

This 74-foot landing craft medium will be used for the Biology Department's coastal shelf studies and by the DAS Meteorology Group for their off-shore atmospheric program.

Brookhaven and the Energy Shortage III

Victor Bond

In the first two articles on Brookhaven and the Energy Emergency, John Blewett detailed the ways in which we are investigating new means of developing energy sources. This work will continue to expand in the future.

With new advances in energy production, additional problems can be expected to develop with respect to environmental and health effects. The Departments of Biology, Medicine, and Applied Science have for years been doing research in these fields.

Environmental research started at Brookhaven at the time the Laboratory opened in 1947, when the Meteorology towers were built to assess the effect of the wind currents on the effluents from the Graphite Reactor. Even before the construction of the reactor was started, surveys of the ground water supply and flow were instituted to assure that Brookhaven's operations would not adversely affect the ecology of this section of the Island. Extensive biological and medical studies of the effects of high and low levels of radiation exposure were initiated in the early stages of the Laboratory's research program and have continued to date.

In 1961 a study was started in the Biology Department, on the long-term effects of ionizing radiation on a pine forest in the northeast sector of the Laboratory site. The fifty-acre pine and oak forest is being irradiated with a 9500-curie source of cesium 137 located at its center. This experiment was designed to yield information on the sensitivity of plants to ionizing radiation, and on the long-term genetic effects on the various physiological characteristics of organisms growing under natural conditions.

At Flax Pond, a wetland area on the North Shore near Old Field, scientists from Brookhaven, Stony Brook, and the New York State Conservation Department, under the direction of George Woodwell, Biology Department, are doing a comprehensive study on the net productivity of the

marsh in order to determine its role in the biosphere. The estuary is an extremely rich nursery for fish and a center of high metabolism. It has been determined that the marsh is supported much of the year by a net flux of organic matter into it from the Long Island Sound.

The Department of Applied Science has been involved in a variety of environmental efforts under the general leadership of Bernard Manowitz. For several years studies have been made on the chemical and meteorological behavior of atmospheric pollutants, primarily sulfur and nitrogen oxides, emitted from power-plant stacks. The plume studies are designed to determine the rate of sulfur dioxide conversion, the chemical and physical nature of the products formed, and the behavior of plumes from tall stacks at long distances from the point of emission. Plumes from both coal- and oil-fired plants have been studied, and significant differences have been noted in the behavior of the sulfur dioxide from the two types of plants. Leonard Newman has been coordinating the plume studies.

The primary emphasis in the meteorological studies led by Paul Michael has been on understanding the dispersion of effluents from point sources. In the past, the lack of suitable tracer techniques made it difficult to obtain data at distances from the source of the order of 10 to 100 kilometers. Radioisotopes have not been used to any significant degree since unnecessary injection of radioactive materials into the environment should be avoided. New instruments, particularly a sensitive sulfurhexafluoride continuous detector developed by Russel Dietz at Brookhaven and made use of in a program led by Bob Brown of the Meteorology Group now permit measurements of plume constituents to be made out to 100 kilometers and beyond with relative ease. The plumes studied included those from the tall-stack fossil-fuel fired LILCO plant at Northport, New York.

(Continued on page 2)



A smoke plume spews forth and makes its way towards shore from the stack aboard the landing craft medium.

Citgo Station

Effective Thursday, March 21, 1974, the on-site Citgo gasoline station will resume normal operations, continuing the "odd"/"even" license plate system.

The station will be open from 8:00 a.m. to 6:00 p.m. Monday through Friday and from 8:00 a.m. to 1:00 p.m. on Saturday.

Should the station receive less than its present allocation of gasoline, it may be necessary to revert to the restricted gasoline sale hours which have been in effect since mid-February.

Schoenborn To Present Paper At AP Meeting

Benno Schoenborn of Biology has been invited to present a paper at the 1974 March Meeting of The American Physical Society in Philadelphia on March 27. Schoenborn's paper on "Neutron Scattering Studies of Protein Complexes and Membranes" was selected as one of particular interest to science writers and other reporters who will be writing about the meeting. Following is a summary of the paper.

Neutron scattering analysis made possible by the advent of specialized high flux beam reactors like the HFBR at Brookhaven provides a unique tool for the analysis of biological structures with possible implications leading to the understanding of molecular diseases and nerve disorders.

Neutron diffraction analysis of protein crystals permits the determination of the protein's architecture, particularly it enables the determination of hydrogen atom positions, atoms that are of prime importance in the protein's function.

The application of neutron scattering techniques in the determination of structure-like membranes, viruses and protein complexes is unique. The differential analysis of such structures where hydrogen has been exchanged with deuterium permits the visualization of the arrangements of the particle's constituents. This hydrogen exchange technique is now being used to locate certain membrane components like cholesterol in an effort to understand the role of these molecules imbedded in the walls of nerve fibers.

In the analysis of ribosomes, the biological factory that assembles proteins according to the genetic map, we found that the proteins were separated from the nucleic acid, while the second part of the ribosome particles shows no such separation of the proteins from the nucleic acid. These new findings are now being used to better understand the function of these remarkable complex and efficient biological machines that are constantly assembling new proteins.

Similar studies are now being made on the retinal rod outer segments, the complex structure that converts the visual image in the eye to an electric signal.

Official & Special Events

Tuesday, March 26

Supervisory Development Seminar (March 26-29) - Berkner Hall, Room B

Japanese Atomic Industrial Forum Technical Study Team on Application of Reactor Heat

Thursday, March 28

USSR Superconducting Power Team

Friday, March 29

Columbia University Students Tour

Monday, April 1

USSR Superconducting Power Team (April 1-4)

Wednesday, April 3

BERA Concert

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.

Hydrogen Energy Is This Year's Theme

Seven members of the Department of Applied Science flew down to Miami this week to attend The Hydrogen Economy Miami Energy Conference (THEME). It was the first major international meeting entirely devoted to the subject of hydrogen energy.

Close to 600 people were expected to attend the three-day conference, presented by the School of Engineering and Environment Design of the University of Miami at Coral Gables. James Reilly, James Powell, Gerald Strickland, Frank Salzano, Wen Shi Yu, Charles Waide, and Kenneth Hoffman represented BNL at the conference, which began March 18 and ended March 20.

The papers delivered by the BNL group centered on metal hydride storage, the use of fusion reactors in hydrogen production, the feasibility of using hydrogen energy for ground transportation, and the role of hydrogen in electric energy storage.

Gerald Strickland, James Reilly, and Richard Wiswall described a 14-pound hydrogen reservoir BNL has constructed for use by the Public Service Electric and Gas Company of New Jersey. They discussed the construction of the stainless steel vessel, the performance tests run at the Lab and the preparation of the hydride (FeTiH₂) to be used as the hydrogen storage medium.

Storage is one of the more technical problems encountered when using hydrogen as a fuel. Two metal hydride storage systems were discussed in a paper prepared by Wen Shi Yu, Eric Suuberg, and Charles Waide. One was a convection bed system where heat is transferred to or from the bed by a constant flow of hydrogen coming into direct contact with the metal hydride particles. The other was a conduction bed system where heat is transferred directly through the container of the metal hydride. Two metal hydrides, magnesium hydride and iron titanium hydride, were evaluated using both systems.

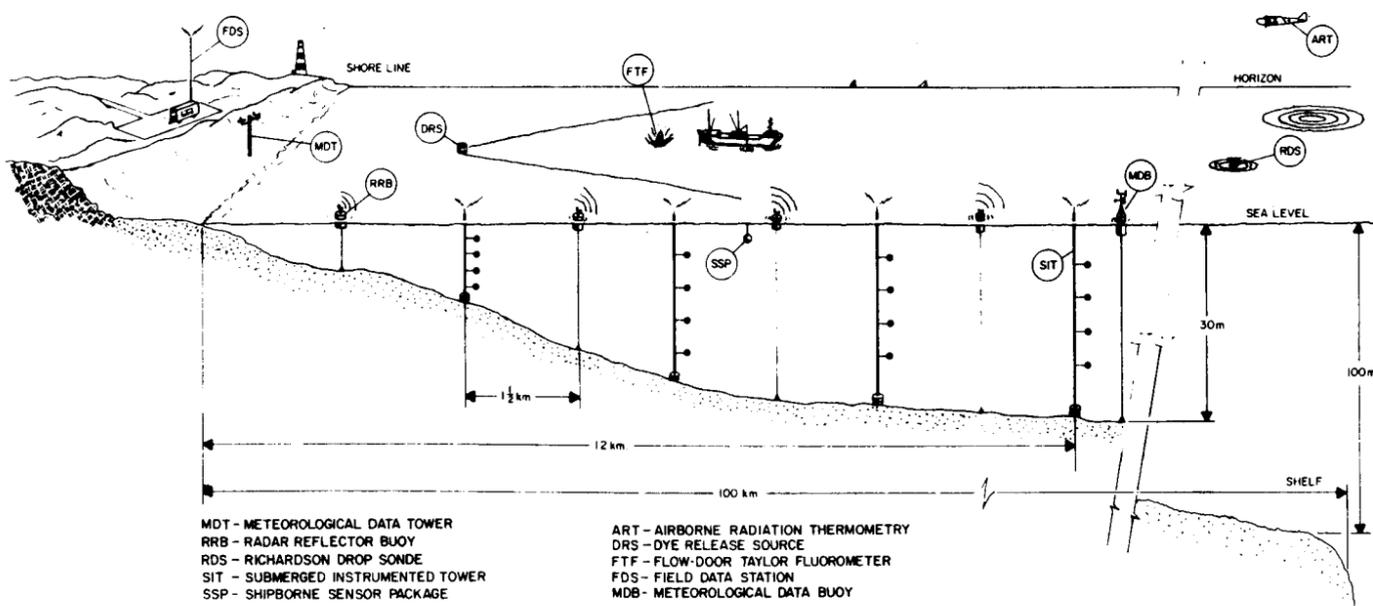
Waide, Reilly, and Wiswall considered the use of hydrogen as an automotive fuel. Hydrogen will eliminate the pollution problem around urban areas caused by conventional fuel, they said. Hydrogen fuel could be used in enclosed areas such as mines and warehouses where gas turbine engines produce too many noxious gases. They weighed the pros and cons of using magnesium hydride or iron titanium hydride as a hydrogen storage medium for automotive purposes.

James Powell, Frank Salzano, and Walter Sevan collaborated on a paper discussing the technology, economics, and environmental effects of using fusion reactors for synthetic fuel (hydrogen gas, liquid and methanol) production. An inexhaustible supply of synthetic fuels, produced from fusion reactors, would supply the United States with all its energy needs, they said. Fusion reactors produce fewer radioactive wastes than fission reactors and could be operated at a lower cost.

The final paper presented by the BNL group, written by Frank Salzano, Ellen Cherniavsky, Robert Isler, and Kenneth Hoffman, dealt with the role of hydrogen in electric energy storage. It would be economically favorable to produce hydrogen using the energy available from electrical utilities during off-peak hours, they said. The hydrogen could then be stored in fuel cells and be converted to electricity during peak hours. This method of storage and conversion would replace gas turbine generators which are economical but inefficient and use high grade fossil fuels which will soon be in short supply.

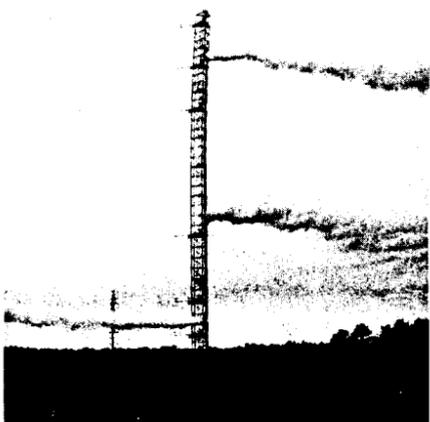
IBEW Meets March 28

Local 2230 IBEW will hold its regular monthly meeting on March 28, 1974, at 8 p.m. in the K of C Hall, Railroad Avenue, Patchogue. There will also be an afternoon meeting for shift workers at 2 p.m. in the Union office at 31 Oak Street, Patchogue. On the agenda will be regular business, committee reports, and the President's report.



The COBOLT experiment will be located in Southampton Town off Tiana Beach. This diagram shows the various elements of the research program that will start this spring.

For the past two years a major effort of the Meteorology Group has been the study of atmospheric transport from emission sources located off shore. The impetus for this program has been the plans of several electric utilities to locate nuclear power plants off shore. Such plants would be on platforms located within an artificial breakwater, about three miles from shore. This study is needed so that one can make realistic evaluations of the impact of accidental and routine releases to the atmosphere. The central part of this program has been a series of field experiments off the south shore of Long Island which have documented the behavior of a tracer plume, usually oil fog smoke, as it travels from an anchored boat to the shore line. Measurements are made in an instrumented van that traverses back and forth on Dune Road. Meteorological measurements are made on portable towers on the beach and in a light aircraft. These field experiments usually involve about a dozen people and are coordinated by Gilbert S. Raynor.



Meteorological towers were erected before the Brookhaven Graphite Reactor was built.

Several programs have been designed to look at the more basic aspects of atmospheric chemistry. Will Castleman and his group have been engaged in studies of the nature of atmospheric ions and the fundamental mechanisms of nucleation phenomena. The overall objective of the work is to understand the mechanisms of aerosol formation, with emphasis on the chemistry of condensation nuclei. These little-understood phenomena play important roles in the earth's atmosphere. Aerosols not only affect visibility and the global radiation balance, but also play a dominant role in the processes for removal of many hazardous airborne substances. James Sutherland has been identifying intermediate species in reactions important to atmospheric chemistry by pulse radiolysis and flash photolysis techniques. Frank Hill has been studying the rate of hydrogen-sulfide generation from marshes. Many of these atmospheric science programs will contribute to a Regional Modelling Program now being organized that will address among other problems the transport, transformation, deposition and dispersion of pollutants in the North East region of the United States.

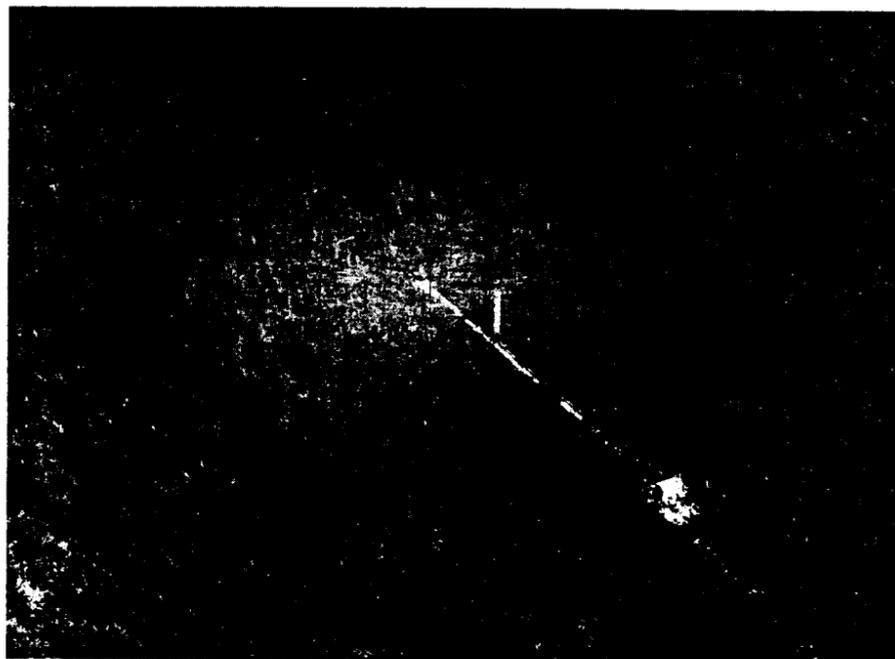
In conjunction with the Town of Brookhaven, a program is in operation to test the feasibility of transforming sewage effluents into potable water by "living filtration," thus recharging the Long Island water table. The effluent is being sprayed onto

portions of a 20-acre area containing oak and pine trees, grassland, lowland, and cultivated agricultural land. The study will determine what effect the spray has on the various forms of vegetation as well as how the vegetation affects the spray-filtration process.

As applied to the Long Island soil, the project will also determine how many gallons per acre can effectively be filtered plus how to recirculate nutrients such as nitrogen, phosphorus, and potassium through living systems. In addition, the study will include an investigation of the effectiveness of a "living filter" in removing viruses and bacteria. The spray irrigation project, as it is commonly called, is being funded by the Town of Brookhaven, and the U.S. Atomic Energy Commission. George M. Woodwell, senior ecologist, and Maxwell M. Small, project manager (Dept. of Applied Science) head the program.

Because the Laboratory has developed a broad base of knowledge, experience, facilities, and equipment, it is able to proceed rapidly into new areas concerned with the environmental and health effects of energy production, both by nuclear and other means.

A principal area for new research has to do with the ecology of the relatively shallow Atlantic coastal shelf. Little work has been done on this area of the earth's surface, and much is to be learned about its biological productivity. The effects of offshore power plants and offshore drilling cannot at present be adequately predicted. As these activities increase there will be a great need for definitive information. An initial phase of this program that will get underway this spring involves the exploration of the coastal boundary layer off the southern coast of Long Island. The aim is to arrive at an understanding of the dynamic processes that govern current flow behavior on the continental shelf. This effort involves the Coastal Boundary Layer Transect (COBOLT) Experiment which will consist of four submerged instrument towers anchored at 1.8, 3.7, 5.6, and 7.5 miles from shore. Continuous fixed-point current speed and direction, as well as water temperature and salinity measurements will be carried out on each tower at four depths. In addition, dye experiments will be performed in the transect area to gather supplemental diffusion information.



The fifty-acre ecology forest is located in the northeast area of the Laboratory.

The program will be conducted in collaboration with scientists at Woods Hole.

Under the present program simple theoretical models will be developed to identify prominent physical characteristics of the dynamic response to wind stress and other existing forces of coastal zones and continental shelves. Of special interest are upwelling and downwelling events which lead to large-scale exchange between the coastal boundary layer and the water further offshore. These events are of importance, not only with respect to nutrient supply, but to disposal of any effluents discharged within the coastal boundary layer. The program intends to investigate also two boundary conditions; mass transfer to



Tall stacks such as these are the source of atmospheric pollution.

sediment and subsequent sediment transport, and transport of both nutrients and toxins across the air-sea interface. Bernard Manowitz is also organizing this effort.

The Biology Department is presently searching for a well-established coastal oceanographer who will assume the responsibility for the biology aspects of the overall coastal shelf studies. These biological aspects of the overall studies will be very closely coordinated with the physical and chemical. The biological studies will involve looking at

phytoplankton, zooplankton, fish eggs and larvae, bottom community, and eventually fin fish. It is hoped that answers will be found to the many questions that arise concerning productivity and control in this area. To what extent do shelf nutrients come from the deep ocean, and to what extent from continental runoff? How do major plankton groups compare as agents of mineralization of organic matter? What is the relative importance of nitrogen, phosphorous, and minor nutrients as factors controlling productivity? The object of the research is to obtain a broad understanding of the processes controlling productivity on the coastal shelf.

The coastal shelf studies require extensive equipment. Recently BNL acquired a 74-foot long LCM-8 (landing craft medium) from the Navy which will be used in this work, as well as in the meteorology group's off shore atmospheric program. The vessel, kept at the Shinnecock Coast Guard Station, is particularly useful for close-in studies. In addition, however, research vessels equipped to take deep water samples and to do field analyses must be developed to translate the raw data into meaningful information, and basic research must be done to augment the applied methods that will be developed.

Nuclear power plants, offshore drilling rigs, and sewage wastes will be more a part of the general ecological picture in the future. Only through careful and painstaking research now can the problems that will be generated be minimized in the future.

The Play's the Thing!

In the beginning are words, but the play's the thing.

Bringing the written word of the playwright to life is a summation of many subtleties - a look exchanged or not exchanged between two characters, an emotional movement prolonged or enlarged by diffusing a light, a moral weakness defined by a limp.

Ronald Peierls will present a program for the Theater Group entitled "In the beginning are the words," which will demonstrate some of the creative devices used by directors, actors, and set designers.

All members of the Brookhaven community are invited to come to the presentation which will be held on April 2 at 8 p.m. in the Exhibit Hall.

—Iris Mastrangelo

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.

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

Arrivals & Departures

Arrivals

Arthur J. Buslik Applied Science
Peter R. Stolz Plant Engrg.

Departures

William A. Swatton Applied Math

BROOKHAVEN BULLETIN

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BERA . . . Who?

Who is BERA? Lab employees know what it is; a four-letter word standing for the Brookhaven Employees Recreation Association. They also know that art exhibits, movies, the swimming pool, the camp ground and all other recreational activities and facilities are brought to them courtesy of BERA. But questions such as "Who organizes it all?" or "Who raises all the money?" could come up.

Brookhaven employees recently elected two members to the BERA Board of Trustees. The Board is made up of six members, two of whom are elected to the Board each year for a three-year term. Members of the present Board are Charles Flood, HP & S; Audrey Blake, Tech. Information Div.; Kay Hunt, Personnel; George Oldham, Accelerator; Patricia Towey, Physics; and Michael Zguris, Accelerator.

The BERA Board directly supervises all recreational clubs, activities, and facilities on site. All club chairmen report to the BERA Board. The Director of Personnel, Joseph Washburne, acts as the Lab Director's designee and can approve or disapprove any decisions made by the Board.

Aside from having to clear major decisions with the Personnel Director, Personnel encourages the Board to act as an independent governing body.

For this reason the Board has become much more active in its aims to improve recreational opportunities for the BERA member. The Board is currently in the process of sending out a questionnaire to members and their families to determine exactly what type of activities they favor. Individuals are encouraged to respond to the survey questionnaire which will probably find its way into the inter-office mail and the regular postal system next week.

The survey is an example of one of the tools the Board is using to stimulate participation in BERA activities. The open Board meeting is another way, and they try to make at least every other meeting open to the public.

The Board schedules a meeting at least once a month but usually meets two or three times a month. All open meetings are scheduled around noon so employees can come during their lunch break.

Incorporated within the Board is a President, Vice President, and Secretary.

A Treasurer, responsible for BERA's accounts, is selected in consultation with the AUI Controller.

Certain committees are appointed by the Board. Among these are the Special Event Committee, the Awards Committee, the Public Relations Committee, and the Nominating Committee. It is the duty of the latter to handle all nomination proceedings and finally to select four candidates to run for the two Board openings each year.

All other organizations within BERA, such as the French Club, the Theater Group, the Mountain Climbing Club, the Camera Club, and numerous others, are formed by active BERA members. Any member can form a club and come to the BERA Board for funding. If the club is approved, BERA will furnish any paraphernalia to get the group started.

Once the club can stand on its own, the BERA Board prefers to let them manage within themselves, says Charles Flood, current Board President. This year, the chairmen of the various clubs will meet with the Board to plan their annual budgets. Because so many clubs exist, Flood is planning to classify them into three groups to make budget planning quicker. Rather than having all club chairmen come before the whole Board, two Board members will be assigned to each of the three groups.

Because BERA members do not pay annual dues, BERA must turn to other sources of income. A portion of the profits from Laboratory vending machines and public telephones as well as those from the Citgo station and the film sale center, go to BERA. The profits from all income-making activities such as movies, concerts, dances and plays, also go into the BERA treasury.

Part of BERA's budget goes into salaries to staff the various recreational facilities on site. Lifeguards at the swimming pool are paid out of income made from the pool.

BERA is a living, breathing organism, existing under a constitution which directs it to serve its members and to provide them with a plentiful supply of recreational activities and facilities. But, BERA can only be as active or inactive as the members make it. It must be fed by the members' enthusiasm in order to survive.

Art Exhibit

An exhibition of paintings, watercolors and collages by Esterina Velardi opens at Gallery North, North Country Road, Setauket, 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.

Milk's Leap To Immortality

Cheese has been called the food that most resembles wine. Like wine, it is a means of preserving an otherwise perishable food. There are innumerable varieties, as there are of wine, and because of differences in grasses and herbs, waters and climate, no two cheeses can be identical if they are made in different places. France has contributed to the world at large such famous and widely-known varieties as Brie, Camembert, and Roquefort, but what of all the others? A rather small cheese shop in Paris listed 160 varieties, ranging alphabetically from Angelot to Vocel, and geographically from Lille to Provence.

With the goal of expanding your interest in and knowledge of cheese (and not necessarily your waistline), the French Group of BNL is sponsoring a cheese tasting, to be presided over by Mr. Ken Dunne, professional *fromager* of Stony Brook and Westhampton. Wine and bread, indispensable accompaniments to cheese, will also be served.

This event will take place at the Rec Hall in the Apartment Area, at 8:30 p.m. on Wednesday, March 27. All members of the BNL community (except mice) are cordially invited; those who are not members of the French Group will be asked for a contribution of \$2.

N.Y. Mets Tickets To Go On Sale

Tickets for the 1974 Mets season, which opens April 9, will go on sale for employees starting Wednesday, March 27, in the Berkner Hall camera shop. They will cost \$4 apiece.

Eight tickets are available for each of the season's 54 days. Of these, 40 will be night games, 13 will fall on a Sunday, and one will be a holiday game. The tickets will be sold in pairs only.

Those people who buy regular season tickets will have first choice of world series and playoff tickets, in the event that the Mets make them. Their names will be put into a common pool from which will be drawn those eligible for these special tickets.

Only the name of the person who picks up the tickets will be placed in the ticket pool. Even though an individual's name will be added to the pool each time he buys a pair of tickets, he can purchase only one pair of playoff and/or world series tickets.

The game schedule will be available at the time of ticket sales.

Bowling News

Grace Fales

Red League

With 7 weeks remaining in the 2nd half, the Neutrons are in first with 64-36, followed by the Sparks 60½-38½. High series for the night went to J. Scesny 235/211/623 scratch. Other highs were: E. Reams 218, J. Petro 211, E. Pluss 200, Roesler 216, R. Nelson 203, R. Adams 213/210, W. Reams 224, P. Klotz 202, R. Wilson 201, and F. Short 217.

Green League

200's for the night: D. Stelmaschuk 213, J. Berech 213, C. Cantera 215, J. Cain 210, S. Kiss 204, B. Belligan 202, H. Marshall 201. With only 6 weeks to go, the Designers hold first place. Can they keep it up this half?

Pink League

What can be said except that Helen Caisey did it again. Rolling a 209 - her third 200 game so far this season. The way she's bowling, there may well be four. Congratulations, Helen! It was also the night for converting splits: Audrey Blake 4-7-9-10 and Grace Searles 4-7-10. High games: Grace Fales 190/507, Audrey Blake 181/512, Renie Rosati 183, Wilma Eriksen 171, Mary German 169, Marge Stoekel 160, and Carol Kerr 171.

Black and Blue League

Highs for 2/27: Roy Marlow 251, Marge Nekerman 194/182/175/551, Ellie Murgatroyd 187, and Pat Lebitski 182. Highs for 3/6: Bob McCluskey 204, Ellie Murgatroyd 200/171/521, Marge Nekerman 194/192/555, Nancy Jesaitis 185, Grace Fales 182, Dot Pollock 161. Ellie Murgatroyd showed her expertise in converting splits; 4-7-10, 6-7-10, plus a variety of smaller ones. High for 3/13: Bob McCluskey 213, Marge Nekerman 203, Ellie Murgatroyd 161/163. Bowling in the 190's, one mark from 200 were: Bill Lebitski (2), Bob McCluskey, Dick Murgatroyd, Bob Rand, and Charlie Tomesch.

Cafeteria Menu

Week Ending March 29, 1974

Monday, March 25	
Cream of Tomato Soup	
Meat Loaf & 1 Veg.	1.00
Beef Ravioli & 1 Veg.	1.00
Tuesday, March 26	
Navy Bean Soup	
Spanish Omelet & French Fries	.95
Curried Lamb on Rice	1.10
Wednesday, March 27	
Beef Barley Broth	
Shrimp Chow Mein on Rice	1.10
Roast Fresh Ham & 1 Veg.	1.10
Thursday, March 28	
Turkey Noodle Soup	
Broiled Chicken Livers & 1 Veg.	1.00
Braised Beef a la Mode & 1 Veg.	1.20
Friday, March 29	
Clam Celery Bisque	
Baked Filet & 1 Veg.	1.05
Spaghetti w/Meat Sauce	.95

Personnel Services

At the Recreation Office

Open Daily 9:00 a.m. to 1:00 p.m.

Stony Brook Events

A variety of concerts, films, lectures and exhibits highlight this week's events at the State University of New York at Stony Brook. Unless otherwise noted, the events are open to the general public without charge.

Music

"Mostly From the Last Decade," a continuing series of contemporary music concerts sponsored by the Music Department, will offer works by Webern, Ialeggio, Xenakis, and Stony Brook faculty member Isaac Nemiroff on March 23 at 8:30 p.m. in Room 105 of the Lecture Center.

On March 24 at 8:30 p.m. in Room 105 of the Lecture Center, the University Chamber Orchestra will perform with Arthur Weisberg conducting.

A student recital will be given on March 25 by James Gburek on the piano with works by Haydn, Brahms, Schoenberg and Chopin at 8:30 p.m. in Room 105 of the Lecture Center.

Ronald Anderson on the trumpet and Alvin Brehm playing the string bass will present an Artist Series concert on March 26 at 8:30 p.m. in Room 105 of the Lecture Center.

A Master of Music degree recital will be given by Daniel Watters on the cello with works by Prokofiev, Shostakovich and Stravinsky on March 27 at 8:30 p.m. in Room 105 of the Lecture Center.

A Baroque and Renaissance Concert featuring Kenneth Wollitz, recorder, Leonard Raver, harpsichord, Judith Davidoff, viola da gamba will be held on March 28 at 8:30 p.m. in Room 105 of the Lecture Center.

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.

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.

Carol Reinfeld will present a Master of Music degree recital on the violin on March 31 at 3:00 p.m. in Room 105 of the Lecture Center.

Films

COCA Spring Movies will show "The Ruling Class" on March 22 and 23 at 7, 9:30 and midnight in Room 100 of the Lecture Center. Admission is \$1 and a limited number of tickets may be purchased at the Stony Brook Union main Desk from 6 p.m. to midnight on the night of the movie.

COCA Sunday Series will show "Loves of a Blonde" at 8 p.m. in Room 100 of the Lecture Center on March 24. Admission is \$.50 and tickets may be purchased at the door.

Tuesday Flicks will show "Walkover" by Jerzy Skolimowski of Poland on March 26 at 8 p.m. in the Stony Brook Union Auditorium.

The Family of Women Film Series will show "Woman's Happy Time Commune" on March 28 from 12:30-1:30 p.m. in the Stony Brook Union Auditorium.

"The Cinema," sponsored by the Center for Continuing Education, will show "Start the Revolution Without Me" at 8:30 p.m. in Room 100 of the Lecture Center on March 28.

COCA Spring Movies will show "The Discreet Charm of Bourgeoisie" on March 29 and 30 at 7, 9:30 and midnight in Room 100 of the Lecture Center. Admission is \$1 and a limited number of tickets may be purchased at the Stony Brook Union Main Desk from 6 p.m. to midnight on the night of the movie.

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

Demonstrations and Exhibits

The University Museum, sponsored by the Anthropology Department, will exhibit "Photographs of a New Guinea People" by J.C. Dark, anthropologist from Southern Illinois University, in Room 142 of the Social Sciences Building from 10 a.m. to 7 p.m. until March 27. The exhibit is on loan from the Smithsonian Institute.

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 from March 22 to April 5 during the hours of 9 a.m. to 5 p.m. daily.

The Roten Galleries of Baltimore will display art work from noon to 9 p.m. in the Stony Brook Union Art Gallery on March 25.

The International Cooking Exchange, sponsored by the Stony Brook Union, will demonstrate the preparing of Cod Fish Cakes (with samples) from 12:30-2:30 p.m., March 26 in the Stony Brook Union Gallery.

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.

Rainy Day Crafts will demonstrate Easter cutouts and see-ins on March 27 from 1-4 p.m. in the Stony Brook Union Main Lounge.

The Department of Theatre Arts' Professional Series will feature Newsday film critic Joe Gelmis speaking "On Film" on March 27 at 4 p.m. in Room 114 of Building B on the South Campus. Refreshments will be served.

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

Classified Advertisements

Each week, the BROOKHAVEN BULLETIN 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 or others whom they wish to recommend to BNL. 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, please contact Supervisor, Personnel Placement and Development, extension 2879 or 2882.

Placement Notices

LABORATORY CUSTODIAN (8) - Plant Engineering. Application deadline: April 3, 1974.

CLERK-TYPIST (1) - Supply & Materiel. Application deadline: April 3, 1974.

STATIONARY ENGINEER, SR. (1) - Plant Engineering. Application deadline: April 3, 1974.

SERGEANT-COMMUNICATIONS - Police Group. Health Physics & Safety Division.

INSTRUMENTATION TECHNICIAN - A.A.S. degree in electronics or equivalent with minimum 3-5 years' strong experience in the repair of a wide range of electronic instrumentation. Scientific Instrumentation Repair Group. Instrumentation Division.

SIGN PAINTER - Plant Engineering Division.

OCCUPATIONAL THERAPIST - New York State License required. Medical Department.

REGISTERED NURSE - Shift assignments. Medical Department.

OFFICE SERVICES ASSISTANT - Medical Department.

SECRETARY - Part-time position. Chemistry Department.

CUSTODIAN - Plant Engineering Division.

COMPUTER SCIENCE ANALYST - Reactor systems programming. Thermal Reactor Division, Department of Applied Science.

Autos & Auto Supplies

65 PONTIAC TEMPEST - 6 cyl, auto trans. \$150. 281-1840 after 4.

70 DODGE CORONET/CHARGER MANUAL - Free to owner of such car. Bernstein, 286-1339.

63 CHEVY WAGON - W/1969-6 cyl eng, low mileage on eng, std trans, good gas mileage. \$250. 363-6597.

MINI BIKE - Suzuki 50 cc, good cond. \$100 or will dicker. 475-9131.

66 CHEVY IMPALA - 4 dr, auto trans, ps, 283 cu in eng 1 yr old. 265-2231 after 7:30.

60 FORD - 2 dr, auto trans, new carb, recent tune-up & valve job, very good running cond, very good body, 20 mpg. \$200. Ext. 3725.

HOLLEY 700 CARB - Dbl pumper, just rebuilt, \$40; Holley 650 spread bore, used 3 times, \$55; 14 & 15" tires, good rubber, \$2 ea. 878-2486.

CUSTOM SEAT - For Honda 350. W. Lundgren, Ext. 3800, 585-3794.

68 DODGE MONACO - 4 dr sedan, white/blk top, auto trans, ps/pb, air cond, immaculate, must see. \$1200. Richie, 924-3553.

69 LAND ROVER - Short wheel base, excel cond. 878-4268.

72 VW - Must sell, 10,900 mi, owner leaving country. \$2000 or make offer. Ext. 2901, 286-3707.

69 TOWN & COUNTRY - Roof rack, ps/pb, air cond, am/fm radio, clean. \$1350. Ext. 5284, 281-8170.

72 PLYMOUTH BARRACUDA - Orig owner, low mileage, pbs, 340 eng. \$2250. Gene, Ext. 4670, 744-3945.

VW SQUAREBACK - Powder blue, std trans, radio, virtually showroom cond. \$1795. 286-9260 eves.

TRAILER HITCH FOR VW - Compl, bolts under frame. \$15. Carol, 924-6258.

1-6.95x14 USED TIRE - Fair cond. \$3. Bill, Ext. 3354.

2 AMER MOTORS RIMS 14" - \$6/pr. Bill, Ext. 3354.

67 CHEVY STATION WAGON - Sm V8, auto trans. \$300. 589-4874 after 6 & weekends.

66 MOTORCYCLE - Sears (Puch), 250 cc, 2 stroke. A.C. Nunes, Ext. 3370.

65 KARMAN GHIA - Great gas mileage, good running cond. \$300. Dave, Ext. 4331.

62 VW - Needs muff. \$125. Rich, 588-5537.

73 OPEL - New Manta, 4 cyl, 4 spd. 289-1647.

62 VW - Good cond, new tires. \$250. 924-8011.

Boats & Marine Supplies

8' WOODEN PRAM - Oars, oarlocks. \$20. Levine, 878-4070.

125 HP CHRYSLER CROWN ENG - New manifold, head & recent valve job, excel cond. A. Wirszyła, 878-0175.

FLYING JR - 13' fiberglass sailboat, Ratsey main & jib, Hard spinnaker, trailer. 744-8623.

Miscellaneous

FISHTANK EQUIPMENT - 1-100w heater; 1 piston pump, needs belt; 3 vibrator pumps; 1 inside filter; all in good to excel cond. Jerry, Ext. 3303 after 4.

ORLON YARN - Will deliver to Lab or pick up at my home, all colors. \$2.50/lb. Ann, Ext. 3143, 732-9384. after 6.

RADIO - FM/AM/SW, by Telefunker, good cond. \$10. Ext. 3792.

BABY THINGS - Stroller, play pen, baby walker, baby swing, infant seat, stair gate. All/\$25. Agrawal, Ext. 3073.

BLK LABRADOR RETRIEVER PUPS - AKC reg. Ruth, 286-0623.

24" BOYS' BICYCLE - 5 spd Sears stingray, very sturdy, speedometer, lights & generator. \$40. Levine, 878-4070.

HEADBOARD & FOOTBOARD - Also frame, walnut, good cond. R. Dee, Ext. 2333.

2 YR OLD MEDITERRANEAN VELVET COUCH - Long, avocado green, matching recliner, apt too small. Both/\$250. Betty, 589-0461 after 5.

GE AIR COND - 10,500 BTU, 2 yrs old, 10 temp settings, excel cond, used 1 1/2 seasons. \$150. Betty, 589-0461 after 5.

RCA 25" COLOR TV & STEREO CONSOLE - Cabinet very good cond, TV needs fine tuner. 585-4040 after 6.

HOTPOINT REFRIG FREEZER - Side-by-side, white, 21 cu ft, excel cond. \$295. 286-1372.

SM REFRIG - Old but works well, \$20 or best offer; set andirons, 20" h, blk w/brass tops, \$10; Romex 8-3 copper, 30' long, new, \$10. P. Sparrow, Ext. 4697, 727-4859 eves.

GIRL'S VANITY TABLE - Good cond. \$10. M. Sparrow, Ext. 4697, 727-4859 eves.

MICROMET FEEDER UNIT - New, & 8 lbs Microcet, \$25; Bilt Rite coach carriage, \$25; playpen, lg crib & matt; single box spring & matt. 289-1647.

LEATHER TOP TABLES - 1 coffee, 2 end. \$50. A. Wirszyła, 878-0175.

MOBILE HOME IN FLORIDA - 1972, 72x72, 3 bedrms, 2 full baths, lived in 6 mos, unfurn. \$5500. 878-2486.

KENMORE WASHER - Compl rebuilt, 2 spd, 3 cycle, water level & temp switch. \$75. 878-2486.

LINOLEUM - 8 1/2x5 1/2, lt green marble pattern, \$5; liv rm couch, framed in hardwood, Duncan Phyfe legs, needs recovering, \$35. 281-7844.

NYLON PLUSH RUG - Taupe, 11'x18', never used. \$325. 286-2255.

WOMAN'S 10 SPD BIKE - Excel cond, center lift brakes, 21" frame. Pam, 286-0428.

BATHRM SLIDING MIRRORS - Tracks & side frames by Miami-Carey, still in cartons, for wall opening 59 1/2x37 1/2. Borg, 286-0428.

3 WOOD WINDOW VALANCES - 2'48", 1-51", \$10; wardrobe trunk, \$20; tweed stair runner, \$15; GE hair dryer, \$10. Borg, 286-0428.

2 AUTHENTIC SCHOOL RM DESKS - W/attached seat, adjustable hgt, hinged maple top opens to storage compartment. \$15 ea. R. Monaghan, Ext. 4824/4688.

CROWN TELEPHONE ANSWERING MACHINE - W/cassette tape recorder, \$60 firm; Olympic stereo console 18w, 3 spd record changer, new cartridge, \$35. Ken, Ext. 4003.

KUSTOM 150 AMP - W/2-12" spkrs, 1 yr old, \$250; Saint George amp, 75w, w/tremolo & reverb, \$70. Ray, 878-2486.

COAT - Dressy winter, size 16, beige, \$30; slacks, 30W-30L, \$4; jackets, size 12-20, \$4-5; bureau, birds-eye maple w/mirror, antique, \$35. A. Munsterman, 744-5871.

BLK PERSIAN LAMB COAT - W/mink shawl collar, size 10-12, exceptional value. \$175. M. Smith, Ext. 4622.

SEARS ELEC SCISSORS - 3 spd, like new, in orig case. \$10. Claire, Ext. 2346, 281-8306 after 5:30.

NECCHI SEWING MACHINE - Table model, all attachments, good cond. \$100. 475-4875.

CLAM RAKES - 20 tooth bubble, 4 1/2" teeth, \$20; 20 tooth bubble, 3" teeth, \$15; both excel cond. 286-9485.

TRAVEL STEAM IRON - GE, excel cond. \$10. 286-3742.

ELEC CARVING KNIFE - New, never used. \$10. 286-3742.

MATTRESS - Twin size, new Stearns & Foster super firm, excel for back problems; Guitar, Gretsch elec, Old Country Gentlemen hollow body model; Premier reverb for guitar. Rich, Ext. 4172.

SIAMESE KITTENS - Male & female, 7 wks old. Olness, Ext. 4581, 751-2655.

ARVIN COMPACT SYSTEM - Am/fm rcvr, 8 track tape player, bought Oct. '73, new spkrs. Asking \$40. Igor, Ext. 4343.

COMBO ALUM STORM DOOR - 2'6"x6'8". \$15. 924-3236.

8' PICKUP CAMPER - 1973 model by Coachman, compl equipped w/pwr converter, wt 900 lbs. \$1075. Dave, Ext. 3762, 698-0549.

CAMERA - 35 mm range finder Kiev camera w/35 mm & 50 mm lenses & variable accessory viewfinder. Corliss, Ext. 4376/4438.

CAMERA - Exakta Varex Ila body w/waist viewer, Angenieux 35 mm F2.5 lens, Exakta mount (lens needs work). Corliss, Ext. 4376/4438.

MAGNAVOX 21" TABLE MODEL B/W TV - Good cond. \$25. Corliss, Ext. 4376/4438.

ANTIQUA CHINA CLOSET - & asstd contents; dbl bed; lg antique table. 757-7467.

UNUSED MATERNITY CLOTHES - Size 9/10, blouse, slip, stretch shorts, \$2 ea; 2 white tops, \$3 ea; dbl knit slacks, stretch slacks, \$4 ea. Carol, 924-6258.

ADJUSTABLE TRAVERSE RODS - 1-84" to 150", \$3; 2-48" to 84", \$2 ea; 2-30" to 48", \$1 ea; curtain rod, 28" to 48", 25¢. 924-6258.

HAIR DRYER - \$5; elec manicure, \$1; lighted (one-way only) makeup mirror, \$1; Remington cord/cordless shaver (needs repair), \$1. Carol, 924-6258.

BISSELL ELEC SWEEPMASTER - \$6; toaster, \$2; lg mirror, about 24x36, \$2; 3 pc stainless steel mixing bowl set, \$1. Carol, 924-6258.

CHILD'S TABLE & CHAIR - \$2; acoustic-type phono, no needles, \$1; Taylor Tot, \$2; baby scales, \$2; used busybox, 25¢. Carol, 924-6258.

OUTDOOR SPOT LIGHTS - Incl spot bulbs, w/2 extra bulbs; Christmas indoor/outdoor lights, 16 lights/set; must sell-moving. M. Weinmann, Ext. 2313, 744-2004 after 5.

AQUARIUMS - 2-10 gal, access, excel cond. 475-2025.

FIBERGLASS DRAPES - New, white, size 48x54; gold 48x45; melon, fully lined 48x84; all new. M. Weinmann, Ext. 2313, 744-2004 after 5.

SPRAY GUN - For auto, home or garden use, attaches to garden hose; auto telephone index & list finder, new. M. Weinmann, Ext. 2313, 744-2004 after 5.

INFANT SEAT - \$1; outdoor/travel bed, \$1; 2 new infant stretch sleepers, 50¢ ea; tot's toilet seat, 50¢. Carol, 924-6258.

CRIB - W/matt, & chest, painted to match, \$10 ea, both/\$15; playpen, \$3; high chair, no tray, \$2. Carol, 924-6258.

50' UTILITY FENCING - Redwood stain, 3' h, \$6; 150' rolls hex net fencing 2' h, 1 roll used, \$3; 2 rolls unused, \$4 ea. Carol, 924-6258.

OLEFIN INDOOR/OUTDOOR RUGS - Brown/gold 9x12, \$10; green/gold 9x12, \$10; blue/green 12x15, \$12; nylon rug, red/blk 12x15, \$15. Carol, 924-6258.

Classified Ad Policy

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

1. The Brookhaven Bulletin's classified section may be used only by active and retired Laboratory employees.
2. All items for sale or rent must be the advertiser's property.
3. Ads for material acquired for resale in association with a full or part-time business cannot be accepted.
4. Firearms offered for sale or trade may not be brought on site.
5. Ads not carried because of space restrictions will be held for publication in the next issue.
6. Ads are run only once and must be resubmitted if they are to be repeated.
7. Ads should be restricted to 20 words or less and typed or printed on the form provided, and must bear the employees signature.

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|--|---------------------------------------|
| <input type="checkbox"/> For Sale: Auto & Auto Supplies | <input type="checkbox"/> Wanted |
| <input type="checkbox"/> For Sale: Boats & Marine Supplies | <input type="checkbox"/> Carpools |
| <input type="checkbox"/> For Sale: Miscellaneous | <input type="checkbox"/> Lost & Found |
| | <input type="checkbox"/> 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.

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(Name & Phone No. To Call)

Employee's Signature Life No. Ext.

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

SUMMER RENTAL - Fully furn 2 bedrm house, priv beach on LI Sound, weekly or monthly. 473-6815, 928-0297.

Wanted

WOOD LATHE - W/motor & tools for beginner. Ext. 4203, 751-0835.

FOLD-A-WAY CHAIRS - Good cond, cheap, need about 6-10. Pauline, Ext. 3155, 289-6092.

DORY OR DORY SKIFF - W/well for outboard motor, 14-17' long. 744-5724.

USED 6-8' DINGHY - Ext. 3332.

BOAT - Any kind, any cond, for 18 yr old boy, must be reasonable. Paul, 744-3807.

BIKE PARTS - For 20" spider bike. Warner, Ext. 2418, 475-7025.

ORIENTAL RUGS - Scatter or room size, any cond. Borg, 286-0428.

PIANO - Sm upright. Saxon, Ext. 3435.

HOME - For 2 1/2 male Dalmation, papers. V. May, Ext. 2902, 744-8765 after 6.

HOUSE SITTER - For 1-1 1/2 mos beginning latter part of May. 286-3742.

APT FOR MATURE WOMAN - 2 to 3 1/2 rms, near transportation facilities, Patchogue-Medford area preferred. 757-7467.

APT - 2 bedrms, near Lab & Expwy, no brokers. Rich, Ext. 4172.

HOME - For 2 female mix pups, 14 wks old, good w/ children, house broken, med sized. Skalyo, 281-8165.

RIMS - 2-13", 4 hole, to fit Pinto, Bob, Ext. 4551.

FREEZER - Used, good operating cond, 10-15 cu ft, preferably upright & w/o auto defrost. Walter, Ext. 3766, 286-2558.

15" CHEVY RIM - Claire, Ext. 2346, 281-8306 after 5:30.

Carpools

WISH TO JOIN OR START CARPOOL - From Birchwood Glen Apts/Sunwave Mall area. Harris, Ext. 2419.

Services

CHAIN LINK & WOOD FENCE - Buy direct from installer & save. Russ, 744-8787 after 6.

TYPING - Term papers, manuscripts, etc. Claire, Ext. 2346, 281-8306 after 5:30.

TAXPAYERS - Federal & State income tax forms prepared in the privacy of your home or mine. 475-8330.

TREE REMOVAL & CHAIN SAW WORK - Experienced, free estimates. Ken, 289-8212 eves.

LOWEST PRICE FOR CLEAN UPS - \$15 full truckload, have truck, will haul. Paul, 744-3807.

BOAT KEYS LOST? - Keys made by code number, Johnson-Evinrude-Mercury, no orig necessary. Charlie, Ext. 2957, 744-3312.

FISHERMEN - Do you want your catch deliciously smoked? 744-9411 after 5:30.

OAK FIREPLACE LOGS - Unseasoned only. Ken, 289-8212 eves.

TENNIS CLASSES - Registration now open for spring instruction, class size 5, 8 wks, 10 hrs, Shoreham. \$40. 744-1906, 5-10 pm.

ROTOTILLING - South Brookhaven area. 286-3377 after 6.

INCOME TAXES - Prepared by experienced knowledgeable professionals, honestly interpreted w/maximum return assured. 924-3236, 924-6408.

ORGAN LESSONS - Experienced teacher, beginners & advanced, your home. Wilma Jo, 924-3236.

TENNIS CLASSES - Registration now open for summer children's instruction, 5 yrs & up, July & Aug, Shoreham. 744-1906, 5-10 pm.