

The Energy Crisis Aired April Second

Kenneth Hoffman, Head of the Engineering Division of the Department of Applied Science, will appear on a panel discussion about the energy crisis on Channel 67 on Tuesday, April 2 from 9 to 10 p.m.

In addition to Hoffman, other panel members will be: Senator Mike Gravel, Chairman of the Senate subcommittee on energy; Professor Paul Raccah, Professor of Physics, Belfer Graduate School of Science, Yeshiva University; and Mr. Paul Luftig, President of Franklin National Bank. Moderator for the program will be Gordon Baker, Associate Director of the Channel 67 News Bureau.

The Program, titled "Perspective: The Energy Crisis," opens with a taped interview with Senator Gravel who talks about the impact of the Alaskan Pipe Line. At the end of this segment the three Long Island panelists discuss the reality of the energy crisis from the viewpoint of the educator, the scientist, and the businessman. Ken Hoffman uses graphs and charts to trace the history of the development of the present crisis, and to illustrate the options for the future. Predictions made during this show hold up remarkably well in spite of the Arab oil embargo being lifted since the show was taped early in March.

Perspective: The Energy Crisis



Kenneth Hoffman (center) chats with moderator during taping of show for Channel 67. Kenneth Hoffman (left, right) appears on TV monitor and camera monitor during taping of Perspective: The Energy Crisis.

The Tandem Has a QDDD

A QDDD magnetic spectrometer, capable of measuring up to 120 MeV protons, has been installed in the Tandem Van de Graaff facility. The spectrometer has been named for the four magnetic elements; one quadrupole and three dipoles.

It was designed in 1969 by Micheal Le Vine of Physics, and Professor Harald Enge of the Massachusetts Institute of Technology.

The QDDD spectrometer measures, with high precision, the energies of charged particles emitted during a nuclear reaction and then aids in the identification of those particles. The particles which interact with a target are bent by the spectrometer and focused onto a focal plane. In a sense, the spectrometer acts like a series of lenses and prisms do optically to focus a beam of light.

Particles of varying energies cross the focal plane at different points. The eight-foot-long focal plane is lined with a series of detectors which indicate at what point the particles cross. The position of the particle on the focal plane can be plotted against the energy it deposits in the detector, to determine the particle's identity.

The five-centimeter-long detectors presently being used are only a fraction of the size of the ones which will ultimately line the focal plane. These will be 50 cm long and are being developed in collaboration with Veljko Radeka, Joachim Fischer and Seigi Iwata, of Instrumentation.

Because the spectrometer must measure particle energies with great precision, it is kept at a high vacuum to prevent charged particles from colliding with gas molecules. If the particles were allowed to undergo many collisions, their initial characteristics would be lost and they would no longer have a well defined energy.

The components of the spectrometer, made mostly of steel, weigh a total of 150 tons, a little under the weight of a 747. Because of its enormous weight, it rests on a floor reinforced by four-foot-thick concrete slabs, and must be moved on an air cushion, very much like a hovercraft.

The instrument's construction began in 1970 and was completed in the Spring of 1973, by Spectromagnetic Industries, a California company. Its installation into the Tandem facility was recently finished and it was used for the first time about a month ago.

Amateur Radio Club

The BNL Amateur Radio Club will be holding their monthly meeting in room "B" at the Cafeteria on Wednesday, April 3, at noon. The topic again will be on FM and RITTY. Bring your own brown bag or if you wish to buy lunch it is available there. BT

Theodore Robinson of Physics devoted much of his time to the installation of the spectrometer. Both Le Vine and he spent five months of hard work just preparing the floor so it would be smooth enough for the air cushion under the instrument to glide on. Any ridge or depression on the floor's surface prevented the cushion from functioning properly.

The spectrometer is a very versatile instrument. Not only is it capable of fitting into almost all of the research programs underway at the Tandem, but it has a unique feature which makes it especially suitable for the very important heavy ion program in process at the facility. This feature, a multipole element, allows measurements with good energy resolution in spite of severe kinematic effects (a problem which is especially serious with heavy ion beams). This multipole element makes this instrument one of the few spectrometers in existence that can be used in a heavy ion induced reaction program, Le Vine says.

Prior to the QDDD magnetic spectrometer, silicon detectors were all the Tandem facility had available for particle detection. While the energy resolution of the silicon particle detectors was .25 percent, the resolving power of the spectrometer is .02 percent, an increase by more than a factor of ten.

There are three other magnetic spectrometers, based on the same design as the one at BNL, located at Los Alamos Scientific Laboratory in New Mexico, Atomic Energy of Canada Ltd. at Chalk River, Ontario and CEN de Saclay in France. But the QDDD at the Tandem is the first to have produced publishable material.

Peconic Expo This Weekend

Friday, Saturday and Sunday, from 10 a.m. to 10 p.m. the First Annual Peconic Exposition and Trade Fair will be open to the public at the Gold Crest Manor in Southampton. Brookhaven Lab will join other educational and industrial exhibitors in displaying their work.

United States Air Force, Coast Guard, Army, Navy, Ducks Unlimited, Suffolk Fish and Game Commission will have exhibits. Also Grumman will demonstrate its Lunarscape Apollo Missions Unit. Other exhibits will be provided by local organizations in the Southampton area.

Boats, sporting goods, garden supplies, and automotive products will be displayed as well as home appliances and jewelry.

Tickets for the Peconic Expo are available at the door or from local service organizations. Adult admission is \$1.50, and children under 12 are admitted for \$1.00.

Selected Reading

- New Sci. 61, March 7, 1974
Velikovskiy in chaos. G. Chedd. 624-5
- Science 183, March 15, 1974
Velikovskiy: AAAS Forum for a Mild Collision. R. Gillette. 1059-62
- Floating nuclear plants: Power from the assembly line. J.J. Carter. 1063-5
- Trans. Amer. Geophys. Union 55, April 1974
Scientific and technical advice for the federal government. P.H. Amelson. 179
- Science 183, March 22, 1974
Should the history of science be rated X? S.G. Brush. 1164-72



Waiting for the taping session to start.

Piano Solo by J. Gemmell

James Gemmell will be the principal piano soloist in the Mozart Concerto in A Minor (K-488), to be presented by the New York Chamber Orchestra at the Great Hall of the Universalist Church of New York on Sunday, March 31, at 2:30 p.m.

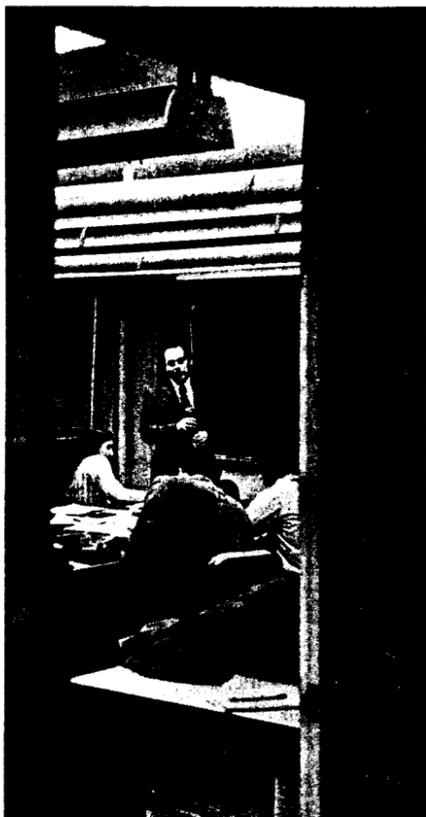
Jim is the son of Lee Gemmell of Health Physics & Safety, who is currently on assignment with the Regulatory & Licensing Division of the AEC at Bethesda, Md.

The orchestra is composed of Juilliard School students, and is presented under the auspices of the West Side Artist Series, of which Andrew Hull (Health Physics & Safety) is the Managing Director.

The Universalist Church is located on Central Park West at West 76th Street (just below the American Museum of Natural History.)



Micheal Le Vine stands in front of the 150-ton QDDD magnetic spectrometer, which he co-designed at the Tandem.



Frank Salzano talks to Columbia Journalism students about alternate energy sources in the future.



Maria Pavlova reaches for bacteria cultures as Susan Eisenhauer looks on.



Meyer Garber, DAS, explains superconducting power transmission to Jim Ostroff and Kenneth Labich.

Questions Asked — Answers Provided

Students from the School of Journalism of Columbia University visited BNL for two days last week for a science writing course they are enrolled in.

The ten students and their professor, Kenneth Goldstein, were given an introduction to the Lab by Assistant Director R.C. Anderson and Public Information Officer Carl Thien. They were then given a tour of the HFBR before meeting with members of the Department of Applied Science.

Frank Salzano, DAS, discussed possible alternate fuel sources for the future, particularly nuclear energy. He talked about fusion reactors, hydrogen energy, and freely answered questions posed by the students.

Mike Dohan, an economist and consultant to DAS from Queens College, discussed the pollution effects on New York City through the mid 1980's. Mike Jones, DAS, summed up what was said by Salzano and Dohan and then had a general question and answer period.

In the evening, the students joined Anderson and Thien at the Brookhaven Center for cocktails and dinner before retiring to their dorm rooms for the night.

On Friday, March 22, they were each assigned to a scientist to observe his or her research. Maria Pavlova, Medical, described her research in microbiology to Susan Eisenhauer and Zachary Sclar. George Woodwell, Biology, explained his various environmental programs underway to Kathleen Johnston and Blanche Alston. Edward Sayre, Chemistry, demonstrated neutron activation analysis for Charles Johns and Thomas Grimes. Joyce Leader and John Holland questioned Bernard Manowitz, DAS, about his energy-environment studies. Eric Forsyth, Accelerator, talked to Kenneth Labich and Jim Ostroff about superconducting power transmission.

The students left around noon on Friday and will each write an article on the research they observed while they were here.

Letters To The Editor

Dear Sir:

We would like to take this opportunity to thank all the marvelous people who helped us through our recent period of grief, in the death of our son, Craig. The number of people who shared in the Memorial Service, the many who contributed to his Memorial Fund, and the avalanche of cards has certainly helped sustain all three of us. It can truly be said, "The love of friends does give you comfort in time of need." Thank you again.

Lyllis, Dick and Peter Adams

Japan Studies Energy at BNL

Brookhaven was one of the stops made by a Japanese study team during their three-week visit to the United States and Europe.

The eight-member Japanese Atomic Industrial Forum Technical Study Team on the Application of Reactor Heat, was welcomed to the Lab on Tuesday, March 26, by Warren Winsche, Chairman of DAS, and other members of the department.

The team was headed by Dr. Ueda, Director of the Japan Atomic Energy Research Institute. It was organized to exchange thoughts and ideas on the technical development and the effective use of nuclear energy. They were particularly interested in the development of hydrogen energy. The Japanese team also took part in the three-day Hydrogen Economy Energy Conference (THEME), attended by seven members of the Department of Applied Science last week.

They spent most of their morning at the Lab discussing research being conducted by DAS on hydrogen energy. The general activities of the department were outlined by Winsche. Kenneth Hoffman discussed hydrogen energy systems, Frank Salzano explained the engineering developments related to hydrogen energy, and Richard Wiswall went into the chemical aspects of using hydrogen as an energy source.

After lunch, they were taken to the DAS laboratories where James Reilly and Richard Wiswall explained the research being done with the storage of hydrogen in metal hydrides. They also showed the team the wankel engine that is being run on hydrogen energy.

Eric Forsyth, Accelerator, described his work with superconducting power transmission and showed them examples of superconducting cables.

Before leaving the Lab in the early afternoon, the team presented Warren Winsche with two Japanese wood block prints as an expression of their appreciation.

Rifle & Pistol Club

All members of the BNL Rifle & Pistol Club are reminded that the membership renewal deadline is March 31.

Community Development



Brookhaven Town Supervisor Charles Barraud fields questions from members of the Community Development Committee of the New York State Association of Industrial Development Agencies at a recent meeting at Brookhaven Lab. Committee Chairman Randy Hudson (right) is also on the platform. The committee met at Brookhaven and had lunch in the Berkner Conference Center on Friday, March 22. After the luncheon members were addressed by Assistant Director R.C. Anderson and Laboratory Director George Vineyard. The group took a tour of Brookhaven Town industrial sites after leaving the Lab.

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Hospitality News

The next regular Hospitality coffee will be held on Tuesday, April 2, from 10 a.m. until noon in Apartment 10C in the apartment area. Mrs. Elke Brengard will be our guest. She will show us her outstanding Quilt- and Patch-work. Everyone is welcome.

Cooking Exchange

No "April Fool" - on April 3rd at 12:30 in the Recreation Building for some new ideas in "firsts." Tired of potato chips and dip? Try us for a new approach to an old story.

May Day - May Day - Men who cook needed to demonstrate to the ladies on May 1st from 12:30 to 1:30. Volunteer a friend. Call Jane Love, 286-1136.

CREF Unit Values

1973			
January	\$50.36	February	\$47.11
March	46.44	April	43.69
May	42.06	June	41.40
July	44.80	August	44.06
September	46.63	October	47.06
November	41.30	December	42.61
1974			
January	\$40.75	February	\$40.83

BERA Concert Series

The last concert in the series will be given by the Warsaw String Quartet on Wednesday, April 3, at 8:30 p.m. in Berkner Hall.

This Polish ensemble made its highly successful North American debut in 1972, after having gained much acclaim all over Europe.

At its BNL appearance the Warsaw String Quartet will perform works by Beethoven, Schubert and the 20th Century Czech composer Bohuslav Martinu.

Admission is \$3.50 for adults; \$1.75 for full-time students with I.D. and Senior Citizens over 65; and free for persons under 18.

Art Exhibit

An exhibition of paintings, watercolors and collages by Esterina Velardi opens at Gallery North, North Country Road, Sea-tauket, on Saturday, March 16th, with a preview from 2 to 5. Ms. Velardi studied with Joseph Albers at the Yale University School of Art and Architecture, where she received her degree, and is married to W.S. Hillman, Biology. The exhibition extends through April 14th. Gallery hours are 10 - 5 Tuesday through Saturday, and 1 - 5 Sunday.

Arrivals & Departures

Arrivals

Douglas W. Smith Plant Engr.

Departures

Hiroshi Takahashi D.A.S.

Official & Special Events

Monday, April 1
USSR Superconducting Power Team
(April 1-4)
Wednesday, April 3
BERA Concert

Wednesday, April 10
Navy Meeting - Brookhaven Center
Thursday, April 11
Low Level Radiation Effects Meeting -
Berkner Hall, Rooms A and B

Tuesday, April 16
Suffolk County Nurses Tour
Thursday, April 18
Long Island Bone Metabolism Discus-
sion Group Meeting - Berkner Hall,
Room C
Saturday, April 20
Synchrotron Radiation Meeting (April
20-21)

Wheeler Named Dean At Lehman College

Dr. George W. Wheeler, 49, an accelerator physicist formerly with Brookhaven Lab, has been named Dean of Science at Herbert H. Lehman College of The City University of New York.

The appointment, approved by the Board of Higher Education at its March 25 meeting, was announced by Dr. Leonard Lief, president of Lehman. The appointment is effective July 1, 1974.

Dr. Wheeler, a former member of the faculty at Yale University, is currently chief of the Advanced Research and Development Branch of the High Energy Physics Program, Division of Physical Research, of the United States Atomic Energy Commission. At Lehman he will be responsible for the college's science departments and mathematics.

Dr. Wheeler's candidacy was proposed to President Lief by a faculty-student search committee. Lehman is a four-year college of liberal arts and sciences with more than 16,000 students enrolled in its day session, School of General Studies (evening division) and Graduate Programs.

Before joining the Atomic Energy Commission in 1972, Dr. Wheeler was an administrator in the Accelerator Department at Brookhaven where he was in charge of the AGS Conversion Division - \$50 million project involving 60 physicists and engineers, as well as nearly 200 technicians. The project involved the redesign of what was then the world's largest accelerator used for the study of elementary particles.

Dr. Wheeler joined Brookhaven Laboratory in 1964 after teaching physics and carrying out research at Yale for 10 years. He is the author or co-author of more than 30 publications dealing with nuclear physics research and the design of atomic accelerators.

A native of Dedham, Mass., Dr. Wheeler earned his bachelor of science degree in physics at Union College, his master's and doctoral degrees at Yale. He is a senior member of the Institute of Electrical and Electronic Engineers, and holds memberships in the American Physical Society, the Society of Sigma Xi, and the American Association for the Advancement of Science.

Dr. Wheeler is married to the former Margaret C. Pirie, an anthropologist on the faculty of the State University of New York at Stony Brook. They reside with their two children in Port Jefferson, New York.

UPS Deliveries

The Laboratory is a subscriber to United Parcel Service for use in its official receiving and shipping operations.

All employees and guests (except those living on site) are reminded of the Laboratory policy regarding the shipment of personal property to the Laboratory.

Items of a personal nature should be addressed to your home address, not to your Laboratory work station.

All future UPS deliveries will be assumed to be official Laboratory business. They will be received, inspected and processed through normal Laboratory receiving procedures.

March Retirees



Luise M. Hillen, Head Nurse in BNL's Medical Department who began work at the Laboratory on September 16, 1957, will retire on March 29.

Stony Brook Events

A variety of concerts, films, demonstrations, exhibits and lectures highlight this week's events at the State University of New York at Stony Brook. There are no events scheduled during Spring Recess from April 6-15. Unless otherwise noted, the events are open to the general public without charge.

Music

A Master of Music degree recital will be given by Lisa Marum on the flute on March 29 at 8:30 p.m. in Room 105 of the Lecture Center. Her program will include works by Mozart, Piston, J.S. Bach, Martinu and Bozza.

Belinda Correa will present a student recital on the flute on March 30 at 8:30 p.m. in Room 105 of the Lecture Center with works by C.P.E. Bach, Jolivet, Bloch, Ibert and Borne.

Carol Reinfeld will present a Master of Music degree recital on the violin on March 31 at 3 p.m. in Room 105 of the Lecture Center. Her program will include works by Berg, Brahms and Prokofiev.

The Manhattan Saxophone Quartet will be featured in a Sunday Simpatico Series concert on March 31 at 3 p.m. in the Stony Brook Union Buffeteria. Admission is \$2 and wine and cheese will be served.

A student recital will be given on April 1 by Mary Ann Heym, pianist, at 8:30 p.m. in Room 105 of the Lecture Center with works by Scarlatti, Schumann, Mozart, Ravel and Chopin.

On April 2 at 8:30 p.m. in Room 105 of the Lecture Center there will be a Music Department Recital.

On April 3 a Percussion Ensemble Concert with Raymond des Roches, director and Samuel Baron, flutist, will be held at 8:30 p.m. in Room 105 of the Lecture Center. Admission is \$2 and the program will include works by Colgrass, Cowell, Davidowsky, Jolivet and Tower.

Margaret Wotten, violinist, will present a recital with works by Stravinsky, J.S. Bach and Schubert for her Master of Music degree on April 5 at 8:30 p.m. in Room 105 of the Lecture Center.

Films

COCA Sunday Series will show "Taking Off" at 8 p.m. in Room 100 of the Lecture Center on March 31. Admission is \$.50 and tickets may be purchased at the door.

"La Chaim," a film sponsored by the Union Community, will be shown on April 1 at 8 p.m. in the Stony Brook Union Auditorium.

Tuesday Flicks will show "Weekend" by Jean-Luc Godard of France on April 2 at 8 p.m. in the Stony Brook Union Auditorium.

The Family of Women Film Series will show "Genesis" and "From 3 a.m. to 10 p.m." on April 4 from 12:30-1:30 p.m. in the Stony Brook Union Auditorium.

"The Cinema," sponsored by the Center for Continuing Education, will show "Zita" at 8:30 p.m. in Room 100 of the Lecture Center on April 4.

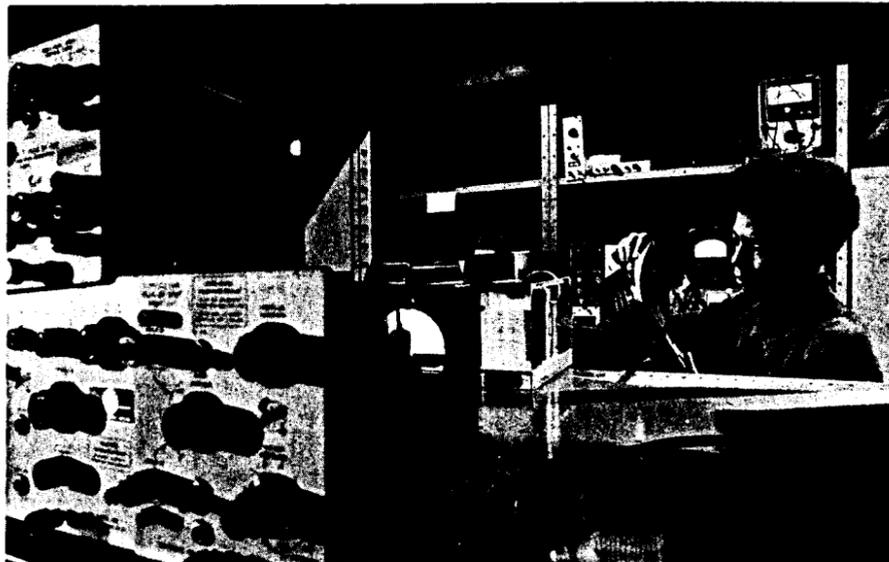
Demonstrations and Exhibits

The First Floor Gallery in the Administration Building presents a collection of serigraphs, collages and color experiments by senior undergraduate student Teofilo Joseph Cardenas. The exhibit runs until April 5 during the hours of 9 a.m. to 5 p.m. daily.

The International Cooking Exchange, sponsored by the Stony Brook Union, will present Lynda Pratt cooking Goulash (with samples) from 12:30-2:30 p.m., April 2 in the Stony Brook Union Galley.

Tournament Bridge, with Master Points awarded, is held every Tuesday at 8 p.m. in Room 226 of the Stony Brook Union. Admission is \$1.

The Department of Theatre Arts' Professional Series will feature Cecily Dell discussing "Movements" on April 3 at 4 p.m. in Room 114 of Building B on the South Campus. Refreshments will be served.



Teddy Murray reads a memo on a machine sent to Instrumentation for repairs.



Lilly Jones prepares a spirometer for a waiting patient in the Medical Research Center.

High School Co-op Program

Lilly Jones and Teddy Murray are two of the 13 students from Longwood High School in Middle Island, participating in the High School Cooperative Program sponsored by the Lab each year.

The Atomic Energy Commission provides funding for the Program which lasts from November to the end of May. It is designed to help students in area high schools overcome certain motivation problems they might have. The students are brought to and from the Lab by a school bus for a period of four hours a day.

Lilly Jones is working under the supervision of Herbert Susskind of DAS, on his research involving the detection of diseases of the small airways of the lungs. He is pleased with her work and has asked her to continue working with him during the summer in the Youth on Campus Program. She is originally from Eustis, Florida, but has been living in Medford, N.Y. for the past five years. She is a senior this year and plans to join the Army as a social worker after she graduates.

Teddy Murray spends his 20 hours a week working in Instrumentation under the supervision of Frank Rizzo. He is a junior at Longwood and hopes to go to college when he graduates to study engineering. He lives in Medford, N.Y.

BERA Golf

After a couple of false starts, it appears that Spring will at last win out. That means it is time to think about our upcoming season. Let's get together on Friday, April 5 after work at the Rec Hall (in the apartment area) and get started. Beer and hot dogs will be served.

Appropriate material is already being distributed to our membership. Interested newcomers should pick it up at the get-together or by contacting any of our association's officers:

Les Lawrence 4107/4106
 Bob Feindt 4452/4796
 Jack Scharpeger 2974
 Jack Detweiler 4054

Theater Group Program

Ron Peierls will direct "In the Beginning Are the Words," a presentation of scenes from a number of plays, for the Theater Group on April 2 at 8 p.m. in the Exhibit Hall. The program will illustrate the factors involved in developing the playwright's words from a bare reading of lines to a full-fledged performance.

"Butterflies Are Free," "The Golden Fleece," and "Who's Afraid of Virginia Woolf" will be treated to show the pitfalls which may befall actors and directors on the road to final production. The performers are Mike Losquadro, Bob Marr, Julie Peierls, and Ramona Xiques.

This will be the first Theater Group program to be held at the Exhibit Hall. Plans are being made to convert the Hall into a flexible theater.

All members of the Laboratory community are invited.

Ceramic Display

A display of six ceramic pieces by Melvin D. Epp of Biology is being featured in the display case at the BNL Research Library through April 10. The pieces include a pinch pot, throw vases, and sculptures. Mr. Epp is currently working with Erasmo Galantino of Miller Place.

Scientist-Fellow Program

The American Association for the Advancement of Science has announced the 1974-75 Congressional Scientist-Fellow Program. Information about and applications for this Program is available in the Office of Scientific Personnel. Deadline for application to the Program is April 5, 1974.

The Program is designed to place outstanding younger scientists and engineers with congressional staffs for approximately one year. The scientists and engineers who will serve as fellows will be assisting Congress through direct involvement in staff activities, while deepening their understanding of the decision-making process. An orientation program and a year-long set of seminars with various governmental and non-governmental leaders will add a greater breadth to the internship. The entire experience of the program should be helpful to them personally, beneficial to the Congress, and of value to the scientific and technical professions, whether the fellows remain in government work or return to positions in teaching and research.

Cafeteria Menu

Week Ending April 5, 1974

Monday, April 1	
Vegetable Soup	
Roast Chicken & 1 Veg.	1.00
Knockwurst & Sauerkraut w/Potatoes	1.00
Tuesday, April 2	
Cream of Chicken Soup	
Chinese Pepper Steak on Rice	1.20
Cheese Omelet & French Fries	.95
Wednesday, April 3	
Split Pea Soup	
Pizza Pie & Tossed Salad	1.00
Short Rib of Beef & 1 Veg.	1.20
Thursday, April 4	
French Onion Soup	
Macaroni & Chopped Beef w/1 Veg.	1.00
Short Rib of Beef & 1 Veg.	1.20
Friday, April 5	
Manhattan Clam Chowder	
Fried Clam Strips	1.15
Roast Beef & 1 Veg.	1.20



Henry C. Weinmann, Patrolman, Health Physics & Safety, who has been employed at BNL since June 21, 1948, will retire on March 29.

