



Weisskopf To Speak At BNL

Dr. Victor Weisskopf, of the Massachusetts Institute of Technology (MIT), will present a Laboratory-wide seminar entitled "The Promise of High Energy Physics" on Wednesday, April 2 at 3 p.m. in Berkner Hall.

Noted for his theoretical work in quantum electrodynamics and nuclear reactions, Dr. Weisskopf has taken a leading role in explaining to the public, science and its role in society. He has also been a major force in the development of physics research at MIT.

Dr. Weisskopf, who formally retired last July after 28 years at MIT, was Director-General of the European Center for Nuclear Research (CERN) from 1960 to 1966, and head of MIT's Department of Physics from 1967 to 1973.

Dr. Weisskopf was chairman of the High Energy Physics Advisory Panel (HEPAP) from its founding until January, 1974. HEPAP advises ERDA's Division of Physical Research. He chaired the HEPAP Subpanel on New Facilities, formed in May, 1974 to consider the future needs for high energy facilities and determine the major steps required in this field over the next decade. In June of that year the Subpanel issued a report containing specific recommendations and general comments on the future requirements of high energy physics.

A naturalized United States citizen since 1943, Dr. Weisskopf, was born in Vienna, Austria, in 1908. He received a Ph.D. from the University of Gottingen, Germany, in 1931 and served as a research associate at the University of Copenhagen from 1932 to 1933 and at the Institute of Technology in Zurich from 1934 to 1936. During this time, he worked with such distinguished physicists as Born, Wigner, Schroedinger, Pauli and Bohr.

Dr. Weisskopf came to the United States in 1937 to join the faculty of the University of Rochester where he served as an instructor and an assistant professor for six years. In 1943, he joined the Manhattan Project at Los Alamos, N.M.

In 1945, he was appointed associate professor of physics at MIT, with a one-year



Victor Weisskopf

leave of absence to complete his work at Los Alamos. In 1946, he came to the Institute as a full professor, and later was in charge of the theory group in MIT's Laboratory of Nuclear Science.

In 1960, Dr. Weisskopf became Director-General of CERN. During his stay at CERN, he was awarded an honorary Ph.D. from the University of Vienna on the 600th anniversary of that institution and honorary Sc.D. degrees from Oxford and Upsala Universities and from Yale University. His book, *Knowledge and Wonder; The Natural World as Man Knows It*, published while he was in Geneva, was selected by the Thomas Alva Edison Foundation as the best science book of the year for youth.

Dr. Weisskopf left Geneva and returned to MIT in 1966 as Institute Professor, a
(Continued on page 2)



Arnold Esper (left) and Walter York wrap super-insulation around a finished mylar target.

A Look Behind The Scenes At AGS

Within one of the grey buildings of the AGS complex is a tight-knit group that designs, builds and maintains all the hydrogen and other liquid gas targets used at the AGS.

The Cryogenic Target Group, which has eleven members, is headed by Al Schlafke. When an experimenter wants a target built, he approaches Schlafke with a rough idea in mind. The idea is then turned into a usable design by Bob Meier, the Group's design engineer.

Working from the design, the men in the target shop, Arnold Esper, Bill Sieger and Walter York, create a finished target. According to Bill Patton, who supervises target construction and operation, it normally takes four or five months to build and install a target, although there are exceptions. The complex target system used by the MIT/BNL Group in the discovery of the J-particle took over a year to complete.

Targets vary from one experiment to another. Most are made of mylar, a strong flexible plastic, shaped into cylindrical vessels. The most frequently used target material is liquid hydrogen, a rich source of protons for particle collisions. The Group has also made targets of metal and glass, and is presently working on a complicated Styrofoam target for the Multi Particle Spectrometer (MPS).

The temperature of liquid hydrogen is -425°F, lower than any other element except helium. Because of this ultra-low temperature, the metal or mylar vessels containing the liquid are superinsulated with the same material used to insulate the Lem module on the Apollo moon missions.

No matter how effective the insulation, some of the liquid hydrogen warms up and vaporizes. It vaporizes or "boils off" at a rate of 2.2 liters (2.3 quarts) per hour making it necessary to replenish the target con-

tinuously with more hydrogen. A 45 liter (48 quart) reservoir is situated above the target in the experimental set-up. Hydrogen is fed into the reservoir from a 175 liter (185 quart) vacuum-insulated tank, brought to the target area from the Lab's 40,000 gallon hydrogen storage facility. These tanks are emptied and must be replaced twice during a 24-hour period.

Designing and building targets is only part of the job performed by the Group. They are also responsible for the maintenance and safe operation of the targets. Currently, four hydrogen target systems are in use on the AGS floor, and each one must be checked once an hour. Carl Murray, Leonard Kelmar, Jerry Novak and Dick Lehman take turns keeping a 24-hour watch on the targets.

Hydrogen is a highly explosive gas so all leaks must be guarded against. Stringent
(Continued on Page 3)

NOVA Explores a Bygone Era

On Sunday, March 30 NOVA will explore "The Lost World of the Maya." The program will be broadcast over Channel 13 at 7:30 p.m. and again on Tuesday, April 1 on Channel 21 at 8:30 p.m.

For over a thousand years the Maya civilization grew and flourished in the rain forests of Central America. Discovered and finally destroyed by the Spanish Conquistadors, it was lost until explorers re-discovered it in the 19th century.

Eric Thompson, an archaeologist who has been trying to unravel the mystery of the Mayans for 45 years, takes the viewer on a pilgrimage of the Mayan world. While visiting the ruins of all the great Mayan cities, he charts the rise and fall of one of the strangest civilizations the world has ever known.

Oceanography Subject Of BNL Lecture

Bernard Manowitz, DAS, will deliver the last in a series of Brookhaven Lectures on energy and the environment. Focusing on the Brookhaven Coastal Shelf Oceanography Program, the lecture will be held on Wednesday, April 2 at 8 p.m. in Berkner Hall.

The BNL Oceanographic Program is designed to assist ERDA in evaluating the environmental impact of energy related activities in the Atlantic coastal zone. It is pertinent to such problems as off-shore siting of nuclear reactors, off-shore drilling and other anthropogenic disturbances to the coastal ecosystem.

Manowitz came to Brookhaven in 1947. In 1960 he was made Associate Head of the Chemistry and Chemical Engineering Division and in 1962 he was made Head of the Radiation Division in the Department of Applied Science. At the present time he is Associate Chairman Environmental Programs of DAS.

Manowitz has had a long interest in research pertinent to the environment. His initial efforts from 1944 to 1946 in Oak Ridge included research on methods for preventing the release of radioactive xenon and krypton into the atmosphere.

At BNL his recent work has included studies of rates of oxidation of SO₂ in power plant plumes and studies on the origin of sulfur compounds in the stratosphere. His most recent efforts are in organizing and coordinating the coastal oceanography program at the Laboratory.

Manowitz received a B.S. degree in chemical engineering from the Newark College of Engineering, and a M.S. degree in chemical engineering from Columbia University.

A buffet supper will be served at the Brookhaven Center before the lecture beginning at 6 p.m. Reservations should be made in advance calling Ext. 3541 before 5 p.m. Refreshments will be available in the lobby of Berkner Hall immediately after the lecture.

Goldhaber Re-Elected To URA Board of Trustees

Gertrude Goldhaber, Physics, was re-elected recently to a three-year term as Trustee-at-Large of the Universities Research Association (URA). The URA Board of Trustees governs the Fermi National Accelerator Laboratory at Batavia, Illinois.

On March 13, she gave a colloquium talk on the status of physics in the People's Republic of China at the Physics Department of New York University. She visited China last September with a group of American physicists that included Laboratory Director George Vineyard and former Director Maurice Goldhaber.

She described the present educational policies of Chinese universities and the kinds of physics research engaged in at the various research institutes she visited. In particular, she noted the excellent literature reproduction method in China which enables Chinese physicists to keep abreast of scientific research from all over the world.

Official & Special Events

- Monday, March 31
Brooklyn College Chemistry Society Tour
- Tuesday, April 1
Polytechnic Institute of N.Y. Tour
- Wednesday, April 2
Navy Meeting
- Thursday, April 3
BNL Lecture - 8:00 p.m., Berkner Hall
- Friday, April 4
Lowell Technological Institute -
American Nuclear Society Tour

- Monday, April 7
ERDA High Energy Program Review -
Berkner Hall (April 7-8)
- Friday, April 11
ERDA Hot Atom Chemistry Meeting -
Chemistry Department
APS - New York Section Meeting - BNL &
SUNY, Sponsors (April 11-12)

Pool/Gym Close For Easter

The swimming pool and gymnasium will be closed to all activities on Easter Sunday, March 30.

Soccer

Ken Batchelor

The first two places in the Winter Indoor Soccer League involved the same two teams as last year, namely AGS and Physics. However, this year the positions were reversed with AGS taking the championship. In general the competition was dominated by the defensive players, with a total of only 50 goals being scored in the 48 games played. This compares with a total of 181 goals scored last year.

Final League Standings

	Goals					
	P	W	D	L	F	A
AGS	24	16	6	2	19	4
Physics	24	9	4	11	13	22
DAS & Medical	24	7	5	12	9	18
Chemistry & Biology	24	5	7	12	11	15

Leading goal scorers: Batchelor 9, Meyers 8, Oldham 5, Friedberg 3, Press 3.

BNL 3 vs Hofstra University 2

On Saturday March 8th, BNL opened the outdoor season with a home game against Hofstra in which they were victorious by a score of three goals to two. Playing against the wind and the slope BNL started strongly and in the first 10 minutes came close to scoring with good attempts by Batchelor, Oldham and Levine, the latter hitting the goal post with the goalkeeper beaten.

In spite of the BNL pressure, the Hofstra defense held firm and a quick break away left the BNL defense flat footed, allowing a Hofstra forward to score from close range. BNL continued to attack after this reverse and Levine and Oldham again came close to scoring with good shots that the strong wind steered wide of the goal.

This pressure did not result in a BNL goal and it was Hofstra who went further ahead with another opportunist goal. This further reverse stung BNL into action and Oldham beat the fullback neatly before crossing to Batchelor who scored with a left foot volley from close range.

After this BNL took control of the game and after two near misses from Cox, Oldham took a hard shot from the edge of the area which the Hofstra goalkeeper could only parry and Batchelor, following up fast, scored from close range to even the score.

Then after five minutes of further BNL attacking Cox pushed a ball through the middle and Batchelor won a race over both the fullback and goalkeeper to score the third goal of his hat trick and complete the scoring for the game.

Now that the Winter Indoor Season has been completed, Soccer will move to Monday evenings at 5:30 p.m. at the Recreation Field. All players and beginners are welcome to come along.

Islanders Ticket Raffle

Tickets for the Islanders playoff games will be raffled off in Berkner Hall on Thursday, April 3 at 12:30 p.m. Winners do not have to be present to claim tickets. You will be notified by phone if your number comes up.

Stony Brook Events

Wednesday, April 2

The Women's Film Series will present Agnes Varda's "Le Bonheur" and Germaine Dulac's "The Smiling Madame Beudet" at 7 p.m. in the Stony Brook Union Auditorium.

Thursday, April 3

Theatre in der Josefstadt, Vienna's internationally famed repertory company, will be visiting the campus to lecture and present several performances of Luigi Pirandello's "Six Characters in Search of an Author." The play will be performed in German tonight, tomorrow and Saturday at 8 p.m. in the Stony Brook Union Auditorium; admission is \$2 for the general public and \$1 for students.

David Schecher will perform a Master of Music degree recital on the trombone at 8:30 p.m. in Lecture Center 105.

Thursday Night Cinema presents "Un Chien Andalou," a short, and "No Exit," a film by George Tabori, based on the play by Jean Paul Sartre. The films begin at 8:30 p.m. in Lecture Center 100.

Saturday, April 5

The Saturday Film Series will screen Alfred Hitchcock's "Dial M for Murder" and "Notorious." The movies begin at noon in the Stony Brook Union Auditorium.

Slo Break Basketball

One game left in the season and only two teams remain in contention; the Persuaders and the Condors.

The first game, played under a special rule allowing a team with only four players to pick up a fifth from a special pool, was won on the foul line. Both teams had 21 field goals but the Persuaders shot 50% from the free throw line compared to 26% for the Spuds.

Box Scores

Persuaders	Pts.	Spuds	Pts.
Garrison	11	Kowalski	0
Rowley	14	Nordstrom	18
Vaughn	8	McKeever	10
Shuman	0	Erenkauffer	2
Casey	0	*Sautter	16
Hill	2		
James	13		
Final Score	48		46

*played under special rule

In a hard fought game, which set the season high for total team fouls of 50, the Condors defeated Roga to stay in contention for a playoff berth.

Box Scores

Condors	Pts.	Roga	Pts.
Thomas	16	Brown	21
Erdman	5	Albright	4
Vignato	10	Lawrence	15
Brooks	25	Baltz	0
Hill	3	Cotten	18
Nettles	8	Scott	0
Sutter	2	Glenn	9
Final Score	69		67

Correction: The season high for total points scored in game was not last week's 147 but 158 in a game between the same teams - Roga and Spuds.

Guides Light Path At BNL

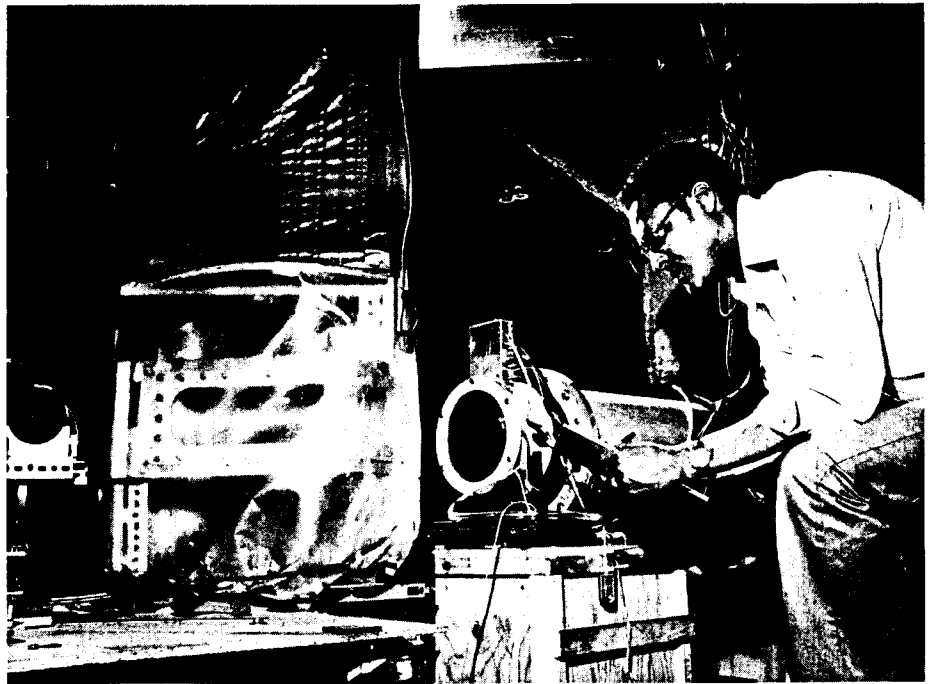
Almost 1000 visitors came to the Lab last year, and all were escorted from building to building by a specially trained group of Tour Guides. To date, the group has been exclusively female but Jane Garron, Personnel who coordinates the Tour Guides, would like to see some men join.

Tour Guides are nominated by their departments and are required to go through an indoctrination course with Health Physics & Safety, giving them access to the Reactor. Before going on their first tour, they are briefed by Virginia Sayre, Special Programs Coordinator. The services of the Tour Guides have already been called on nine times this year and were required on 17 occasions last year.

Anyone who would like to nominate a person from their department to be a Tour Guide should contact Jane Garron, Ext. 2113.



Following a luncheon in their honor, the current BNL Tour Guides assembled for a commemorative photograph. They are (front left to right) Janice Berry, Reactor; Dede Seay, Personnel; Betsy Schumajda, DAS; Sharon Rosenhagen, Director's Office; Eleanor McCaw, AUI; (center left to right) Frances Scesny, Personnel; Audrey Blake, Information; Tony Fridae, Physics; Francine Benante, DAS; Carolyn Eterno, Photography & Graphic Arts; (rear left to right) Marge Stoeckel, Fiscal; Rosemary Mack, Accelerator; Kay Hunt, Personnel; Joan Perullo, Staff Services; Dottie Marelli, Personnel; Betty Pergan, Personnel and April Donnegain, Physics. Not present for the picture were: Louise Kilcoyne, Director's Office; Jackie Larrie, Medical; Helga Pirozzi, Photography and Elaine Rowland, Chemistry.



Carl Murray makes an hourly check on a liquid hydrogen target system installed in the beam line of an experiment.

Target Group

(Continued)

safety precautions are taken in the design of a target system. All parts of the system are vented to the outside so escaping gas can be removed quickly and efficiently. The target and hydrogen storage tanks are kept under vacuum. All equipment is explosion-proof; vacuum pump motors, relays and switches are non-sparking and all lights in the area are encased to render them explosion-proof.

Before a hydrogen target is mounted into an experiment it must be inspected by the Safety Review Board of the Accelerator Department. "During the 14 years I have been here, we have had a perfect record," commented Arnold Esper, one of the target builders.

The Cryogenic Target Group has also designed and constructed targets for the Fermi National Accelerator Laboratory (FermiLab). To date they have built two for them, a 3-foot hydrogen target and one that measured 7 by 48 inches.



Charles Frank, fills a 175-liter vacuum insulated tank from the BNL 40,000-gallon liquid hydrogen storage facility.

Rifle and Pistol Club News

Our daylight pre-supper intramurals will start on March 25th. In case you missed our last business meeting, check with Bob Liegel for details.

Short lunch time practices have started too. Why not sharpen up for the intramurals on Tuesday and Friday noons. Several regulars will be on hand so you can count on company.

Road Runners — Pedal Pushers

Sunday, May 4 has been chosen by the Runners/Cyclists Committee for the Spring event.

A late-morning start for the 5 and 10-mile runs and the 17.5 mile bike race is planned. Exact times for entry and start will be announced in a future Bulletin.

Further plans for the 3000-mile run are also being developed and will be announced shortly.

Bowling News

Grace Fales

Red League

3/11 Highlights: J. Scesny 222/251/221/658 scratch series, W. Piel 707 gross series, J. Roesler 200, R. Nelson 215, C. Bachsmith 209, R. Wilson 202, W. Piel 216, K. Asselta 202, and J. Petro 209.

3/18: After 10 weeks the Neutrons are leading the league with a record of 75 1/2-34 1/2, followed by the Lucky Strikes with 72 1/2-37 1/2. Highs for the night: R. Larsen 236/212/621 scratch series, B. Brehm 233, R. Nelson 227, K. Asselta 202, E. Fales 200, and P. Klotz 211.

Pink League

The star for the night was C. Eterno with a 223 followed by a 175. Kay Hunt 195. Nice bowling, girls! Other highs were M. German 175, and B. Nine 175. The Spares are still in first place with the Alley Opps and Fiscal Assets neck and neck for second place.

Black and Blue League

Highs for the night: C. Tomesch 212/599, P. Lebitski 188, D. Antonio 181/164, D. Pollock 166, K. D'Ambrosio 161, and N. Mayeski 161. Pots were won by Bill Sells 216 and Pat Lebitski 241.

Highlights of the Men's Long Island Industrial Invitation Tournament

BNL's team finished 5th of the sixteen entering teams. Nice bowling guys! Highs for the final week were J. Scesny 206/557, R. Larsen 203/556, C. Buzzeo 195/539, and R. Nelson 199/534. Congratulations, men!

Harnessing The Sun's Energy

What does one do with 3000 aluminum cans, some black paint and glass and a few scraps of fiberglass insulation? Simple, build a heat sink solar furnace.

Arnold Roesch, of Physics, has never liked to waste anything, especially something as useful as aluminum. One day he read an article in a magazine that gave the steps for making a solar furnace using aluminum cans, so decided to give it a try.

He placed an ad in the *Brookhaven Bulletin* for aluminum cans, stating "no lot too small." He got excellent results. One woman brought him 1500 cans packed into a 9-passenger station wagon and another sent two via the interlab mail system. Arnold praised the mail system, claiming the cans arrived in perfect shape despite their flexibility, but "politely discouraged" this method.

Arnold now has more than enough cans to construct a solar panel, which when completed will be 20 feet long and 12 feet high. By recycling aluminum cans rather than buying the raw material, he estimates that he has saved approximately \$1.25 a square foot. With ten cans per square foot this amounts to a savings of \$300.

He has constructed a small prototype solar panel which has proved very successful. The best temperatures recorded inside the panel were 210°F when the temperature outside was 52°F and 221°F in 63°F weather. The panel is a three foot square box lined with aluminum can halves sprayed with flat black paint. Aluminum is a good heat conductor and black absorbs heat as opposed to silver which reflects it. The box is covered with two thicknesses of glass that prevent the heat generated in the panel from escaping. The other five sides of the box are covered by fiberglass insulation.

Heat from the sun passes through the glass and is absorbed by the cans within. A small air blower attached to one end of the panel blows cold air through the panel where it is heated and leaves as warm air.

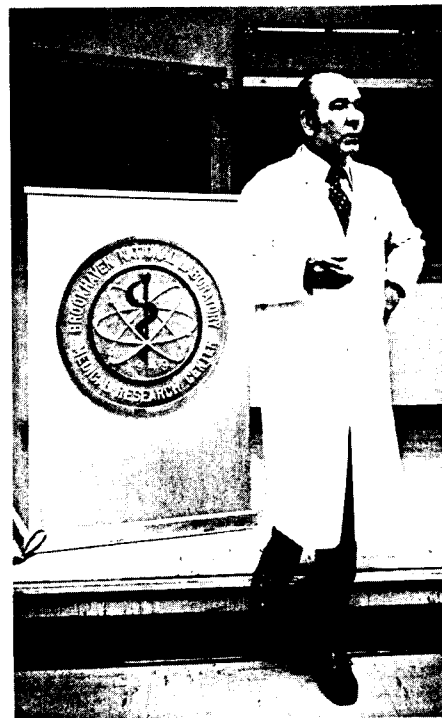
When the large panel is constructed, the warm air will be funneled into a yet-to-be-constructed den, where it will be passed over a bed of pebbles forming a heat sink. The pebbles will retain the heat for those cloudy days. Arnold estimates that sufficient heat will be absorbed by the pebbles to heat the den for four days.

The large panel will be outfitted with a ½ horsepower blower. Arnold plans to install a thermostat, connected to the blower so heat from the panel can be drawn on demand.

If the solar panel proves successful, he hopes to build a cottage on his six acres of land in Manorville, using the sun to heat it. Also in the back of his inventive mind is a plan to run copper pipes through the solar panel to heat domestic water. The only problem is that he will have to tell his family to take fast showers.

There has been one drawback to his inventiveness - he has had to cut down several trees and quite a few bushes around his house to clear the path between his solar panel and the sun. But he thinks it is worth it.

After the solar furnace what is next on his list? Would you believe a steam generator to pump water? Well, look where it got Benjamin Franklin and Thomas Edison.



Weisskopf (Continued)

rank given sparingly by MIT to recognize distinction. During the year before his retirement, he was named James R. Killian Award Lecturer.

Among his numerous activities and memberships, Dr. Weisskopf is a fellow of the American Physical Society and was its president for 1960-61. He received the Max Planck Medal of the German Physical Society in 1956 for his contributions to physics, and the Cino del Duca Award for humanism in science. He is a member of the National Academy of Sciences and the Federation of American Scientists. He was on the board of editors of "Nuclear Physics" and "Annals of Physics," and is author of numerous articles on nuclear physics, quantum theory and radiation theory.

Golf News

Our 1975 activities are underway. Elections are now in progress and a pre-season get together is planned for Friday, April 18 at the Recreation Building after work. Bring \$1.00 for hot dogs and beer.



Arnold Roesch with his prototype solar panel and materials used to build it.

Columbia Science Writers



Ten students from the Columbia University Graduate School of Journalism spent two days at the Lab last week questioning scientists about their research programs. Dr. Paul Papavasiliou, Medical, (bottom left) spoke to them about new developments and trends in the treatment of Parkinson's Disease. Murrey Goldberg, DAS, (top left) described BNL's Engineering and Systems Division where energy systems are modeled and analyzed. Ron Peierls (above right) discussed the place of high energy physics in today's world.



Arrivals & Departures

Arrivals

Michael J. Dagg App. Science
Alan H. Rosenberg Biology

Departures

Francis M. Costello Hlth. Phys. & Safety
Judah M. Frankel App. Science
Chen Lee Manns Medical

Hospitality Plans Trip To City

The Hospitality Committee is planning a group railroad trip to the city on Wednesday, April 9.

Departure will be at 8:45 a.m. from the Patchogue Long Island Railroad station. Any train to Patchogue may be used for the return trip.

The round trip cost will be between \$2 and \$3, depending on the number of people who take the trip. Children under 6 years of age are free.

If you are interested, please sign up as soon as possible by calling Ruth Dimmler, 751-6342 or Rosemary Jewett, Extension 3089.

Hospitality News

The next Hospitality coffee will be held Tuesday, April 1, at 9:30 a.m., in the Brookhaven Center. Babysitting will again be provided at no cost in the same area.

Deputy Commissioner Geraldine M. Sheridan will discuss the work and responsibilities of the Suffolk County Department of Consumer Affairs.

BROOKHAVEN BULLETIN

Published Weekly for the Employees of Brookhaven National Laboratory

CARL R. THIEN, Editor
JEAN BURKE, Assistant Editor
CAROL GOLDSTEIN, Copy Preparation

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

Cafeteria Menu

Week Ending April 4, 1975

Monday, March 31	
Cream of Tomato Soup	
Manicotti & 1 Veg.	1.00
Breaded Pork Chop & 1 Veg.	1.15
Tuesday, April 1	
Vegetable Beef Soup	
Meat Loaf & 1 Veg.	1.05
Western Omelet & 1 Veg.	.95
Wednesday, April 2	
Chicken and Rice Soup	
Broiled Beef Liver w/Onions & 1 Veg.	1.05
Special	
Davy Jones Fish Fry	\$1.25 plus tax
Thursday, April 3	
Navy Bean Soup	
Beef Hash & 1 Veg.	1.00
Southern Fried Chicken & 1 Veg.	1.05
Friday, April 4	
Manhattan Clam Chowder	
Fish & Chips	1.00
Roast Sirloin of Beef & 1 Veg.	1.20

Adult Swimming Classes

Adult swimming lessons will not be given next week, March 31, April 1 and 2.

Classes will resume on Monday, April 7.



Charles Tomesch, Instrumentation, will retire from the Laboratory on March 31, 1975.

