

U.S. and Soviet Scientists Join in Sea Study Pelmeni and Pizza Exchanged, Too

Dockside at Dutch Harbor, Alaska, at the end of July, Pizza Hut prepared 218 pizzas to go aboard the U.S.S.R. research vessel *Akademik Korolev* to feed 30 Soviet scientists, 100 Russian crew members and 16 U.S. oceanographers, including BNL oceanographer Terry Whitledge and oceanography associate Denise Veidt. They were included in the farewell pizza party as members of the Second Soviet-American Expedition in the Bering Sea, the first oceanographic cruise made by Americans on a Soviet vessel since 1977.

Studying the Bering Sea

The principal objective of the joint expedition was to determine any non-natural changes in the structure and functioning of the organisms and environment of the Bering Sea. "The Soviets are interested in monitoring pollution in the Bering Sea because a lot of petroleum exploration is occurring there," explains Whitledge, "and I believe they are thinking of exploring their side of the sea. The Soviets want to know what to expect if an oil spill occurs."

"Degradation of petroleum in sea water is highly dependent upon microorganisms," Whitledge continues, "but the water is so cold in the Bering Sea that it slows down the rates at which the bacterial population processes petroleum and its by-products. The Soviets say the degradation rates may be as slow as 10% of the rates in warmer waters. So if an oil spill happened accidentally, the oil would remain in the Bering Sea for perhaps 10 to 20 months instead of one to two months."

U.S./Soviet Agreement

U.S. scientists participated in this oceanographic adventure as a result of a 1972 bilateral environmental protection agreement which provided for

joint Bering Sea ecosystem studies. After renewing the bilateral agreement, the Fish & Wildlife Service of the U.S. Department of Interior and their Soviet counterparts met last March in the Soviet Union to arrange the second joint Bering Sea expedition.

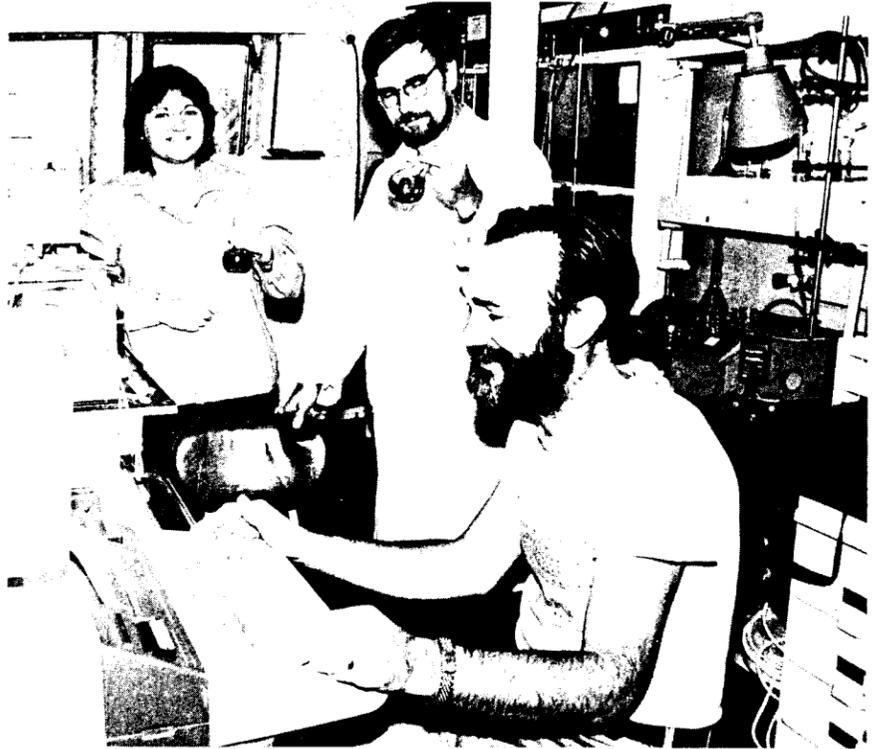
"When I was offered one of the 16 American spots on this 36-day cruise, I took only half an hour to decide to go," says Whitledge. "It was a unique opportunity because we were able to gather data along the Soviet side of the Bering Sea, water in which our American ships cannot sail, for a new project we had just started."

Tracing Nutrients

"Our new project concerns nutrients which are used to produce organic matter," explains Whitledge. "These nutrients are released in June by the Yukon River, taken up by the phytoplankton, carried through the Bering Straits and deposited on the bottom of the lower Chukchi Sea. On the Atlantic coast, it is very difficult to follow the process from the time the nutrients are released in the water until the time the phytoplankton decompose in the sediment because the depth of the water where settling occurs is between 300 and 1,000 meters deep. But in the Bering Sea, it is much easier to investigate because it is shallow shelf water, between 30 and 50 meters deep."

"We are interested in studying the nutrient input from the Soviet side that goes through the Bering Straits," continues Whitledge. "This cruise was useful because we are now able to define the nutrient concentrations of the other side. We got stations on the Soviet coast which we wouldn't have been able to get otherwise."

From Dutch Harbor, an oil and fishing village in the middle of the chain of Aleutian Islands, the ship headed



BNL oceanography associate Denise Veidt (left), Soviet microbiologist Vassily Kudryavtsev and BNL oceanographer Terry Whitledge collaborate on an organic decomposition experiment. Veidt stands to the right of the auto analyzer, and Whitledge is seated before the computer that controls it.

west to four research stations in the open ocean. The *Akademik Korolev* then sailed north-east to four more stations on the slope of the eastern Bering Sea shelf. From there, the research vessel cruised north toward the Bering Strait and the third polygon of stations on the northern Bering Sea shelf. Next, it traveled southwest to stations along the western Bering Sea shelf's edge near Kamchatka and then south-east to the first polygon before completing its voyage back at Dutch Harbor.

At each polygon of stations, biological, chemical and physical base-line data were collected to establish a profile of the Bering Sea and assess its relative ecological health. As their specialty is sea water chemistry, Whitledge and Veidt analyzed 600 samples to determine the concentrations of nutrients available to microscopic floating plants living at different levels in the water at the polygons in the Bering Sea.

Using a computer-controlled auto analyzer, Whitledge worked 18 hours a day in one of the six working groups looking for nitrogen, phosphorus and silica, compounds vital for plant growth. "Diatoms, the most common microscopic floating plants in the Bering Sea during the spring bloom, require silica in the form of silicon dioxide to build their shell, a glass house that acts as their skeleton."

As well, Whitledge collaborated

with three Soviet microbiologists on organic matter degradation studies, trace metal experiments and ammonium production research. "They know a lot of the microbiology involved in the nutrient recycling processes in which I'm interested that was very helpful," says Whitledge. "It is best to investigate the Soviet waters with them because they have insights into the area and because we don't have the experience there."

An Exchange of Cuisine

During the cruise, the Americans experienced a Russian treat: pelmeni, meat wrapped in a soft dough and cooked in broth. In return, the Americans offered to provide the Soviets pizza for their last meal together.

The U.S. Fish & Wildlife Service arranged the pizza and beer bash through Pizza Hut, a Kansas-based restaurant chain, which picked up the tab. "About a week before we were due in Dutch Harbor, the ship's captain was asked over the radio if he would permit the pizza party on board upon our arrival," says Whitledge. "The captain was concerned because the galley was so small, and he was afraid that the party would take over the ship. After thinking about it for three days and consulting with some of the Americans, including myself, he granted Pizza Hut permission to go ahead on the dock."

Pizza Hut flew eight uniformed res-
(Continued on page 2)

BNL Lecture A Tale of Two Bosons

Last year, the intermediate vector bosons, W^+ and Z^0 were "discovered." Their existence had long been anticipated by theory, nevertheless, experimental proof of their reality (by actually creating them with a high energy



William Marciano

accelerator) has been heralded as one of the great scientific discoveries of the 20th century. Why?

Physicist William Marciano will answer this question in the next Brookhaven Lecture, "A Tale of Two Bosons," on Wednesday, September 19, at 4:30 p.m. in Berkner Hall.

According to Marciano, in modern day theories, the W^+ and Z^0 are as

fundamental as the photon. "Their discovery confirms the unification of weak and electromagnetic interactions and sets the stage for what we hope will be an even more exciting chapter in elementary particle physics," he says.

He will survey the role of the W^+ and Z^0 in unified theories and describe the ingenious experiments that led to their discovery at CERN. Marciano will mention some, as yet, unexplained surprises found in these experiments, along with speculations about their origin. And, finally, he will attempt to predict future advances in elementary particle physics.

William Marciano came to BNL on September 1, 1981 from Northwestern University where he had been an Associate Professor. He spent six years at The Rockefeller University, first, as a Research Associate and, then, as an Assistant Professor. He has held various visiting appointments at Brookhaven and at other national laboratories. Marciano received his Ph.D. in physics from New York University in 1974.

All those interested in getting together after the lecture are invited to go with the lecturer to a restaurant off-site. If you want to be part of this group, call George Rabinowitz, Ext. 7637.



The U.S.S.R. research vessel *Akademik Korolev* is docked in Dutch Harbor, Alaska, as oceanographic equipment is loaded on board.

New Counselor In Employee Relations

Susan Foster has been appointed Employee Relations Counselor effective September 1. In this capacity, she succeeds Janet Whitehead, who left the Laboratory last spring. Foster



Susan Foster

will assist all non-bargaining unit employees with work-related problems which they have not been able to solve through the supervisory network in their departments, or which they wish to take directly to Personnel. She can be reached on Ext. 2888, or by writing her at Bldg. 185. For those who prefer

it, she would be happy to arrange a meeting elsewhere than at Personnel.

Foster has been with the Personnel Division since 1977, and has worked on student programs, employee recruitment and placement. She looks forward to her new job and says she hopes to provide "prompt and fair solutions" to the problems presented her.

The Employee Relations Counselor is just one of the channels through which employees may air and resolve their grievances:

- Employee Relations Committee: reviews work-related problems presented to them directly by the employee, or referred by the Counselor. Edward McFadden, Ext. 4188, is the chairman.
- Affirmative Action Office: responds to employees' equal opportunity concerns. Earl Blanton, Ext. 3318, is manager of the Office.
- Women's Program Coordinator: deals with the particular employment concerns of women. Coordinator is Gail Williams, Ext. 3338.
- Tune In: Letters to the editor of the Bulletin whereby employees may anonymously question Laboratory policies or practices. Boxes containing Tune-In forms are located in the major buildings, and the forms may also be obtained from Public Relations, Ext. 2345.

Sea Study

(Continued)

restaurant employees from Seattle, a 1,000 pound pizza oven on wheels with a propane tank, 250 pounds of flour, 15 gallons of sauce, 100 pounds of mozzarella cheese, 150 pounds of pork, beef, pepperoni and sausage, 25 pounds each of onions and green peppers, 15 pounds of mushrooms, and 40 cases of soft drinks and beer.

"The deep-dish pizzas were popped in one side of the oven and they came out cooked on the other," reports Whitledge. "Since the Russians were not permitted to leave the ship, some of the U.S. scientists served as pizza couriers. Pizza Hut donated the extra pizzas to the 300 to 400 townspeople of Dutch Harbor who came down to the dock to sing and dance to the local rock band.

"During the party, the Olympics were on TV," adds Whitledge, "and the Russians were very interested in the games and expressed disappointment that they weren't there. I said to one scientist, 'It's too bad you didn't come to the LA games.' He replied, 'Well, you guys didn't come in 1980.' All I could say then was, 'Enough said.'"

The joint expedition was so successful that the participants recommended the planning of a third Soviet-American expedition. During the second half of 1985, the Americans have invited some of the Soviets to the U.S. to discuss the results of the cruise and to discuss publishing a compendium of the analysis of the expedition research.

—Marsha Belford



The emblem designed by one of the Soviet oceanographers for the cover of the joint expedition's protocol.

Reports Available

The following reports are now available to the Laboratory staff and to affiliates of the DOE, AUI and NRC. Others may purchase the reports from the National Technical Information Service, U.S. Dept. of Commerce, 5285 Port Royal Rd., Springfield, VA 22161. Staff members should call Ext. 5068.

NUREG/CR-2331
BNL-NUREG-51454
Vol. 3, No. 3

Safety Research Programs Sponsored by Office of Nuclear Regulatory Research. Quarterly Progress Report July 1 - Sept. 30, 1983. A.J. Weiss, et al

NUREG/CR-3518
BNL-NUREG-51716
Vol. 1

SLIM-MAUD: An Approach to Assessing Human Error Probabilities Using Structured Expert Judgement. Vol. I: Overview of SLIM-MAUD. D.E. Embrey, P. Humphreys, E.A. Rosa, B. Kirwan, K. Rea

NUREG/CR-3641
BNL-NUREG-51740
Reliability Assessment of Indian Point Unit 3 Containment Structure. J. Kawakami, H. Hwang, M.T. Chang, M. Reich

BNL-51747
Chemical/Hydrogen Energy Systems - Annual Report Jan. 1, 1983-Dec. 31, 1983. A. Mezzina, et al

BNL-51755
The 1983 Breeding Bird Censuses and Summary of 1977-1983 Results. G.S. Raynor

BNL-51756
Waste Form Development Program Annual Report Oct. 1982 - Sept. 1983. P. Colombo, P.D. Kalb, M. Fuhrmann, G. Arnold, R. Doty

BNL-51745
Biological Effects Summary Report: Polyethylene Glycol. B.D. Silverstein, et al.

NUREG/CR-3529
BNL-NUREG-51721
Review of the Arkansas Nuclear One Generating Station Unit No. 1 Emergency Feedwater System Reliability Analysis. R. Youngblood, I.A. Papazoglou.

BNL-51728
Vols. I & II
Proceedings of the Conference on High Temperature Solid Oxide Electrolytes. Aug. 16-17, 1983. Vol. I Anion Conductors; Vol. II Cation Conductors. Compiled by F.J. Salzano.

Equipment Demo

Exxon Office Systems Company will be in the lobby of Berkner Hall on September 20 from 11 a.m. to 2 p.m. They will be demonstrating office automated equipment, specifically information processors with ink jet printer technology, facsimile and the expanded capabilities of the QYX Intelligent Typewriter.

Cafeteria Menu Week Ending September 21

Monday, September 17	
Cream of mushroom soup	(cup) .65 (bowl) .85
Beef Stroganoff over noodles	2.10
Fish Newburg on rice	2.05
Hot Deli: Pastrami	(bread) 2.00 (roll) 2.15
Tuesday, September 18	
Beef barley soup	(cup) .65 (bowl) .85
Oven baked chicken quarters w/1 veg. & mushroom sauce	2.00
Oven baked chicken half & 1 veg.	2.90
Ham & noodles au gratin w/1 veg.	1.95
Hot Deli: Beef & bean burrito	1.95
Wednesday, September 19	
Canadian cheese chowder	(cup) .65 (bowl) .85
Beef & broccoli stir fry on rice pilaf	2.00
BBQ spare ribs & 1 veg.	2.00
Hot Deli: Chicken patty club	(bread) 2.15 (roll) 2.30
Thursday, September 20	
Minestrone soup	(cup) .65 (bowl) .85
Beef liver & onions w/1 veg.	1.90
Pork chow mein on rice	1.95
Hot Deli: Swedish meatball hero	2.00
Friday, September 21	
Seafood chowder	(cup) .65 (bowl) .85
Western style chili on rice	2.00
Tuna noodle casserole & 1/veg.	1.95
Hot Deli: Top round of beef	(bread) 2.00 (roll) 2.15

Stony Brook Events

Concert: September 16, 3 p.m., Recital Hall. Carnatic Music Association presents Mr. U. Srinivas, on the mandolin, in a performance of Indian music.

Lecture: September 18, 4:15 p.m., William Higinbotham, BNL, "Nuclear Proliferation and Terrorism." Graduate Physics Lab., S240.

Concert: September 22, 8 p.m. Main Stage. Guarneri String Quartet with Lydia Artymiw, piano. Tickets \$11, \$13, \$15.

Learn English

A course on "English as a Second Language," is being offered at the Laboratory to employees and guests and their immediate families. This program is designed for adults who wish instruction in conversational English as well as in reading and writing the language. There is no charge for the course.

Classes are held in the Recreation Building in the apartment area on Monday evenings from 7 to 8:30 p.m. for beginners, and from 8:30 to 10 p.m. for intermediate students.

If you are interested in attending, please report to the Recreation Building at the appropriate time. Any questions should be directed to the Personnel Office, Ext. 7631.

MICOM Meeting

The next meeting of the MICOM Users Group will be for new users on Wednesday, September 19 at 2 p.m. in Room 2-160 of the Physics Department (Bldg. 510A). MICOM representative Ruth Stannish will be present, and the topic will be keystroke memory and merging. For experienced users, at 3 p.m., the topic will be communications. Stannish will also give a demonstration on talking to another MICOM and the VAX computer. For further information, call Isabelle Harry, Ext. 3727, or June Martino, Ext. 2933.

Correction

In the story last week "Practice School on Practical Problems," Richard Sapienza was incorrectly identified as Richard Shapiro. We regret the error.

Postal Note

Anyone who purchased a money order at the U.S. Post Office on site either Friday, September 7, or Monday, September 10, please call the post office at Ext. 2539.

Consumer Alert

Because of a potential fire hazard, approximately 102,000 "Patton" and "Sears" portable electric heaters have been recalled by Patton Electric Company. The recalled units, sold at Sears and other retail outlets between August 1983 and March 1984, are: "Patton Heater Plus Fan," model HF-10, and "Sears Heater Plus Fan," model 201-7208, and bear the words "Made In Hong Kong." The company believes the potential fire hazard is related to its sliding type switch assembly and not to the heater itself. Under the recall program, Patton Electric will modify and upgrade all suspect model heaters with a rotary dial switch, which has been proven on other models. Consumers are urged to stop using the heaters and to unplug them from electrical outlets. Instructions for returning the heater to Patton for replacement at no cost are available by calling Patton at 1-800-528-6600. The Consumer Product Safety Commission also provides information concerning the recall at 800-638-CPSC.

Volleyball

Interested in playing volleyball? Call Susan Carlsen, Ext. 4267, for a team roster. They must be mailed to Bob Marascia, 911B, by September 21.

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Are You Up To Par?

New Exercise Trail Opens To Employees

Though it may resemble an obstacle course from the days of Camp Upton, the Lab's new Parcourse Fitness Circuit provides more scientifically-sound exercise and is a lot more fun to use. On Wednesday, September 19, at 5:15 p.m., at the Parcourse entrance, employees are invited to a brief dedication ceremony. Afterwards, all are invited for an inaugural walk, jog or run around the Parcourse trail. The rain date is Thursday, September 20, at 5:15 p.m.

The BNL Parcourse Fitness Circuit consists of a series of 18 exercise stations set up on a 1.57 mile serpentine trail in a pine woods off Upton Road (see map). It loops through the woods so that no station is too far a walk back to the entrance, allowing those who workout at lunch to complete as many stations as they can in the time allowed yet not be stranded on the course when their time is up.

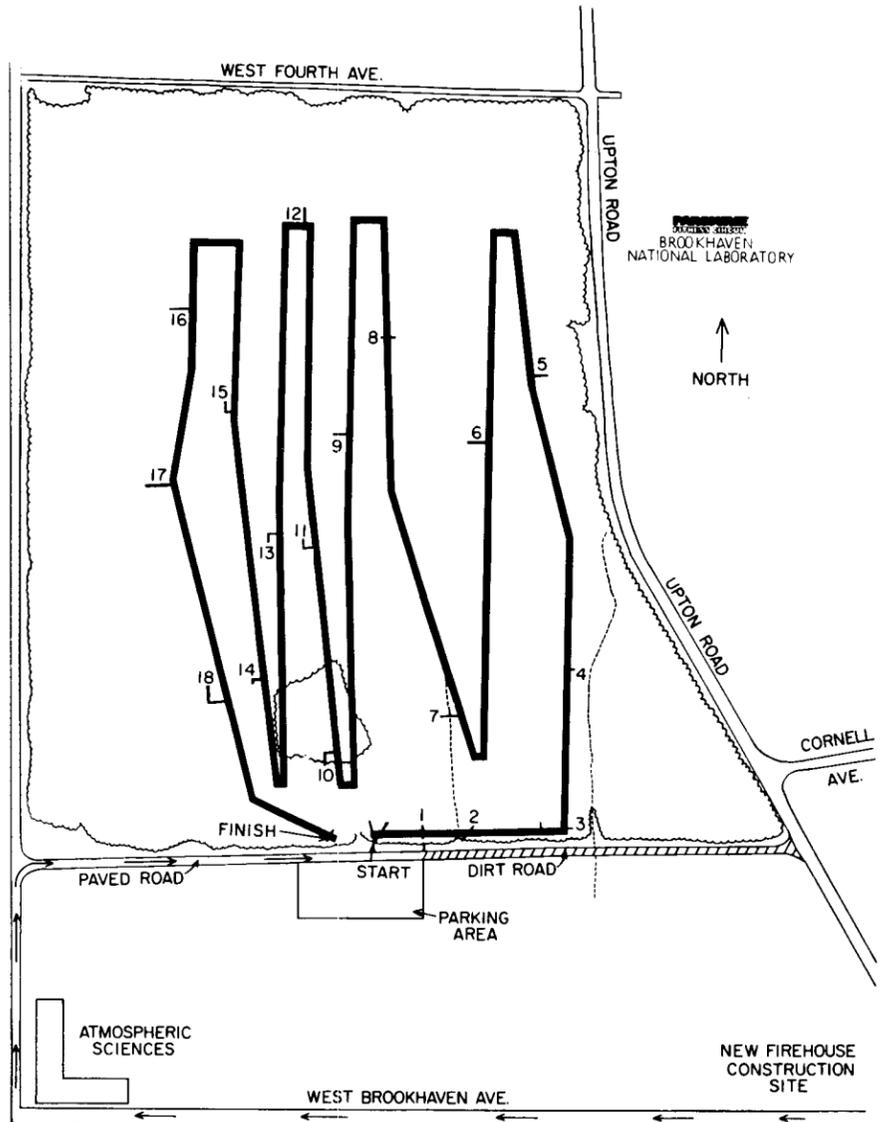
The 18 stops on the exercise trail have illustrated signs with instructions on how to perform the calisthenic movements. As well, the instructional panels suggest the number of repetitions for the calisthenics depending upon your fitness level.

The exercises include Achilles stretch, toe touching, log hopping, hop kicking, sit-ups, push-ups, leg stretching and balancing on a beam. Each of fourteen stations has a piece of apparatus on which to perform the prescribed exercise. The equipment is designed to accommodate all regardless of ability or size.

The different stations of the Parcourse Fitness Circuit are designed to exercise specific muscle groups. As you work at each stop and move from station to station at a run, jog or walk, you are exercising in a prescribed sequence of difficulty. First, you warm up by stretching your muscles, then you strengthen your muscles as you improve your cardiovascular conditioning, and finally you stretch again to cool down.

The stretching exercises are designed to relieve muscular tightness and improve joint flexibility. The strengthening exercises have been selected to tone and firm all the major muscle groups.

Cardiovascular conditioning comes as a result of following the Parcourse Heart Check system. At the start of the Parcourse Fitness Circuit, a sign explains how to use your pulse as a guide to safe and effective exercise, and tells how the frequency and intensity of exercise plus the amount of time spent exercising add up to cardiac conditioning. At each of the five



Map of Parcourse Fitness Circuit's location on site, and the 18 exercise stations' placement on the trail. The stations are: 1. Achilles Stretch, 2. Sit & Reach, 3. Touch Toes, 4. Knee Lift, 5. Jumping Jacks, 6. Log Hop, 7. Step-Up, 8. Circle Body, 9. Body Curl, 10. Chin Up, 11. Hop Kick, 12. Vault Bar, 13. Sit-Up, 14. Push-Up, 15. Bench Leg Raise, 16. Hand Walk, 17. Leg-Stretch, 18. Balance Beam.

Heart Check stops, you will pause briefly to check your pulse to be sure you are exercising at a pace right for your current level of fitness.

The fitness trail idea originated in Scandinavia, was made popular in Switzerland, and brought to the U.S. in 1973. Gus Prince, Department of Nuclear Energy and a member of the BNL Roadrunners, became familiar with exercise circuits while he attended a meeting in Sweden. "For several years, I have thought it would be nice if a fitness trail existed at the Lab as an alternative exercise facility," says Prince. "The Parcourse Circuit provides self-guided exercise and a complete workout for the entire body." As Prince points out, exercise courses exist at Los Alamos and Lawrence Livermore National Laboratories.

Prince's idea was endorsed by Occupational Medicine Clinic director Laura Sbarra. "Many of our employees have said to me that they feel foolish running down the street or doing calisthenics on the lawn outside their office," says Sbarra. "An exercise circuit will permit these employees to participate in walking or jogging, and in a stretching, strengthening and conditioning program as well."

When the Laboratory approved Prince's request to buy and install a fitness trail on-site, the BERA Board asked Prince, Sbarra, Mickey Haller of Contracts & Procurement and Ken Sutter of DAS to find a place for it. The fitness trail site had to be convenient for most employees, in the shade, have a parking area, and left undisturbed by the construction and use of the course.

After Associate Director of Administration Vincent O'Leary agreed to their site choice and senior buyer Andrew Feldman purchased the Par-

course system, general supervisor of roads & grounds Roy Barone coordinated the installation. Surveyor Ralph McDowall and assistant surveyor James DeSantis laid out the course in such a way that no trees would have to be removed.

Grounds workers cleared the trail through the woods, supervised by grounds & sanitation supervisor Tage Carlsson. Carpenter Richard Geib and apprentice carpenter Anthony Calligeros Jr. assembled the prefabricated pieces of the apparatus. Mason Earle Dickerson installed the 18 stations, assisted by building & grounds worker Tom Hanlon and driver Tom Crews.

According to Sbarra, employees who should receive clearance from their physician prior to embarking on a strenuous exercise program include those over 40 years with a family history of heart attack, chest pain or sudden death of one or more relatives under 65. Others who should consult their doctor are cigarette smokers; those with high blood pressure or high blood fat levels; employees 30% or more above their ideal body weight; people with undiagnosed chest or leg pains, shortness of breath or dizziness; and those having arthritis and other musculoskeletal problems.

"Doing the Parcourse program on a regular basis, as prescribed, will strengthen the muscles of the heart and improve its capacity to pump oxygen to the rest of the body," Sbarra explains. "Added benefits include enhanced weight control, stress reduction, and a sense of mastery and well-being."

At the official opening of the Parcourse Fitness Circuit, those who go out on the course will be provided with refreshments.

— Marsha Belford

Islanders Tickets

Tickets for the New York Islanders pre-season exhibition games are now on sale at the BERA Sales Office in Berkner Hall. The eight tickets for each of the four games (see below) are being sold to employees at a special reduced cost of two for \$27, a saving of \$10.

Schedule:

Tuesday, Sept. 25 New York
Saturday, Sept. 29 Boston
Wednesday, Oct. 3 Philadelphia
Sunday, Oct. 7 Buffalo

The opening sale date for regular season tickets will be announced in the Bulletin within the next three weeks.

Aerobic Dance

If you want to continue your summertime level of exercise throughout the winter, the Aerobic Dance Club may have just the thing—a regular program of Aerobic Dance and/or Stretchercise.

All classes in the 10-week fall session are in the North Room of the Brookhaven Center and run from 5:15 to 6:15 p.m. Registration will precede the first classes, and full payment is due at that time.

Aerobic Dance classes will meet on Tuesdays and Thursdays, beginning September 18. The fee for the 20-lesson session is \$60. The 10-class Stretchercise session will meet on Wednesdays and will cost \$30. The first class is scheduled for September 19.

Participation in the activities of the Aerobic Dance Club is open to any eligible BERA member age 18 or over. For more information call president Helga Pirozzi, Ext. 2384; secretary/-treasurer Marty Heine, Ext 3563; or instructor, Linda Sandberg, 689-8740.

Singles Club

The club will sponsor a softball game on Sunday, September 23 at 2 p.m. on Field #1 — gals vs. guys. Everyone is welcome, couples and singles. Bring your mitt and enthusiasm. Raindate, September 30.



Mickey Haller (left), Gus Prince (center) and Laura Sbarra midcourse on BNL's Parcourse Fitness Circuit.

Classified Advertisements

Placement Notices

The Laboratory's placement policy is to select the best-qualified candidate for an available position, with consideration given to candidates in the following order of priority: (1) present employees within the department, with preference to those within the immediate work group; (2) present employees within the Laboratory as a whole; and (3) outside applicants. In keeping with the Affirmative Action plan, selection decisions are made without regard to age, race, color, religion, national origin, sex, handicap or veteran status.

Each week, the Personnel Office lists new personnel placement requisitions. The purpose of these listings is, first, to provide open placement information on all non-scientific staff positions; second, to give employees an opportunity to request consideration for themselves through Personnel; and, finally, for general recruiting purposes. Because of the priority preference policy stated above, each listing does not necessarily represent an opportunity for all candidates. As a guide to readers, the listings are grouped according to the anticipated area of recruitment.

Except when operational needs require otherwise, positions will remain open for one week following publication date.

For further information regarding a placement listing, contact the Personnel Placement Supervisor, Ext. 2882.

LABORATORY RECRUITMENT - Opportunities for Laboratory employees only.

2106. SENIOR ADMINISTRATIVE POSITION - Requires a bachelor's degree, MBA desirable. Responsibilities will include assisting in the management of the Laboratory's construction program, coordination of responses to AUI/DOE/GAO audits and appraisals as well as conducting other Ad Hoc studies, investigations and assignments. Demonstrated ability to function with a high level of independence in addition to excellent analytical skills are necessary. Director's Office.

2107. SECRETARIAL/ADMINISTRATIVE POSITION - Requires extensive knowledge of Laboratory procedures and proven ability to perform diverse administrative and technical secretarial duties. Will coordinate conferences, make domestic and foreign travel arrangements and handle budgetary matters. Stenography skills are necessary. The ability to function independently is required. Director's Office.

OPEN RECRUITMENT - Opportunities for Laboratory employees and outside applicants.

2108. TECHNICAL POSITIONS - Require AAS degree in electronic technology or equivalent and experience in the construction, test, repair and maintenance of rf equipment. A strong analog background as well as experience with digital circuitry and power supplies is desirable. Accelerator Department.

2109. TECHNICAL POSITIONS - Require AAS degree in electrical technology or equivalent and a background in pulse circuits, analog and digital controls and high voltage and/or high current power supplies. Ability to troubleshoot power supplies and associated controls necessary. Shift work required. Accelerator Department.

2110. RESEARCH ENGINEER - Requires Master's degree in electrical engineering or equivalent and a broad background in analog circuit engineering, feedback systems and controls, high-frequency low-level rf circuitry and HV pulsed systems. Applicants must have a solid record of accomplishments and a sound ability in network analysis, feedback theory and signal treatment. Position involves narrow and broad band beam coupled feedback systems for the suppression of longitudinal and transverse instabilities. Accelerator Department.

2111. BIOLOGY ASSOCIATE - Requires BS in biochemistry, biophysics or equivalent with extensive computer programming along with experience in basic biochemical laboratory procedures. Individual will assist in the development and operation of a single-crystal x-ray diffraction facility. Biology Department.

2112. STAFF ENGINEER - Requires BS in electrical engineering or equivalent with an emphasis in digital microprocessor design. Individual will design and develop both accelerator control programs and control equipment. Accelerator Department.

2113. RESEARCH ENGINEER - Requires a BS in electrical engineering or equivalent and broad experience in analog circuit design. Experience in sophisticated instrumentation, low-level high-noise immunity circuit design, timing and controls is necessary. Individual will be involved in interfacing computer systems and various accelerator processes. Knowledge of pulsed and dc power supply systems desirable. Accelerator Department.

Autos & Auto Supplies

74 MONTE CARLO - Auto, a/c, p/s, p/b, am/fm, good cond. in/out, good running, hi-mi. 331-1162
77 CHEVY CAPRICE - classic, 350 V8, 4 dr., sedan, Jensen stereo/tape. \$2,900. A.M., 744-2783.
84 VOLVO - 4 dr., sedan, Deluxe model, must sell. \$5,000. Lou, Ext. 4087, 269-7587.
74 CHEVY NOVA - hit in rear, 50,000 mi. Dick, Ext. 3499, 589-9103.
75 MERCURY COUGAR - 2 dr., sedan. \$1,200. 286-0345.
75 PLYMOUTH VALIANT - v.g. cond., \$950. Arthur, Ext. 4015.
80 PONTIAC SUNBIRD - 6 cyl., 4 spd., excel. cond. \$3,300. Frank, 929-8317/744-4816
79 CAMARO - p/s, p/b, a/c, 305 V8, stereo cass., A-1 cond. Karen, Ext. 2456.
78 AMC GREMLIN 250 - 4 spd. man., a/c, orig. owner, mint cond. Asking \$2,300. Danny, Ext. 3935, 698-2743.
68 FALCON - ugly, runs well, new transm., best offer over \$250. 924-0138.
73 OLDS DELTA 88 - 4 dr., yellow, asking \$400. 289-1665 after 5 p.m.
78 SUZUKI - 1000 cc, mint cond. E. Edwards, Ext. 4027, 286-1121.

72 VOLVO 142E - needs body work, asking \$800. Eric, 289-2352, Ext. 2973 after 5 p.m.

68 VALIANT - good for many new parts. \$350 or best offer. Ivan, 473-8150, Ext. 3559.

79 OLDS CUTLASS - 8 cyl., 4 dr., p/s, p/b, a/c, clean in/out, low mi., \$4,000. Katherine, 281-8021.

75 VW - type 3, good run. cond., new tires. Ron, Ext. 2189, 281-6630 after 5.

72 VW BUG - roof rack, runs well, make offer. Russ, Ext. 3059, 744-7242.

75 DATSUN 280Z - 2x2 split sun roof, spokes, louvers, \$2,500. Robert, Ext. 2309, 473-9180.

77 YAMAHA 650 - many extras, 11k mi., \$975. Neal, Ext. 4019.

84 FORD ESCORT - Lx sta. wag., 7.5k mi., fuel inj., a/c, p/dr. locks, a/t, cruise, rack, loaded, \$8,200. 286-0795.

81 VIKING POP-UP TRAILER - sink, stove, heater, sleeps four, 6.851 lbs., \$2,200. After 5 p.m., 929-3312.

72 DUSTER - manual, runs well, new brakes, battery, muffler, stereo, \$400. or best offer. Greg, Ext. 5508.

CHRYSLER NEWPORT - \$450. or best offer. 727-5912.

70 & 72 PLYMOUTH FURY - good tires, many new parts, not run., \$150. for both. Ext. 3072 eves.

TOYOTA AM/FM STEREO - 4 spkr, \$40.; Shop manual for 77 Honda Accord. \$5. Gordon, Ext. 4095.

79 HONDA - moped, excel. run. cond., \$200. Ramona, 928-3088.

P.U. CHEV. BUMPERS - front \$50., rear step \$65., bumper guards \$15., mirror stainless \$25. Tony, Ext. 2462.

71 DODGE DART - 318 4 dr., p/b, a/c, excel. run. cond., body fair, 127k, asking \$750. Neelima, Ext. 4935, 928-5737 after 6.

83 CHEVY CAVALIER - 2-tone, a/c, p/s, p/b, 11,500 mi., sun roof, Lois, Ext. 2959, 751-0023.

79 CAMARO - 6 cyl. a/t, sun roof, stereo, excel. cond., asking \$4,900. neg. 325-1756.

78 MERC MARQUISE - loaded, very clean, asking \$3,400. Anthony, Ext. 4126, 878-0653.

VESPA SCOOTER - 200cc, white, 5000 + mi., 3 yrs. old, good cond., \$750. Nick, Ext. 2490.

65 SAAB - model 96, V-4, recent seats, muffler, new batt., in daily use, \$450. J. Fischer, Ext. 4250, 286-0295.

78 COACHMAN CAMPER - 22', mint cond., 460 Ford eng., 21,000 mi., loaded, sleeps 6. MY 4-6346.

71 VW POP-TOP CAMPER - sleeps 3, all fixtures, new radials, batt., asking \$1,200. Wanda, Ext. 3583, 922-4865.

81 SUBARU DL - rustproof, undercoating, teak rack, 34,000 mi., orig. owner, like new, \$4,500. 369-2838 after 5:30 p.m.

75 CORDOBA - for parts. 286-8185 after 5 p.m.

TIRES (4) - ER78-14, good year, 1/2" left, good for spares. Ext. 7505, 689-8605.

75 TOYOTA COROLLA - good cond., reliable transp., asking \$1,200. 473-3070.

FORD HUBCAPS - 6 14" for Maverich, Montego, Mustang, also 2 rims, 5 hole, best offer. Gerry, Ext. 4471.

77 DODGE VAN - a/c, p/b, p/s, Slant 6 eng., A-1 cond., heavy duty front end. 878-0885.

68 ROVER - new brakes, paint, 27 mi./gal. Mario, Ext. 7148, 363-2522 after 6 p.m.

79 280Z - 2+2, mint, 5 spd., 38,000 mi., \$6,000. 70 Cougar Conv., good cond., some fixing needed. 399-0435.

75 PLYMOUTH VALIANT - v.g. cond., \$950. Arthur, Ext. 4015, 475-1964.

PICK-UP CAMPER - 11', slide-in, self contained, sleeps 6, alum., step bumper, excel. cond., \$2,395. 821-1081.

73 WINNABAGO - 26', full bath, 5 kw gen., built in vacuum, mint cond., \$13,000. Jack, Ext. 3164.

73 PONTIAC LeMANS - V-8, runs well, \$450. Robert, Ext. 2692, 689-8665.

81 KAWASAKI - motorcycle, 440LTD, black, low mi., must sell, \$1,000. 289-6519.

75 MGB - conv., tan & black, am/fm, tape, good cond., \$2,600. John, Ext. 7671.

70 KZ 400 - low mi., v.g. cond., extras, \$750. firm. 281-0360 after 6 p.m.

72 DUSTER PARTS - 6 cyl. eng. & trans., rt. fender, rt. dr., windshield. 727-3608.

80 KAWASAKI - motorcycle, 440LTD, runs well, rooster fairing, stereo, new tire, spockets, chain, \$600. 399-0168.

Boat & Marine Supplies

79 CHRYSLER - 22' Cuddy cabin camper top, 265 hp, \$12,500; 84 Cox trailer holds up to 5600 lbs.; 25' boat \$3,500, 734-7496.

15' FIBERGLASS BOAT - excel. cond., \$300. Arlene, Ext. 3604, 878-0516.

600 LB. MUSHROOM ANCHOR - \$300. Gordon, Ext. 4095

POWER WINCH ELEC. TRAILER - \$75. John, Ext. 4312.

32' RANGER - sloop, 14 sails, 11 winches, auto pilot, new stearns, mast, must sell, excel. buy. 473-8426.

32 1/2" IRWIN SLOOP - center cockpit, excel. cond., loaded, \$33,000. Stan, 878-6670 days, 878-0528 eves.

TRAILER GALV - for 16' boat, needs little work, \$100. Bud, Ext. 3083, 878-1915 after 5:30 p.m.

SAILBOAT - 14' Blue Jay, 2 sets sails, spinn., \$200. Rich, Ext. 4987.

28' OWENS - fully equip., v.g. cond., sleeps 4, many new parts, \$2,500. 281-0360 after 6 p.m.

MERCURY OUTBOARD MOTOR - single lever, control w/2 sets Telex cables, \$25. John, Ext. 2423.

BOAT TRAILER - for 16' Galv, \$100. Warren, Ext. 3083, 878-1915 after 5:30 p.m.

16' RUNABOUT - fiberglass, 60 hp, Gale eng. + extras, \$1,500. 286-0345.

RATHYON CHART - flasher recorder w/transducer, \$150. John, Ext. 4312.

20' TAHITI SKI BOAT - Ford V8, OMC outdrive, custom deck & seating, best offer. 744-1521.

OUTBOARD ENGINE - 78 Mercury, 4.5 hp, lg. shaft, low hrs. \$350. Eric, Ext. 3833, 587-8408.

Miscellaneous

DOLL CLOTHING - custom handmade, for antique dolls and Cabbage Patch dolls. Linda, days 979-0956.

PORTABLE TOILET - beige, new never used, \$80. 878-1572.

CORNET - Bundy & case, \$125. 475-2998 after 3 p.m.

BEDRM. FURNITURE - Contemp. bed, dresser, night tables, good cond., best offer over \$150. 475-4005.

BARBER CHAIR - early 1900's, white & green upholstery, great conversation piece, must see (\$100. 42201840 after 7 p.m.

COMMODORE VIC-20 COMPUTER - and cassette unit, etc., perfect for beginners. Herb, Ext. 3611.

BEDSPREAD - for single bed, red, white & blue, like new. \$15. Les, Ext. 2920.

FIXTURES - (2) ceiling, black octagonal w/beveled glass, 2/\$30; (1) wall copper w/glass chimney \$15. 744-1917.

MINK STOLE - w/Launaire collar, beautiful fur, \$300. or best offer. 363-6121.

VERTICAL BLINDS - for sliding glass patio doors, beige. Carol, Ext. 4398.

CHILDS ELEC. ORGAN - Bontemp. w/cord section & melody keyboard, v.g. cond. Marvin, Ext. 7155.

MARTIN GUITAR - 7-28 model, 3 quarter sz., excel. cond. w/life time guarantee. 821-0137.

KEROSENE HEATER - Heat Mate, 10,000 BTU, 55 gal. drum w/hand pump. \$70/all. 744-9832.

NATIONAL GEOGRAPHIC MAGAZINES - 1970's issues, make offer. 727-5912.

BIKE - Panasonic tourist-type, 10 shifts, Moli-buden frame, \$300.; Pioneer stereo cass./record player, (dolby) + 2 spkrs., \$150. Hidenori, Ext. 9327, 246-8617.

PUPPIES - Jack Russell terrier. Eves., 261-7280.

IMPORTED DUTCH HAMS - good qty., unopened, 12 lb. can, \$24 ea. Niels, Ext. 4124.

SHORT WAVE RADIO - Sharp, FV-310GB, 7-sw bands, + am/fm & lw, new, cost \$140., sell \$80. Robert, Ext. 4745, or 744-3225.

COCKER SPANIELS - black & white, papers included, \$225. Tony, Ext. 4605.

COAL STOVE - Vermont castings "Vigilant", w/glass doors, \$500.; coal/2 tons, \$150.; Wood stove, Upland model 207, \$200. Gordon, Ext. 4095.

RACON FUR JACKET - never worn, won in raffle, value/\$1000., sell for \$250. Tony, Ext. 2462.

BRITISH RALEIGH BICYCLE - men's, 3 spd., 25" frame, \$125.; adult wooden crutches, \$10. Raymond, Ext. 7509.

VISTA LADIES BICYCLE - 10 spd., 21" frame, good cond., \$60. Janet, Ext. 7112, 472-1922.

BASS AMP - Baldwin Professional two 12" spkrs., 4 inputs, loud, excel. cond., \$325. or best offer. 281-3149.

LENS RICOH - f2.8, 35mm, wide angle for Ricoh 126C. \$25. Susan, Ext. 4267.

CAR RADIO - am/fm, CB, 8-trk, GM. Metz, Ext. 4091.

DINING TABLE - hardwood, w/mica top, 4 chairs, 2 leaves, \$125. Mark, Ext. 7708, 744-0903.

GE ELEC. RANGE - white, \$200., hardly used; Sears Coldspot refrig., 11 cu./ft., works fine, \$45. JoAnn, 286-0745.

ADMIRAL UPRIGHT FREEZER - 15 cu./ft., excel. cond., \$150. Len, Ext. 4289.

TOYS EDUCATIONAL - demo. & sale Mon. 9/17, 8 p.m. 287 S. Cty. Rd., Brookhaven. Maria, Ext. 5102, 286-1904.

KEROSENE DRUMS - 55 gal., \$10 ea. Hseuh, Ext. 7505, 689-8605.

DINING RM. SET - mahogany table, 3 leaves, pads, 6 chairs & hutch, must see, \$750. Lou, Ext. 7773, 732-3105.

BDRM. CHEST - sm., \$8.; 30" dr's, \$5/ea.; flood-light bulbs; 21" Toro blade; tricycle. Morris, Ext. 4192.

LAZY BOY ROCKER - recliner chair, blue & green print, excel. cond., \$100. Carol, Ext. 2895, 475-8640.

BDRM. FURNITURE - 2 dressers, chipped veneer, lovely big mirrors, \$40/ea. Marian, Ext. 3552, eves., 744-8639.

TICKETS (2) - Carnegie Hall, 10/13 concert, Gidon Kremor (violin), \$14/ea. Mike, Ext. 4414.

SLIDING GLASS DOORS - new, \$50.; women's bike, 3 spd. \$35. John, Ext. 2192, 744-4386.

SURDIAC COAL STOVE - 60,000 BTU's, excel. cond., \$500. Laurence, Ext. 3811.

KEROSENE HEATER - Sears, 9300 BTU, 2 pt. wick, removable tank, elec. ignit., tip switch, \$30. 878-0717.

TABLE - formica, 40x60, \$35.; chairs, teak-4, \$20/ea.; hi-fi cab. w/ spkrs., \$35.; birch Swedish table, 20x40, \$35.; window fan, 20", \$20.; dresser/4 draw, pine, \$20. 265-0501.

FIREWOOD - full cords split & delivered, \$135. 399-0168.

ELECTRIC DRYER - G.E., new cond., \$200.; adding mach. w/paper tape, \$5. Victor, Ext. 2395.

WASHER/DRYER/FRIG. - G.E.; Westinghouse freezer, 18 cu./ft., all good cond., best offer. 286-1714 after 6 p.m.

MEN'S 26" BICYCLE - 3 spd., excel. cond., best offer over \$60. 927-7696 after 4 p.m. or wkends.

KITCHEN CABINETS - bathrm. vanities; table tops build or refaced w/formica. Mitch, 585-7667 after 5:30 p.m.

UPRIGHT FREEZER - sm., needs new seal, \$10.; assort. winter coats, 1 spring, all sz. 10-12.; maple tree saplings, \$5./ea., you dig. 281-2002.

ORGAN - Yamaha, E-30, 2 keybds., ft. pedals, loaded, mint cond., \$2,900., valued \$6,000. 286-1358, after 5:30 p.m.

38" LONG PIANO - w/stool, fits in sm. space, make offer; fold-up bed w/thick mattress, \$35. 298-4398.

MOVING SALES - Toro snow blower, sabre saw, ping-pong table, electric hedge trimmer, many others; call for list. 261-7825.

1984/85 MET OPERA TICKETS - 1st row balcony, 2 each, Boheme 10/13/84; Lulu 4/9/85, \$19/ea. Carmen, Ext. 4135.

Yard Sales

CENTER MORICHES - corner Main St. and R.R. Ave., yard and bake sale, Sat., Sept. 15, 11:30 a.m.-5 p.m.; raindate, Sept. 22. Ext. 4843.

PORT JEFFERSON - B/T, 107 Cliff Rd., house and yard contents sale, Sept. 15, 10 a.m. Ext. 7108.

SHOREHAM - 3 Albert St., Sept. 14-15, 10 a.m.-4 p.m.; high chair, crib, bed, baby clothes, misc. Ext. 5025.

EASTPORT - Eastpond Lane, multi-family, Sat., Sept. 15, 10 a.m.; toys, books, assorted items., Ext. 7594.

PORT JEFFERSON - 2-family, Sept. 15, 201 Chestnut St., 10 a.m.-evening., Ext. 2945.

Free

CAT - beautiful solid white, 4-yr. old, looking for good home, better with adults. Pam, Ext. 4303 or 289-6081.

KITTENS - 1 black and white male, 1 black female, 8 wks. old. 286-3791.

Real Estate

Real Estate advertised for sale or rent is available without regard for the race, color, creed or national origin of the applicant.

For Sale

E. SETAUKET - Colonial 4 bdrms., wooded 3/4 acre, 2-1/2 baths, 1/4, d/r, oak floors, den w/brick fpl, newly redecorated eik, finished basement, 2-car garage, 3-Village School, walk to SUNY and elementary school, excel. cond., \$155,000. 751-3868 eves. after 7 p.m.

SETAUKET SOUTH - cul-de-sac, expanded 5 bdrm. Colonial, 3-1/2 bath, 3-Village School, many extras, owner anxious. 698-6437.

MILLER PLACE - Colonial, 4 bdrms., formal l/r, d/r, country kitchen, family room w/brick fpl, .9 acre, \$158,000. 331-1718.

For Rent

GARAGE - in Shoreham, \$20/mo. Pete, Ext. 3297 or 821-9547.

MOUNT WASHINGTON VALLEY, N.H. - contemporary chalet, weekly or weekends, Sept. and Oct., 3 bdrms, 2 baths, deck, wood stove, dishwasher, w/d, reasonable. 928-6921.

WADING RIVER - spacious (1200 sq. ft.) furnished 1 bdrm. basement apt. in private beach community, newly finished, 10 min. to Lab, private entrance, \$525 pays all. 929-4729.

MILLER PLACE - 4 room apt., full size bath and kitchen, walking distance to beach and stores, private entrance, 15 min. to Lab and SUNY Stony Brook. Ann, Ext. 2022 or 744-8386 after 3 p.m.

PATCHOGUE - (East) 2 bdrms., eik, l/r, bath, \$400/mo. + util., no pets. Walt, Ext. 2907 between 10 a.m. and 3 p.m. or 698-0576 after 6 p.m. and weekends.

ROCKY POINT - 3 bdrm. Cape. 2 full baths, modern, kitchen with dishwasher, self-cleaning oven, dinette, large living-room with fpl, carpeting, \$750 + util. 744-8659.

SHIRLEY - large studio, private ent., bath, full eik, \$375, incl. util. Ext. 5283.

Car Pools

BABYLON/W. ISLIP - driver needed for on-time car pool 8:30-5 p.m. M. Tesla, Ext. 2705.

ROCKY POINT - Ext. 4091.

Wanted