BROOKHAVEN BULLETIN
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BROOKHAVEN NATIONAL LABORATORY

First RHIC Magnets Built by Industry Arrive at BNL

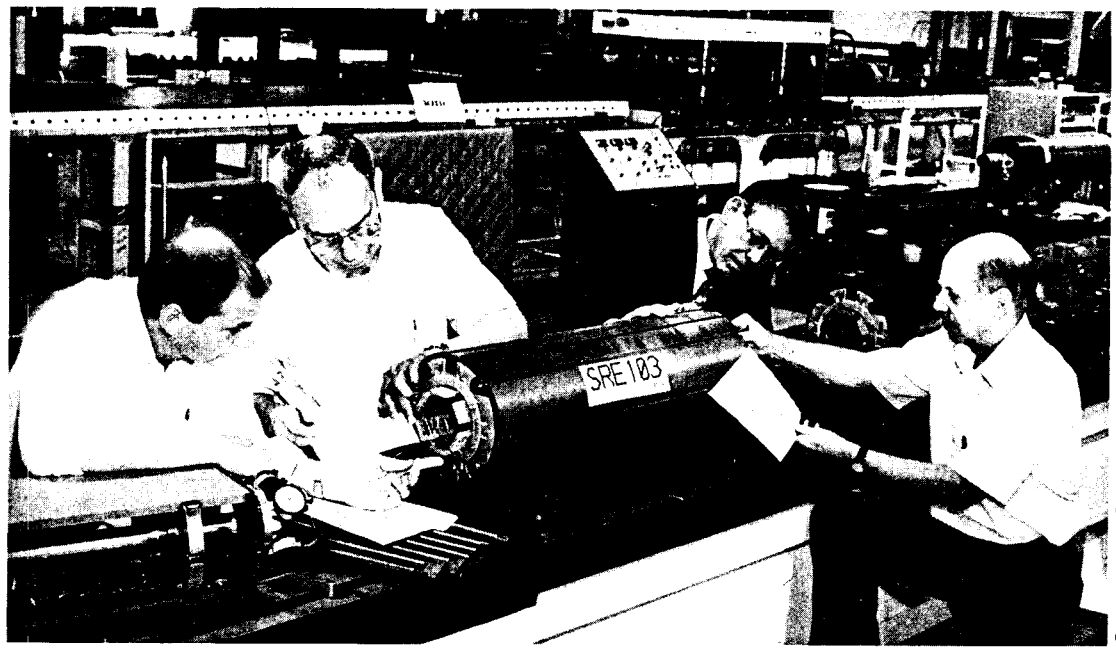
The first two of 300 superconducting sextupole magnets to be installed in the Relativistic Heavy Ion Collider (RHIC) arrived at BNL on August 9.

Built by Everson Electric Company of Allentown, Pennsylvania, they are the first superconducting magnets produced by U.S. industry for use in an accelerator.

Inspecting one of the newly arrived magnets are: (from left) Roy Lebel, a quality assurance engineer, and Melvin Lindner, a sextupole project engineer, both in the RHIC Magnet Division; Jay Redding, a senior contracts specialist in the Contracts & Procurement Division; and Erich Willen, Head of the RHIC Magnet Division.

Industry will manufacture nearly 1,200 of the 1,740 superconducting magnets needed to guide heavy ions around RHIC's two intersecting rings, each 3.8 kilometers (about 2.5 miles) long. Last October, BNL had signed a $2.25 million contract with Everson to build sextupole and special trim quadrupole magnets for the collider.

The bulk of RHIC's superconducting magnets — dipoles and quadrupoles — will be built by Grumman Aerospace Corporation of Bethpage, New York. Grumman is gearing up for magnet production to begin later this year.



Roger Stoutenburgh

Tech Transfer: The Emphasis Is on CRADAs

Over a decade ago, BNL formally established an office to promote the transfer of Brookhaven-developed technologies from the laboratory to the marketplace.

Today, that original effort, combined with the Lab's patent and licensing activities, has been expanded under the Office of Technology Transfer, headed by Sy Baron, Associate Director for Applied Programs.

According to the office's deputy manager, Margaret Bogosian, BNL has six main technology transfer mechanisms: patenting and licensing; personnel exchanges with other institutions; work for industry, universities and state and local government; the Lab's user facilities; an outreach effort to acquaint industry with BNL (see story about RHIC magnets); and — last on the list but quite effective — CRADAs.

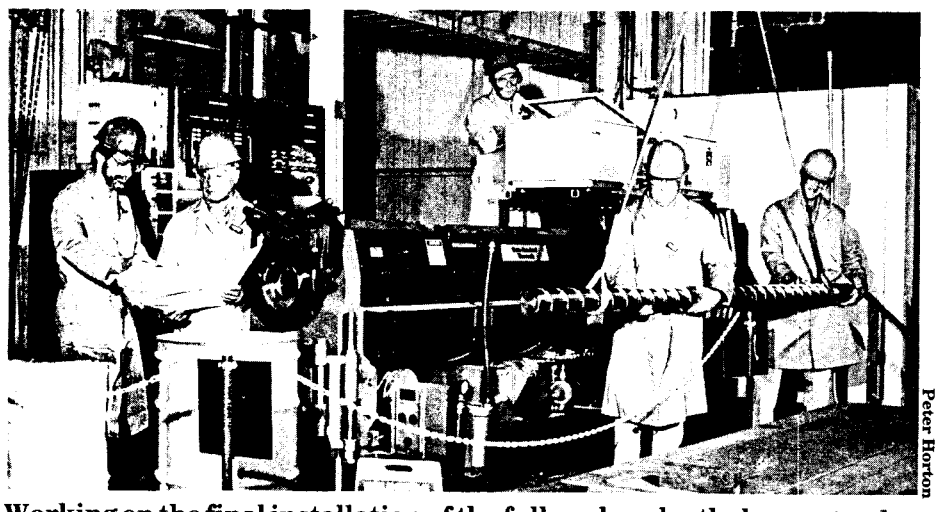
CRADAs, short for Cooperative Research and Development Agreements, have become a major focus of the tech transfer effort, with the federal government recently supporting significantly enhanced CRADA activity.

"CRADAs are aimed at U.S. industry," says Bogosian, explaining that, because they partner federally developed technology with the manufacturing and marketing know-how of industry, CRADAs can help boost U.S. economic competitiveness.

At present, BNL has 12 active CRADAs, with about eight more to be put in place soon. (Two of the Lab's active CRADAs are discussed in other stories in this issue.)

A look at the total dollars committed, both from the U.S. Department of Energy (DOE) and from the industrial partners, shows the increase in CRADA activity at the Lab.

In fiscal year 1992 (FY92), $1.1 million was committed for CRADAs. For FY93, nearly $1.7 million has been committed to date, with another $3.7 million pending. For FY94, says Bogosian, "We expect that our CRADA funding from DOE will be close to $6 million, with at least that amount in matching contributions from industrial partners." (continued on page 2)


Peter Horton

Working on the final installation of the full-scale polyethylene extruder are members of the team applying this technology to the encapsulation of hazardous chemical waste: (from left) Paul Kalb, Peter Colombo, Don Cassidy (top), Cal Brewster and Jay Adams.

A New Job for Plastic — Containing Hazardous Waste

The next time you use a plastic bag, think of hazardous waste.

Why? Because the same kind of plastic that went into that bag may be used to contain the hazardous chemical waste in the future.

That plastic technology was first developed in BNL's Department of Advanced Technology (DAT), at the Environmental and Waste Technology Center (EWTC), headed by Peter Colombo. There, it is about to undergo a full-scale test after attracting interest from diverse industries.

To contain waste better and more safely, Paul Kalb, led EWTC's Waste Treatment and Disposal Group in adapting an established plastic-processing technique called extrusion to their purposes. "We haven't invented the equipment," Kalb said. "We've just found a new application for existing equipment."

The new application uses low-density polyethylene, or LDPE, a kind of thermoplastic polymer that is pliable enough to make bags, but sturdy enough to mix with hazardous, low-level radioactive and mixed wastes to make nearly inert blocks.

The U.S. Department of Energy (DOE) and commercial waste processors usually use cement for treating (continued on page 2)

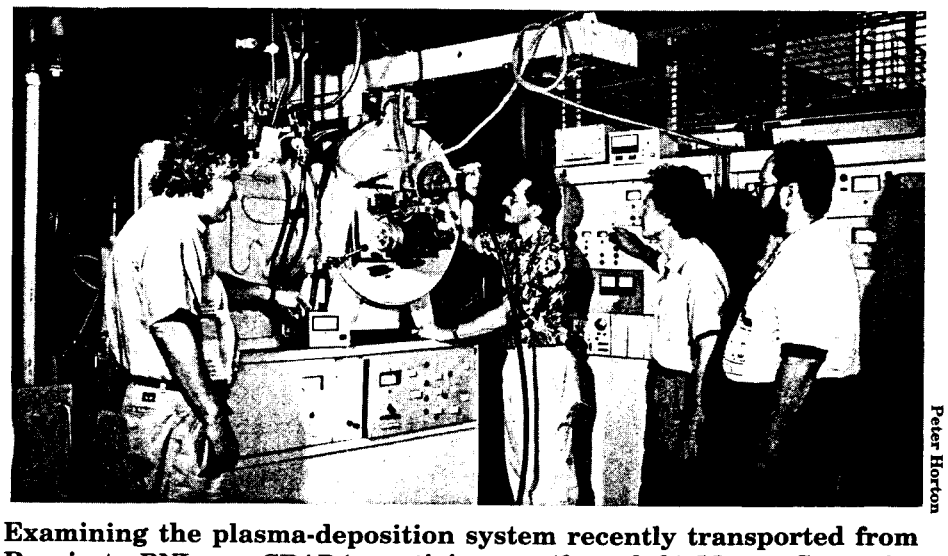
Developing Russian Materials For Commercial Use

Since the breakup of the former Soviet Union, American technology in Russia is becoming more prominent, but new ideas in technology are also flowing from Russia to the U.S.

BNL scientists have been among the first to tap into this new source of scientific innovation — by using a plasma deposition system made in Russia. Recently transported from Moscow to Brookhaven, this system is being used to make a novel class of submicron-scale materials in BNL's Physics Department.

Formed from diamond-like carbon, quartz-like silicon oxide and atomic-scale metallic clusters, these unique materials are called diamond-like nanocomposites (DLN). They are being investigated at Brookhaven to determine their suitability for use in commercial areas, particularly catalysis, under a Cooperative Research and Development Agreement (CRADA) with DFD Solid State Labs, Inc., of Farmingdale, New York.

Developed in the former Soviet Union in the 1970s, DLNs are now used in Russia as protective coatings for computer hard disks. The materials have many potential applications in industry, as they provide protection against corrosion, mechanical damwho (continued on page 3)


Peter Horton

Examining the plasma-deposition system recently transported from Russia to BNL are CRADA participants: (from left) Myron Strongin, BNL; Michael Abraizov, Polytechnic Institute; Benjamin Dorfman, DFD Solid State Labs, Inc.; and Mark Ruckman, BNL.

It's a Spaceship . . . It's a Dirigible . . . It's a Bubble Chamber!

This intriguing, spaceship-like device surveys the Lab site from its station atop the hill next to the Science Museum, located in Bldg. 701, the former Brookhaven Graphite Research Reactor.

But it's not a spaceship: It's a bubble chamber. Within this device, particles interacted in liquid hydrogen, leaving bubbly tracks that were photographed and analyzed. Dubbed the 7-Foot Bubble Chamber, this instrument is part of BNL history. That's why it is placed, together with other historic equipment, next to the museum, which chronicles BNL's scientific efforts — past, present and future.

Hard by the bubble chamber is a small, rounded machine — a dingy beside a yacht. This is the 1.5-meter- (60-inch) in-diameter piston that built up pressure on the hydrogen, superheating it to the point at which nuclei could form for bubble growth.

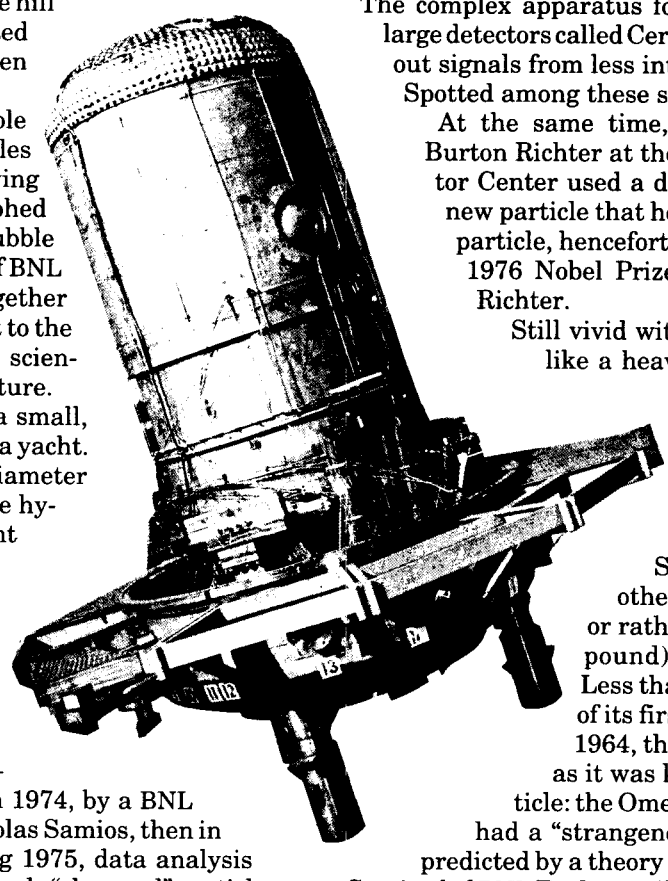
The 7-Foot Bubble Chamber was constructed under the leadership of Ralph Shutt, now a senior physicist with the RHIC Project. It was first used for neutrino experiments at the Alternating Gradient Synchrotron (AGS) in 1974, by a BNL group headed by Lab Director Nicholas Samios, then in the Physics Department. By spring 1975, data analysis provided the first observation of a single "charmed" particle — the charmed baryon, a particle made up of three quarks, one having the particle quality named charm. This finding reinforced the interpretation of the 1974 discovery of the J/psi particle, an important step in confirming that there was a new member of the quark family, the charmed quark.

The J particle was found at the AGS in a 1974, Nobel Prize-winning experiment by a Massachusetts Institute of Technology (MIT)/BNL group led by Samuel Ting, MIT. The complex apparatus for the experiment included large detectors called Cerenkov counters, which sifted out signals from less interesting reaction products. Spotted among these signals was the J.

At the same time, however, a group led by Burton Richter at the Stanford Linear Accelerator Center used a different technique to find a new particle that he called psi. It was the same particle, henceforth known as the J/psi, so the 1976 Nobel Prize was shared by Ting and Richter.

Still vivid with yellow paint and looking like a heavy-metal giant megaphone, the Cerenkov counter used in the J-particle discovery also lies outside the Science Museum.

For more history on the hoof, step inside the Science Museum to see another famous bubble chamber, or rather, its 675-kilogram (1,500-pound), distortion-free window. Less than two weeks after the start of its first experiment at the AGS in 1964, the 80-Inch Bubble Chamber, as it was known, revealed a new particle: the Omega-minus. The new particle had a "strangeness" of -3, which had been predicted by a theory called SU(3). Therefore, the Samios-led BNL/Rochester/Syracuse experimental team established the theory as correct, forming a solid foundation for the development of quark theory. — Liz Seubert



You can see the 7-Foot Bubble Chamber, the piston and the Cerenkov counter any time, but the Science Museum is only open for tours on two more Sundays this summer. To join a tour, stop by Berkner Hall on August 22 or 29, between 10 a.m. and 3 p.m. **— Photo by Roger Stoutenburgh**

Scoop of the Week

The fifth Scoop of the Week for this season goes to Kumi Pandya, Department of Applied Science, who suggested the idea for this week's story on "... It's a Bubble Chamber!"

During the summer, if the Bulletin publishes a story based on your idea, you too may win a Scoop of the Week, an official certificate for a free frozen dessert at the Cafeteria, compliments of Service America Corporation. To enter, send your hot tips to the Brookhaven Bulletin, Bldg. 134, or call Ext. 5053.

Tech Transfer (cont'd)

As reported in the May 28 BNL budget story in the Brookhaven Bulletin, President Clinton's budget for FY94 contains $6 million earmarked for BNL's tech transfer activities, most of which will fund new CRADAs. In March, DOE asked the national laboratories to submit proposals for 1994 CRADAs. BNL's Office of Technology Transfer responded with 74 proposals, which covered a wide range of fields, from materials science to biotechnology to environmental technology.

Each one also met DOE's parameters: that the CRADA would have a term of one to three years; require $100-500 thousand in DOE funding each year; use BNL's capabilities to meet industrial needs; and have promise of commercial impact, such as new products, more jobs or increased competitiveness.

"The increased funding for CRADAs reflects a strong commitment to tech transfer under the new administration," says Bogosian. She is quick to add, however, that there has long been advocacy for the transfer of federally owned technology to state and local governments and to the private sector. Today, the big difference is that the government is setting aside new money for CRADAs.

Costs for doing research and development under a CRADA agreement are shared between BNL and the industrial partner, with both contributing people, facilities, instruments and/or materials. The industrial partner may also contribute funds. Research results are exchanged, but patent and data rights are negotiated.

"I definitely see a different attitude now toward technology transfer, especially among the younger researchers trained at big universities that have an active involvement with industry and a more entrepreneurial climate," says Bogosian.

She also says that the more BNL scientists interact with the research community from industry, the more they realize the value of those interactions. "Our scientists have come to understand that, in most tech transfer programs, both the laboratory and the industrial partner benefit. Cross fertilization is very valuable," she comments.

Bogosian adds that scientists understand the economic reality and the interrelationship between funding for research and technology utilization. She says, "The future of the laboratories is going to depend much more on our ability to show that we are relevant and can help the economic security of this country. One way to do that is to have active technology development programs with American industry." — Mona S. Rowe

Plastic (cont'd)

these types of wastes because it is cheap and readily available. But cement also has some drawbacks.

Plastic vs. Cement

Cement's ability to harden depends on a chemical hydration reaction. So, Kalb said, "when you start adding chemical wastes, they may react and interfere, causing a failure to solidify or a product with poor durability."

When solidified waste forms fail, they do not adequately isolate contaminants from the accessible environment. This leads to the need for potentially difficult and costly remediation.

To search for an alternative, Kalb and his team set out more than 10 years ago to select and perfect a technology that would use plastic to do the same job, only better.

After settling on recyclable LDPE as a suitable material, they used a small-scale version of a device called an extruder to test the process' efficacy. The resulting test forms held up so well under rigorous environmental testing that the team has received DOE funding for a full-scale test, scheduled for the next fiscal year.

After years of perfecting the process, Kalb's team purchased a full production-scale extruder. Installation and modifications are now under way, and preliminary testing should begin next month.

Tremendous Promise

"I think this technology has tremendous promise, not only for stabilizing the waste forms we're using now, but also for stabilizing many other waste forms," said Romney Duffey, DAT Chairman. "We're customizing the process to each waste form."

The extrusion process combines melted LDPE with waste so that the plastic completely surrounds, or encapsulates, the waste particles. After being mixed by a rotating screw, the mixture is squeezed out to fill a mold, such as a 209-liter (55-gallon) drum. After cooling to a solid the drum then goes to an approved disposal site.

Diverse types of chemical waste can be encapsulated, including incinerator ash, which contains highly concentrated hazards from the trash it once was. Sludges, spent ion-exchange resins and concentrated waste left over from evaporation processes can also be sealed inside the plastic.

Despite the repeated success, Kalb said he has needed to convince some people that thermoplastic polymer encapsulation is economically efficient because raw LDPE is four-to-five times more expensive per pound than cement. But, tests have shown that it only takes a small amount of plastic to encapsulate a large amount of waste: an LDPE-waste form can contain up to 70 percent waste, compared with 15 to 20 percent for cement.

More Effective, Less Expensive

"At first look, it would appear that it's not economical, but better efficiencies mean fewer drums produced," he said. "In each case, we've been able to show that, compared with traditional cement solidification, this method is effective and significantly reduces costs."

For instance, for a plant generating a million kilograms of nitrate salts per year, the team's calculations have shown that encapsulation could save up to $2.7 million by reducing by 70 percent the number of disposal drums needed.

With so much promise for the new technology, and the need to find disposal alternatives to satisfy a demanding regulatory system and public, DOE and industry alike have become even more eager to learn more about thermoplastic polymer encapsulation.

Kalb's team is also working on better ways to pretreat the waste streams for more efficient encapsulation, leading to more industry interest. Future research will investigate its applicability to other waste types and the potential use of recycled plastics for encapsulating wastes.

"This is a technological improvement over what was previously available," Kalb said. "It reduces risk to human health and the environment in a cost-effective manner and will be available for implementation in several years." — Kara Villamil

CRADA for Sealing Waste in Plastic

When Paul Kalb and his team wanted to investigate ways to pretreat waste before encapsulating it in polyethylene (see accompanying story), they went to Seattle's Pacific Nuclear Inc. for the right equipment.

Now, Pacific Nuclear has come to Kalb, showing interest in the waste-encapsulation process as a potential way to treat one of their industry's waste streams.

The company and Associated Universities, Inc., have entered a Cooperative Research and Development Agreement (CRADA) to test the efficacy of encapsulation as a means to solidify ion-exchange resins produced by the nuclear industry. Work is expected to begin soon.

"We went to them for their technology, and they came to us for ours," said Kalb, leader of the Department of Advanced Technology group that developed the encapsulation process for sealing hazardous chemical waste.— K.V.

Catch a glimpse of
GLANCE
playing in Berkner Hall
weekdays, 11:30 a.m. to 2:00 p.m.
Show changes every Tuesday.

IBEW Meeting

Local 2230, IBEW, will hold its regular monthly meeting on Monday, August 23, at 6 p.m. in the Knights of Columbus Hall, Railroad Avenue, Patchogue. There will also be an afternoon meeting at 2 p.m. for shift workers in the Union office at 31 Oak Street, Patchogue. On the agenda will be regular business, committee reports, the president's report, installation of officers and the report of the Negotiation Committee.

Users' Group WordPerfect 5.1

The WordPerfect Users' Group will next meet on Tuesday, August 24, from 10 to 11 a.m., in the Computing & Communications Division seminar room, Bldg. 515. The topic will be "Inserting Graphic Images in WordPerfect Documents."

Seating is limited, so call group moderator, Pat O'Connor, Ext. 7341, by August 23, to confirm attendance.

UNIX Training

The schedule for UNIX training announced in last week's Bulletin has been revised as follows:

- **Introduction to UNIX,** $300
  Mon.-Thu., 9/20-23, 8:30 a.m. to noon
  Fri., 9/24, 8:30 a.m. to 5 p.m.
- **C Shell Programming,** $200
  Mon. - Thu., 9/20-23, 1 to 5 p.m.

Classes will meet in the Computing & Communications Division seminar room, Bldg. 515. To register, send an ILR for the correct amount, to Pam Mansfield, Bldg. 515, before August 25. For more information, contact Mansfield, Ext. 7286.

1993-94 BERA Concert Series Arrives Early With the Guild Trio

The Guild Trio, a Long Island-based ensemble that gave an acclaimed performance at BNL in February, will be back for an encore. They will give a special summer concert in Berkner Hall on Tuesday, August 24, at 8 p.m., bringing an early start to the 1993-94 BERA Concert Series.

Formed at the State University of New York (SUNY) at Stony Brook in 1988, the gifted trio, a pianist, violinist and cellist, has already won a world-class reputation. Only three months after its formation, the ensemble won the prestigious Artistic Ambassador Competition. In 1990, the group was honored as the trio-in-residence at Tanglewood Music Center.

The Guild Trio holds a unique residency at the Institute for Medicine in Contemporary Society at SUNY at Stony Brook's Medical School. They coach amateur musicians from the University Hospital and Health Sciences Center, as well as perform and tape concerts to show to patients.

The Guild Trio

The program for the Brookhaven concert consists of Beethoven's Trio VIII in G Major, Opus 121a, "Kakadu"; "To the Spirit Unconquered" (1992), inspired by Primo Levi's writings on the Holocaust and composed by Sheila Silver; and Brahms' Quartet in G minor, Opus 25.

The Guild Trio performance will be the first in a series of five concerts at BNL, which will also include:

- **Aeolian Chamber Players**, Wednesday, October 27
- **Ruth Laredo**, Pianist, Wednesday, December 1
- **The Baltimore Consort**, Wednesday, February 9
- **The Fresk Quartet**, Thursday, March 17

All of the concerts begin at 8 p.m. in Berkner Hall. Tickets can be purchased at the door the night of the performance. Prices are $14, general admission; $9, students and people over 65; and $5, youths under 18.

Block tickets will be honored at any concert and can also be bought at the door at The Guild Trio performance. At $10 each for a minimum purchase of four, block tickets may be purchased before the first concert at the BERA Sales Office, weekdays from 9 a.m. to 1:30 p.m., or from any of the following:

Name	Bldg.	Ext.
Leroy Blumberg	725C	4600
M. Kay Dellimore	185	2873
Michael Goldman	911B	5090
Howard Gordon	510A	3740
Geoffrey Hind	463	3400
Richard Holroyd	555A	4329
Alfredo Luccio	911C	7699
Edwin Popenoe	490	3622
Stephen Schwartz	426	3100

Concert, Picnic This Weekend

Two special events to be held on site this weekend are open to all BNLers and their families and friends:

• BERA's Bluegrass Concert, tonight, on the lawn behind the Brookhaven Center* — The outdoor concert by Buddy Merriam & Back Roads will begin at 7 p.m. Bring your own lawn chairs, blankets and snacks. In case of rain, the concert will be held in Berkner Hall.

At $7 for adults and $3 for children, tickets are on sale until 1:30 p.m. today in the BERA Sales Office; after 1:30 at the Recreation Office in Personnel, Bldg. 185; or from any of the following: April Donegain, Ext. 2459; Andrea Epple, Ext. 4424; Skelly Frei, Ext. 7898; Augie Hoffmann, Ext. 3884; Pat Manzella, Ext. 3336; Betty Pergan, Ext. 2937; Rosalie Piccione, Ext. 3160; Bridget Ramos, Ext. 3452; or Mary Ann Reynolds, Ext. 5241. Tickets will also be sold in the lobby of the Brookhaven Center before the performance.

Please note change of location.

• Afro-American Culture Club Annual Picnic — Good food, great music by E.T., fun and games will highlight this picnic tomorrow, August 21, from noon to 6 p.m. in the gazebo area of the BERA fields.

Tickets are $5 for adults and $3 for children under 12. Purchase tickets today from April Donegain, Ext. 2459; Pauline Dixon, Ext. 2164; Sarah Ebron, Ext. 2232; or Barbara Kponou, Ext. 5104; or buy them tomorrow at the gate.

Camera Club

The results of the BNL Camera Club's live model shoot, held last month, will be presented at the club's next meeting on Thursday, August 26, at noon, in Berkner Hall, Room C. All interested persons, including the models and those who missed the actual shoot, are invited to see and discuss the photographs.

Arrivals & Departures

Arrivals

Joseph B. Giuffre ..... Plant Eng.
John B. Mulligan ..... Advanced Tech.
Ping Zhou ..... RHIC

Departures

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

Ralph J. Cerbone ..... Advanced Tech.
Do Hyung Lee ..... App. Science
Wey-Sheng Lin ..... Medical
Alexei V. Selikhov ..... RHIC

Materials (cont'd)

age and ultraviolet light. The chemically stable, strongly adhesive materials can be used as both electrical insulators and conductors.

In addition to contributing the machinery needed to make these new materials, DFD Solid State Labs, Inc., a small, two-year-old company that specializes in technology transfer projects, brings to the CRADA the expertise of Benjamin Dorfman, one of the Russian scientists who developed the technology for making DLNs. Michael Abraizov, another scientist who worked on the materials in Russia and is now employed at the Polytechnic Institute in Farmingdale, is also a member of the CRADA team. The principal BNL researchers are Myron Strongin and Mark Ruckman, both from the Physics Department.

"This novel class of materials has tremendous commercial potential," said Strongin. "Many applications are feasible, from use as a protective coating for integrated circuits or plastics, to using the materials as catalysts."

DLNs are formed by injecting liquid solutions containing carbon and silicon into an argon plasma, an extremely hot ionized gas. This plasma breaks up the reactants into atoms of carbon, hydrogen, silicon and oxygen. By controlling the plasma environment and adding metals, the researchers modify the deposition of the atoms to grow DLNs.

"We are making DLN thin films that range from 100 angstroms to 10 microns thick," said Dorfman. "We have experimented with approximately 20 different metals so far. We use no more than three atoms of metals in each particle of the material. In particles of this atomic-scale size, novel properties emerge."

The plasma-deposition system developed in the former Soviet Union has unique features that are not commonly used in the U.S. "Apart from making an interesting new class of materials, this project provides an opportunity to use and evaluate Russian equipment," Strongin commented.

Instrumental in getting the plasma deposition system to function was Michael Carroll, a technical specialist in Physics who pieced together machinery after it arrived badly damaged at BNL in a steel shipping container insufficiently braced with only a few two-by-fours.

"The electronics were damaged, and the equipment's heavy steel doors were unbolted," said Carroll. "All the instruction manuals were written in Russian. The scientists helped me to interpret them, and I acted as liaison between electricians, plumbers, Safety and Environmental Protection Division personnel and other technicians to get the system working. It worked the first time we tried it — six weeks after the system arrived."

Next, the BNL scientists will study the atomic structure, bonding and stability of DLNs using various x-ray probe techniques at the National Synchrotron Light Source. They will also work with materials scientists from BNL's Department of Applied Science on further characterization of the novel materials' chemical and physical properties.

Funding for Brookhaven's participation in the CRADA comes from the U.S. Department of Energy's Laboratory Technology Transfer Program and Basic Energy Sciences Program.

— Diane Greenberg

Apple Support Continues on Site

Over the past 18 months, the on-site use of Apple computers has nearly doubled to more than 300 systems. Therefore, the Computing & Communications Division (CCD) is supporting these computer users with the newly formed PC Resource Center.

Recognizing the importance of Apple support, CCD has arranged for Michael Borowski, formerly of Custom Computer, to work temporarily at BNL, assisting users with configuration and applications support, particularly during the critical fiscal year-end period.

The Apple sales office will have representatives from Government Technology Services, Inc., on site regularly, so users can get product information on the Apple line, as well as PC add-ons. Look for additional information in the Brookhaven Bulletin and LINK.bnl. as plans are made final.

Cafeteria Menu

Monday, August 23	
Soup: Homemade chicken noodle	80/1.10
Entree: Chicken fajitas	3.45
Fitness: Pasta w/marinara sauce	3.20
Carvery: Pastrami sandwich	2.95
Grill: Reuben platter	2.95
Fitness Salad: Pineapple boat	
Tuesday, August 24	
Soup: Cream of mushroom	.80/1.10
Entree: Spaghetti w/meatballs	3.45
Fitness: Baked fish w/lemon & tomato	3.55
Carvery: Hot roast beef sandwich au jus	2.95
Grill: Western omelet w/French fries	2.35
Fitness Salad: Chef's seafood bowl	
Wednesday, August 25	
Soup: Bavarian lentil	.80/1.10
Entree: Knockwurst & sauerkraut	3.55
Fitness: Tomato & broccoli casserole	3.25
Carvery: Baked Virginia ham sandwich	2.95
Grill: Italian cheesesteak w/fries	2.95
Fitness Salad: Fresh fruit entree	
Thursday, August 26	
Soup: Cream of spinach	.80/1.10
Entree: Italian steak pizziola	3.75
Fitness: Tarragon lime chicken	3.50
Carvery: Corned beef sandwich	2.95
Grill: Ham & broccoli cheese melt	2.75
Fitness Salad: Cantaloupe bowl	
Friday, August 27	
Soup: New England clam chowder	.80/1.10
Entree: New Orleans Cajun catfish	3.65
Fitness: Exhibition cooking special entree	
Carvery: Hot turkey sandwich w/gravy	2.95
Grill: Fried shrimp boat	3.25
Fitness Salad: Chef's salad	

Burger, Deli & Taster's Bar specials daily.

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ANITA COHEN, Editor
MARSHA BELFORD, Assistant Editor

Bldg. 134, P.O. Box 5000
Upton NY 11973-5000
Tel. (516) 282-2345; Fax (516) 282-3368

Amateur Radio Club

The BERA Amateur Radio Club will next meet in Berkner Hall, Room D, on Thursday, August 26, at noon. All Lab employees, guests and licensed amateur radio operators are invited.

For more information, contact Chris Neuberger, Ext. 4160, or Nick Franco, Ext. 5467.

Call for Bowlers

Applications for bowling with the Tuesday night men's league in Port Jefferson and the Thursday night mixed league in Shirley are now at the BERA Sales Office.

Priority registration for existing teams is due by August 20; new team registrations are due by August 27. A captains' meeting will be held on Wednesday, September 1, at noon, in Berkner Hall, Room B.

All willing bowlers are welcome. For information, contact Ray Raynis, Ext. 3536, or Maryann Reynolds, Ext. 5241.

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 Personnel Division lists new placement notices. The purpose of these listings is, first, to give employees an opportunity to request consideration for themselves through Personnel, 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.

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

SCIENTIST/ENGINEER - With experience in advanced reliability theory, statistical analysis, probabilistic safety analysis and optimization theory, to join an aging-risk assessment program. Contact: Pranab Samanta or Robert Hall, Department of Advanced Technology

RESEARCH ASSOCIATE - Trained in inorganic chemistry, with research experience in the development of new materials and processes for the treatment of hazardous, radioactive and mixed wastes, to participate in an experimental R&D effort aimed at new and improved treatment processes for low-level radioactive and mixed wastes. Contact: Peter Colombo, Department of Advanced Technology

LABORATORY RECRUITMENT - Opportunities for Laboratory employees.

DD 2727. ADMINISTRATIVE POSITION - Requires AAS/BS in accounting and several years' experience in cost and/or construction accounting. Responsibilities include the application of accounting principles for charges pertaining to the special maintenance program, contract labor, general plant projects, IHEM, line items and special studies. Additional duties will include checking invoices, recording and checking contract charges, preparing reports and accrual documents, and reconciling cost records to BNL ledger. Knowledge of computer spreadsheet programs, preferably EXCEL or Lotus required. Knowledge of PC networks, PC databases and IPAP/JCARS desired. Plant Engineering Division.

OPEN RECRUITMENT - Opportunities for Laboratory employees and outside candidates.

NS 0730. GENERAL SUPERVISOR, STAFF SERVICES - Requires a bachelor's degree, or equivalent, in a relevant field, and extensive pertinent experience. Major areas of oversight and responsibility are automotive fleet operations, transportation and communications services. Extensive experience in two of these areas is required; large automotive-fleet operations and PC business-applications experience is highly desirable. In addition,will be responsible for property, recycling, security, contracts, safety, quality assurance, building and budget management within division. Staff Services Division.

NS 8180. ENGINEERING POSITION - Requires a master's degree in health physics/industrial hygiene or equivalent, or substantial experience in operational radiation protection. Certification in HP or IH is required as are demonstrated management abilities, and excellent written and oral communication skills. Familiarity with DOE ESH program requirements and accelerator or reactor programs a plus. Will be responsible for planning and leading a diverse staff of health and safety professionals and technicians. Must be able to obtain/maintain a security clearance. Safety and Environmental Protection Division.

LS 0419. X-RAY TECHNICIAN POSITION - Requires New York State license as diagnostic radiology technician. Responsibilities include taking x-rays, performing quality-assurance procedures and maintaining records for radiology as part of Occupational Medicine Clinic physical exams. Additional responsibilities may be assigned for related exam procedures. Training will be provided. Medical Department.

LS 8181. ENGINEERING POSITION - Requires MS or equivalent in health physics or physical science, plus several years' pertinent health physics experience, demonstrated supervisory background and good oral and written communication skills. Knowledge of current health physics regulations, dosimetry principles, TLDs, SOPs, quality control and computer skills are desired. Responsibilities include supervision of the monitoring of internal and external radiation exposures for Laboratory staff, and assisting in development of DOE-accredited dosimetry programs. Safety and Environmental Protection Division.

LS 8182. TECHNICAL POSITION - Requires BS or equivalent in health physics or physical science, plus several years of pertinent health physics experience. Knowledge of current health physics regulations and dosimetry principles and the ability to use health physics or quantitative laboratory-based electronic equipment is required. Experience performing minor computer tasks such as backups, running programs and modifying spreadsheets or database applications is desired. Safety and Environmental Protection Division.

Motor Vehicles & Supplies

91 MERCURY TRACER LTS - a/t, ac, 4-dr., 11k mi., 1991 *Road & Track* 10-best list, excel. cond., $8,995. Eric, Ext. 5875.

90 TIOGA MOTOR HOME - 23', loaded, 8k mi., mint cond., $20,000 or best offer. Pat, Ext. 7705.

89 HYUNDAI - 2-dr. h/b, 36k mi., $1,500. Bob, 286-0407.

88 FORD CUSTOM VAN - fully loaded, V-8, 67k mi., a/t, CB, TV, captains' chairs, p/bed, curtains, alarm, $9,600. Wayne, Ext. 7839.

87 DODGE DAKOTA LE 4x4 PICKUP - 90k mi., body excel., needs engine, $2,000. Charlie, Ext. 2407.

86 TOYOTA CAMRY - white, ac, am/fm, a/t, good cond., $3,500 neg. John, 473-9114.

86 CITATION TRAILER - 25', sleeps 8, awning, TV antenna, lg. refrigerator, am/fm stereo cassette, side bunks, $6,000 neg. 286-1762.

86 ISUZU I MARK - low mi., fully loaded, good running car, $2,500. 929-6540.

86 LEBARON GTS - 4-dr. h/b, Sport Turbo Premium, all opt., Clarion audio sys., int. leather, low mi., new brakes & tires,$5,500. Ann, Ext. 5740 or 744-8386.

86 MAZDA B2000 SE5 - white/red. 4-cyl., 5-spd., bed liner, sliding rear window, high mi., runs well, excel. in/out, $1,700. Pat, 399-3211.

86 OLDS CUTLASS CIERA - 6-cyl., 83k mi., p/s, a/t, ac, cruise, am/fm, excel. cond., asking $3,100. Alex, Ext. 3723/4407 or 341-1018.

86 CAMARO - parts. Bob, Ext. 4661 or 395-4521.

86 TOWN CAR - fully loaded, 40k mi., new tires, used as secondary car, asking $7,000 or best offer. T. Parris, Ext. 5923.

86 TOYOTA CAMRY - 5-spd., ac, 84k mi., v.g. cond., $3,800. Mireille or Marc, 341-1010.

84 FORD F150 X LT - clean body w/cap, newly rebuilt engine & trans., p/everything, $3,800. Bill, 246-5968.

83 NISSAN SENTRA WAGON - high mi., ac, p/assist, runs well, good for local transportation, asking $900. David, 924-4927.

82 COUPE DE VILLE - V-6 engine, 111k mi., loaded, v.g. cond., must see, $1,250. 261-2719 after 3 p.m. or 821-4174.

82 DATSUN 210 - h/b, s/t, 219k mi., $375. Bob, Ext. 4637 or 692-8659.

81 DODGE CUSTOM VAN - new paint, tires, runs well, asking $1,250. Bob, Ext. 4672 days, or Brett, 929-4753 eves.

78 FORD PICKUP - cap, 2wd, s/t, 6-cyl., mech. sound, body rough, $800. Don, Ext. 7145.

67 CHEVELLE - 67k mi., 2-dr., blue, antique, orig. owner, garaged, 286-1113.

RACKS - for 8'-bed truck, custom-made of heavy gauge steel by professional welder, freshly painted, excel. cond., $400. 589-2338.

RIMS - 3, Chevy S10, steel, v.g. cond., 3/$25. 265-6542.

91 TOYOTA CAMRY - a/t, p/w, p/l, cruise, cass., 21k mi., $12,500. 928-7734.

91 DODGE DYNASTY - blue, cruise, 4-spd., a/t, ac, p/w, p/l, excel., 26k mi., 3.0L, $9,500; '83 Dodge Maxi Van, a/t, $1,200. Ed or Pat, Ext. 7251 or 765-4147.

88 ISUZU TROOPER 4x4 - 4-dr., ac, low mi., new tires, excel. cond., $7,500. 325-8116.

86 TRANS AM - black, T -top, fully loaded, 305 eng., excel. cond., asking $5,800. Gina, 563-4468.

86 LE BARON GTS - h/b, 4-dr., sport premium, all options, leather int., new tires/brakes, low mi., excel. cond., $5,500. Ann, Ext. 5740 or 744-8386.

86 OLDS CUTLASS SUPREME - 2-dr., 82k mi., , a/t, p/s, p/b, ac, landau roof, good cond., $2,200. Allen, Ext. 4473 or 581-2961 eves.

85 SUBARU XJ - dbl. coupe, 5-spd., sunroof, am/fm cass., tilt wheel, lt. blue, good cond., $1,600. 588-9325.

85 PORSCHE 991 CABRIOLET - conv., all leather, ac, p/w, p/seats, new Yokom ZR-16 tires, new brakes, extra Pirellis, mint, 35.6k mi., $27,500. Jim, 289-0876.

85 NISSAN 200SX - 5-spd., ac, 100k hgwy. mi., excel. cond., $2,800. Vasilis, Ext. 2830 or 543-0487 eves.

85 MALLARD TRAILER - 28', excel. in upstate campground, never on road, asking $6,500. Kurt, 744-2097, leave message.

85 PONTIAC GRAND PRIX - 106k mi., only 30k on new trans., V-6, ac, a/t, p/s, p/b, p/w, am/fm cass., new brakes, $1,600. Brian, Ext. 2369 or 929-5407.

85 LTD WAGON - a/t, p/s, 99k mi., not pretty but reliable, $600. 751-8257 eves.

84 MERCURY GRAND MARQUIS - 87k mi., loaded, excel. cond., best offer. Jerzy or Elizabeth, Ext. 4331 or 341-1019.

84 HONDA ACCORD - 146k mi., good cond., $1,000. Andreas, Ext. 3855.

82 FORD GRANADA WAGON - 6-cyl., a/t, ac, p/s, p/b, radio, new tires, good cond., runs well, $800 neg. Johan, Ext. 5258 or 341-1014.

The Brookhaven Bulletin is printed on paper containing at least 50 percent recycled materials, with 10 percent post-consumer waste.

84 BUICK LE SABRE LTD - V-8, full power, new shocks/exhaust/tires, $2,000 neg. Jean-Michel, Ext. 7092.

83 VW GTI - parting out; '82 Datsun 310, new parts, make offer. Ext. 3806.

82 CAMARO - new eng., clutch, exhaust sys., sunroof, gray, asking $2,200. Rich, 363-6845.

80 CHEVY BLAZER - 250 6-cyl. eng., K5 Class cass. stereo, p/booster, CB, etc., great body cond., $3,500. Ext. 2384 or 924-8558.

79 BERLINETTA - great shape, body in good cond., engine still tight, easy to start, $700. David, Ext. 5974.

77 CAMARO - 305/350 10-bolt posi., needs restoration or for parts, best offer. Ken, 289-8212.

75 FORD VAN 150 ECONOLINE - good tires, runs well, needs body work, luggage rack, ladder, $475 or best offer. Vinny, 582-6241.

72 CHEVELLE SS - 402 4.10 rear, gold w/black stripes, numbers match, $7,000. 265-1039 or 289-1732 eves.

53 STUDEBAKER - hardtop, high-performance tunnel ram, turbo 350, 3500 stall, 9" Ford rear, best offer. Terry, 473-8426.

PARTS - '86 Camaro. Rob, Ext. 4661 or 395-4521.

MOTOR PARTS - Chevy, S/B, new 1-6 rocker arms, piston set, crank for 327, rebuilt torque converter, cheap. George, Ext. 4584.

ENGINE - 305 c.i.d., 350 turbo, good runner, can demo, $300; also Surburban pickup, nose & glass. Ken, 289-8212.

Boats & Marine Supplies

22' MARSHALL CATBOAT - freshwater-cooled Yanmar diesel, VHF radio, depth sounder, Danforth compass, head. Gordon, 477-2269.

18' CENTURY BOWRIDER - 1984, 170-h.p. FWC Mercruiser, '86 Cox trailer, elec. winch, VHF, DF, 105 hrs., like new cond., $5,700. Richie, Ext. 2175 or 734-7342.

WINDSURFER - Mistral Maui, beginner/intermediate, 2 sails, excel. cond., $400; O'Neill Oasis dry suit, $100. Scott, Ext. 3856.

30' O'DAY - 1980 furling Genoa, 16-h.p. diesel, VHF, KM, DF, OD, $24,900. Bob, Ext. 2629 or 751-7330.

26' PEARSON SLOOP - 1974, 1991 9.9 elec. start Evinrude ob., new Harken furling, sleeps 5, autopilot, clean, ask. $6,500. Mike, Ext. 5972 or 744-4579.

21' BOWRIDER - fg, w/full canvas, trailer w/115-h.p. Evinrude, lower unit has been rebuilt, $3,200 neg. Fred, Ext. 5319.

YAMAHA WAVE JAMMER - 1988, little used, like new, runs well, $2,000 neg. Marie, 744-5761.

Furnishings & Appliances

AIR CONDITIONER - Friedrich Quietmaster, 8,000 Btu/hr., 10 EER, good cond., orig. $570, asking $300 or best offer. Ellie, Ext. 3395 or Ken, 325-1537.

AIR CONDITIONER - window model, 6,000 Btu/hr., $50. Elizabeth or Jerzy, Ext. 4331 or 341-1019.

BED - queen size, boxspring, mattress & frame, $85; bathroom sink, $15. Klaus, Ext. 3677 or 924-2062.

BEDROOM SET - light wood, single bed frame, bookcase-style headboard, nightstand, dresser & mirror, $100. Ext. 2378 or 758-3284.

BLENDER - coffee maker, toaster oven, hot-plate, dish set, $5/ea.; twin boxspring, $30; water bed, full size, like new, $125. George, Ext. 4584 or 567-0027.

CHAIR - upholstered, swivel-rocker, w/ottoman. 286-8552.

COUCH - Early American, $100; love seat, $75; chair & ottoman, $75; end tables, $35/ea.; $300/all. Joan, Ext. 2910 or 698-6259.

CHAIR LIFT - La-Z-Boy, motorized, model 19-924, orig. $1,150, sacrifice $450. 473-0963.

CHAIR LIFT - for elderly or handicapped person, electric, tan upholstered, good cond., $200 neg. Kathy, 821-2586.

FREEZER - GE, 18 cu. ft., upright, white, built-in lock, excel cond., $350. Ann, Ext. 5740 or 744-8386.

HOT CURLERS - Clairol Benders, used twice, $15; Richard Simmons exercise video, $5; electric skillet, $5. Brian, Ext. 2369 or 929-5407.

HEADBOARD - queen size, contemporary, $20; 6' drafting table, $50; rattan hanging chair, $10. Terry, 499-8377.

LIVING ROOM SET - bleached oak tables, w/smoked glass top, pastel splash pattern, v.g. cond., sofa, chair, love seat, $300. Vinny, 582-6241.

ROCKING CHAIR - antique, solid oak, reupoholstered seat, $200. Donna, Ext. 2716.

TABLE - dining room, 60"x40", 3 leaves, extends to 96", pads, 6 chairs, local delivery, $75 firm. Bill, Ext. 2378 or 758-3284.

WASHER & DRYER - Sears, apt. sized, 2 yrs. old, $400. Mauro, Ext. 265-6542.

WATER BED - king size, dual, waveless, heater, best offer. Mike, Ext. 2052.

Tools, House & Garden

GENERATOR - 4kW, low hours, $100. Frank, Ext. 7684 or 584-5933.

LAWN MOWER - Black & Decker, elec., double insulated, 18" blade, 6.5A, 120V, 4,000 rpm, ask. $100; lawn tractor, 11-h.p., 36" cut, riding, $500. 878-1617.

LAWN MOWER - Locke, 30" single, $375; Locke triplex, 72", w/sulky, $475; 75" sulky F-N-R, $750. Ed, Ext. 7251 or 765-4147.

MOWERS - Craftsman, 22", self-propelled, rear bagger, 4.0 reserve power, $50; Murray, 20", walker, $50. 821-2602.

PAINT - Sears Weatherbeater, exterior, latex, lt. blue, 6/27/93 new, 1 gal. pails, $5/ea. Donald, 473-6570.

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

TREES - Japanese red maples, $5-$10. Bob, Ext. 5439 or 744-3224.

WATER PUMP - for wells, 2 stage, 1 h.p., 2 yrs. old, upright, $150. 924-8558 after 5 p.m.

WINDOWS - 2, white, vinyl sliders, w/screen, 34"x34½, never used, $50/ea., $90/both. Donna, Ext. 2716.

Sports, Hobbies & Pets

MOUNTAIN BIKE - Giant Sedona,, Shimano components, bar ends, other extras. Maj Britt, Ext, 2384.

BICYCLES - man's, $15; woman's, $35; young adult, $35. Johan, Ext. 5258 or 341-1014.

CLIMBER - BMI 7000, full frame, computer, white, $95; soloflex home gym, $350. David, 821-3009.

EXERCISE BIKE - excel. cond., must sell. Ext. 7044 or 732-0432.

HORSE - part Boarder, 15.3 QH west./Eng., near Lab, indoor arena, educated rider. Pat, Ext. 5406.

SCOOTER - Rascal, excel., $500; typewriter, IBM, daisy wheel, needs work, $30. 281-7844 eves.

SCUBA EQUIPMENT - wet suit, tanks, regulator, more, sell separate or as package. Charlie, Ext. 2407.

TANK - 50 gallon, stand, top, lights, w/Aqua Master filter, gravel, extras, $120. Graham, 821-1726.

TRUMPET - new, w/case, $225. Tim, Ext. 3814.

Audio, Video & Computer

AMPLIFIER - Crate CR212, v.g. cond., $250; Kustom practice amp, brand-new, portable, $75; Marlboro guitar amp, $125. David, Ext. 5211.

ANSWERING MACHINE & PHONE - Duophone, $25. I. Meyer, 929-4326.

COMPUTERS - 486, DX-33, 170 MB HD, dual floppies, 4 meg ram, SVGA .28 dot pitch, new, w/warranty, 9 left, $1,300. Vinny, 582-6241.

COMPUTER - Macintosh II, 5 megabytes RAM, 80M HD, mono. monitor, glare screen, Imagewriter II, 2 floppy drives, 32 bits, $990. Ext. 4156.

COPIER - Panasonic FP1670, sheet feed, sorter, almost new, $3,200; Panasonic printer P1624, sheet feed, unused, $500. MaryAnne, Ext. 369-2889.

RADIO - Telefunken, early 60s, am/fm, 2 shortwave bands, good, $25; RCA Victrola, 1940, am radio, 78 rpm, ask. $200. Frank, Ext. 7684 or 584-5933.

SATELLITE SYSTEM - complete dish & receiver, $1,000, install or alignment avail. Ginny, Ext. 5663.

STEREO - Sony, portable, CD, radio, cass., detachable 2-way speakers, almost new, retails $349, asking $110. Ext. 2733 or 878-8491.

TAPE RECORDER - reel-to-reel, Sony, model TC270, microphone, needs repairs, $25. 744-5871.

TV - Sharp, color, 19", 6 mo. old, $150; Panasonic VCR, 3 mo. old, $170. Elizabeth or Jerzey, Ext. 4331 or 341-1019.

TV - GE, b&w, $20. Johan, Ext. 5238 or 341-1014.

TV - b&w, 13", $30. Klaus, Ext. 3677 or 924-2062 eves.

VIDEO GAMES - Nintendo, games & game holder, all $50, games alone, $5/ea. Graham, 821-1726.

Miscellaneous

CLEANING EQUIPMENT - Von Schrader VS1, VS2 dry-foam extractors; Thoromatic steam extractor; chemicals & access., etc. Leo, 363-7501.

COMIC BOOKS - great for collector or dealer, must see, $1,100. 981-5993 after 6 p.m.

CONCERT TICKETS - 4, Jethro Tull, floor seats, 8/27, Jones Beach, $200. Adele, Ext. 2437.

CRUISE - The Great South Bay, music, dance, food, drink, all inclusive, $40/person, 9/18, 9 p.m.-1 a.m. Richard, 289-2939.

INFANT'S CAR SEAT - up to 20 lbs., $25; playpen, new, $30; wicker basinet w/mattress & cover, $20; bathtub, $8; play gym, $8. Chris, 744-6874.

PLAYPEN - Century "Fold & Go", brand-new, orig. $90, sell for $75; bathtub, $10. Janet, Ext. 2345 or 929-3910.

U.S. OPEN TICKETS - two, 9/1 eve., $16/ea. Gail, Ext. 3338.

WEDDING GOWN - white, sophisticated sheath, size 10, lace, satin, pearls, sweetheart neck, magnificent train, perfect cond., $400. Sue, 924-2062.

Free

BACK SEAT - to Suzuki Samari; shop vac, needs new motor. Donna, Ext. 2716.

CATS - 2 tabbies, orange and gray for adoption, real sweeties, affectionate and house trained, neutered w/shots. Nick, Ext. 3572.

DOG - big, black, Belgian sheepdog, needs a companion desperately, great friend and protector, 7 yrs. old. Maria, Ext. 3033 or 744-1912 eves.

DOOR - 6 ft. aluminum, sliding glass, + screen. Dick, Ext. 2911.

KITTENS - 5 red tabbies, 1 black, born 7/13/93. Herb, Ext. 4247.

Lost & Found

LOST - cart, 2,500-lb. capacity, hardwood top, blue steel frame, 12" tires, steerable, 24x48x17, Hercules, call or return, TVDG, Bldg. 901A, Ext. 4584.

Car Pools

ELWOOD-E. NORTHPORT-COMMACK - on-time carpool seeking 5th driver. Paul, Ext. 4156.

Wanted

BOAT TRAILER - 18' capacity, E-Z Loader or like style. Tom, beep 0950.

GOLFER - retired woman to play casual golf. 472-1735.

HOME - for 2 guinea pigs, cottontail puff, gray, w/case and accessories, owner allergic. 588-9325.

HOUSE TO SIT - free, experienced, caring, any period after Aug. 27. J. Allentuck, Ext. 2412.

HOUSEMATE - nonsmoker, prefer 30+ female, but negotiable, $350/mo. incl. priv. rm., kit. priv., share house, near Lab, refs./interview. 281-0973.

MEMORABILIA - bead curtains, strobe lights, lava lamps to donate to program for handicapped adults. Heidi, 281-7873 eves.

RIDE - to Rochester, NY on 8/26 or 8/27;will share driving and expenses. Ext. 3698 or 821-4326.

ROOMMATE - to share apt. in Sheepshead Bay, Brooklyn, Kings Hwy. & E. 13th St., $300/mo. + ½ elec. 399-3381.

TIRES - good to excellent cond., P205/75R14. Susan, Ext. 7647.

VIOLIN - ⅛ or ¼ for beginner. M. Tanaka, Ext. 2396.

In Appreciation

Thanks to BNL's EMTs and my Bldg. 130 friends for your concern during my recent fall. Mommy and baby are fine. — Donna Storan

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