metal container, was removed and an identical container, filled with 14 spent fuel elements was hoisted aboard.

Last Monday marked the 95th shipment of spent fuel from the HFBR to a federal reprocessing plant in South Carolina. It was also the last shipment for this year. Shipments are made in the spring and summer to take advantage of good weather and road conditions.

Bob Bergoffen supervised as Martin Sautter and Bill Keating, reactor operators, hoisted the 13-ton container onto the truck with the help of a crane. Wally Wawczak, the truck driver, then gave them a hand in securing it with heavy cables.

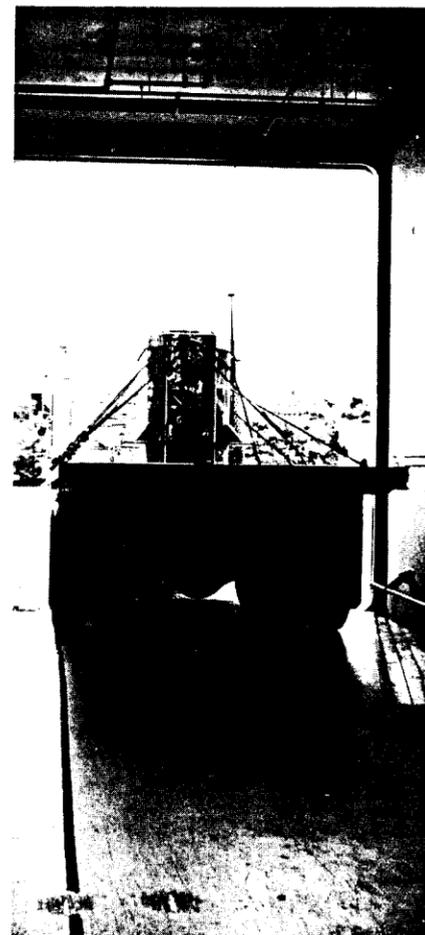
Both Sautter and Keating are veterans when it comes to fuel handling. Keating is entering his 29th year at the Lab, while Sautter has been here 24 years. Wawczak has been transporting spent fuel from the HFBR ever since it first went into operation ten years ago. The reactor personnel have gotten to know Wally, whom they nicknamed "King of the Road," pretty well and look forward to seeing him because "he always has a good story to tell."

During the shipping period, Wawczak picks up spent fuel elements each Monday and returns with an empty container the following Monday. The container is exchanged for a full one and the truck is sent on its way again. But before it goes on the road, a strict list of procedures is followed.

The truck bed and the incoming cask are smeared by a reactor health physicist and tested for possible surface contamination. The full cask is also smeared, and radiation levels are written on stickers which are affixed to all sides of it. Once the container is placed on the truck, radiation readings are taken one meter from it. All of the readings are recorded and accompany the driver to his destination.

A week before a shipment, the spent fuel elements are remotely loaded into the container under 20 feet of water. They must be kept under the shielding water for a minimum of 270 days before being shipped. This gives them time to "cool down" so they are not as radioactive as when they first enter the fuel storage canal through a chute after being discharged from the reactor core.

The container, or "pig" as it is known, is a five-foot high double-walled stainless steel vessel. The inner spaces are filled with lead. The pig has been designed to withstand extreme accidents such as high speed impact, puncture and fire and water immersion.



A truck loaded with spent fuel leaves the HFBR through a series of airlock door.

A Message From SUNY's President

Dear Colleagues:

On Friday evening, September 26, 1975, the Stony Brook Foundation will present its award for distinguished contributions to higher education to Brookhaven National Laboratory Director George H. Vineyard at a dinner-dance at Colonic Hill in Hauppauge, New York. The award will be presented by Nobel Laureate C.N. Yang, Stony Brook's Einstein Professor. This event recognizes Dr. Vineyard's great achievement and also symbolizes the extremely close ties between Stony Brook and Brookhaven National Laboratory.

A second award will be presented to Averell Harriman by the present New York State Governor Hugh L. Carey.

Among the 1000 persons expected to attend the dinner are many leaders at the state and national level, as well as leading faculty and scholars, including at least three Nobel Laureates. We hope that there will be a strong representation at the dinner of George Vineyard's colleagues from Brook-

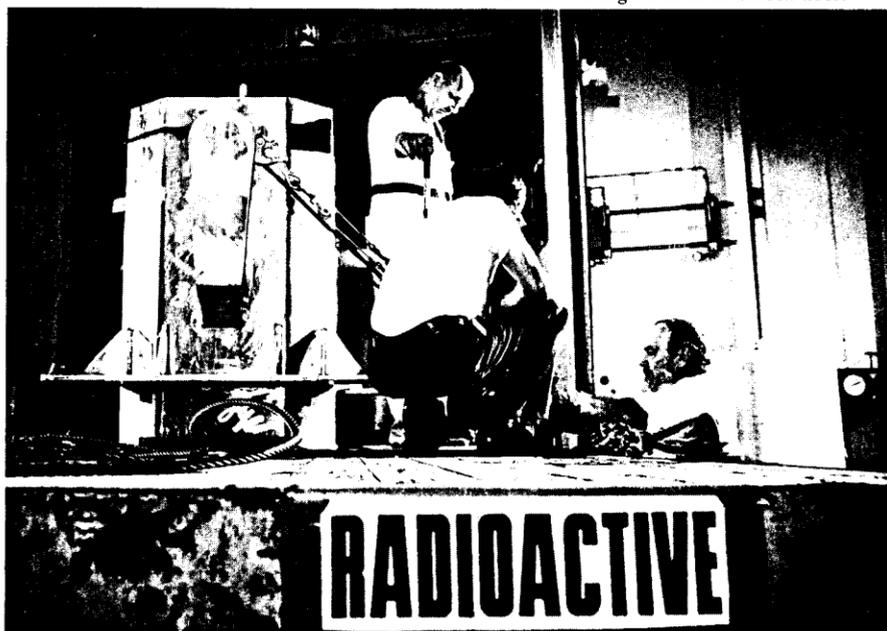
haven National Laboratory.

Tickets for the dinner-dance are \$75-a-person or \$125 a couple. All proceeds from the dinner or other deductible contributions support the program of the Stony Brook Foundation, including scholarship funds and other needs of the University and community not covered by State appropriations.

Reservations for the dinner can be made by calling 246-3462 or by writing to the Stony Brook Foundation, P.O. Box 638, Stony Brook, New York.

The Stony Brook Foundation feels very privileged that Dr. George Vineyard has agreed to be its honoree this year. The dinner is also expected to feature an important announcement concerning the University by Governor Carey. We hope very much that you will wish to join us for this historic occasion.

Sincerely,
John S. Toll, President
SUNY at Stony Brook



Martin Sautter, Wally Wawczak and Bill Keating (left to right) secure the 13-ton pig carrying spent fuel.

Hold That Line!

The Long Island Association is expecting a large turnout for its meeting here on Tuesday, September 16. The participants will be eating lunch at 12:30 p.m.

BNL employees should try to eat early to avoid a long wait at the cashier and to find a table.

Setlow, Ting Elected To Honorary Society

Among the newly elected Fellows to the American Academy of Arts and Sciences are Richard B. Setlow, Senior Biophysicist in the Biology Department, and Samuel C.C. Ting, Professor of Physics at MIT, and leader of the research team that discovered the J-particle at Brookhaven this spring.

Setlow joined the Biology Department at Brookhaven in the fall of 1974 after 14 years on the research staff of Oak Ridge National Laboratory. After receiving his Ph.D. degree from Swarthmore, he taught physics and biophysics at Yale University. In conjunction with his work at Oak Ridge, he continued his teaching career at the University of Tennessee.

Setlow is one of the pioneers in determining the effects of radiation on the DNA molecule, and his current research focuses on the repair mechanisms of DNA damaged by chemicals or radiation.

He is a member of the National Academy of Sciences. He and his wife Jane, a geneticist at Brookhaven, reside in Shoreham.

Ting has been involved in teaching and research in physics since 1962 when he received his Ph.D. at the University of Michigan. After two years of research at CERN, he taught at Columbia from 1964 to 1966. He has been associated with MIT since 1967. The momentous announcement in November 1974 that a new particle - J - had been discovered, was the result of intensive work of the MIT-BNL team, headed by Ting. This new particle was hailed as the physics discovery of the decade and created much excitement in the scientific world.

Ting and his family live in Lexington, Mass.

The American Academy of Arts and Sciences was founded in 1780. It is an honorary society and interdisciplinary studies center, and includes scholars and national leaders in mathematical and physical sciences, biological sciences, social arts and sciences and humanities.

Sept. Service Awards

The following employees will receive service awards during the month of September.

Twenty-Five Years

Clara A. Bjerknes Biology
Charles Pukit Accelerator
Richard D. Stoner Medical
Arthur W. Swenson Chemistry

Twenty Years

Donald C. Borg Medical
Florence V. Caliguri Staff Services
Dorothy M. Dioguardo Medical
John D. Langfeldt Accelerator
Lawrence B. Leipuner Physics
Thomas W. Morris Accelerator
Joseph M. Titmus Health Physics & Safety
Howard Vetter Accelerator

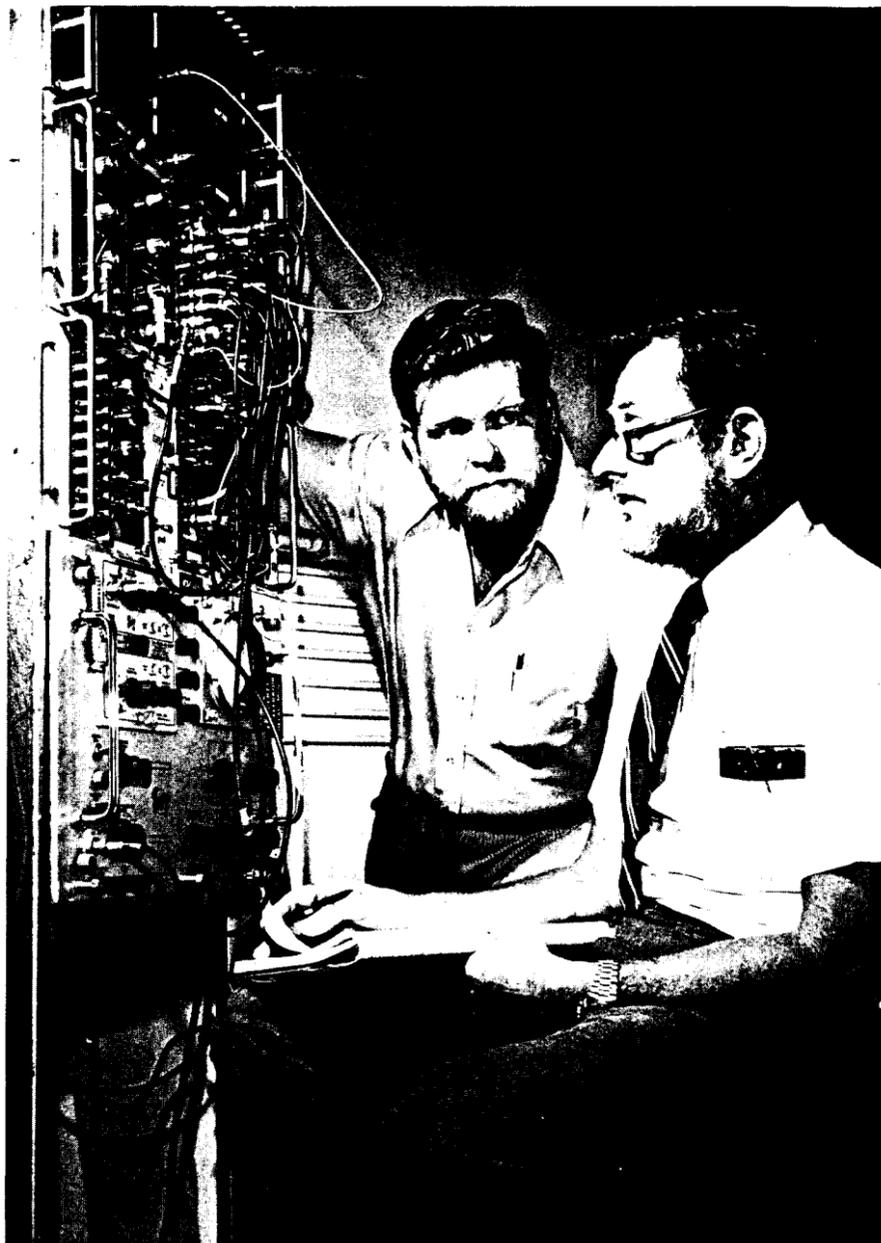
Ten Years

Gloria Cusimano Applied Mathematics
Henry W. Danowski Supply & Materiel
Arthur J. Gannon Plant Engineering
George M. Guydish, Jr. Plant Engineering
Beverly R. Gwathney Health Phys. & Safety
Anthony Kaczmarczyk Central Shops
Myron C. Ledbetter Biology
Mordechai Montag Mechanical Engineering
Richard E. Parker Plant Engineering
Ralph T. Sanders Accelerator
Herbert Schulman Health Phys. & Safety
Sharon L. Smith Physics
Suzanne Vander Kolk Medical

Selected Reading

Phys. Bull. 26, August 1975
International publication: Changing patterns.
A. Singleton. 354-5
Science 189, August 22, 1975
Caspar Weinberger: Beware of an "all-pervasive federal government. B. J. Culliton. 617-9

Medical Protons



Gerald Bennett (left) and John Archambeau discuss a project underway at Brookhaven to investigate the use of proton beams for cancer therapy.

Proton Therapy

(Continued)

tion of radioisotopes generated in tissue by the beam itself. The body is about 65% oxygen. The beam protons convert some of the stable oxygen, oxygen-16, to the unstable isotope oxygen-15, which has a half life of two minutes. Oxygen-15 emits an anti-electron (a positron) which quickly annihilates with an electron, producing a pair of gamma rays of opposite direction. By detecting these gamma rays outside the body the beam distribution can be determined. The maximum depth of the beam in the patient can then be tailored by appropriately shaping absorber material in the beam path. Preliminary calculations and experiments over the last three years indicate that the spatial resolution and dose required are practical, but an accurate

measure of the clinical feasibility requires a full scale program, using tissue-like plastic "phantoms" and tissue specimens in the investigation in lieu of patients.

*This technique of beam localization in vivo will be useful in the development of proton radiation therapy presently underway at the Harvard Cyclotron Laboratory and in three accelerator centers in Russia. The same method is applicable to meson and heavy ion radiation therapy being developed at Los Alamos, Stanford University, and the Lawrence Berkeley Laboratory.

Later goals for this facility include investigation of its diagnostic value of such proton induced "positron pictures," pre-clinical radiation biology and proton radiation therapy.

— Bennett & Archambeau

Official & Special Events

- Monday, September 15
Yom Kippur
- Tuesday, September 16
Long Island Association Meeting
- Friday, September 19
BERA Very Special Event,
7:30 p.m., Brookhaven Center
- Saturday, September 20
BERA Very Special Event,
7:30 p.m., Brookhaven Center
- Tuesday, September 23
IEA Water Electrolysis Workshop
(September 23-25)
- Wednesday, September 24
USSR Delegation (September 24-25)
- Friday, September 26
BERA Very Special Event,
7:30 p.m., Brookhaven Center
- Saturday, September 27
BERA Very Special Event,
7:30 p.m., Brookhaven Center

IBEW Monthly Meeting

Local 2230, I.B.E.W. will hold its regular monthly meeting on September 25, 1975, at 8 p.m. in the Knights of Columbus, Railroad Ave., Patchogue.

There will also be an afternoon meeting at 2 p.m. for shift workers in the Union Office at 31 Oak Street, Patchogue. On the agenda will be regular business, committee reports and the president's report.

Arrivals & Departures

Arrivals

Albert H. Beaufre Mech. Engr'g
George D. Darling Biology
Jeffrey S. Gaffney Chemistry
Jack Heller Applied Math.
Brant M. Johnson Physics
James F. Lynch Applied Science
Michael D. Marx Physics
Linda C. Matusiak Applied Science
Susan P. Montague Applied Science

Departures

Kenjiro Kondo Chemistry
Malcom R. Macphail Physics
Walter N. Schreiner Physics
Paul E. Schueler Chemistry
Barbara Sedgwick Biology
Steven G. Sedgwick Biology

Fishing Contest

BNL fresh water anglers are invited to enter the 1975 National Industrial Recreation Association's Annual Employees Fishing Contest.

Contest entry blanks with complete rules and regulations are available at the BERA Sales & Services Office in the Cafeteria.

The winners of each class will receive a special National Industrial Recreation Association Fishing Contest Trophy and one of Heddon & Sons' rod and reels.

Chabrol Film Classic To Be Shown In Berkner

The French Group of BNL will present the Claude Chabrol film *Les Cousins* on Thursday, September 18, at 8:00 p.m. in Berkner Hall. Members of the BNL community and their friends are cordially invited to attend. A donation of \$2 will be requested from those who are not members of the French Group. After the film showing, there will be a brief meeting to discuss the future of the BNL French Group.

Les Cousins begins slowly, portraying people that seem unexceptional, but who are inexorably drawn into a conflict that can be resolved only by violence, or even death. This follows the pattern of many other Chabrol films: In *Léda* (1960), a soft-spoken music lover murders his father's mistress; in *Les Bonnes Femmes* (1960), a timid vigin succumbs to the charms of a romantic stranger and is brutally killed; in *Les Biches* (1968), an idyllic ménage à trois ends in the murder of one lover and the mental breakdown of another. In *Le Boucher*, which had an English sound-track dubbed in and was widely distributed, the village butcher of the title, an apparently amiable and obliging chap, could always find a soup-bone for a puppy but was discovered to be a homicidal maniac using his knife after business hours.

Hollis Alpert of the Saturday Review said about the film "whether it is essentially 'beat' is not so much the point as the fact that Chabrol has caught a contemporary mood here and with the good taste not to judge it too moralistically. In other words, his eye and his sense for detail is - and there is no other word for it - extraordinary."

— Ralph Weston

Hospitality Committee

The Hospitality Committee will hold an evening get-together on Tuesday, September 16, from 8 to 10 p.m., at the Recreation Building in the apartment area.

Mrs. Geraldine Sheridan, Deputy Commissioner, Suffolk County Department of Consumer Affairs, will discuss the goals and work of her department. Many of you will remember the interesting morning we shared with Mrs. Sheridan last April. Her return engagement promises to be at least as interesting.

Spouses are invited; refreshments will be served. We look forward to seeing you at our final evening get-together of the season.

Cooking Exchange — Jackie Newman Returns

The BNL Cooking Exchange will begin its 1975-76 season on September 17th. Meetings are held on alternate Wednesday afternoons from 12:30 to 2 p.m. in the Recreation Building in the Apartment Area. Children are welcome and babysitters are provided. There is a small charge of 75¢ to cover the cost of food plus 25¢ per child for the babysitters' fee.

The inimitable Jackie Newman will give her annual demonstration of classic Chinese cuisine. She is sensational so don't miss this demonstration! Come taste the fried stuffed eggplant, savor the Ants Climbing Trees, and enjoy the steamed shrimp custard.

Don't forget - come! That's September 17 at 12:30 p.m. in the Recreation Building.

New Pool Hours

Monday through Friday
11:30 a.m. - 1:30 p.m. Employees only
5:00 p.m. - 9:30 p.m. Employees/Families/Guests

Saturday & Sunday
1:00 p.m. - 6:00 p.m. Employees/Families/Guests

Summer Pool Passes will be honored until September 30, 1975.

**BNL ARTISTS
&
CRAFTSMEN
GET READY FOR
AUTUMN ART SHOW**

Softball

Dick Ruffing

After more than three months of vigorous competition, the 1975 softball season came to an end with the final championship games being played last week. To give you some idea of the balance in the leagues, three out of four leagues were either tied or were involved in championship games.

The National League's four teams were tied for first place at the end of the second half of play. In all, we had six playoff games and two championship games.

Brookhaven League

Last Tuesday evening, on Field One, the Blue Jays, winners of the first half, defeated the Old Timers, winners of the second half and defending champs, by a score of 10 to 4.

The Blue Jays put it all together in nice fashion by scoring five runs in the first inning. Offensively the Blue Jays did not get an extra base hit - all timely singles. Herm Haller was four for four, and Danny Oldham was three for four with three runs batted in. George Oldham pitched a fine game, in fact, had a no hitter for four innings, backed up by superb defense by the Blue Jays. Tom Petty had a home run for the Old Timers.

Congratulations to Walt Chornoma and Hal Marshall, as well as the rest of the players on the Blue Jays, for a very fine season.

National League

On Wednesday August 27, the first two playoff games were played to determine a second half champion. The Six Pax defeated the Bubble Boys 10 to 6, and the Dirty Sox defeated the Hawks 9 to 6. On September 2, the Six Pax defeated the Dirty Sox 14 to 3.

On the 28th, the Six Pax and the Hawks played to determine a first half winner and the Hawks came out on top 13 to 2.

On September 3, the Hawks and the Six Pax played to determine a champion in the National League. The Hawks were really up for this game and jumped to a big lead in the early innings and went on to win 18 to 4. Joe Hanson and team look like strong competition in league one.

Laboratory League

The Phoubars, who had already won the first half, were tied with the Dags for the second half, and that game was played on the 27th with the Dags smashing the Phoubars 21 to 7. On the following night the "never say die" Phoubars played the Dags once more for the League Championship. One has to understand, as one person said, "they look like a bunch of Veteran Hospital rejects," that although plagued by injuries, the Phoubars scored three runs in the last inning to win a come-from-behind victory 8 to 7. The National League needs George Sabine & Co.

University League

In the last game of the season, the Oh Kays who had already wrapped up the League Championship lost in their bid to have an undefeated season by being defeated by the RBI's 8 to 5. Kay Hunt and Ed Taylor have put together a fine team. Congratulations!!

Cafeteria Menu

Week Ending Sept. 19, 1975

Monday, September 15	
Corn Chowder	
Beef Liver & 1 veg.	1.05
Scrambled Eggs, Sausage & Fr. Fr.	1.05
Tuesday, September 16	
Beef Noodle Soup	
Knockwurst & Sauerkraut	1.05
Baked Lasagna & 1 veg.	1.15
Wednesday, September 17	
Cream of Potato Soup	
Beef Chop Suey on Rice	1.05
Chuck Wagon Special	
½ lb. Beef Burger	
Baked Beans, French Fries, Cole Slaw	
Roll & Butter	
Plain Jello or Ice Cream	
Small Beverage	\$1.87 plus tax
Thursday, September 18	
Chicken Vegetable Soup	
Cheese Ravioli & 1 veg.	1.00
Roast Chicken, Stuffing & 1 veg.	1.10
Friday, September 19	
Clam & Celery Soup	
Spaghetti w/Clam Sauce	1.00
Breaded Pork Chops & 1 veg.	1.25

There Are Still Tickets Left!



There are still tickets left for BERA's Very Special Event on Friday, September 26. The featured entertainment will be the joyous musical "I Do, I Do," followed by dancing under the stars to the MJB Trio. "I Do, I Do" is the story of a happily married couple starting with their early married years (above), and ending with the day when, full of years, they move out of their well-beloved big home after their children have grown and found lives of their own.



BROOKHAVEN BULLETIN

Published Weekly for the Employees of
Brookhaven National Laboratory

CARL R. THIEN, *Public Relations Officer*
JEAN BURKE, *Editor*
CAROL GOLDSTEIN, *Copy Preparation*

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Telephone 516 345-2345

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Expert skippers in your area volunteer to teach you, free of charge, the boating skills you must possess for safety on the water.

This free course covers the following subjects in approximately 12 evening lectures at 2 hours each.

Handling under Normal Conditions
Handling under Adverse Conditions
Seamanship and Common Emergencies
Rules of the Road
Aids to Navigation
Compass and Chart Familiarization
Running Lights and Equipment
Boat Trailing
Mariners Compass and Piloting

Squadrons holding classes within the environ of the Laboratory are the following:

Patchogue Bay - Mondays at 8 p.m., beginning September 8; Middle Island School, Patchogue.

Old Field Point - Tuesday at 8 p.m., beginning September 16; Rocky Point High School; John F. Kennedy High School, Terryville.

Moriches Bay - Mondays at 8 p.m. beginning September 8; William Floyd High School, Shirley; Eastport High School.

The Winner Is Picked

For all of you who were hoping to win the big drawing and get a pair of free tickets to one of BERA's Very Special Events - sorry. The winning ticket has been drawn and it belongs to Dorothy Schroeder of the Director's Office. Over 700 tickets were sold by September 5, the deadline for the drawing, and Dorothy came out the big winner.

Tickets are still available for September 26, so hurry up. September 15 is the last day you can buy one.

The BERA Committee wishes to remind you to be on time for dinner - promptly at 7:30 p.m. All the clatter and munching is to be out of the way before the play starts at 9.

Bowling News

Cathy Van Noy

Bowling season is here again with lots of enthusiasm and great expectations. Welcome to all of the new bowlers and welcome back to the oldies.

Listed are your league secretaries. Be sure to give them those big games and converted splits.

Pink League - Marie Brenner, Ext. 2456
Black & Blue League - Lou Jacobson, Ext. 2462
Green League - Dan Stelmashuk, Ext. 3386
Red League - Charles Bohnenblusch, Ext. 4578
Purple & White League - Ken Asselta, Ext. 4403
Good luck and good bowling!

Soccer

The BNL soccer team has practice sessions each Monday night at 5:30 p.m.

The next scheduled game will be BNL vs. St. Johns University to be held on Saturday, September 20, at BNL. Kickoff time is 1:30 p.m.

The annual meeting of the Soccer Club will be held on Monday, September 15, at noon in Room A of Berkner Hall.

Classified Advertisements

Placement Notices

Each week the Personnel Office lists personnel placement requisitions, currently being processed. The purpose of these listings is, first, to give notice of all non-scientific staff positions being filled and, second, to give employees an opportunity to request consideration for themselves through the Personnel Office. In filling vacancies, the Laboratory's objective is to give first consideration to present employees, as follows: employees within the immediate group having the vacancy, employees within the department or division, employees within the Laboratory as a whole.

For further information regarding a placement notice, or to request consideration for an available position, contact Supervisor, Personnel Placement & Development, extension 2874 or 2882.

164. RESEARCH SERVICES ASSISTANT - A.A.S. degree or equivalent in agriculture or horticulture. Some experience in instrumental methods of analysis required. Some greenhouse experience desirable. Department of Applied Science.

186. BIOLOGY ASSOCIATE - Biology Department.

187. CUSTODIAN - Plant Engineering Division.

188. REFRIGERATION AND AIR CONDITIONING SUPERVISOR - Plant Engineering Division.

189. OFFICE SERVICES ASSISTANT - Temporary part-time position. Director's Office.

190. COMPUTER SCIENCE ANALYST - Temporary position. Neutron Cross Section Group. Department of Applied Science.

Autos & Auto Supplies

72 CHEVY - Short block, 400, needs line boring. Walt Chornoma, Ext. 3254, 325-0567 after 6.

72 PONTIAC VENTURA - 6 cyl, std, excel cond. Ext. 3268.

69 CADILLAC - Coupe de Ville, ac, full power, lt blue/dark blue vinyl top, clean. \$1500. 924-3581.

TIRES - Laramie Big Wheel on Chevy rims w/VW adapters, simulated mag hubcaps, 2 wheels, new. \$100. Fred, Ext. 4407, 864-1214 after 6.

CHROME WHEEL INSERTS - 15", 4 deep dish type. Ext. 3120.

64 CHEVY IMPALA - 4 dr hdtp, ps, radio, good running cond, good tires. \$200. Ext. 4740.

75 CAPRICE ESTATE - Am/fm stereo w/short wave, power rear window & tailgate, roof rack, ac, must sell. Pete, 698-1889.

66 VW SQUAREBACK - Engine completely rebuilt, new ball joints, brakes, steering box, etc, recon'd by VW dealer, excel cond & mileage. 751-7140.

70 MONTE CARLO - Bucket seats, 3 spd automatic, black w/black int, 400 eng, 60,000 mi. \$1600. Ext. 3305.

2 SNOW TIRES - G78-14 on 14" Ford rims. \$50. Ext. 4823.

73 CAMARO LT - Brown, excel cond, ps/pb, am/fm, new steel radials, many extras, 30,000 mi. 286-0372.

72 DODGE CHARGER - 6 cyl, 3 spd, am/fm, stereo tape, radials, 23 mpg, very clean in & out. L. Toler, Ext. 3942, 727-1412.

69 CHEVROLET - El Camino. 289-2420 after 5:30.

65 OLDS - F85 sedan, engine excel, body fair. \$300. Ext. 4753, 941-9282.

66 CHEVY IMPALA - Transmission needs work, otherwise in generally good mechanical cond. Ext. 3268.

65 VW BUG - Engine replaced, runs very good, transmission slips out of high. C. Nielson, Ext. 3935.

TRUCK TIRE - Brand new Uniroyal Fleetmaster 8 ply rating, 9.50x16.5, mounted on new Dodge rim. \$70. Dee, Ext. 3675.

2 SNOW TIRES - Like new, 520-13, 4 ply nylon, Goodway. \$15 a pair. Pluta, Ext. 2957.

69 OLDS - Auto, ac, all power, am/fm radio, new muffler, new brakes. \$1250. 289-6469 after 5:30.

74 JAWA - Trail 90, 3000 mi, clean. Asking \$260. J. Guthy, Ext. 4764.

67 CADILLAC COUPE - Full power, stereo, radio, good radial tires, needs body work. \$300. 744-8949.

73 GOLD DUSTER - Low mileage, 6 cyl, excel cond. Asking \$2400. 281-2176.

73 FORD PICKUP - And camper, 11', sleeps 6, power disc brakes, ps, auto trans, 16,000 mi, excel cond. Ext. 3499, 732-4031.

TIRE - 6.95x14, General Jetair, like new, mounted on Ford rim. \$15. Mike, Ext. 3531.

VW BEETLE - 28,000, r&h, snow tires, orig owner, excel cond. \$1850 firm, Ext. 3298.

70 PLYMOUTH - 9 pass sport suburban wagon, 383 eng, sure grip differential, ps/pb, power rear window, ac, \$1500. 588-0147.

72 YAMAHA - 175 cc, dirt or street, under 2000 mi, very clean. Asking \$475. Frank, Ext. 4095.

66 OLDS 88 - V8, ps/pb, radio, newly tuned-up. Ext. 3414, 281-6776.

69 MERCURY COMET - Low mileage, good cond, r&h. 281-7654.

75 TR6 - 3000 mi, burgundy w/tan interior, new cond. \$5000. Naomi, Ext. 3699.

66 CHEVY IMPALA - Auto, ps, radio, air cond, runs very well, recent tune-up & new parts. \$250. 924-4837.

60 OLDS - Station wagon, auto. \$100. Ext. 2528.

Classified Advertisements

73 FORD 1 TON PICKUP - Camper special, ps/pb, auto, dual batteries & gas tanks, am/fm stereo, 10,000 GVW, 17,000 mi, 24 months old. \$4000. Paul, Ext. 2023, 744-9889.

Boats & Marine Supplies

AQUA CAT - Catamaran, all fiberglass, new sail, daggerboards, very good cond. \$375. Paul, Ext. 2476.

17½' COBIA - 50 hp elec start Johnson, Cox trailer, tops, tanks, depth finder, lots more. \$1400. 928-1794 after 6.

17' STARCRAFT - Datona trihull, fiberglass, 80 hp Evinrude motor, TeeNee trailer, all 1967, newly overhauled motor. \$1300 firm. Can be seen at Milne's in Rocky Point. 473-1154 after 5.

17' TIGERCAT - Fiberglass catamaran w/trailer. \$600. John Evans, Ext. 4323, 286-2247 eves.

SUNFISH - Alcott, very good cond w/trailer. \$450. Fred, Ext. 4407, 864-1214.

BOSTON WHALER, X - Sport, 14', 40 hp Johnson, very good, w/trailer. \$1200. Fred, Ext. 4407, 864-1214 after 6.

16' COMET - Dacron sails, stainless rigging, bronze fittings. \$300. John, Ext. 3674, Don, 444-2217, 473-6570 after 6.

32' CHRIS CRAFT - Sedan, twin FWC Palmers, fly-bridge & bimini, bendix auto pilot, depth finder. \$9000. Ext. 4823, 475-7241.

34' BALTZER - Twin Chrysler engines, camper back, excel fishing or family boat. 331-1718.

Miscellaneous

WASHING MACHINE - 14 lb capacity, very good cond, coppertone. Asking \$85. Ben, Ext. 2528.

KEROSENE STOVE - 3 burner cook stove, table model, \$7; snow blower, hardly used, \$50; old mahogany wood & upholstered chair, \$15. 727-1329.

GIRL'S BICYCLE - 20", \$10; 26", \$5. Ext. 2485.

BEDROOM SET & DINING ROOM SET - Blonde wood, sound. \$150 each. Barney, 744-8567 after 6.

BICYCLE - Trail brand, good for 4 yr old child, red, very good cond. New \$30, sell \$15. Ext. 3090.

BOWLING BAG & BALLS - \$10. John McCafferty, Ext. 2012.

PORTABLE TYPEWRITER - Smith Corona w/carrying case. \$25. 281-6130.

BABY CRIB - \$40; dressing table, \$25. Les, Ext. 4074.

SHOT GUN - 12 ga Stevens pump, like new. \$80. John, Ext. 3354.

AREA RUG - Diamond shape, gold, \$15; olive green round area rug, \$10; colonial kitchen table w/4 chairs, \$100. 281-6130 eves.

RANGE HOOD - Yellow, brand new, never used, \$30; ice skates, size 3 & 11, new, \$3 each. 281-6130 after 6.

WARMING TRAY - Excellent, \$8; stairway iron rail, \$10. 281-6130 after 6.

SCOTTS SPREADER - \$20; small spreader, \$5; swimming pool complete w/filter, ladder, vacuum & net, \$50. 281-6130 after 6.

SECURITY LOCK - New still in box, \$10; glass top center table w/gold marble bottom, excel cond, \$30; 4-piece bathroom set, red, new, \$7. Ext. 3141.

JUDO UNIFORM - Complete, brand new, \$20; Eureka upright vacuum cleaner, new, \$150. 281-6130 eves.

RIDE ON REEL MOWER - Yardman 250, 24' reel, used 2 yrs, stored 3 yrs. W. Finn, Ext. 3630.

TRAILER - 1964 Scotty, self-contained, 2 burner stove, ice box, sink, toilet, sleeps 5, good cond. \$900. 475-9021 after 5.

SHOT GUN - Springfield 12 gauge pump, case, 3 gun rack, cleaning kit & vest, all for \$80. 289-1505 after 6.

FLOOR LOOM - 2 harness, weaving width 35", \$100; pine table, 48" round, opens to 72" oval, 2 leaves, \$150. Carolyn, 567-1272.

GERMAN POINTER - Short hair, good lines, AKC, stud service for pick of litter. 589-1069.

ANTIQUES - Oak can seat chairs, refinished & caned; mahogany umbrella stand, refinished; small oak rocker, cane seat. 363-6597.

GENERATOR - 12 V for cars, Sears rebuilt, new. \$65. Ext. 4240.

TYPEWRITER - Portable with case, \$20; movie screen w/stand, \$6. Ext. 4240.

TELEVISIONS - B&W, Zenith 21" portable, \$50; B&W Zenith 19" portable, \$25; B&W Motorola 19" table model, \$40; Panasonic 19" color set, table model, \$125. 581-9199.

HEADBOARD - King size. \$30. 581-9199.

SATIN DRAPES - Cover 10' wall area, \$50; chandelier, 10-arm wrought iron, \$50. 581-9199.

HEADBOARD - For single bed, charcoal grey & white formica w/built-in shelves, drawers & light. \$25. 928-0297.

CAMERA - Nikon F, tn finder w/F1.4 sc lens, 74 model, like new. Asking \$400. 878-2486.

WET SUIT - Like new, size ranges to tall & thin, full top & bottom. \$35. Ext. 4058, 286-0436.

PANASONIC CASSETTE STEREO - Am/fm, recorder, model RS2805, 35 watts, w/out speakers. \$75. Ext. 4058, 286-0436.

SHOT GUN - Single barrel, 12 gauge, excel cond. \$40. John, Ext. 2268.

CHILD'S CAR SEAT - Consumer Report approved, orig \$35, selling. \$15. John, Ext. 2268.

QUILTED BEDSPREAD - Yellow basic color, \$5, orig, \$16; foot pump for air mattress, \$2.50. Matko, Ext. 4362.

ELECTRIC HEATER - Arvir 1350/1650 watt, \$10; GE portable vacuum w/tools, \$15; Presto electric griddle, \$7.50. Ron, Ext. 4310, 3206 eves.

ENCYCLOPEDIA - Funk & Wagnel, 25 vols & 4 year books, 1965 edition, like new, \$10; photo flood set, r lamps on flexible bar in steel carry case, \$7.50. Ron, Ext. 4310, 3206 eves.

COUCH - Converts to bed, gold colonial. \$20. Bob, Ext. 2303, 473-9180 after 2.

PACHYSANDRA - Good ground cover for sun or shade. 50 for \$5. Ext. 2540, 744-5448.

TENT - Attaches to side of VW van or free stands, good cond. \$100 firm. 473-9180 after 2.

BABY ITEMS - Coach carriage, \$30; stroller, \$15; Jolly Jumper, \$5. L. Arnold, Ext. 2024, 281-2136.

BIKES - Boy's 20" high riser, 5 spd, \$15; girl's high riser, \$15. Norman, Ext. 3354.

FREE - Phys Rev, Phys Rev Letters, 1964-70. Ext. 3878, 928-3891.

GITAR - Steel string, vinyl bag, good cond for beginner. \$20. E. Bihn, Ext. 3840.

PORTABLE DRYER - Hoover, no vent. \$65. John, Ext. 4129, 744-1845 after 6.

POOL TABLE - 4x8 slate, best offer over \$150. John, Ext. 4129, 744-1845.

CRIB - Like new, w/mattress. R. Evans, Ext. 3044, 289-0532.

MICROSCOPE - Graf Aspco, 10x44x1000. 567-2348 after 7.

FREE - Hungarian Vizler hound, 3 yr old, female; AKC St. Bernard, 5 months old female puppy, \$75. 281-6042.

TABLE - Dining room, solid oak oval, 40x60, 2 leaves, 4 matching chairs. \$100. 928-6492.

CLASSICAL GUITAR - Giannini, like new w/case, orig cost \$115, asking \$80. Daryl, 289-8385.

TENNIS RACKET - Unused, high quality. Ext. 4740.

SKIS & BOOTS - Head 360 skis size 185; Garmont boots, size 8. \$100. 924-3312.

NIKON F CAMERA - 1.4 sc lens. \$400. Mike, 878-2486.

WALL TENT - 7x7, never used, list \$90, sell, \$65. R. Ince, 286-0682.

STOCKADE FENCE - 3 sections, 6x8' each w/4x4 posts, 1st grade, 6 months old. \$45. Ben, Ext. 2461.

TAPE RECORDER - Mono, reel to reel, very good cond. \$150. 589-3485.

SOFA BED - Rolls out from bottom to sleep 2, Danish modern. \$125. 581-9199.

REFRIGERATOR - Small freezer top, old but good working cond. Ed, Ext. 4212, 924-3831.

BACKPACKER TENT - Lightweight, 2-man, urethane coated nylon. \$20. Steve, Ext. 4072.

WADING POOL - 20"x8, pool test kit, vacuum, recirculating filter, pool cover. \$20. Frank, 727-5527.

SCREEN DOOR - Unpainted wood, 29¼x80" w/hinges & lock knob. \$15. Frank, 727-5527.

MEN'S BIKE - 10 spd Atala, excel cond. \$100. 924-3312.

MINI BIKE - New motor 3½hp, very good. \$75. Viola DiDio, 286-0372.

PARROT CAGE - Large, \$8. 581-0932 after 6.

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

BROOKHAVEN - Colonial 4 bedrm, 2½ baths, 2-car garage, full basement, fireplace in large living room, formal dining, country kitchen, den, ¼ acre plot, Middle Island Schools. \$51,500. 286-0158.

SHOREHAM - Cape cod, frame & brick, living rm w/ fireplace, dining, den, 3 bedrms, kitchen, 2 baths, center hall, 2 car garage, ½ acre, beach rights, many extras. \$60,000. 744-8949.

TOWNHOUSE - 2 bedrm ranch w/wall to wall carpet, all appliances, dishwasher, air cond, 5 min to Lab. 924-3963.

CATSKILLS - Delaware Co, 20 acres, trailer, panoramic view, spring, open & wooded, excel hunting & fishing, will divide. \$20,000. Pete, Ext. 3297, 586-3579.

For Rent

BELLPORT - 4 bedrm house, 2½ baths, large library, living rm, dining, kitchen, fireplace, screened porch, fully furnished, 3 beautiful wooded acres. S. Country Rd, till July. Ext. 2943, 286-0263 eves.

CENTER MORICHES - 2 bedrm ranch, fenced corner plot, beach rights, furnished or unfurn, 20 min to Lab. \$275/mo. Bogart, 878-0249.

BELLPORT - On Brown's Lane, 2 bedrm furn house, from Oct 1 to June 1, \$220/mo + util. 286-1725.

FURNISHED ROOM - Kitchen priv. Ext. 3800, 585-3794.

BELLPORT - 3 bedrm furnished house, on 1½ acres, near bay, avail 1 yr from Sept 1. Ext. 4581, 286-8639 after 6.

TO SHARE - 4 bedrm house in Medford. \$30/wk + ½ util. Jack, Ext. 4255, 289-6708.

WADING RIVER - 3 bedrm house avail Sept 2, beach rights, beach 800' from house, brand new. \$300/mo + util. 488-7135.

YAPHANK - 3½ room apartment, furnished, 10 min from Lab, good location, private entrance. 924-7344 after 6.

SHIRLEY - 4 bedrm house, 5 min to Lab, excel cond, avail Oct 1. \$240/mo + util. Ext. 4396.

SMALL 2 BEDRM HOUSE - Water view, 15 min to Lab. Ext. 3482.

PUERTO RICO - Penthouse, 1 hr from San Juan, shorefront, sleeps 6, 2 bedrm, 2 baths, take advantage of off-season rates. Ext. 3482.

Wanted

TO SEE - Someone who took SO-11, Sociology w/Mr. Lagos at SCCC. John, Ext. 2268.

APARTMENT - 1 bedrm, unfurn, reasonable please. Linda, Ext. 3381, 585-2559 after 5:30.

USED TRUNKS - The larger the better. Matko, Ext. 4362.

HOME - For small shepherd-husky mix, excel watch dog, good companion, 3 yrs old, I have too many dogs. Collinson, Ext. 2528, 286-3623 after 6:30.

BABYSITTER - Prefer woman on-site to care for 3½ yr old, 2 afternoons/wk. R. Evans, Ext. 3044, 289-0532.

REFRIGERATOR - In good cond, need desperately. 588-4703.

Classified Ad Policy

Deadline is 12 noon Monday for publication Friday of the same week.

- The Brookhaven Bulletin's classified section may be used only by active and retired Laboratory employees.
- All items for sale or rent must be the advertiser's property.
- Ads for material acquired for resale in association with a full or part-time business cannot be accepted.
- Firearms offered for sale or trade may not be brought on site.

- Ads not carried because of space restrictions will be held for publication in the next issue.
- Ads are run only once and must be resubmitted if they are to be repeated.
- Ads should be restricted to 20 words or less and typed or printed on the form provided, and must bear the employees signature.

For Sale: Auto & Auto Supplies
 For Sale: Boats & Marine Supplies
 For Sale: Miscellaneous

Wanted
 Carpools
 Lost & Found
 Services

Check the heading applying to your ad.
Print or type your ad in 20 words or less.

Ads concerning property for sale or rent cannot be accepted on this form. Special Real Estate Ad forms are available at the Office of the Brookhaven Bulletin, Room 111, 40 Brookhaven Avenue.

(Name & Phone No. To Call)

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

Send to: Brookhaven Bulletin, Building 460, 40 Brookhaven Avenue (Ext. 2345).