BROOKHAVEN BULLETIN
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BROOKHAVEN NATIONAL LABORATORY

Thin Flat-Panel Video Screen Invented by DAT Researcher

If you were born in the first half of this century, you probably remember the first televisions — big, bulky boxes with tiny screens. In fact, a 16-inch screen was considered huge. As the century draws to a close, however, televisions with screens as large as 54 inches are on the market, and the space that these screens and their components take up has become thinner — sometimes less than two feet thick.

But the move toward even thinner screens continues, and now, James Veligdan, a BNL Department of Advanced Technology (DAT) research engineer with a background in physics, has taken video-screen technology a giant step forward: He has invented a flat-panel video screen, called a planar optic flat-panel display, that uses lasers as a light source. His prototype of this display screen is nine inches wide by five inches high. And it's only about *one inch thick*.

Thin and Rich With Advantages

With this new technology, in the near future, large, flat, wall-mounted displays may replace bulky picture tube televisions. Besides television, potential uses of the new technology — patented by Associated Universities, Inc. (AUI) — include video-advertising displays, computers, and automotive-dashboard and aircraft-cockpit displays, as well as portable military-map displays.

Since the BNL device has advantages in brightness, contrast and viewing angle over the new generation of liquid-crystal cockpit displays, the U.S. Air Force is funding development of the flat-panel device for use in its new airplanes. In another project involving the new technology and funded by the U.S. Department of Defense's (DOD) Advanced Research Projects Agency (ARPA), Brookhaven is also working on a five-foot plastic television screen for military use.

While the new flat-panel video display provides high-definition, full-color television images, the high-brightness military version is not yet cost-competitive for small television-type displays. As the video-rate scanners and diode lasers used in the BNL invention become less expensive, however, the new technology is expected to become marketable for multiple uses.

Roger Stoutenburgh

James Veligdan, Department of Advanced Technology, displays the prototype of the flat-panel video screen he invented.

Vital to Our Economic Future

President Bill Clinton has identified the development of flat-panel displays as vital to the economic future of the U.S., and the Brookhaven technology helps fulfill this national challenge, as the new flat-panel screen has several advantages over current technologies.

Many video-display systems now on the market use cathode ray tubes (CRTs). Although CRTs are reliable, they make the displays very large, heavy and not easily transportable. Other than CRTs, the major video-display technology currently is limited to liquid-crystal displays, which are comparatively difficult and expensive to manufacture.

In addition to overcoming these drawbacks, "The flat-panel video screen is totally eye-safe and high-contrast. It offers exceptionally wide viewing angles, and maintenance is easy and inexpensive," Veligdan said. "Also, it can be used in cold weather, whereas liquid crystals thicken and freeze as temperatures dip below freezing. And the technology can be adapted to display 3-D images, if the viewer wears polarized glasses."

This novel TV screen also has the capability of interactive communica-

(continued on page 2)

Coming Up

Chemist Charles Springer, Chemistry Department, will give the next Brookhaven Lecture on Wednesday, October 11. Entitled "Magnetic Susceptibility in MRI: Imaging the Brain Function," his talk will begin at 4 p.m. in Berkner Hall.

With $20M From Japanese Lab, RHIC Ventures Into Spin Physics

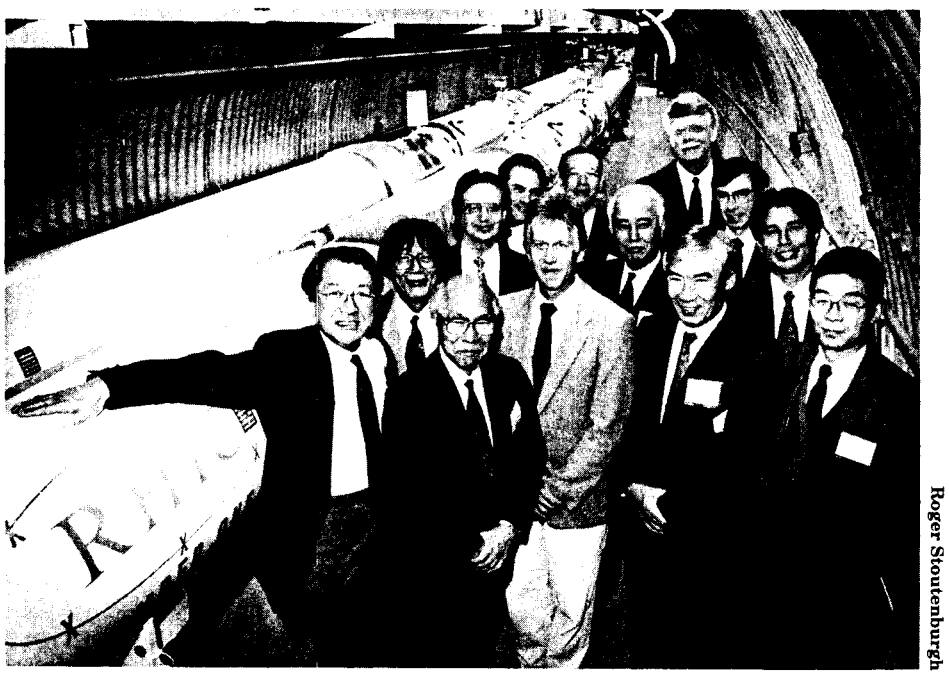
By penning their names on their respective lines in a memorandum of understanding during a ceremony held in Berkner Hall on Monday, September 25, BNL Director Nicholas Samios and Akito Arima, the President of the Japanese laboratory known as RIKEN, officially marked the start of a $20-million collaboration to do spin-polarized proton physics research at BNL's Relativistic Heavy Ion Collider (RHIC).

As a result of this collaboration, RHIC, when commissioned in 1999, would not only be the world's highest energy collider of heavy ions, but it would also be the highest energy collider of spin-polarized proton beams for physics research.

"The goal of the spin-physics program is to clarify the spin structure of nucleons by taking advantage of the unique potential of RHIC," explained Arima. "I believe that this is a very fascinating project, with crucial scientific significance, in particular, for establishing the understanding of nuclear substance in terms of quantum chromodynamics. Therefore, it is to my great pleasure that RIKEN joins the large, worldwide research collaboration at BNL."

Rikagaku Kenkyusho, or the Institute of Physical & Chemical Research, RIKEN is a semi-governmental research institute located north of Tokyo and supported by the Japanese government's Science & Technology Agency. Established in 1917, RIKEN is also a multipurpose laboratory employing a scientific staff about a third of the size of Brookhaven's, with research ranging from the physical to the life sciences, and with facilities to include an 8-billion-electron-volt (GeV) synchrotron x-ray source now under construction.

"This is a momentous occasion for many reasons," added Samios. Among them, "By establishing this international collaboration, we are not duplicating facilities: We are complementing them by expanding the capabilities of RHIC so that it can straddle the fence between high-energy and nuclear physics." In addition, Samios pointed out, "This collaboration opens the possibility of future collaborations in other areas, so it is an important first step."



Roger Stoutenburgh

On a tour of the Relativistic Heavy Ion Collider (RHIC) before the BNL-RIKEN signing ceremony are: (front row, from left) Satoshi Ozaki, RHIC Project Head; Akito Arima, RIKEN President; (second row, from left) Masayasu Ishihara, Chief Scientist, RIKEN Radiation Laboratory; Michael Harrison, RHIC Associate Head; Hiromichi Kamitsubo, RIKEN Executive Director; Takaaki Hattori, Director, RIKEN Contract Management Division; (third row, from left) BNL Director Nicholas Samios; Michio Seki, Director, RIKEN Planning Office; Hideo Yabuki, Director, RIKEN International Cooperation Office; (fourth row, from left) BNL Senior Physicist Samuel Aronson, PHENIX Project Director; Minoru Yanokura, Vice Director, RIKEN Planning Office; Thomas Kirk, BNL Associate Director for High Energy & Nuclear Physics; and Thomas Ludlam, RHIC Associate Head.

Wise Investment

"We just completed a review to see if RHIC is being completed within budget and on schedule, and the conclusion was yes, so RIKEN is investing wisely," commented David Hendrie, Director of the Division of Nuclear Physics within the U.S. Department of Energy's Office of Energy Research.

RHIC is being constructed to collide beams of heavy ions at relativistic energies of 100 GeV per nucleon, to explore hot and dense states of nuclear matter with the ultimate goal of creating what is called quark-gluon plasma. BNL's existing proton accelerator, the 30-GeV Alternating Gradient Synchrotron (AGS) has not only been accelerating heavy ions since 1986, but it has also been accelerating spin-polarized protons since 1984.

So, since the AGS will be used as an injector for RHIC and since the necessary hardware to handle spin-polarized protons can be added to RHIC's lattice of magnets that will guide and focus any beam, BNL proposed "RIKEN become involved with this newly emerging field and facility because it would be fruitful for both laboratories," explained Satoshi Ozaki, RHIC Project Head. "Their contribution will expand RHIC's horizon."

Understanding Spin

Like mass and electric charge, each of the elementary particles in nature is distinguished by a unique value of spin. A magnetic property, spin is the intrinsic angular momentum of elementary particles and nuclei.

When spins are aligned in the same direction, the beam is considered spin-polarized. By colliding beams of polarized protons within RHIC, physicists hope to gain an understanding of the spin structure of nucleons; for example, they want to know how quarks and gluons, each having a spin of ½ and 1 respectively, organize themselves into a nucleon with a spin value of ½.

Half of the money that RIKEN brings to the collaboration will be used to build and install the Siberian snakes, spin rotators and other hardware needed to collide spin-polarized protons in RHIC.

The other $10 million will buy an additional detector system for PHENIX, one of the two large detectors now under construction for RHIC, which will allow this experiment to do spin physics. Specifically, PHENIX will gain a second muon arm, containing a 10.5-meter, 360-metric-ton magnet, and a muon tracking chamber and identifier.

— Marsha Belford

1995 Healthfest

BNL Health, Fitness & Safety Fair

The Lab's *Healthfest* is being sponsored by the Director's Office for the third year to encourage BNLers to take personal responsibility for their individual and family's health, fitness and safety. The hope is that employees and their families who attend *Healthfest* '95 — scheduled for Wednesday through Saturday, October 11-14 — will not only use the information to improve their personal well-being, but also to decrease their risk of occupational injuries and illnesses.

On **Wednesday, October 11**, the festivities for employees will begin with the **2-mile Employee Fitness Walk**, organized by the BNL Walking Club. Rain or shine, it will start at noon and leave from the Science Education Center, Bldg. 438. Before the walk, the BNL Aerobics Club will hold a stretch clinic, from 11:30 a.m. to noon. Then, on **Thursday, October 12**, the pace will be picked up with a **5-kilometer (3.1-mile) Employee Fitness Run**, organized by the BNL Roadrunners Club. It will start at the Biology Department, Bldg. 463, at noon, rain or shine.

The two-day **Health, Fitness & Safety Fair** will be held **Friday and Saturday, October 13 & 14**. On Friday from 11 a.m. to 2 p.m., employees are invited to view the various displays on such topics as back safety and ergonomics, cancer and heart-disease prevention, and traffic safety and emergency preparedness; participate in a demonstration of stress management and relaxation techniques; and be screened for blood pressure, cholesterol, foot problems and pulmonary function.

Then on Saturday, October 14, from 10 a.m. to 2 p.m., employees are invited to bring their families to the fair, which will be expanded to interest children and parents alike. Parents may be interested in children's height & weight measurements, foot screening, and photo ID and fingerprinting; while children will like the teddy bear clinic, pumpkin painting, face painting, clowns and balloons. Each day, door prizes and healthy refreshments will also be offered.

In addition, Saturday will feature fitness and safety fun for all: family tennis, all-star basketball, ballroom dancing, country/western dancing, family bicycling, water safety & rescue demonstration, family swimming and water aerobics.

To register for the walk, run, workshop, foot screenings, tennis, dance lessons and/or bicycle ride, use the form below. For more information, contact Mary Wood, Ext. 5923.

1995 *Healthfest* Registration Form

Name: _____

Life # _____ Ext.: _____

Dept./Div.: _____ Bldg.: _____

❑ **2-mile Employee Fitness Walk** (rain or shine)
Wednesday, October 11 noon - 1 p.m.

❑ **5-kilometer (3.1-mile) Employee Fitness Run** (rain or shine)
Thursday, October 12 noon - 1 p.m.
❑ female ❑ male age on day of run: _____

❑ **Podiatry Foot Screening for ADULTS**
Friday, October 13 11 a.m. - 2 p.m.

❑ **Stress Management and Relaxation Techniques Workshop**
Friday, October 13 select time: ❑ noon - 12:30 ❑ 12:30 - 1 p.m.

❑ **Podiatry Foot Screening for CHILDREN**
Saturday, October 14 10 a.m. - 2 p.m.

❑ **Family Tennis Games**
Saturday, October 14 10 a.m. - noon ❑ beginner ❑ advanced

❑ **Ballroom Dance Lesson for ADULTS**
Saturday, October 14 11 a.m. - noon

❑ **Country/Western Dance Lesson for ADULTS**
Saturday, October 14 noon - 1 p.m.

❑ **5-mile Family Bicycle Ride**
Saturday, October 14 noon - 1 p.m.

Return completed form to Mary Wood, Bldg. 490, by Thursday, October 5.

Healthline Lecture

Exercise Do's and Don'ts

Back by popular demand, exercise physiologist Laura Tipaldo will present the next Healthline lecture, "Exercise Do's and Don'ts," on Tuesday, October 3, from noon to 1 p.m. in Berkner Hall. All are invited to this lecture, which is sponsored by the Health Promotion Program (HPP) of the Occupational Medicine Clinic. The program will be available afterwards on audiocassettes in the Research Library.

After reviewing exercise principles, Tipaldo will discuss proper technique for common exercises and offer tips on sticking to an exercise program.

Graduated from Hofstra University with a degree in exercise science, Laura Tipaldo has worked as a personal trainer and within fitness centers for corporations such as Chase Manhattan Bank and Kraft General Foods.

To register for this lecture, complete and return the bottom portion of the Healthline flyer recently sent to all employees to Health Promotion Specialist Mary Wood, Bldg. 490. For more information on HPP or the Healthline lecture series, call Ext. 5923.

Flat-Panel Screen (cont'd.)

tion with the viewer. As Veligdan explained, "A viewer can remotely control the TV by using a laser pointer, just like a person would use a mouse to control a computer."

Veligdan got the idea for this innovative approach to video screens in the summer of 1994. "I was looking through optics textbooks, and the idea came to me," he recalled. "My supervisors, Jim Powell and Morris Reich, encouraged me to pursue it, and the results have been very promising."

How the Screen Works

The technology works by directing light from a miniature diode laser to a scanner, which guides the light beam into the proper sector of laminated wave guides. Composed of multiple sheets of laminated glass or plastic, the wave guides direct the light onto the screen to display the video image.

"The display system operates on the principle of total internal reflection," Veligdan explained. "The cladding over the glass layers has a lower refractive index than the glass. Thus, a light beam that enters the sheet at the bottom will travel without any reflective loss to the screen, providing an extremely sharp image."

The flat-panel video screen was originally developed under a technology maturation grant from the U.S. Department of Energy's (DOE) Energy Research Office. Through interagency cooperation between DOE and DOD, further development of the technology is being funded by the U.S. Air Force and ARPA for military applications.

As holder of the patent for the new invention, "AUI is actively seeking licenses for the flat-panel display," said David Langiulli in BNL's Office of Technology Transfer, "and we have been speaking with a number of companies that have expressed interest in commercializing the technology."

"There are several competing technologies in this field now, from plasma displays to liquid-crystal displays," said Veligdan. "Time will tell which will be the first to become commercial. Ours is the youngest technology, but it has a good chance."

— Diane Greenberg

Enrollment Open for Medical & Dental Plans

Until October 20, eligible employees working 20 or more hours per week may make changes to their medical and dental coverages: Employees may join a medical or dental plan, change from one plan to another, add or drop family members covered or drop coverage entirely.

Coverage changes made during the open enrollment period will become effective January 1, 1996. *Employees who do not want to change their coverages at this time do not have to do anything for them to continue.*

Medical: AUI Plan or HMO?

The medical plans available to eligible employees are the AUI Medical Plan, administered by CIGNA, and three health maintenance organizations (HMOs): ChoiceCare, Health Insurance Plan of Greater New York (HIP) and US Healthcare. Employees who enroll in any of the medical plans are required to pay a contribution for their medical insurance coverage.

In an HMO, employees receive medical services from physicians and health-care facilities within that HMO's provider network. There are no claim forms to submit, and many services are covered, including physician visits, well-baby care, surgery, x-rays, hospitalization, diagnostic tests and prescription drugs. Some HMOs require a copayment at the time services are rendered.

Under the AUI Medical Plan, employees choose their physicians and health-care facilities. To receive reimbursement for covered medical expenses, employees must submit claim forms to CIGNA.

Dental: CIGNA Plan or AUI Plan?

The dental plans available to eligible employees are the CIGNA Dental Health Plan and the AUI Dental Assistance Plan, administered by Eastern Benefits Systems. Employees who enroll in either of the dental plans are required to pay a contribution for their dental insurance coverage.

Under the CIGNA Dental Health Plan, there are no deductibles, no maximum benefits and no claim forms to submit. Dental services are provided through a network of participating dentists. Many preventive and basic services are covered in full. Restorative and orthodontic services are based on a fee schedule.

Under the AUI Dental Assistance Plan, employees may choose any dentist, and preventive, diagnostic, basic and major dental services are based on a fee schedule. Orthodontia for dependent children is covered at 50% of the reasonable and customary charge. Claim forms are required for reimbursement. The plan has a $25 individual and $75 family calendar year deductible for basic and major dental services. The maximum benefit is $1,000 per person per calendar year for non-orthodontic service, with a separate $1,000 lifetime maximum per child for orthodontia.

Plan Representatives Coming on Site

To help employees decide which medical and dental plans are right for them, representatives from all of the available medical and dental plans will be in Berkner Hall from 11 a.m. to 2 p.m. on October 3, 13 and 17, and from 10 a.m. to 2 p.m. on Saturday, October 14, during *Healthfest* '95. Literature will be available, including lists of physicians and facilities participating in the medical HMOs and the CIGNA Dental Health Plan, and comparison sheets for the various programs.

Employees who want to make changes to their medical or dental coverages must contact Muriel Pfeiffer, Ext. 2877, for the required forms, which must be returned by Friday, October 20, to Bldg. 185. Pfeiffer will also be available at Berkner Hall at the times indicated above to answer employees' questions.

Changes can be made only during the annual open enrollment period or when a qualifying event occurs. Qualifying events, such as the birth or adoption of a child, marriage, divorce or legal separation, loss of dependent status, or spouse's gain or loss of employment, allow employees to make certain changes to their coverages within 31 days of an event's occurence.

New Cashier's Hours

As part of the cost-reduction effort in the Fiscal Division, effective Monday, October 2, the Cashier's window in Bldg. 134 will be open only two hours per day — 2:30 to 4:30 p.m.

The reduced hours necessitate that Cashier services will be limited to: travel advances, petty cash transactions, and guest services, which include collaborator payments, cashing travelers' checks, and housing and phone remittances.

Services to be discontinued are the cashing of BNL employees' personal checks and BNL payroll checks.

Suggested alternatives to the discontinued services are: the on-site branch of the Teachers Federal Credit Union, the on-site ATM machine in the Berkner Hall lobby and the electronic direct deposit of paychecks, an option available to employees upon request at the Payroll Office in Bldg. 134.

Food Drive Needs You

Almost eight years ago, in an effort to help feed the hungry in Brookhaven Town, Brookhaven INTERFACE, which is a coalition of local businesses, schools and civic organizations including the Lab, teamed up with local food pantries, to help them keep their shelves stocked. As a result, members of INTERFACE hold regular food-drive days, during which canned goods and other nonperishables are collected for donation to the pantries.

Since November 1988, Brookhaven employees have contributed 182,756 pounds of food to this effort during the monthly food drives held at the Lab. Until now, these have been coordinated by Carole Kerr, Director's Office. However, since she is leaving the Lab, the BNL Food Drive needs another coordinator. Supervisory approval is necessary. For more information about the tasks involved or to volunteer, call Business Manager Barney McAlary, Ext. 3330.

Call for Nominations For Goldhaber Prize

Brookhaven Women in Science (BWIS) is now accepting nominations for the Gertrude S. Goldhaber Prize, which honors nuclear physicist Gertrude Scharff-Goldhaber, who, in 1950, became the first woman Ph.D. physicist appointed to the BNL staff.

The winner of the $500 award will be a woman graduate student in physics, in recognition of her substantial promise and accomplishment. She will be expected to give a seminar on her work at the award ceremony next spring.

To be eligible, she must be a candidate for a doctoral degree, still active as a physics graduate student and *not* receiving her degree before spring 1996. She must either be enrolled at the State University of New York (SUNY) Stony Brook or performing her thesis research at BNL.

Any member of the BNL staff or the faculty in the Physics Department at SUNY at Stony Brook may nominate a candidate by the deadline of October 31. For more information or to make a contribution to the prize fund, contact BWIS Goldhaber Prize, P.O. Box 183, Upton NY 11973-5000, or call Vinita Ghosh, Ext. 3527, or Louise Hanson, Ext. 7709.

Read All About It

The Research Library, Bldg. 477, has a copy of the U.S. Department of Energy's draft Waste Management Programmatic Environmental Impact Statement (WM PEIS), which covers the entire country. Prepared by the Office of Environmental Management, Office of Waste Management, the report is available to the public for review and comment until December 21, 1996. For more information, contact Judy Liu, Ext. 7860.

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Softball Champs

In League E1, nobody beat the System: (kneeling, from left) captain Pete Cancel, Charlie Wilkens, J.R. Santiago; (standing, from left) Ken Kentoffio, co-captain Tony Mendez, Mike Schaeffer, John Blydenburgh, Brian Boyle, Vic Cassella, Frank Gaetan and Fred Rodriguez. Not pictured: Pete Eterno, Mike Morrow and Walter Shaffer.

In League M1, the Goodtimers had a good time winning it all: (kneeling, from left) Larry Musso and Luke Greco, with Lukey Greco; (standing, from left) Maryann Musso, Allan Jones, Claudia Jones holding Jaclynn Jones, Kerry Bonti, captain Pete Bonti, co-captain Jennifer Schwarz and Michael O'Connor, holding Mikey O'Connor. Not pictured: Jerry Gaeta, Jody Greco, Steve Jao, Ali Lopez, Barbara McCarrick, Kim Moylan, Pat Moylan, Fran Salpietro, Dena Tullo and Carlos Victoria.

In League E2, the Big Sticks carried the day: (kneeling, from left) Brian Dusek, Chris Ceresko, Steve Pontieri, Bert Palacios, captain Robert Marascia; (standing, from left) Rob Marascia, Roy McWilliams, Vinny Lettieri, co-captain John White, William Chimienti, John DeBoer, Mike Hamilton, Joe Scaduto, John Mingoia and John Bohnenblusch. Not pictured: Gerry Bunce, Bob Chanda, Justin Flores and Bill Struble.

In League M2, the OER Wellheads finished well ahead: (kneeling, from left) Bill Dorsch, Tom Hayes, Mike Hauptmann, Victor Cassella; (standing, from left) co-captain Donna Alvarez, Teresa Baker, Tim Lenahan, Bill Pemberton, Bill Gunther, Jen Shannon, Peder Martino, Michael Cowell, captain Bob Howe and Sharon Emery. Not pictured: Carlee Beecher, John Carter, Laura Howe, Gail Penny, Jason Remien and Scott Smith. **— Photos by Roger Stoutenburgh**

Enjoy Great Adventure

Since Labor Day, Six Flags has been offering a fall special on Great Adventure tickets, which are good for weekends only through October 29. An amusement park, Great Adventure features rides such as the Great American Scream Machine, Batman and the Viper, and offers a safari adventure. The BERA fall special price is $18 for either the amusement-park ticket or the park & safari combo.

For tickets or more information, call Andrea Dehler, BERA Sales Office, Ext. 3347.

Our Sons Are Coming to Work

Over 170 sons of BNL employees and guests are already signed up to participate in the Lab's first Take Our Sons to Work Day, on Monday, October 9.

Since the event is open to only the first 200 boys ages 9 to 15 who register, parents should quickly return the registration form found on the bottom of the letter sent to all employees earlier this month or available at the reception desk in the Human Resources Division, Bldg. 185, or call Susan Foster, Human Resources, Ext. 2888.

This special day for boys was planned based on BNL's successful participation last April in the third annual Take Our Daughters to Work Day, organized by the Ms. Foundation for Women.

Now, a Lab committee headed by Foster has planned a day in which the visiting sons will report to work at their parents' normal reporting time and spend the morning in their parents' workplace. If a parent cannot bring his or her son to the workplace due to safety concerns, the parent should arrange for a "host parent" for this part of the day, or ask the Lab to find a host parent by noting this need on the registration form. Several boys already need host parents, so employees interested in helping out should call Foster, Ext. 2888.

At noon, the boys and their parents will go to the Brookhaven Center for a box lunch, compliments of Associated Universities, Inc. Then, at 1 p.m., the boys will hop onto buses for guided tours to several areas of the Lab, including: the Biology Department, the Central Shops Division, the Chemistry Department, the Firehouse, the Relativistic Heavy Ion Collider and, for the youngest boys, the BNL Science Museum.

Parents will pick their sons up at the Brookhaven Center at their usual departure times.

Volunteers Needed

Otherwise healthy cigarette smokers are needed for a positron emission tomography (PET) study, measuring the concentration of the enzymes MAO A and MAO B in the brain. These enzymes are known to be involved in depression and degenerative diseases of old age. Volunteers will be paid for their participation. For more information, call Naomi Pappas, Ext. 2694.

Be Social Soon

The next Saturday Social sponsored by the BNL Ballroom, Latin & Swing Dance Club will be held Saturday, October 14, from 8 p.m. to midnight in the North Ballroom, Brookhaven Center. All are invited. The suggested contribution is $1 per person. For more information, call John Millener, Ext. 3853.

Bowling

Red & Green League

K. Asselta 247, J. Griffin 246, J. Goode 245, R. Pwrivo 244/206/610 scratch series, R. Mulderig 237/605 scratch, K. Koebel 236, G. Weresnick 225, R. Raynis 221, R. Larsen 213/213, B. Geib 212, E. Larsen 204, R. Wiseman 204, A. Warkentien 202, E. Meier 200.

Purple & White League

R. Larsen 247/234/223/704 scratch series, E. Meier 222, J. McCarthy 218/194/195/607 scratch, M. Guacci 205/182, S. Logan 204/192, R. Wiseman 204/189, G. Mehl 204, A. Almasy 201, S. DiMaiuta 199, P. Callegari 194, E. Sperry III 190/183, M. Meier 190, B. Guiliano 187, T. Blydenburgh 186, Donna King 179, M. G. Meier 173.

Camping Club

The Camping Club invites new members to join up for camping on site or off, during weekends of affordable fun and games, camaraderie and pot-luck meals. When on site, the Lab's recreation facilities are available for Camping Club use, including the pool, softball fields, volleyball, horseshoe pit and tennis courts.

For a schedule of camp-outs, call Charles Watson, Camping Club chairperson, 929-4413, or M. Kay Dellimore, Recreation Supervisor, Ext. 2873.

Equipment Demo

On Wednesday, October 11, five divisions of 3M Company will host a product show from 11 a.m. to 2 p.m. in Berkner Hall.

The 3M Visual Systems Division will feature its new multimedia projector and the 6,000-lumen overhead projector. The 3M Data Storage Division will show Travan and MegaByte data cartridges, 3490E mainframe back-up, and ergonomics products.

While the 3M Abrasive Products Division displays Scotch Brite industrial abrasive products, the 3M Commercial Graphics Division will display Scotchprint electronic graphics.

Finally, the 3M Commercial Office Supply Division will have a variety of stationery products on display and for sampling, including a selection of Post-It Notes.

Volleyball

The second Volleyball League captains' meeting is scheduled for noon on Wednesday, October 4, in Room B, Berkner Hall. The agenda includes the final decision on refereeing, the budget presentation and the setting of team fees.

Badminton

Badminton competition for 1995-96 begins Monday, October 2, and will run for 25 weeks, excepting the period between December 23 and January 2. Participants may compete in either a challenge-format singles ladder or a season-long round-robin doubles tournament. Courts may be reserved one week in advance.

For more information, check the badminton bulletin board in the gym, or call Jay Adams, Ext. 4994.

Arrivals & Departures

Arrivals

Rangasayi N. Halthore.....App. Science
Gregory Marr.....RHIC
Anthony C. Tridico.....App. Science

Departures

This list includes all employees who have terminated from the Lab, including retirees:

Sandra L. Curry.....Reactor
Robert L. Harrington.....NSLS
Baohua Niu.....Chemistry
Stephen V. Richardson..Saf. & Env. Prot.

Cafeteria Menu

Monday, October 2	
Soup: Roasted corn chowder	.90/1.20
A la Carte: Arroz con pollo	3.85
Lite: Baked manicotti & cheese straws	3.65
Deli: Corned beef & cabbage	3.20
Grill: Cornmeal filet of fish	3.30
Tuesday, October 3	
Soup: Oriental vegetable	.90/1.20
A la Carte: Fried chicken	3.95
Lite: Meat lasagna w/focaccia	3.95
Deli: Turkey w/stuffing	3.20
Grill: Pastrami melt	3.30
Wednesday, October 4	
Soup: Sausage-tortellini minestrone	.90/1.20
Display Cooking: Pasta	4.75
Deli: Pork loin	3.20
Grill: Monte Cristo	3.30
Thursday, October 5	
Soup: Summer squash	.90/1.20
A la Carte: Macaroni & cheese	2.95
Lite: Veal Parmesan	3.65
Deli: BBQ brisket of beef	3.20
Grill: Turkey chili tortilla	3.30
Friday, October 6	
Soup: Seafood bisque	.90/1.20
A la Carte: Salisbury steak	3.85
Lite: Vegetable au gratin	3.65
Deli: Leg of lamb	3.20
Grill: Philly cheesesteak	3.30

Look Before You Leap

. The Safety Glasses Office, Bldg. T88, will be closed on Wednesday, October 4.

Classified Advertisements

Placement Notices

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

Each week, the Human Resources Division lists new placement notices. The purpose of these listings is, first, to give employees an opportunity to request consideration for themselves through Human Resources Division, and second, for general recruiting under open recruitment. Because of the priority policy stated above, each listing does not necessarily represent an opportunity for all people.

Except when operational needs require otherwise, positions will be open for one week after publication.

For more information, contact the Employment Manager, Ext. 2882, or call the JOBLINE, Ext. 7744 (282-7744), for a complete listing of all openings.

Current job openings can also be accessed via the BNL Home Page on the Wor d Wide Web. Outside users should open "http://www.bnl.gov/bnl.html", then select "Scientific Personnel Office " for scientific staff openings or "Employment Opportunities" or "BNL Human Resources Division" for all other vacancies.

SCIENTIFIC RECRUITMENT - Doctorate usually required. Candidates may apply directly to the department representative named.

POSTDOCTORAL RESEARCH ASSOCIATE - Trained in applied mathematics, physics or computer science/engineering, to conduct research on the development of image-analysis computer methods to enhance the signal-to-noise ratio in PET and MRI brain images and the application of these methods to the large Chemistry Department database of brain images. Knowledge of numerical analysis, computer modeling, 2-D and 3-D transform operators, classical statistics and 3-D directional and spatio-temporal statistics is required. Experience using large software packages such as SAS, IMSL/IDL, MAT-LAB, PV-WAVE and Neural Networks libraries is desirable. Contact: Alejandro Levy, Chemistry Department.

OPEN RECRUITMENT - Opportunities for Laboratory employees and outside candidates.

NS 2443. MANAGEMENT ANALYST - Requires minimum of a bachelor's degree and substantial systems experience which includes at least five years in project management for systems implementation, preferably in the high-end client/server area. Knowledge in one or more of the following areas is required: UNIX, Windows NT, and SQL and relational database technologies. An understanding of automation tools/4GL within a client/server environment and strong interpersonal and organizational skills are also required. Will be responsible for supervision, as required. Responsiblities include the implementation of a full suite of client/server financial software packages. Management Information Systems Division.

Motor Vehicles & Supplies

93 CHEVY S-10 TAHOE PICKUP - 5-spd., 2.8 liter V-6, am/fm cass., 7k mi., $8,500. Joe, Ext. 2898 or 728-1859.

93 NISSAN SENTRA SE-R - 5-spd., 36k mi., p/sunroof, ABS, air bag, ac, cruise, tape, alarm, $11,000 neg. Rob, Ext. 5161.

93 CHEVY LUMINA SPORT - gray/gray, V-6, a/t, ac, p/l, am/fm cass., ABS, $8,900; '68 Camaro, red, all metal, 350, ask. $6,000. Emil, Ext. 4289 or 473-3120.

92 CHEVY LUMINA - ac, a/t, p/s, p/w, am/fm, p/l, cruise, still under warr., good cond., $5,000 or best offer. Steve, Ext. 7309.

92 FORD F-150 - 6-cyl., 5-spd., 2wd, bedliner, new tires, 79k mi., asking $5,800. John, Ext. 8197.

91 FORD EXPLORER 4x4 SPORT - loaded, 66k mi., 2-dr., must sell, $12,000 neg. Deng, Ext. 2197 or deng@bnl.gov.

90 BMW 525I - black, 65k mi., orig. owner, maint. by BMW, mint cond., ask. $16,000. Michelle, 289-1726.

90 CAMRY - black, 4-dr., ac, p/w, p/d, 4-cyl., great mileage, 62k mi., gar., excel. cond., $7,200. Don, Ext. 5156 or 366-3878.

89 CHEVY CORSICA - 4-dr., 4-cyl., ac, a/t, cruise, tilt, high mi., excel. cond., $2,500. Gabriel, Ext. 2707 or 341-1087.

89 FORD ESCORT - looks good, runs well, new tires, 80k mi., $2,400. Pam, 474-2792.

89 FORD TAURUS GL - fully equipped, runs well, rear door damaged but functions, 108k mi., $2,500. Steve, Ext. 3822 or 929-6527.

89 DODGE COLT - 2-dr., 4-spd., ac, 92k mi., $1,900 or best offer. Jim, Ext. 3140.

89 FORD ESCORT LX - 2-dr. h/b, 5-spd., very clean, excel. cond. Bob, 821-0695.

89 HONDA CRX - 5-spd., silver, ac, 45 mpg, 2-seater, excel., $4,500. John, Ext. 7671 or 765-1299.

88 AUDI 5000 CS TURBO - loaded, am/fm cass., cruise, p/w, p/m, p/l, p/sunroof, leather seats, p/seats, $5,000 or best offer. Steve, Ext. 7309.

88 LINCOLN LSC - loaded, mint cond., $3,800. Harvey, 281-7568.

88 FORD TAURUS - s/w, 86k mi., loaded, $3,500. Ext. 4909.

87 TOYOTA CAMRY - ac, a/t, am/fm cass., cruise, 144k mi., gar., excel. cond., $3,900. Bill, 878-4356.

87 FORD MUSTANG LX - 64k mi., new brakes, ac, a/t, 4-cyl., runs well, $2,000. Katrina, Ext. 5849, 696-7153 or 878-6655.

87 PONTIAC SUNBIRD - tan, a/t, good shape, runs well, $1,100. Patt, Ext. 3799 or 744-9516.

87 SUZUKI SAMURAI - new top, 4wd, runs well, $1,600. P. Plunkett, 821-1839.

86 PONTIAC GRAND PRIX - all power, rebuilt trans., clean, runs well, custom wheels, $900 firm. W. Hughes, Ext. 2138.

86 AUDI QUATTRO - 5-spd., ac, sunroof, excel. cond., $3,500. Gail, Ext. 3338.

86 TOYOTA CAMRY LE - all power, new brakes & starter, sunroof, alum. rims, well maint., high mi., $2,500 neg. James, Ext. 5318 or 399-4912.

86 TOYOTA COROLLA - 4-dr., 5-spd., am/fm, cruise, ac, gar., 95k mi., excel., $2,950. Bob, 737-1786.

84 MUSTANG - conv., V-6, a/t, am/fm cass., near showroom cond., 84k mi. $3,500 neg. 286-3231.

83 HONDA PRELUDE - a/t, 2-dr., 100k mi.; Honda Civic, 5-spd., 4-dr. h/b, 135k mi., both in good cond., best offer. Baorui, Ext. 2045.

83 CHEVY BLAZER - 6.2-liter diesel, loaded, excel. cond., $4,700. Roger, Ext. 7518 or 878-8847.

82 VOLVO - s/w, 140k mi., good cond., very dependable, asking $2,000. 751-8731.

76 VOLVO 242DL - 4-spd., new batt. & front struts, good running cond., $900 or best offer. Steve, Ext. 3018 or 369-5181.

67 RAMBLER AMERICAN - 2-dr., HT, 6-cyl., a/t, 4 yr. old restoration, 88k orig. mi., excel. cond., $2,500. Joe, 281-7683.

67 VW BEETLE - spare engine, many extra parts. Phil, 821-1839.

CAR COVER - new, weather resistant, Dupont Tyvek, size 3, fits cars 14'3"-16'8" in length, $20. Pete, Ext. 3297 or 821-9547.

FLOOR MATS - '92 Sentra, carpet, gray, good cond., $25 or best offer. S. Spark, Ext. 4111.

VW RABBIT PARTS - engine block, heads, interior, exterior, suspension, wheels, body, etc. Ext. 3179 or 751-7104.

FORD PARTS - 302 alum. intake manifolds, headers, Mallory electronic distributor, '88 stock 5.0 roller motor, fuel inj., low mi. Wayne, Ext. 7238.

PARTS - cleaner, 20 gal. complete w/stand, pump, etc., $60; micro-precision static wheel balancer, $60, both $110 neg. Bill, 281-6498.

TIRES - 2 Goodyear P225/75R14, like new, $40 ea.; 1 Firestone P215/70R14, $20. 698-9274.

REPAIR MANUALS - '84 Subaru, $6; '76 Isuzu Trooper, $15; truck cap, '92 A.R.E. for Toyota std. bed, excel. cond., orig. $800, asking $400. John, Ext. 3292.

PARTS - '86 Camaro, 2.8 and '84 & '86 S10 Blazer. Rob, Ext. 7668.

TIRES - 4, Grandsports GTs 20570-14, fair cond., $40; 2, BF Goodrich 1957, w/w on GM wheels. 698-6436.

BUMPERS - new, front & rear, '95 Chevy van, $50 ea. firm. Don, Ext. 7237 or 929-6571 after 5:30 p.m.

Boats & Marine Supplies

23' SAILBOAT - fg, sleeps 4, galley, fixed keel, mooring, dinghy, jack stands, 6-h.p. motor, sails, excel. cond., extras, $1,500. Mike, Ext. 7861 or 698-3967.

16' STAR CRAFT - alum., new navy top, 50-h.p. Evinrude, trailer w/new elec. winch, $1,600. 924-6751.

Furnishings & Appliances

AIR CONDITIONER - RCA, 8,000 Btu, 3 yrs. old, excel. cond., $150. Joe, Ext. 7762 or 878-0093.

BED - platform, queen, storage cabinet, hdbrd., excel. cond., $400; brass headboard, full size, good cond., vertical rungs, 5'H, $50. Kathy, Ext. 2267.

COUCH - Castro Convertible, extra-long pull-out bed, matching recliner, brushed maroon velvet, great cond., $300. Steve, 758-7002.

DESK - rolltop, solid oak, 46Hx51Wx22D, 6 cubby holes, 4 drawers ea. side, center drawer. Ken, Ext. 2012.

DINING TABLE - Formica top, leaf, 4 chairs, v.g. cond., $75. 924-5816.

FREEZER - 19.3 cu. ft., Imperial, heavy-duty, commercial, 4 shelves, deep drawers, $125. Pete, Ext. 3297 or 821-9547.

REFRIGERATOR - GE, 19.8 cu. ft., 5'x5', ice, white, 4 yrs. old, 1 yr. warr., slight odor, $250 neg. Cindy, 331-4487.

REFRIGERATOR - Sears Kenmore, 18 cu. ft., white, good cond., 6 yrs. old, remodeling, must sell, $200. Dan, 698-7322.

TABLE - oak, contemp., 6 chairs, 36"x48", 12" leaf, 3 yrs. old, orig. $600, sell for $150. 874-3873.

TABLE - 72", glass, w/6 chairs, $1,000 neg. Steve, Ext. 7309.

WASHER & DRYER - Whirlpool, stackable, good cond., $150/both. Al, Ext. 2173.

Tools, House & Garden

BAMBOO PLANTS - 3' to 6', some w/pots, $5/ea. Anne, 361-6835.

CEILING FAN - Sears, 52", 4 frosted glass lights, works well, $20. Lloyd, Ext. 5225.

HEATER - 40", baseboard, portable, w/plug, $25. Nick, Ext. 7307.

LAWN MOWERS - Caldor, 20", $50; Greenbriar, rotary, 20", $60; Snapper, 21", self drive, 4.0 h.p., rear bag, brake, w/Snapperizer, $175. Dan, 698-7322.

MOTORS - for Green Machine & Blue Seal pool pumps, 1 h.p., ¾ h.p., new, $25/ea; chainsaws, 2, Sears, $125/ea. Bart, Ext. 2005, 924-6761.

PATIO SET - table, 4 chairs, umbrella, new; 3-in-1 yard games, new, never used; Trane heat pump unit, new. Harvey, 281-7568.

TREES - Japanese maples, $10-$45+. 265-6542.

Sports, Hobbies & Pets

CAMERA - Canon F-1, 50mm lens, 28-70mm wide angle zoom, 70-200mm telephoto, Vivitar auto flash, $400. Lloyd, Ext. 5225.

DOGHOUSE - Dogloo, for small dog, orig. $115, never used, $75. Carol, Ext. 3325 or 472-3332.

EXERCISE BIKE - good cond., $40. Joe, Ext. 7762 or 878-0093.

EXERCISE BICYCLE - Ergo Air Plus Pro w/work zone monitor, $100. Sandra, 874-3873.

EXERCISER - Body by Jake, used 5 times, $80. Al, 331-1003.

FISH TANK - 55-gallon, saltwater, complete setup, stand, filters. Jim, Ext. 4617.

FISH TANK - 55-gallon, 403 floral canister filter, gravel, extras, $300. 981-5993.

FISHING RODS - Diana Graphite, 9', $40; 10', $50, $75/both. Emil, 473-3120.

GOLF BALLS - almost new or shag balls, $2-$7, based on cond. John, Ext. 8197.

LACROSSE STICK - STX Dominator, purchased last year, hardly used, $45. Alex, 929-5945.

PIANO - Kranick & Bach, console w/bench, excel. cond. & tone, tuned every 6 mos., owned by music teacher, $1,100. Joan, 751-7023.

SEWING MACHINE - antique, iron trestle base, $80. Ext. 5491.

TREADMILL - Lifestrider 3325, 0-6 mph, auto incline, $250. Mike, Ext. 4293.

WEIGHT BENCH - incline or flat, good cond., $20. Kathy, Ext. 2267.

Audio, Video & Computer

CALCULATOR - HP285, scientific, manual, programmable, plotting, printing, symbolic computation, $50. Lloyd, Ext. 5225.

COMPUTER - Abest 286, 12 MHz, 40 MB HD, 1 MB RAM, 3½" drive, two 5¼" drives, 14" mono. mon. w/MGA, mouse, modem. Ext. 2272 or 732-7634.

COMPUTER - 486 DX66 mini tower, 120 MB HD, 4 MB RAM, 3½" floppy, Creative Labs sound board card, $375. Frank, 345-5834.

COMPUTER - Mac Plus, 20 MB external HD, modem, printer, software, $400 neg. Steve, Ext. 7309.

CD PLAYER - Aiwa DX-M51H in good cond., $40. George, Ext. 3783.

ELECTRONIC & COMPUTER PARTS - boards, components, you name it, no reasonable offer refused. Ext. 3179 or 751-7104.

MODEM - US Robotics Sportster, 14.4K baud, internal, $40. Dick, Ext. 7185.

PRINTERS - Okidata, Microline 391, Texas Instruments, Omni 800 model 855, $30/ea. Bill, 878-4356.

SPEAKERS - EPI, 9"x11"x21", $25/pair. 472-0510.

STEREO - Proton, AM300 amp/rec., CD player, cass., 2 Boston speakers, 3 yrs. old, $500 neg. Janet, Ext. 2345 or 929-3910.

STEREO - Kenwood TS450 HF transceiver, antenna, tuner, general coverage receiver, like new, $875. Frank, 345-5834.

TV - GE, floor console, great picture, $80. Chris, 399-7493.

TV - 21", console, Zenith, color, works well, asking $100. 924-6751.

TV - b&w, $20; large wooden plant stand, 1950s, $100; VCR, $45; outdoor wooden lounge chair, 1950s, $45. Kathy, 744-2203.

Miscellaneous

BABY'S ITEMS - 2 walkers, bouncers, $9/ea.; diaper pail, $4. 473-6432.

BOOTS - Durango, never worn, size 9EE, black w/silver trim, orig. $89.99, now $40. Pete, Ext. 3297 or 821-9547.

TICKETS - 2, *Beauty and the Beast*, Sun., 10/1, 1:00 p.m., $67.50/ea. Sue, Ext. 4461.

Free

GRAVEL - colored stone, great fill. David, Ext. 5207.

KITTENS - 2, tan-gray striped. 288-0889.

TV - color, Sony KV-1930R, works, color is off; IBM Displaywriter, 8" double floppy drives, monitor, daisy wheel printer, 1985 vintage. Adele, Ext. 2437.

Yard and Garage Sales

BAITING HOLLOW - Sat. 9/30, 8:30 a.m., rain date 10/1, housewares, fireplace, garden, furn., aquarium, bric-a-brac, ski boots, sewing machine, 10 Harper Rd.

ROCKY POINT - Sat. 9/30, 9 a.m.-5 p.m., appl., toys, furn., books, kitchen items, 49 Vine Rd.

SMITHTOWN - 9/29-30, 10 a.m.-4 p.m., housewares, kitchenware, granny's attic, more, 44 Brooksite Dr.

WADING RIVER - 9/30, 9 a.m., multifamily sale, household items, furn., clothing incl. maternity, toys and crafts, Clarendon Homes, 26 Long Bow.

Lost & Found

LOST - silver earring w/diamonds, on Mon., 9/18. Mary, Ext. 2719.

Car Pools

LIE EXIT 36 - fourth person needed. John, Ext. 5181.

Wanted

ACCOMMODATIONS - for 2 families, near ski area, 12/27-1/1. 689-1877.

APT/HOUSE - and housemates, for 23-yr.-old son of BNLer looking to rent within modest commute of office in Merrick. Jeff, 928-5714.

BABY-SITTER - to get my 6-yr.-old off the bus Mondays & Wednesdays, Mt. Sinai area. 928-7734.

CHILD CARE - mature, loving woman to care for child in my Medford home, f/t, nonsmoker, own transportation. 758-3274 after 5 p.m.

DRYER - electric. Jeanne, Ext. 7425.

HOUSE/CAT SITTER - in Bayport, Dec. 21-28. Bernice, 472-1735.

PERSON WHO BOUGHT BERLITZ GERMAN TAPES - I have booklet. Mott, Ext. 7108.

ROTOTILLER - gas-powered, mini-size. Harriet, Ext. 2800.

TRAILER - for 19' sailboat w/centerboard. Dave, Ext. 2686.

In Appreciation

Uncountable thanks to my friends at BNL for your concern and generosity during my recovery from my recent mishap. — Kevin Barnes

Thanks to all who attended my farewell party, especially to the Research Library staff who organized it. I feel deeply honored. — Harriet Martin

Farewell Gatherings

RETIREMENT PARTY - for A. van Steenbergen, K. Batchelor, N. Fewell, P. LeDoux, G. Stenby, B. Larson, Fri., Oct. 13, 5:15 p.m. at the Brookhaven Center, $25 incl. gift, buffet, refreshments. Toni Hoffmann, Ext. 5257, or Lydia Rogers, Ext. 4746, by Oct. 9.

Classified Ad deadline is 4:30 p.m. Friday for publication Friday of the next week.