

New Isotopes Produced at MEIN

Scientists in BNL's Nuclear Chemistry Program have used secondary neutrons from the 200 MeV proton Linac - plus some fast footwork and fast chemical separations - to produce uranium-242 and neptunium-242, the highest mass isotopes of those elements ever to be identified. They are the latest in a series of new isotopes made during the last four years at the Chemistry Department's Medium Energy Intense Neutron facility (MEIN).

MEIN is located next to the Linac and is one of several facilities which use excess protons from the Linac for various types of irradiations. The Linac, which serves as an injector for the AGS, can produce five pulses of protons every second, but the AGS normally requires only one pulse every two seconds. The excess protons are diverted into a spur tunnel, where many of them are used by the Brookhaven Linac Isotope Producer to make large quantities of radionuclides for use in nuclear medicine.

Within the same spur tunnel, the protons can be diverted to the Chemistry Linac Irradiation Facility (CLIF), where they have been used to produce neutron-rich nuclei. In these irradiations, an incoming proton from the Linac dislodges some of the protons already in the target nucleus, leaving a nucleus which has extra neutrons compared to the original. These neutron-rich products can be chemically separated from the target material and their decay properties can be studied by gamma-ray and beta-ray spectroscopy.

But it is difficult to study the neutron-rich isotopes which are produced in this way, because the incoming protons also cause quite different reactions, dislodging both protons and neutrons from the target material and leaving behind nuclei which are neutron-deficient instead of neutron-rich. The neutron-deficient isotopes, usually present in large amounts, emit radiation which interferes with the spectroscopy, making it very hard to obtain clear data on the behavior of the neutron-rich nuclei. The interference problem can be minimized, however, if the targets are irradiated with neutrons rather than protons, since neutron-induced reactions will produce relatively more neutron-rich nuclei than in the proton irradiations.

Copper Beam Stop

With this end in mind, a water-cooled copper beam stop was installed at the end of the CLIF beam tunnel. When protons hit this copper beam stop, they cause spallation reactions which result in the liberation of neutrons. The protons stay within the beam stop, and a Medium Energy Intense Neutron (or MEIN) beam comes out. These secondary neutrons can then be used to irradiate targets and produce the desired neutron-rich isotopes.

The targets are enclosed in small capsules called "rabbits" which are placed behind the beam stop, and later retrieved, by means of a pneumatic transfer line. Irradiation time ranges from a couple of minutes to a couple of hours, depending on the half-life of the isotope being produced.

New Isotopes Produced

MEIN was completed in early 1975, and by that summer, a new isotope of iron (iron-62) had already been produced by irradiating an isotopically enriched nickel-64 foil. By April 1976, the MEIN project staff was ready to announce the identification of three more new isotopes: tungsten-190, osmium-196 and radium-230. All were the heaviest isotopes of their elements ever to be produced and characterized.

The most recent additions to the new isotope lineup - uranium-242 and neptunium-242 - were first seen in February 1977, and the MEIN group (which currently includes chemists Seymour Katcoff, Peter Hausteine, Eena-Mai Franz and Dick Hseuh) reported on the isotope pair at the April meeting of the American Physical

Society and at the Miami Beach meeting of the American Chemical Society, held two weeks ago.

The uranium/neptunium pair is produced by irradiating a target consisting of a small amount of plutonium-244 placed on a special ion exchange resin, for about half an hour. After irradiation, the target is taken to the Chemistry Building where a series of complex radiochemical separations is performed to isolate the uranium-242 from the plutonium and its fission products. The isolated uranium-242 is then taken to a germanium detector to measure the energy and intensity of the gamma rays given off as it decays, and the results go into a computer-based analyzer which puts the data on magnetic tape to be fed into BNL's large computers for analysis. Based on the computer output, scientists can infer the isotope's decay scheme, which identifies the excited levels of the nucleus and the transitions that occur between them.

The neptunium-242 is a decay product of the uranium-242 and provides the MEIN group with a second new isotope to study, "almost," says Peter Hausteine, "like getting the neptunium for free." Although the neptunium-242 is also produced in the irradiation, it decays rapidly (its half-life is only two minutes) and can only be studied as the daughter product from its uranium-242 parent.

Production Difficulties

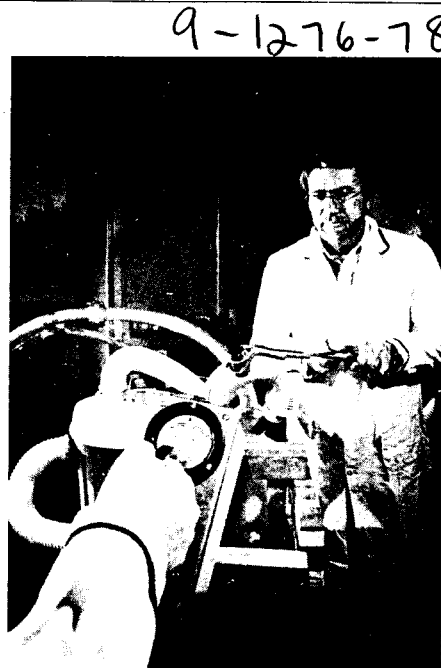
Production and separation of the uranium/neptunium pair is particularly difficult, notes Hausteine, because irradiation of the plutonium target produces large amounts of fission products (over 40 elements, in fact) which must be separated from the uranium before study of the pair can begin. Uranium-242's half-life is only 17 minutes and the chemical separations take close to 45 minutes. By the time they are completed, about 75 percent of the uranium has already disappeared.

Some fast footwork is required to ensure that enough uranium-242 will remain in the sample for analysis, so the MEIN team has perfected a routine for cutting down on lost time. When the target is pulled from the MEIN beam, a car is already waiting outside, with its motor running and the door open. The target is pulled out, placed in a lead-shielded "pig," and rushed to the second floor of the Chemistry Building for processing and analysis.

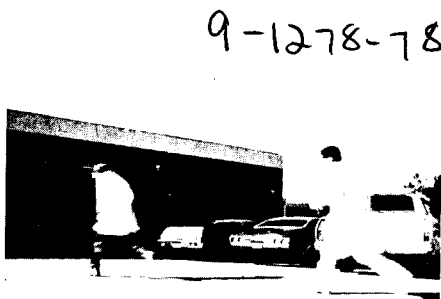
(The first new isotope produced at MEIN - iron-62 - has a half-life of only 68 seconds, so short that it was impossible to transfer to the Chemistry Building for processing. Separations and identification of this isotope were done immediately in a lab located at the CLIF-MEIN facility).

In the future, the group plans to look for neptunium-243 and uranium-241, two

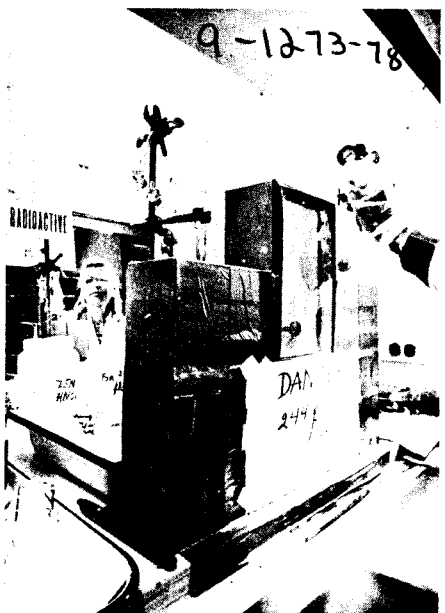
Continued on Page 3



10:00 A.M.: The "rabbit" containing the irradiated target is removed from the pneumatic transfer line by Peter Hausteine.



10:04 A.M.: Hausteine and Dick Hseuh rush the target into the Chemistry Building for processing.



10:11 A.M.: Eena-Mai Franz (reflected in a mirror) begins one of the first steps in the radiochemical separation process - eluting the uranium from the irradiation cartridge.



10:45 A.M.: The separation and analysis nears completion with neptunium-milking chemistry and gamma ray counting, using a computer-based analyzer. Pictured from left to right are Franz, Doris Franck, Seymour Katcoff, and Hseuh.

—photos by Humphrey

Roberts To Head NRAO

Morton S. Roberts will become Director of the National Radio Astronomy Observatory, Brookhaven's sister laboratory, on October 1. He will succeed David S. Heesch who has served in this position since 1962.

Dr. Roberts' long association with the NRAO began in 1959 when he was a visiting observer. He joined the staff in 1964 and now holds the rank of Senior Scientist. Although primarily concerned with research, he has made many contributions to the operations of the Observatory, including serving as Assistant Director for Green Bank Operations during 1969-70.

His research interests have encompassed both optical and radio astronomy. Most recently, his work has been concerned with the study of neutral hydrogen in galaxies, a field in which he is the recognized authority. Other highlights of his research include the first measurement of extragalactic HI absorption in radio galaxies and the first high-redshift hydrogen detections, with a resultant determination of the remarkable constancy of several fundamental constants of physics over a look-back time of one-third the age of the Universe. He also made the first clear enunciation that many, if not most galaxies have flat rotation curves--a fundamental datum describing the mass distribution in the outer regions of such systems.

Roberts received his master's degree from the California Institute of Technology in 1950 and his doctorate from the University of California at Berkeley in 1958. He is a member of the American Association for the Advancement of Science, the American Astronomical Society and the International Astronomical Union.

APS Retains Exemption

The Internal Revenue Service, in a recently issued report, affirms that the American Physical Society (APS) is a scientific and educational organization and therefore tax-exempt. The report by the North Atlantic Regional Office of the IRS reverses the position of the Manhattan District Office which held that the Society should be treated as a business league and taxed accordingly.

The report by the Regional Office takes into account the Society's protest and conferences. It concludes, "the exemption granted the American Physical Society under Section (c) (3) of the Code should not be disturbed."

In response, Norman F. Ramsey, President of APS, said, "the entire physics community will be pleased that the Internal Revenue Service has recognized the scientific and educational character of The American Physical Society and its role in the science of our nation."

Weekend Tour

Last of Season

Environmental issues are a major public concern. In this, the last public tour of the season, the Safety and Environmental Protection Division will focus on its environmental activities. Does Brookhaven have an effect on our local ecosystem? What is being done in the Marshall Islands program? Weekend visitors will be able to discuss these questions with the environmental monitoring group as they tour the Division's main offices and laboratories.

EXHIBIT CENTER

B
R
O
O
K
H
A
V
E
N
S

Q
U
E
S
T

G
U
I
D
E
D

B
U
S

T
O
U
R

Apply Now

The Office of Scientific Personnel has announced that application forms and schedules of critical dates for the 1979 AUI Trustee Scholarships are available. The application deadline is November 10, 1978.

Each scholarship will be in the amount of \$1250 per year and is renewable for up to four consecutive years. Children of Lab employees who began full time employment no later than January 1, 1978 are eligible, as are children of retired employees or of employees who died when in regular service at the Laboratory. Applicants must be secondary school seniors who will be graduated during the current academic year and who will enter college in the fall of 1979.

Up to ten scholarships are awarded on a competitive basis and are granted independent of financial need or other forms of student aid. Winners are selected by an independent committee appointed by College Scholarship Service/Sponsored Scholarship Programs (CSS/SSP). The secondary school academic record, school recommendation, scores of the Scholastic Aptitude Test and three Achievement Tests are among the factors considered by the committee in addition to the applicant's school and community activities, and evidence of leadership and creativity.

Up to three additional scholarships may be awarded to minority group children; one is available to a qualified student of a BNL employee and one to a qualified

student of a National Radio Astronomy Observatory employee. The third scholarship may be awarded to a student of either laboratory, on a competitive basis. Pertinent federal criteria will determine the eligibility of applicants for these scholarships.

Applications and further details are available from the Office of Scientific Personnel, 40 Brookhaven Avenue.

The Cohn Scholars

All five children of Dr. Stanton Cohn of the Medical Department have been AUI scholarship winners. Here is a note on their progress:

Avra, who won the award in 1970, is completing her doctorate in Computer Science this year at the University of Edinburgh. Haldan, winner in 1971, is completing his Ph.D. in Astrophysics at Princeton and will return to his undergraduate school, Harvard, as a postdoctoral fellow. Holly, winner of the award in 1973, completed her undergraduate work in three years, and is in her second year of work at law school at the University of Southern California. Cara, 1974 winner, graduated with a degree in mathematics from Stanford in June. Evan, the 1978 winner, entered Harvard this month.

Dr. Cohn adds that "the parents are about ready to graduate to the poor house."

9-699-78 Retiring on September 29 8-1299-78



Charles Pukit, a Staff Shop Technician in the Accelerator Dept., who has been with BNL since September 1950, retires today to enjoy an extended vacation to the Florida Keys and Gulf Coast, and to Mexico. Pukit, who has made his home on Long Island for 23 years, hopes to relocate to a warmer climate - perhaps to Mexico.



Paul J. Melvin, a Lab employee since April 1961, retires this month to his home in Florida. Melvin, a Dietary Services Assistant in the Medical Dept., has lived all his life in the Northeast but prefers golfing and swimming in Florida's North Riviera Beach to the cold on Long Island.

—photos by Rosen

Famous Trio Opens Concert Season

Standing room only is expected for the performance of the Beaux Arts Trio in Berkner Hall on Thursday, October 12. This world famous ensemble will open the 1978-79 BERA Concert Series.

For over 20 years, Menahem Pressler, pianist, Isidore Cohen, violinist, and Bernard Greenhouse, cellist, have combined their individual virtuosity to create an extraordinary ensemble. Their superb musicianship has only increased with the years. As noted by Robert Sherman in the New York Times last year, "There are a number of fine young trios on the concert scene these days, but the Beaux Arts Trio's appearance at Hunter College yesterday afternoon reminded us who still reigns supreme."

The Beaux Arts Trio made its official debut in 1957 at the Berkshire Festival in Tanglewood and had the distinction of performing there for nine consecutive seasons. At that time, maestro Charles Munch wrote that "the marvelous musicality of these three artists has been unknown in trio playing for many years. They are worthy successors of the last great trio - Thibaud, Casals and Cortot." They also won high praise from Arturo Toscanini who said, after one of their performances, that "it was an inspiring experience, fine cham-

ber music with impeccable taste and musicianship."

The prize winning ensemble has recorded for Philips all the Haydn, Mozart, Beethoven, Brahms, Mendelssohn, Ravel, Tchaikovsky, Op. 50, Schubert and Dvorak trios. They are at the top of every best selling classical list throughout the United States and Europe.

The program for the concert, beginning at 8:30 p.m., will include the Haydn Trio in A major (H.XV, No. 18), the Ravel Trio in A major, and the Schubert Trio in B flat Op. 99.

Single adult admission for this performance is \$5, senior citizens and students \$2, persons under 18 years of age \$1. Block tickets, good for any concert, are \$16 for the first 5 tickets and \$3 for each additional ticket. They may be purchased at the door, or from any of the following persons:

	Ext.
Don Lazarus	4643
Arnie Aronson	2606
Clemens Auerbach	3985
Steve Schwartz	3100
Geoffrey Hind	3400
Myron Ledbetter	3418
Dick Holroyd	4329
Ed Popenoe	3622
Maria Pavlova	3634
Howard Gordon	3740



Beaux Arts Trio of New York

TUNE IN!

Question:

My question is about safety storage cans for flammable liquids. While I can understand the reason they are useful once the liquid is in, I can't help but wonder if anyone from safety has ever tried to transfer 5 gallons of acetone or similar fluid into one. The spring loaded lid resists the use of a funnel, sometimes ejecting funnel and liquid all over - a considerable hazard right there. If there is an easy way to do this I would like to know it. I also think that they would be better accepted by all of us if not for the problem of filling.

Answer:

We recognize that convenience to the user is frequently more important than the safety features of any safety appliance and we concur with all that the questioner has stated.

The spring loaded lid will stay open when a safety can is being filled by any cylindrical shaped device, such as the nozzle on the hose of a pump or a faucet installed in a drum. Most industrial transfer of flammable liquids to safety cans generally involves drums or larger tanks and it was for this market that the safety can was developed.

The spring loaded lid is one of the major safety design features of a safety storage can. The questioner has highlighted a se-

rious deficiency with this design and it appears a basic design change is required. A sizable percentage of the market for safety cans transfers flammable liquids from containers appreciably smaller than drum size. For example, it takes two hands to pour from a five gallon bottle. Since the typical, conically shaped funnel is easily squeezed out of the safety can filling spout by the spring loaded lid, a third hand is needed to hold the lid open. Thus safety considerations would dictate that filling a safety can from a five gallon bottle is a two-man operation.

Funnels with cylindrical cross sections, such as Justrite Model #11102 with a 3/4-inch OD flexible hose and 8-inch overall length, may be utilized to alleviate the problem.

We recognize that the above response is not completely satisfactory. One man, safe transfer of flammable liquids to safety cans should always be possible. Accordingly, we are forwarding the original question to Underwriters' Laboratories, Inc. and the three major manufacturers of safety cans. Meanwhile, we are limited to using safety cans which are commercially available, with their inherent deficiencies.

—Dennis Kirson
Safety & Environmental
Protection Division

Call For BNL Artwork

The 7th BERA Members' Art Exhibit opens at noon on Wednesday, November 8 in Berkner Hall. All BERA members including employees, related family 16 years of age and over, and retired employees are invited to contribute their work to the exhibit. Two categories, pictures and sculpture, will be displayed in the exhibit which runs during November 8 to November 17. Contributions done in water color or oils, drawings and graphics will be accepted under the picture category. No crafts may

be submitted for this exhibit. A craft show is planned for 1979.

In order that a printed catalogue can be ready for the opening, the Art Committee requests that you complete two forms for each work you intend to exhibit, and return them to the BERA Sales and Services store in Berkner Hall no later than October 24. Exhibitors will be contacted as to details of where to deliver and pick up their work. The Committee can accept only two works from each contributor.

Return To BERA Sales and Services Office - Berkner Hall

Name of Artist.....

Title of Art Object.....

Medium.....

Name of Artist.....

Title of Art Object.....

Medium.....

BROOKHAVEN BULLETIN

Published weekly for the employees of
BROOKHAVEN NATIONAL LABORATORY

BERNICE PETERSEN, Editor
ANNE BAITTINGER, Staff Writer
ROSANNE PAGANO, Editorial Assistant

40 Brookhaven Ave., Upton, N.Y. 11973
Telephone (516) 345-2345

CARL R. THIEN, Public Relations Officer

Service Awards

September

Thirty Years

R. Christian Anderson... Director's Office
Seymour Katcoff... Chemistry
Lyle W. Smith... Accelerator
Edward Sperry... Physics

Twenty-Five Years

James Egan... Energy & Environment
Herbert Iversen... Plant Engineering
Eugene C. Raka... Accelerator
George H. Vineyard... Director's Office

Twenty Years

Audrey D. Biittner... Physics
Walter G. Hansen... Medical
Lorraine E. Hartly... Staff Services
James R. Miles... Plant Engineering
Raymond F. Reilly... Plant Engineering
Max Schmaeler... Medical
John M. Sullivan... Accelerator

Ten Years

Constantino Buzzeo... Central Shops
Arthur Forman... Medical
Gary E. Jayne... Reactor
Wenzel J. Rowan... Supply & Materiel
Richard B. Schonberg... Personnel

New Isotopes

(Continued)

isotopes whose existence can be predicted but which have never been identified. One of the problems they expect to encounter, says Haustein, is the fact that the isotopes will probably have very short half-lives, and much faster chemical techniques will be required to separate them from target materials and fission products.

The production and study of new isotopes plays an important role in advancing basic nuclear science research - especially in the area of nuclear systematics, says Haustein. By comparing the actual decay properties of a new isotope with existing theoretical models of how such a nucleus should behave, scientists can use each new isotope to test and improve their theoretical nuclear models.

Reminder

The Suffolk Symphony will present a free concert in Berkner Hall on Sunday, October 1, at 8 p.m. The program will feature French Horn soloist, Robin Graham, and will include popular favorites by Rossini, Ponchielli, Verdi, Liszt and Johann Strauss.

DOE's Energy Saving Tips

- Try to use major appliances such as washing machines or dishwashers during early morning or later evening hours whenever possible. By performing these household chores at such off-hours, you can help relieve the heavy demands made on utilities during the day by offices, schools, and factories.
- Try using glass or ceramic dishes for baking in the oven. You'll find that you can cook at temperature settings as much as 25 degrees lower than required for cooking similar meals in metal pans.
- Whenever practical, use the more efficient fluorescent lights in place of incandescent lamps. One 40-watt fluorescent tube provides more light than three incandescent bulbs, yet uses less electricity.

Mixed League Softball Champions



The E-Z Riders beat the O-Kays 14-5 in the playoff. The O-Kays played a great game, but a double play by Nick Masciopinto and Larry Musso, a spectacular running backward catch by Gary Goldstein put a stop to their hitting streak. The champions are (left to right) back row: Debbie Fannon, Rich Zahra, Marijane Gillette, Linda Zahra, Doug Gillette, Becky Sutter, Larry Musso. Front Row: Nadine and Gary Goldstein (with team mascots Baggins and Bombur), Mickey Haller, Nick Masciopinto, Pat Webster, Bobby Callister and George Morgan. Mike Hahle was not present for this photo.

On Tour In Finland

Arthur Scholtz, a technician in AGS, has sung with the Long Island Symphonic Choral Association (LISCA) for about seven years. Earlier this month, he and four other members of the BNL family (Jane Danby, June Adams, Ruth Hirsiger and Alice Perez) returned from a concert tour of Helsinki, Finland where they gave 5 performances of "The New Hope Jazz Mass," by Heikki Sarmanto and "The Mass for St. Peter's," by Gregg Smith, founder of LISCA.

Three performances by the 60-voice chorus were given in the Rock Church of Helsinki, so named because it is hewn out of solid rock. "It's quite a place," Arthur said. The LISCA concerts, covered by Finland radio and television, were broadcast to neighboring European countries and received newspaper coverage in Italy and Sweden. The group made a 3 1/2 hour bus ride out of Helsinki to give additional road appearances in Tampere and Turku, major Finnish cities. "We sang to enthusiastic audiences each time," said Arthur, "and were sold out every night."

Smith, the American composer, and Sarmanto, of Finland, first met when Smith's "Mass for St. Peter's" was presented by LISCA in that New York City church, which commissioned the special mass for its dedicatory service. Sarmanto heard LISCA's performance of the Mass and suggested that he and the chorus combine efforts to present his recent work, "The New Hope Jazz Mass," in Helsinki. This month's successful concert in Finland culminated work by groups on either side of the Atlantic.

Of the country and its people, Scholtz said, "the cities are orderly and immaculate, and the people are unassuming, intuitive and extremely honest." Travel to almost anywhere in the country is easy by electric train, he continued, and most suburban dwellers get around by bicycle. "We were accommodated in a summer retreat with a picturesque view of the bay," continued Arthur, "everything was beautiful - I'd like to go back as a tourist."

Assertiveness At BNL

Another series of Assertiveness Workshops conducted by Francine Berger has been scheduled. The Workshop Meetings will be held on October 6, 13, and 20, from 1:00-2:30 p.m.

The employees who attended this program last spring felt it was a valuable and rewarding experience.

The objective of the workshop is to improve the participant's ability to communicate and interact with others, both on the job and in their personal lives.

This program is open to all employees, work permitting. Enrollment forms are available at the Personnel Office reception desk and must be completed by Monday, October 2. For information please call Robert D'Angio, Extension 2878.

Arrivals & Departures

Arrivals

Mahel Afshatsh... Accelerator
Charles J. Gerbino... Accelerator
David Levesque... Central Shops
Luis R. Rios... Accelerator

Departures

Kevin Barnes... Plant Engrg.
James A. Bell... Medical
Gilbert M. Brown... Chemistry
William D. Ellenson... Physics
Hans Hirsiger... Medical
Tun-Hsu McCoy... Energy & Env.
Paul J. Melvin... Medical
Daniel J. Mitchell... Accelerator
Nancy A. Monastero... Chemistry
Charles Pukit... Accelerator
Drew A. Gillett... Energy & Env.
William H. Sachs... Medical
John A. Strozier, Jr.... Physics
Glenn A. Zorn... Biology

Cafeteria Menu

Week Ending October 6, 1978

Monday, Oct. 2	
Corn chowder	(cup) .30
	(bowl) .40
Beef chop suey on rice	1.30
Scrambled eggs, sausages and French fries	1.15
Hot Deli - Pastrami	(on bread) 1.15
	(on roll) 1.25
Tuesday, Oct. 3	
Beef noodle soup	(cup) .30
	(bowl) .40
Knockwurst and sauerkraut	1.15
Roast chicken w/stuffing and 1 veg.	1.20
Hot Deli - Veal pattie & peppers hero	1.25
Wednesday, Oct. 4	
Cream of potato soup	(cup) .30
	(bowl) .40
Braised meatballs à la mode w/buttered noodles	1.25
Fried fillet w/French fries	1.25
Hot Deli - Roast beef	(on bread) 1.25
	(on roll) 1.35
Special - Salad bar w/garnishes	
Thursday, Oct. 5	
Chicken vegetable soup	(cup) .30
	(bowl) .40
Eggplant parmesan w/tossed salad	1.40
Sauerbraten and potato pancake	1.45
Hot Deli - Italian sausage and peppers hero	1.25
Friday, Oct. 6	
Fish chowder	(cup) .40
	(bowl) .50
Spaghetti w/clam sauce	1.10
Breaded pork chop and 1 veg.	1.50
Hot Deli - Smoked tongue	(on bread) 1.15
	(on roll) 1.25

Selected Reading

Nature 275, September 14, 1978
Science at the UN: Coordination or chaos? P. Collins. 84-5

New Sci. 79, September 14, 1978
Gentlemen v players. J. Meadows and T. Fisher. 752-4

What's so funny? H. Pollio. 774-7

Hockey Ticket Buyers

Please Note:

The first day of ticket sales for the Islanders regular season games has been postponed from Tuesday, October 3, to **Thursday, October 5**, same time, same place - 8:00 a.m., BERA Film Service Office.

Pool/Gym Closing

The pool/gym complex (including locker rooms) is scheduled for a one-day maintenance closing on Saturday, October 7. It will not be necessary for lockers to be emptied.

No admittance will be permitted.

Football

Quarks 25 - Players Pool 12

Bob Casey threw touchdown passes to John Polcha, Charlie and Fletcher Johnson and Gary Mosley to lead the Quarks to victory.

Sweathogs 20 - Chickens 12

Roga 26 - Tee Dees 13

Flying Club

There will be a second meeting to discuss plans to organize a BNL Flying Club on Monday, October 2, at 12 noon in Room B, Berkner Hall.

All pilots and perspective pilots are urged to attend.

Bowling

Gold League

After two weeks of bowling the Personalities are in first place. High games for the evening were Marsha Kipperman 205, Kay Conkling 176, Lynn Tice 160.

Congrats to Doris Pion for making a 2-7-10 split.

Pink League

Mary Grace Meier had a beautiful night bowling 170/159/183 for a scratch series of 512. Not far behind was Ellie Kristiansen who bowled 193/182 for a scratch series of 505. Barbara Pfeiffer came up with two good games of 165 and 160. Ellie Adams had a 168, Fran Briening 163 and Pat Castleman 145.

Team #2 (Debbie Meier) is in front but the Pinsplitters are only one point behind.

Purple & White League

Jim Griffin had a high game 233 and high series 560 for the night. Dick Murgatroyd had a 213, Ed Meier 205, James Petro 202. Caryl Mac Dougall had high series for the ladies with a 516. Other high games were Liz Bull 182, Nancy Erickson 170, Gloria Brown 176, Kathy Carter 173, Irene Sperry 173.

Red League

The 76'ers won 11-0 over the Pinball Wizards by knocking down 3028 pins. R. Larsen (256/213/656) averaged 218. J. Morris rolled a 205. This Isa team (3013 pins) also won 11 from the Freon Loaders. R. Barberich (216) had a 572-647 series, and W. Kollmer a 551 scratch.

The Old Timers won their match 8-3 over the Dyno-Mites. R. Adams had a 215. The Anachems split 6-5 with the Trouble Shooters. The Sandbaggers took only 4 in their Cosmos contest. E. Meier (200) 585-657 series, averaged 195 for the night. R. Jones had a 202. The Designers only took 3 in a match with the Old Timers II. C. Zavesky bowled a 200.

Hospitality Committee

Due to the Jewish holiday on Monday, October 2, the morning coffee will be held the following Monday, October 9, from 9:30 to 11:30 a.m. at the Brookhaven Center.

Please come and bring the children. Babysitting will be provided at no charge. It is suggested that you bring along a toy or two for your children to play with.

