

Horn of Plenty... of Neutrinos

For three days last week, the Accelerator Department's Beams and Physics Support (BAPS) Group conducted a major test of the two horns that make up a new particle focusing system for neutrino experimentation at the Alternating Gradient Synchrotron (AGS). By the test's conclusion on Saturday, September 22, the system had run successfully at currents of 270,000 amperes at 12,000 volts, well in excess of the normal operating current of 240,000 amperes.

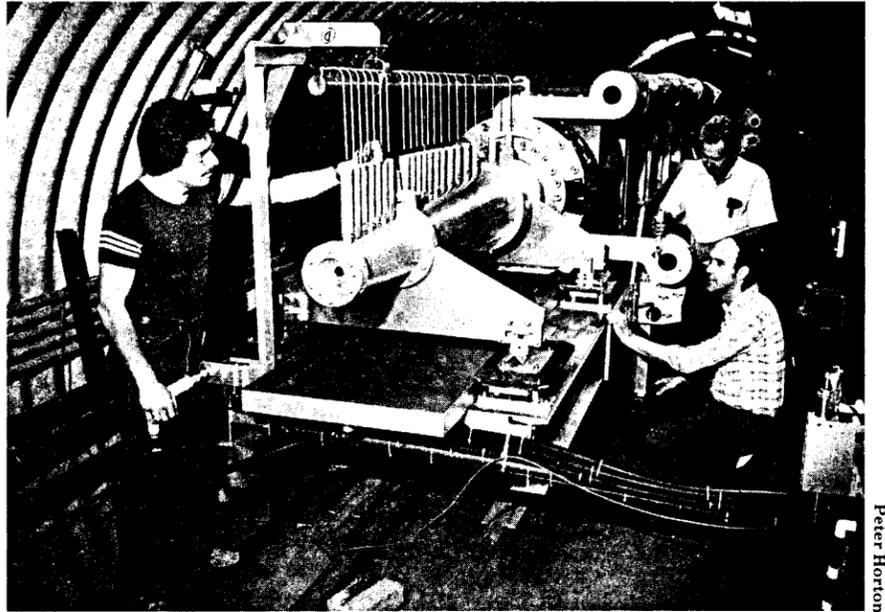
Such enormous amounts of power are generally associated only with very large power plants. But these are also the kinds of currents necessary to create the magnetic fields that can focus particles for neutrino experimentation. In the 33-foot-long focusing system, however, the current is sustained for only a brief moment during each pulse — about 20 microseconds at intervals of 1.4 seconds — so the thermal and mechanical stresses induced by these tremendous currents can be endured.

Last week's test demonstrated that the system can withstand these currents without damage. It was critical that this be done before neutrino

experimentation begins in November. As physicist Alan Carroll, acting head of the project, explained, "Within a few days of turning on the AGS beam, the radiation level of the horns will become very high. Our first concern was to minimize radiation exposures by troubleshooting now to reduce the chance of failure later, when it would probably be difficult to fix individual components. We would have to replace the entire system, rather than repair it, which would be very expensive. As it turned out, the few minor problems we encountered during this test could have been repaired during an actual run with acceptable exposure levels."

The new horns were designed to satisfy the requirements for a new experiment, 776, but, with modifications, will also serve existing experiment 734. Both experiments are interested in events involving neutrinos, elusive particles that have been around at least as long as our universe, having evolved with the weak interaction, the force associated with radioactivity and nuclear decay.

Though called neutrino horns (because each of the two major components resembles a long, slim horn),



Peter Horton

Working on the new particle focusing system for neutrino experimentation at the AGS are (left) Ed Hoey, (kneeling, right) Adam Lescowicz and Ted Kijowski. Others involved with the project were: Joe Bauernfeind, Charlie Bohnenblusch, Tom Brown, Steve Bubka, Marty Candito, Alan Carroll, Al Casper, Vinnie Chiampou, Len Chimienti, Ed Dale, Artie Dick, Ernie Heppner, Dick Hildenbrand, Bob Jasaitis, Dick Lane, Bill Leonhardt, Russ Lowell, Herb Lutz, Bob Marascia, Joe Mayeski, Bill McGahern, Bob Monaghan, Pat Oster, Charlie Pearson, Al Pendzick, Doug Pope, Al Ravenhall, Bob Ritter, Bud Ryan, Dom Salimando, Jon Sandberg, Bill Sims, Gary Smith, Charlie Spataro, Bernie Stepnoski, Pete Stillman, Dick Stoehr, Hank Thorwarth, Gene Tombler, John Walker, George Warner and Jack Weinmann.

the focusing system will rarely see a neutrino. What will pass through it are the pi (π) mesons produced when the AGS' fast extracted proton beam strikes a tungsten-rhenium target. With the magnetic field produced by the strong current pulsing through it, the horn will focus the π mesons into a parallel beam with a well-defined energy, which will travel out of the horns and down the U-line tunnel toward the experiment. Along the way, a large fraction of the π 's will decay, and one product of the decay will be neutrinos.

Beginning in November, Exp. 776, a Columbia/U. of Illinois/Johns Hopkins collaboration, will search for signs that these neutrinos oscillate, to determine whether they have any mass. Then in December, at the end of Exp. 776's first run, the horns will be modified for the next run of Exp. 734. This continuing study, which involves researchers from BNL, Brown University, SUNY at Stony Brook, the University of Pennsylvania, Japan's Osaka University and its national laboratory KEK, began in 1981 to test the Weinberg-Salam theory of electroweak interactions by measuring neutrino-electron elastic scattering.

The new horn system, which was designed by mechanical engineer

John Walker to meet specifications determined by physicist George Tzanakos of the Exp. 776 collaboration, represents a several-fold improvement over previous systems. First, because the location has been moved to allow a longer decay space, and because the larger horns can focus more π mesons, there will be more decay products and thus more neutrinos, for an increase of about a factor of ten in neutrino intensity, for narrow band running.

The BAPS group, headed by Bill Sims, has been responsible for all the construction and assembly involved in the focusing system. Bob Monaghan oversees the group's mechanical assembly work, while Bud Ryan coordinates the efforts of the many technicians involved in the project.

In addition to the horn itself, the project involved a number of other systems, including a new mechanical support system, designed by Hank Thorwarth, which makes the new system both safer and easier to maintain. Bill Leonhardt is responsible for building an improved water system. The neutrino horns and their support systems are located just north of the AGS, in a new blockhouse built by Al Pendzick, head of the Experimental Areas Group, and liaison engineer Charlie Pearson. — Anita Cohen



Peter Horton

Organizers of the 33rd Biology Symposium meet to plan the program on "The Molecular Basis of Aging." From left they are Richard Setlow, Betsy Sutherland, Avril Woodhead, Helen Kondratuk and Raymond Tice.

Aging Examined At the Molecular Level

During the upcoming Brookhaven Symposium in Biology, entitled "The Molecular Basis of Aging," about 100 scientists from the U.S. and abroad will discuss cellular and molecular studies regarding the "wear & tear" hypothesis of aging, aging in cellular proteins, changes in DNA with age, and diseases featuring altered rates of aging. This is the 33rd symposium sponsored by the Biology Department since 1948.

The seven scientific sessions and the three symposium lectures will be conducted from 8 p.m. Sunday, September 30 through 4 p.m. Wednesday, October 3 in Berkner Hall. According to BNL Assistant Biologist Avril Woodhead, chairwoman of the symposium, the conference is the first on the molecular biology of aging that has brought together researchers and clinicians in the field.

"Many molecular biologists working in the field of aging do not realize that their findings may be important to clinical problems of aging," says Woodhead. "Equally, those concerned with the medical aspects of aging may have little appreciation that there are now many molecular tools applicable to their investigations. Therefore, we have invited speakers from

both disciplines so that they may interact.

"We hope that, as a result of this conference, cellular and molecular studies will be used more and more to explore some of the clinical problems of aging," explains Woodhead. "We are also interested in attracting younger scientists and students into aging research through our discussion of future research goals and formulation of a more coherent discipline."

The BNL scientists on the symposium committee are Biology Department Chairman Richard Setlow; Biologist Betsy Sutherland, who has been investigating ultraviolet damage to the skin of young and old people; Geneticist in the Medical Department Raymond Tice, who is interested in aging and its effect on sister chromatid exchange; 1983 Fermi Award winner and BNL Biology Department consultant Alexander Hollaender; and Woodhead, who has been studying comparative aspects of aging in fish and other cold-blooded vertebrates, as well as the molecular basis of aging.

"Since much of the work of the Biology Department is centered upon the role of DNA in aging and carcino-

(Continued on page 2)



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A \$3,588,000 contract was signed on September 19 between BNL and the Balport Construction Co., Inc., of Hawthorne, New York. The company will build the 2000-foot tunnel and other conventional structures which will be used in the transfer of heavy ions from the Tandem to the AGS. Construction is to start in October and be completed early in 1986. This is known as the Tandem/AGS Heavy Ion Facility Project, of which Horst Foelsche has just been named project head, and Peter Thieberger, deputy. Above, at the contract signing, are (from left) Robert Cavaliero, Chief Engineer at Balport; Dominic Clemente, Executive Vice-President of Balport; (standing) David Schweller, Manager of DOE's Brookhaven Area Office; Paul Reardon, Associate Director for High Energy Facilities. Signing for Brookhaven is Vincent O'Leary, Associate Director for Administration, and, at right, Horst Foelsche and Peter Thieberger.

Service Awards

The following employees received service awards during the month of September:

Thirty-Five Years

Maurice Goldhaber Director's Ofc.
Garman Harbottle Physics
Virginia Pond Biology
Seymour Rankowitz Instru.

Thirty Years

Theodore F. Arns Accelerator
Frank B. Hill Applied Science
Donald J. Metz Applied Science
Albert C. Muller Applied Science
Yoshio Shimamoto Applied Math

Twenty-Five Years

Stanley P. Cherouski P&G Arts
Manny Hillman Applied Science
Melvin M. Levine Nuclear Energy

Twenty Years

Lester G. Epel Nuclear Energy
Geoffrey Hind Biology
Kelvin K. Li Physics

Ten Years

Thomas W. Burrows Nuc. Energy
Joseph M. Carraba Central Shops
Tzi-Shan Chou Accelerator
Mundrathi Divadeenam Nuc. En.
Ronald D. Gasser Nuclear Energy
Theodore Ginsberg Nuclear Energy
Ernest J. Jochen Central Shops
Norman R. Keeler Central Shops
C.R. Krishna Applied Science
Kelvin G. Lynn Physics
Alan H. Rosenberg Biology
Richard R. Ryder Central Shops
Jane K. Setlow Biology
Richard B. Setlow Biology
Nancy L. Sobrito Personnel
Rosemary Taylor Central Shops
Dorothy Theinert Fiscal
James M. Vaughn Applied Science
Otto White, Jr. Safety & Env. Prot.

Last Tour of the Season

BNL's summer Sunday tour program draws to a close this weekend. If you haven't taken the tour, which features a slide show about the Lab, a bus tour of the site, and a walking tour of the Exhibit Center, this Sunday is your last chance.

The tours depart from Berkner Hall, and visitors may arrive any time between 10 a.m. and 3 p.m. Tours will be offered continuously throughout the day. There is no admission charge, and children are welcome.

Health Seminar

The next Employee Health Seminar will be held on Wednesday, October 10, at noon in Berkner Hall. Colin Campbell, Director of the Long Island Council on Alcoholism, will address the topic, "How to know when someone has an alcohol problem and what you can do to help." He will discuss such issues as what is alcoholism, what's the difference between an alcoholic and an alcohol abuser, how to help someone to accept treatment, and what types of treatment and prevention approaches are available.

Hospitality News

Ginny Thien, a member of the Hospitality Committee, will be the guest speaker at the Committee's next morning get-together on Tuesday, October 2, at 9:30 a.m. at the Brookhaven Center. Her topic will be "Orchids — the Many Varieties and How to Grow Them."

Wives of employees, guests and visitors are welcome. Please come and bring the children. Babysitting will be provided free of charge. Coffee, tea and danish will be served.

New Administrator In Personnel

Mary White has made the transition from the malls of merchandising to the halls of science. She is the new Training and Development Administrator in Personnel and she acquired her training expertise at Gimbels.

Since 1981 until her arrival here on September 17, White was Corporate Director of Training for all Gimbels' stores, and this included all kinds of training at all levels. And she came into her career just by chance.

White started out to be a teacher. She got her B. A. in 1971 from SUNY at Cortland and did graduate work at the University of North Carolina in romance languages. But a summer job with the Gertz department stores took her into the business world. She trained temporary Christmas employees and then was asked by Gertz to join their executive training program. She decided to give it a try. After a year, she was assigned to training and recruitment at the executive level and the following year, was made personnel manager at the Massapequa Park store. White stayed two years, then joined Gimbels where she was, successively, personnel manager, manager of program development in training, and head of the overall training function.

Although her experience is oriented towards merchandising, she has extensive experience in supervisory and management training. "The diversity of the Lab presents me with new and different challenges," she says.

In organizing BNL's training programs, White is not about to start from scratch. She intends to build on the success of those programs which



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Mary White

have already proven effective and have been well received. These include resource management, basic supervision, effective employee relations for supervisory personnel (with EAP head Judith Katsin), project management, technical writing, effective presentations, professional effectiveness, and personal, team and organizational effectiveness (PTO). June Herbert will assist her in the coordination and planning of the programs.

White has already started to make herself known and will get around to all of the departments as soon as she can. As she becomes more familiar with the Lab, she says she will try to determine the needs not yet addressed, and asks that employees who wish to offer suggestions, call her on Ext. 7994. Says White, "I want employees to view training and development as a resource for them."

Consumer Alert

Some Hygrade all beef franks and Hygrade hot dogs are being recalled. Those in question have "sell by" dates of May 14, 1984, June 24, 1984, July 14, 1984 and August 22, 1984. The finding of wire pieces measuring one to four millimeters in length in the product has been confirmed by the USDA Emergency Programs Office.



Virginia is for lovers, but Virginians love New York.



Though the bumper sticker came from Upton, Massachusetts, Janice Lamb, Director's Office, loves Upton, New York. A year and a half ago while in the Bay State, Lamb and her husband were driving behind a car whose bumper was labeled "I love Upton." Lamb decided she had to have the same sticker, so they followed that car in hopes of catching it and asking the driver the origin of his sticker. But the car got away. At a meeting that night, Lamb's husband introduced her to another man from Upton, a town southeast of Worcester. The Uptonian sent Lamb several "I love Upton" bumper stickers, one of which she proudly applied to her car.

—photos by Reben

Aging

(Continued)

genesis, we felt that it would be appropriate to hold such a symposium at BNL," says Woodhead. "Results published by Richard Setlow and Ronald Hart in 1974, which generated a lot of excitement and activity in the field, concerned a correlation they had found between the potential longevity of seven different mammals and their ability to repair damage done to their DNA. Setlow and his colleague looked at unscheduled DNA synthesis, a measure of DNA repair, in shrew, mouse, rat, hamster, cow, elephant and human cells of similar ages after they were damaged by exposure to ultraviolet light."

"If an animal's cells are exposed to a constant level of physical and chemical damage per unit time, they will accumulate damage at rates dependent on the efficiencies of their repair systems," noted Setlow. "If the systems are inefficient, the level of damage in DNA will increase relatively rapidly, and this might lead to cellular malfunction and the animal's death. This point of view leads to the prediction that there may be correlation between the life-span of a species and its overall ability to repair damage to its DNA."

Although Setlow and Hart did not claim that the two events were causally related, other researchers give more weight to the correlation and feel that DNA damage may be an important, if not the primary, cause of aging. "This correlation has been vigorously debated," reports Woodhead. "There is a real question as to whether the relationship is a causal one. Two sessions of the symposium will be devoted to the pivotal role of DNA in aging and to the evaluation of this hypothesis."

"For many years and for many investigators, aging was an adjunct area of research," says Woodhead. "Few people devoted their whole time to aging research, and much of the work was done as a secondary inter-

est by experimenters working in other areas. As a result, scientists put forward their theories on aging without testing them. So we have a plethora of theories and a dearth of observation.

"Alex Comfort, renowned for his work on the biological and social aspects of aging, believes that the reason so few scientists were in the field and there was so little scientific inquiry is because aging is a negatively emotional subject," continues Woodhead. "Over a quarter of a century ago, Comfort urged that an experimental approach to aging research be pursued."

"The situation is changing because with improved medical care, more and more people are living longer," adds Woodhead. "So we need to know more about aging. It is no good thinking about aging when one is old. We must concern ourselves with aging now, for aging will eventually concern us."

—Marsha Belford

Reminder

The symposium committee has adopted as its slogan "Aging: Everybody's doing it" for the public lectures, which will be given at 8 p.m. in Berkner Hall during the 33rd Brookhaven Symposium in Biology.

On Sunday, September 30, Edward Schneider, Associate Director for Biomedical Research and Clinical Medicine at the National Institute on Aging will speak on "Aging Research: Challenge of the 21st Century." Alex Comfort, Associate Professor in the Neuropsychiatric Institute at UCLA and author of "The Joy of Sex," will talk about "Living All of Your Life" on Monday, October 1. And on Tuesday, October 2, Lewis Thomas, University Professor at SUNY-Stony Brook and author of "The Lives of a Cell: Notes of a Biology Watcher," will discuss "The Odds on Normal Aging."

Following the lecture by Lewis Thomas on October 2, a graduate professional ensemble from SUNY-Stony Brook will present a free concert in the same hall, beginning at 9 p.m. Lecturegoers are invited to remain for the music program.

BROOKHAVEN BULLETIN

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1984-85 BERA Concert Series

All concerts begin at 8:30 p.m. in Berkner Hall, and are open to the public. The season's schedule is as follows:

Young Uck Kim, violinist, Tuesday, October 30. Over the last two decades, Young Uck Kim has built a formidable reputation on four continents. He has been a soloist with the world's major orchestras and has performed extensively in music festivals such as Salzburg, Spoleto and Marlboro.

Golub/Kaplan/Carr Trio, Thursday, November 15. Pianist David Golub, violinist Mark Kaplan and cellist Colin Carr make up the famed trio. They come to Brookhaven following their highly successful series in Tully Hall earlier this year.

Sharon Isbin, guitar, Thursday, September 13. Sharon Isbin's artistry has earned her three top prizes in the world's most prestigious guitar competitions. Only in her twenties, Ms. Isbin has toured Europe, Canada, Japan and Israel, performing solo concerts and appearing with orchestras.

Thomas Lorango, piano, Thursday, March 14, 1985. Thomas Lorango was last at Brookhaven two years ago, when he gave a memorable performance of Bartok's Sonata for Two Pianos and Percussion with Bruno Canino. He tours regularly with "Music From Marlboro."

The Panocha String Quartet, Thursday, April 11, 1985. The Panocha String Quartet is attracting attention around the world for its remarkable performances. These artists have performed together since their student days at the Prague Conservatory, and they play with a unity of ensemble rarely heard today.

Admission is \$8 for adults, \$5 for students and those over 65, and \$3 for those under 18. Block tickets may also be purchased at \$28 for the first five tickets and \$5 for each additional ticket. Tickets will be sold at the door the night of each concert, and block tickets will be available the night of the first concert. Tickets are also available at the Recreation office, Personnel.

Singles Club

The Singles Club is sponsoring a canoe trip on the Peconic River, Sunday, October 21. Call Doris, Ext. 2228 for complete information. All are welcome. Confirm by Wednesday, October 17.

Arrivals & Departures

Arrivals

Lisandro P. Cardoso NSLS
Richard A. Jones Plant Eng.
Kazuo Kubota Medical
Eric A. Myers Physics

Departures

This list includes all employees who have terminated from the Laboratory, including retirees:
Judith B. Miele Medical
Creighton D. Wirick DAS

Hockey Tickets

Tickets for the 1984-85 hockey season will go on sale at the BERA Sales Office in Berkner Hall on Wednesday, October 3, at 8 a.m. Copies of the games schedule should be ready for distribution at the BERA store on Tuesday morning.

BERA's eight seats for the Islanders home games to be played at the Nassau Coliseum are located in Sections 319J and 321A. Tickets are priced at \$18.50 each.

During the initial sale only, a maximum of eight tickets may be purchased; i.e., either two tickets for each of four games, or four tickets for each of two games. The employee may then go to the end of the line and await another turn, at which time as many tickets as desired may be bought.

The BERA Sales Office will give no refunds or make any ticket exchanges after a sale is made.

Assuming the Islanders will again be in the NHL playoff and championship race next spring, only those employees who support the BERA Ticket Service Program by purchasing hockey tickets during the season, will be eligible for entry in the special drawing for game tickets.

Rifle & Pistol Club

Listed below is the 1984-85 shooting schedule of the BNL Rifle & Pistol Club. All sessions are held at the Patchogue Armory between the hours of 1900 and 2300.

	Rifle Nights	Pistol Nights
Sept.	4 18	11 25
Oct.	2 16	9 23
Nov.	6 20	13 27
Dec.	4 18	11 25
Jan.	8 22	15 29
Feb.	5 19	12 26
Mar.	5 19	12 26
Apr.	2 16	9 23

Those interested call Ed Elliott, Ext. 4636, for rifle shooting, and Otto Jacobi, Ext. 4428, for pistol shooting.

Cricket Club

The Brookhaven International Cricket Club completed the 1984 season with a close win over the Oyster Bay Club in a match played at the Lab on Sunday, September 16. Batting first, the Lab team made a good start with a record opening partnership of 54 runs between G. Rajeswaran and John Millener. Rajeswaran went on to make 88 not out in a Lab total of 159 (Millener 19, Glaister Fraser 24). In reply, Oyster Bay totalled 148 before their allotted 32 overs were up. Millener conceded only 18 runs in 8 overs of bowling. Munawar Sajjad took 1 wicket for 33 runs, and Dave Cox 2 for 51.

Bowling

Red/Green League

R. Jones rolled a 224, K. Riker 223/211, R. Larsen 217, J. Medaris 215, J. Cochrane 209, P. Ouvrard 209, E. Sperry IV 206.

Purple League

J. Ferrante bowled a 218, R. Jones 206, M-G Meier 200, G. Fales 191.

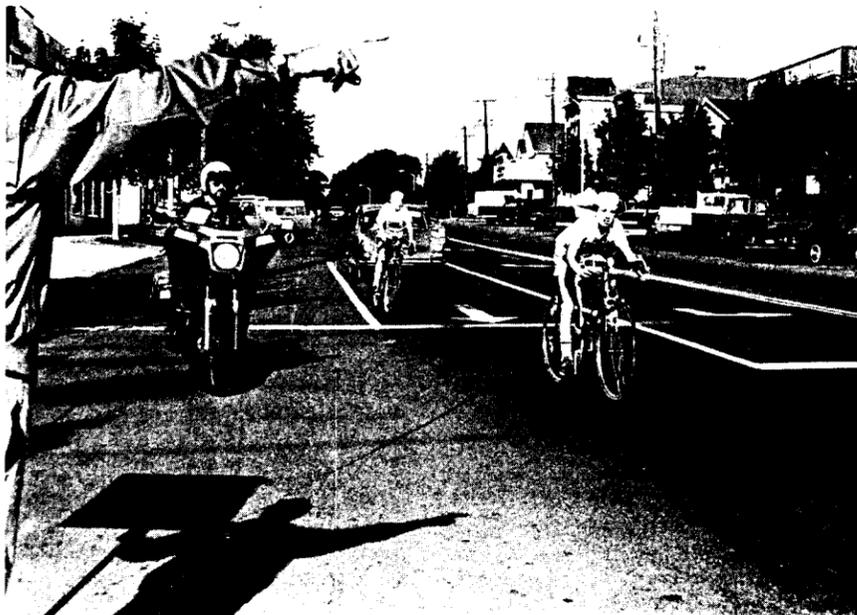
White League

High games were bowled by H. Asselta 222, J. Connolly 213, J. Griffin 203, E. Sperry 203, K. Conkling 200.

Runners Corner

A reminder that the Roadrunners will meet at noon on Thursday, October 4 in Berkner Hall. Note that the room is now Room D. Volunteers and new members are urged to attend.

BERA News



Motorcyclist Dave Derryberry rounds a corner in Southampton with bicyclists on their way to Montauk.



At Montauk, the half-way point in the 108-mile bike-a-thon course, Cyclotron members (from left) Dave Derryberry, John Elmore and Kristin Chung met BNL employee Donald Litcher, who had pedaled there on a tandem bike with his son.

Vroom! Vroom! for Charity

Last Saturday was a fine day for a ride, and seven members of BNL's Cycletrons Motorcycle Club rode out to Montauk and back. They weren't just enjoying the scenery, however. They were keeping watch on bicyclers who were participating in the 12th annual bike-a-thon to raise money for Camp Paquatuck, a summer camp in East Moriches for physically handicapped children.

According to Dave Derryberry, vice-president of the Cycletrons, the club had voted to sponsor bikers from members' families and to serve as the road patrol for the bike-a-thon. Their intent was to do something charitable.

Saturday's route went from Center Moriches to Montauk and back, for a total of 108 miles. Through the day, club members Derryberry, Kristin Chung, John Elmore, Frank Dusek, Art Scholtz, Carl Gardner and John Maddock rode the course. The motorcyclists were identified with official bike-a-thon stickers, and each carried tube patch kits, spare tubes and pumps. Anytime they spotted a bicycler stopped along the road, they pulled

over to see if there was trouble or if it was just time out for a rest. All in all, the motorcyclists didn't find many problems — just a flat tire and one scouting trip to locate the nearest bike shop for a tool.

Several BNL employees participated in the bike-a-thon, including Jim Hanson, who made the trip with his son Brian; Donald Litcher, who rode a tandem bike with son Donnie; and Michael Creutz, who accompanied daughter Lela. A total of 567 bicyclists set off for Montauk. Not all made the grueling circle trip, which took an average of 10-12 hours, but money was earned for every mile pedaled. Each cyclist had one or more sponsors who had agreed to pay a certain amount per mile ridden.

Camp Paquatuck needs about \$100,000 a year to operate. Saturday's bike-a-thon raised nearly \$47,000 for the camp.

Club members Kristin Chung and John Elmore are so enthusiastic about the event that next year they are planning to do the trip by bicycle instead.

Badminton

Tennis players who suffer withdrawal symptoms as winter approaches and four-wall handball players who haven't played since they left school have a new experience coming. The BNL Badminton Club welcomes players at all levels of skill and experience to its annual ladder tournament. The tournament runs

from October 2 and offers recreation, exercise, satisfaction and prizes to participants. Join the BBC by calling Bill Love at Ext. 3996, or by dropping him a note containing your name, Lab address and telephone extension. Find out how much more satisfying than lunch, a noon-hour badminton match can be.

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.

2120. FABRICATION ASSISTANT - Requires a working knowledge of machining, welding, sheet metal fabrication and a thorough knowledge of materials. Individuals will prepare job orders for fabrication, materials and shop supply orders and numerical controlled machine tool programs. Central Shops Division.

2121. HELPER A - Central Shops Division.

OPEN RECRUITMENT - Opportunities for Laboratory employees and outside applicants.

2122. EXPERIMENTAL MACHINIST - Requires experience in job print interpretation, layout and machine set-up. Candidates must demonstrate ability and imagination in all phases of machine work. Will function as all-round machinist for non-production work in research and development shop. Project assignments range from raw material work in research to final assembly. Central Shops Division.

2123. INTERVIEWER - Requires a BS degree or its equivalent in pertinent business experience. Several years' experience in technical recruiting and interviewing is highly desirable. Responsibilities will include recruiting for exempt and non-exempt positions as well as handling other employment related functions. Personnel Division.

Autos & Auto Supplies

71 MERCURY COMET GT - 302, auto., bucket seats, tinted glass, am/fm cassette, \$575. Ext. 4662 or 929-3566 after 5 p.m.

80 FORD FIESTA - excel. cond., low mileage, \$2,500. Ext. 3597.

69 CHEVY BELAIR - runs, but best for parts, \$200. Les, Ext. 5180 or Ed, Ext. 2007.

72 DODGE DUSTER - parts, 6 cyl. eng., trans., right fender, windshield, 727-3608.

78 KZ400 - very good cond., new battery, chain, sprockets, tires, tune-up, low mileage. 281-0360 after 6 p.m.

77 TOYOTA COROLLA - very good cond., new brakes, tires, alt., battery, \$2,200. Ext. 4768 or Ext. 2512 after 6 p.m.

77 PONTIAC ASTRE - 2 dr., 4 cyl., \$850. 331-1718. SNOW TIRES - (2) Firestone A78-13, new, \$30. Steve, Ext. 4187.

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

78 SUZUKI GS 1000E - mint cond. E. Edwards, Ext. 4027 or 286-1121.

79 HONDA CIVIC - auto., reg. gas, excel. cond., cassette w/ equalizer booster, \$3,000. 821-0137.

69 PONTIAC CATALINA - a/c, p/s, p/b, new brakes, new tires, runs well, 50K orig. miles, \$1,000. 878-4664.

73 VW TYPE 3 - rebuilt eng., good running cond., \$700. Ron, Ext. 2189 or 281-6630 after 5 p.m.

72 OLDS 98 - 140K mi., many new parts, reliable transp., best offer. Marian, Ext. 3999 or Ext. 3129 eves.

RIMS - (2) from Oldsmobile Cutlass, \$15. Ext. 2175.

78 AMC GREMLIN - 250 eng., 4 spd., man. trans., a/c, orig. owner, mint cond., \$1,900. Danny, Ext. 3935 or 698-2743.

79 FORD VAN - brown, 8 cyl., 302, a/c, p/s, a/t, port windows, excel. cond., \$3,800. Ext. 4486 or 878-0480 eves.

81 VIKING POP-UP TRAILER - sink, stove, heater, sleeps four, 685 lbs, \$2,200. 929-3312 after 5 p.m.

80 OLDS 350 - diesel eng. complete, good running cond., \$850. Al, Ext. 4313.

77 PLYMOUTH VOLARE - p/s, p/b, a/c, good running cond., \$1,250 firm. 281-4871 after 6 p.m.

TRAILER HITCH - tube type, from 1973 Chrysler, detachable, 1-3/4" & 2" balls, excel. cond., \$50. Bob G., Ext. 3988.

72 TOYOTA LAND CRUISER - 4 wheel drive, 6 cyl., \$2,800. 475-0831.

79 FORD FAIRMONT - 55K miles, 4 dr., a/c, p/b, p/s, must sell, \$3,300. Ext. 3637.

80 HONDA 750 MOTORCYCLE - 1,300 mi., full dress, excel. cond., \$1,800. 878 8008.

SEARS CARTOP CARRIER - used once, \$45; new car ramps, \$10; van front seats, \$30. 929-4133.

CHEVY PICK UP TRUCK PARTS - front bumper, rear step bumper, st.st. mirrors, bumper guards, LR78-15 tires on wheels. 269-9510 after 7 p.m.

TUNE UP KITS - for VW's '64-'67, \$2.50 ea.; (2), C78-13 snow tires, good cond., \$40/pair. Susan, Ext. 4267.

75 CHEVY MALIBU - 6 cyl., new tires, 106K mi., good maintenance, \$950. Ext. 2735 or Ext. 3181 eves.

79 CHEVY CAMARO - 6 cyl., auto., sunroof, am/fm stereo, beautiful cond., must see. 325-1756.

77 PLYMOUTH VOLARE WAGON - p/s, p/b, a/c, snow tires and rims, \$1,700. Ext. 3664 or 689-8090.

75 CHEVY NOVA PARTS - nose, \$125; 3 spd. trans., \$50, both excel. cond. Dick, Ext. 3499 or 589-9103.

82 SUZUKI RM125 - dirt bike, mint cond., used weekends, w/equip., \$800 firm. John, 281-3342 after 6 p.m.

73 VW KARMANN GHIA - convert., new top, runs well, \$2,100 or best offer. Ext. 4819 or 744-0681.

72 FORD MAVERICK - low mi., runs well. Devinder, Ext. 4985.

76 DATSUN 710 - new brakes, good tires, am/fm radio, very good cond., \$1,600. Ext. 3565 or 924-8594.

76 VW BEETLE - 98K mi., stand. trans., am/fm cassette stereo, best offer. Ext. 7720 or 281-2396.

81 FORD ESCORT DL WAGON - 39K mi., am/fm tape, roof rack, manual, clean, \$3,400. 286-0497.

TOW BAR - universal H.D., new. Ext. 2462 or 269-9510 after 7 p.m.

71 VW POP-TOP CAMPER - rebuilt eng., new radials, battery, good gas mi., \$1,200. Wanda, 922-4865.

75 TOYOTA COROLLA - will sell auto. trans. or whole car, repairable, \$100. Al, Ext. 2043.

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

77 YAMAHA 500 - low mi., off road, street legal, \$600. 286-2289.

76 CHEVY IMPALA 350 - dependable engine, interior good, body fair, \$550. Ext. 2853 or 331-5133.

RIMS & HUBCAPS - (4), new for Ford E-150 van, \$20. 289-2939 eves.

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

72 VOLVO 144 - runs but needs some work, \$300. 928-3568 after 5 p.m.

73 VOLVO 164E - 4 dr., well maintained, good cond., extras, \$2,000. Ext. 4238 or 286-3509.

80 HONDA - like new, low 2,400 mi., \$1,800. 286-0372.

VESPA BRAVO MOPED - Super Deluxe, Class B, excel. cond., used very little, \$500. Lloyd, Ext. 3381 or 286-1024.

Boats & Marine Supplies

28' OWENS - fully equipped, good cond., many extras and new parts, \$2,400. 281-0360 after 6 p.m.

OUTBOARD MOTOR - 3-1/2 h.p. Evinrude Twin, runs great, \$160. Steve, Ext. 4187.

21' THUNDERBIRD - modified tri-hull, 115 h.p. Evinrude, in water, ready to go, \$2,500. 878-4664.

17' COBIA VEE - 100 h.p. Johnson, both 1971 with 1981 Dilly trailer, \$3,000. Ext. 7115 or 744-5801.

19' CRUISERS INC. - fiberglass with 90 h.p. Chrysler, trailer, many extras, excel. cond. 325-0447 after 6 p.m.

CANOE - Sawyer X-17, Golden glass, 2 paddles, 2 PDF's, all items never used, \$675. John, Ext. 4255 or 929-4450.

17' TRAVEL TRAILER - sleeps 6, stove/oven, a/c, gas refrig., lt. wt., low profile, excel. cond., \$2,200. Arnold, Ext. 4289 or 929-4905 after 5 p.m.

Miscellaneous

RAILROAD TIES - (12) pressure treated, 4x4x8 ft., \$100. Pat, 289-5420.

RCA COLOR TV - 13", 10 months old, still under warranty, \$150. Ext. 4768 or Ext. 2512, after 6 p.m.

DIAMOND RING - beautiful marquis, 2 baguettes, total 1 point, appraised \$3,125, sell for \$2,000 firm. Mary Ann, 286-2435.

COUCHES - 3 piece brown sectional, 3 cushion, blue, \$35 each. K. Fuchel, Ext. 4116.

FIREPLACE - free standing, white enamel cone, new with screen preway, \$100. Steve, Ext. 4187.

SUIT - black, 100% wool, with thin red stripe, size 9, worn twice; spiffy red wool jacket, never worn. Janet, Ext. 2345 or 929-8152.

ENGAGEMENT RING - new, excel. cond., .3 carats, appraised value, \$700, asking \$350. Larry, Ext. 4821 or 727-1412.

MARTIN GUITAR - model 7-28, three quarter size, excel. cond., case, with lifetime guarantee. 821-0137.

MINK JACKET - like new, beautiful fur, \$3,000 or best offer. 727-2604.

GE UPRIGHT FREEZER - 20 cu. ft., white, very good. \$200. Ext. 2462 or 269-9510 after 7 p.m.

TRUMPET - professional model, \$375; coronet, good cond., \$125. Jim, Ext. 3372.

BARBEQUE GRILL - Sunbeam Patio Master, used one season, \$25. 281-4871.

COLONIAL ACCENT PIECES - mirrors, planter, lamps and more, all reasonable. Jody, Ext. 2907.

RABBIT COAT - size 7, rust color, bought at rabbit farm, like new, \$100. 281-7073 after 5:30 p.m.

ACCORDIAN - 120 base, \$125; "Flexible Flyer" sled, large, \$25; concertina, \$8. Ann, 286-2280.

WARDS WASHER - large capacity, \$150; Sears apartment size dryer, \$100; fiberglass marble sink, \$40. 878-4259.

DRILL PRESS - 5 lb. capacity, variable speed, table model, cast iron, \$75. 475-0831.

MEN'S BICYCLE - Schwinn, 10 speed, like new, \$80. Ext. 3637 or 282-3105 eves.

GARMENT BAG - like new, \$20. 751-1884.

LIVING ROOM SET - Mediterranean, gold color, sofa w/2 matching chairs; coffee table, end tables w/glass tops, lamp and chandelier, extras to match. 281-6727.

MET OPERA - Elektra, Dec. 8, evening, family circle, 3 available, \$14 each. Dave, Ext. 2694.

PERFECT WRITER - speller and calc., for MS-DOS (IBM, etc.) orig. disks and documentation, \$50 each. Dick, Ext. 2911.

VERTICAL BLINDS - for patio door, beige. Carol, Ext. 4398.

BUNDY CORONET - and case, \$125. 475-2998 after 3 p.m.

WOOD STOVE - Surdiac, 60,000 BTU, excel. cond., \$300 ONO; contemporary sofa & armchair, \$75 ONO. Ext. 3811.

FILTERED COFFEE MAKER - \$15; camping cooler, \$10. Luc, Ext. 2735 or Ext. 3181 eves.

SMALL PIANO - 58 keys, 38" long, needs tuning, \$125. 298-4398.

WINDOW AIR CONDITIONER - \$75; fan \$25. Ext. 4940 or Ext. 3117.

TWIN BED - maple, complete, \$50; Scott spreader, upholstered chair, oil drums, \$10 each; white double sink, \$20; SCM adding machine, \$15. 325-1961.

COYOTE FUR JACKET - lady's size 12, horiz. pelts, dress or sport, leather trim, 1/3 cost, \$875. 736-3578.

ISLANDERS HOCKEY STICK - with 25 signatures received during '84 playoffs. Charlie, Ext. 3897.

BEDROOM SET - 5 pieces, w/queen mattress, \$250; bookcase, coffee table, paperback books. 744-4838.

GUCCI SHOULDER BAG - black, brand new, 12"x9"x2", cost \$180, asking \$90. Ext. 3293.

DECORATED PILLOW CASE - pretty Chinese brocade, 17.5"x17.5", red and blue, new. Ext. 2225.

MINI BIKE FRAME - with wheels, shocks, strong, \$45; bass amp., 2-1/2" speakers, excel. cond., \$300. 281-3149.

CASEMENT WINDOWS - heavy-duty, aluminum, screens, various sizes, \$20/each. Niels, Ext. 4124.

PLAYPEN - highchair, swing w/canopy, stroller, carseat, combination, all very good cond., \$65. Jim, Ext. 2050.

COLONIAL WOOD SET - couch, rocker, 2 end tables, party ottoman, one month old, \$375. Neal, Ext. 4019.

TEAS - 20 different varieties from Selestial Seasonings, call for list. \$1.70/ per box. Victor, Ext. 2395.

BICYCLE - suitable for girl's age 6-10, red, two-wheeler, excel. cond., \$30. Ext. 3369 or 929-6442.

CLOTHES DRYER - elec., 220V, works well, \$50. 821-0758, 6 p.m. to 8 p.m.

WOOD BURNING STOVE - takes 18" logs, front doors and screen, \$200. J. Davis, 473-0495.

COUCH - custom cont., grey, L-shaped, excel. cond., must see, \$900. 265-3208.

SOFA - Danish, green with walnut trim, \$100; custom corner bench & table, \$100; pine corner hutch, \$50; drafting table & stool, \$60. Ext. 4483.

NATIONAL GEOGRAPHIC MAGAZINES - 1970's issues, make offer. Ext. 3082.

ENCYCLOPEDIA - complete, recent, reasonable. Helen, Ext. 5158.

MOVING SALE - queen bed set, mint cond.; record/cassette player; dishwasher; men's bike. 331-5133.

MAGNAVOX COLOR TV - 25", console needs repair, picture tube good, \$70; Sears 19" b/w TV, \$30. Ext. 3987.

AIRLINE CARRIER - for small dog, best offer. Ext. 4091.

ENGAGEMENT RING - 1.01 carat, excel. quality. Dan, Ext. 3275.

DINING ROOM SET - mahogany table, 3 leaves, pads, 6 chairs and hutch, \$750. 732-3105.

BEDROOM CHEST - small, \$7; 30" doors, \$5/each; flood light bulbs, \$2/each; wooden artwork trays. Ext. 4192 or 751-7787.

BED - single, mattress and box spring with metal frame, \$30. Mark, Ext. 4058 or 473-5012.

COLOR TV - Zenith 25" console, excel. cond. 325-0447 after 6 p.m.

LADY'S WINTER COATS - almost new; two winter outfits for two-year old. Chandra, 924-0582.

MAGNAVOX STEREO - hi-fi console, good cond., nice piece of furn., good sound, \$150; Wurlitzer organ, spinet, solid cherry, model 4300D, multi-matic percussion, excel. cond., \$900. Lloyd, Ext. 3381 or 286-1024.

WOODEN SHUTTERS - 51", new, \$5. 289-2939 eves.

ROUND TABLE - wood, \$250; double head, foot board, \$25; formica table, chairs, \$20; skis, \$25. 929-6623.

SINK TOP - 5' stainless steel, large basin with backsplash and new faucets, \$80. 475-0831.

COUCH - best offer over \$10; Marantz stereo, am/fm cassette, turntable, w/2 triaxial speakers, best offer over \$100; lobster pots, wire, vinyl coated, \$22/ea. Ext. 2926 eves or 744-3298 days/weekends.

CARD TABLE - custom made, \$75; Shugart dual 1/2 size disk drives, in case, DS/DD, \$250 pair. Rosalie, Ext. 3160.

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 Rent

VERMONT CHALET - on pond, fall and winter rental, 4 bdrm., 2-1/2 bath, stone fp., fully equipped kitchen, ski Stratton, Bromley, Magic, Okemo, X-C. 757-5599.

ROCKY POINT - Sept. to June rental, furnished, 3 bdrms., 1-1/2 bath, l/r, d/r, eik, deck/waterview, no children/pets, \$700/mo., incl. heat. 744-1234.

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

MILLER PLACE - 1 bdrm. apt., l/r, kitchen, private entrance, utilities incl., avail. Oct. 1st. Ext. 2537 or 473-1158 after 6 p.m.

VERMONT HOUSE - reasonable, 3 bdrm., 2 bath, fireplace, fully equip., beautiful view, x-country & downhill skiing, avail. weekly or weekends. 732-6499 after 6 p.m.

EAST PATCHOGUE - 2 bdrms., eik, l/r, bath, \$400/mo. + util., no pets. Walt, Ext. 2907 bet. 9 a.m. and 4 p.m. or 698-0576 after 6:30 p.m. and weekends.

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

EASTHAM, CAPE COD - Sept.-Nov., 4 bdrm. house, sleeps 8, 2 baths, washer/dryer, dishwasher, deck, near beaches. 722-3865 eves. and weekends.

ROCKY POINT - 3 bdrm. cape, modern kitchen, dishwasher/self cleaning oven, dinette, large l/r with fp, carpeting, 2 full baths, large closets, \$750 + util. 744-8659.

GORDON HEIGHTS - two single rooms, share kitchen and bath, util. incl. 698-4895.

FLORIDA - winter rental, New Port Richey, house on deep canal, minutes away from Gulf, fishing, golf, 2 baths, furnished, \$600/mo., 3 mo. minimum. 751-0468.

SHAWNEE ON DELAWARE - condo., with everything provided (except food), sleeps six, one week-Oct. 13-19. John, Ext. 3651 or 929-3352 after 7 p.m.

For Sale

MILLER PLACE - colonial, 4 bdrms., formal l/r, d/r, country kitchen, fam. room w/brick frplc., \$158,000. 331-1718.

MASTIC - Cape Cod, 3-4 bdrms., 2 full baths, eik, finished basement, w/w carpet, deck, fenced area, many extras, mint cond., 8 miles from Lab, \$78,000. 281-6944.

CENTER MORICHES - ideal location, 2 bdrm., must see. 475-9065 anytime or 589-1661 bet. 9 a.m. & 5 p.m.

SO. SETAUKET - expanded 5 bdrm., colonial, cul-de-sac, 3 Vil. School Dist., 3-1/2 bath, 1/2 acre, low gas heat, assumable mort., 7-1/2%, possible mother/ daughter, owner anxious. Ext. 3293 or 698-6437 eves.

Free

HOUSE CAT - four years old, beautiful, all white, spayed female, family members allergic, looking for good home. Pam, Ext. 4303 or 286-8380.

Wanted

TRAINS - Lionel, American Flyer, accessories, any cond. brings good price. Carole, Ext. 3362 or 924-4097 eves.

BABYSITTER - responsible to care for 2 children, part time, Ridge area. 924-7723 eves.

HOUSE TO RENT - Sayville-East Islip area, option to buy. Ernie, Ext. 2957.

WEIGHTS - metal weight lifting set. Pete, Ext. 3297.

CO-OWNER - for 1978 25' Catalina sailboat, only half the maintenance and half the cost. 473-2473 or 744-7127.

BABYSITTER - on-site only, for one child, part time; tricycle, 26", in good cond., tap shoes for child, sizes 1 or 2. 298-4398.

PIANO TEACHER - for 7 year old, beginner, 3 p.m. Mon. or Wed., Stony Brook. Yako, Ext. 3349 or Ext. 2592.