BROOKHAVEN BULLETIN
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BROOKHAVEN NATIONAL LABORATORY

Brookhaven Cottons to New CRADA

Cotton is the worldwide fiber of choice. Since the U.S. is a major cotton grower and manufacturer, improving the yield and quality of cotton plants would provide a significant boost to both the nation's textile industry and the economy.

To achieve that objective, BNL biologists are now working under a Cooperative Research and Development Agreement (CRADA) with Cotton Incorporated, a 38,000-member association of American cotton producers based in Raleigh, North Carolina, which promotes cotton research and use.

Cotton Incorporated and the U.S. Department of Energy (DOE) share the cost of the CRADA, which is funded for $3 million for 1995. The goal of the CRADA partners, which they hope to realize fully within five years, is to increase cotton performance and reduce its cost.

The CRADA is one of many that have been initiated by the American Textile Partnership, or AMTEX, a partnership among DOE's national laboratories and the entire textile complex that seeks to increase the competitiveness of the American textile industry.

CRADA Project Manager Benjamin Burr, a geneticist in BNL's Biology Department, said, "New high-speed machinery is being developed that will increase cotton manufacturing manyfold. Cotton-fiber quality — its length, strength, fineness and uniformity — must also change to keep pace with these advances."

Roger Stoutenburgh

Surrounded by cotton plants and bolls that will be used in laboratory experiments, (from left) Jack Van't Hof, John Sutherland, Susan Lamm, Denise Monteleone, Michael Blewitt, Eileen Matz, Katrina Reaves and Benjamin Burr of BNL's Biology Department are working under a CRADA with Cotton Incorporated to improve the yield and quality of cotton plants.

Working with Burr in this CRADA are Biology's Michael Blewitt, Susan Lamm, Eileen Matz, Denise Monteleone, Katrina Reaves, John Sutherland and Jack Van't Hof.

To increase the number of long fibers in cotton plants, it is important to understand at what point in seed development these fibers are naturally programmed to be formed. Fiber cells grow out of the cotton plant's seed

(continued on page 2)

Peak Intensity: A New AGS & World Record

Success arrived once again at the Alternating Gradient Synchrotron (AGS) last week — in the wee hours of the morning on Friday, February 10. At 3:28 a.m., 50.5 trillion protons per pulse (p/p) were accelerated around the AGS ring, eclipsing the previous mark of 40 trillion p/p that had been achieved during the 1994 operating period and bringing the AGS's world-record proton intensity up to a new high of 5.05×10^{13} p/p.

The moment was the culmination of a great deal of ongoing effort by groups throughout the AGS, said Thomas Roser, who heads the AGS Accelerator Division. It all came together in the AGS Main Control Room, where Neville Williams was the coordinator of the Operations Group, and Jonathan Reich and Keith Zeno were doing the tuning, supported by AGS physicists.

Roser explained that the immediate beneficiaries of last week's intensity leap are the rare kaon decay experiments now running at the AGS: A more intense proton beam yields a more intense kaon beam — and a greater chance of observing any unusual transformation of one of these subatomic particles. But this 25 percent increase in proton intensity is also a major step toward the goal of 6×10^{13} p/p, which the AGS staff is aiming to achieve before the end of 1995, and which will lay the foundation for using accelerators for other scientific endeavors, such as intense neutron sources or future high-energy muon colliders.

Severe Nuclear Reactor Accidents: DAT Studies Hydrogen Combustion Process

The combustion of hydrogen has especially concerned nuclear reactor-safety engineers since hydrogen gas was produced from the reaction of metal and water, and released into the building containing nuclear reactor No. 2 at Three Mile Island, following the partial meltdown of the reactor's core on March 28, 1979.

Mixed with air and steam, the hydrogen gas had ignited and burned, increasing the pressure within the reactor's containment building, but not breaching it. However, the concern developed that, if enough hydrogen were ignited and detonated, then this combustion process, which moves at supersonic speed through the unburned gas, could cause sufficient pressure to make a break in the building.

So, as a result of this severe accident, experiments were performed during the 1980s to understand how mixtures of hydrogen, air and steam at pressures between one and three atmospheres and temperatures up to 400 kelvins (K) could detonate. Data from these experiments have been used to analyze how well reactor-containment buildings would survive hydrogen combustion resulting from severe accidents.

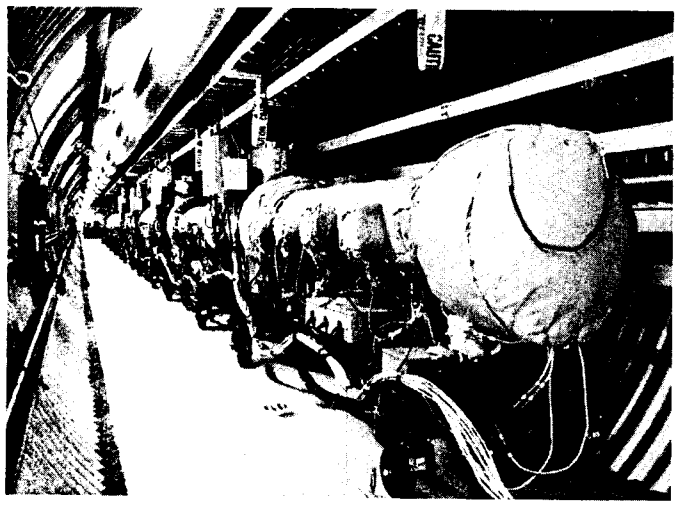
However, safety calculations showed that, under certain accident conditions, temperatures at some locations within containment buildings may reach upwards of 650 K. So, research into self-sustained detonations of gaseous mixtures of hydrogen, air and steam at 300-400 K had to be extended to temperatures up to 650 K — research that was first done at BNL's Small Scale Development Apparatus (SSDA) and is being extended at the new High Temperature Combustion Facility (HTCF).

"Our investigation of leaner mixtures of hydrogen at the HTCF will allow us to determine the minimum hydrogen concentration necessary to initiate and sustain detonation at high temperature," explains Ted Ginsberg, Leader of the Experimental Simulation & Analysis Group (ESAG) in the Department of Advanced Technology (DAT). "We will then scale that information so we can better predict what could happen during a severe reactor accident."

The main features of both the SSDA and the HTCF are combustion vessels, stainless steel tubes able to withstand the temperatures and pressures involved in the detonations. The experiments are studied using various instruments inserted into the vessels, and the data are then analyzed by computer. This combustion research is supported jointly by the U.S. Nuclear Regulatory Commission and the Japanese Nuclear Power Engineering Corporation (NUPEC).

Working with Ginsberg are: lead experimentalist Gaby Ciccarelli, HTCF facility manager Charles Finfrock, mechanical technician Louis Gerlach, and Hisato Tagawa, a NUPEC mechanical

(continued on page 2)



Roger Stoutenburgh

Photo left: The large detonation vessel of the High Temperature Combustion Facility (HTCF).

Photo below: At the dedication of the HTCF last October are: (from left) Romney Duffey, Chairman of BNL's Department of Advanced Technology (DAT); Masahiko Kinoshita and Hisato Tagawa, Japanese Nuclear Power Engineering Corporation (NUPEC); BNL Deputy Director Martin Blume; Kenji Takumi, Director & General Manager of the Systems Safety Department, NUPEC; Themis Speis, Deputy Director, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission (NRC); DAT Deputy Chairman Robert Bari; Asimios Malliakos, NRC Project Manager; Ted Ginsberg, DAT; Gaby Ciccarelli, DAT; John Boccio, DAT; and Carson Nealy, Manager, Brookhaven Area Office, U.S. Department of Energy.

Roger Stoutenburgh

Flushing on Tap For Apartments' Water

The Plant Engineering (PE) Division will be flushing water mains in the apartment area next week, weather permitting. This flushing will remove rust (iron) and sediment from the water mains and help improve the appearance of the water.

On the day the water mains are flushed, the water at the tap may appear cloudy or rusty, *but the water will be safe to drink.* However, because iron can stain laundry, the apartment area laundry will be closed for 24 to 48 hours.

A flyer with more detailed information is being distributed to every housing unit in the apartment area. If you have questions, call Bill Chaloupka, PE, at Ext. 7136.

Equipment Demo

Weiland Corporation and Broadline Electronics will exhibit new electronic and electrical products on Wednesday, February 22, from 11 a.m. to 2 p.m., in Berkner Hall.

China Awards Meinhold Two Professorships

BNL's Charles Meinhold received two honorary professorships in China last October — one from the China Institute of Atomic Energy (CIAE), the principal research center for nuclear science and technology in China, and another, a visiting professorship, from Suzhou Medical College, the first and only school in China to teach radiological medicine.

Both institutions recognized Meinhold for his contributions to the field of radiological protection.

Meinhold is Senior Scientist and Deputy Head of the Radiological Sciences Division in BNL's Department of Advanced Technology (DAT) and President of the National Council on Radiation Protection and Measurement in Bethesda, Maryland. He divides his time between BNL and Bethesda, using his expertise in radiological risk assessment at both locations. He is also Vice Chairman of the International Commission on Radiological Protection and President of the International Radiological Protection Association.

Lin-Shen Casper Sun, a research engineer in DAT, accompanied Meinhold to China, acting as translator. According to Sun, Meinhold was the first foreign scholar to receive an honorary professorship from the CIAE.

Said Meinhold, "I am very encouraged to see the progress that the Chinese community is making in regard to radiological protection. I am honored to receive both of these professorships, and I believe they will promote communication among our institutions."

Deputy Director of the China Institute of Atomic Energy (CIAE) Wen-Zhen Xu (left) presents BNL's Charles Meinhold with a plaque commemorating his honorary professorship at CIAE.

With BNL since1957, Meinhold served as Head of the Safety & Environmental Protection Division from 1972 to 1988, when he moved to DAT where he is now Deputy Division Head. — Diane Greenberg

Arts, Crafts by Women Needed for Exhibit

Attention, female Lab employees: Your most beautiful art or craft work is needed to exhibit in "Women-in-Art at BNL," a show that is among the events being organized at the Lab to mark Women's History Month. The show will run daily Tuesday through Friday, March 14-17, in Room C, Berkner Hall, from 11:30 a.m. to 1:30 p.m., with an opening reception from 5 to 6:30 p.m. on Tuesday, March 14.

To enter an exhibit, call Elaine Lowenstein, Ext. 2400; Doris Rueger, Ext. 3743; or Liz Seubert, Ext. 2346, by Friday, March 3. Limited space could mean that some entries may not be able to be included in this show — but the Art Society-sponsored Labwide art and craft shows will be held as usual in the fall, so no work need stay unseen. Artwork and photography must be ready to hang, and all work must be labeled. Exhibitors should arrange to deliver works to Berkner Hall between 3 to 5 p.m., Monday, March 13, and collect them 1:30 to 2:30 p.m., Friday, March 17.

Determine Your Body Composition

Want to know your body's metabolic rate, lean mass and fat content? Sign up for a computerized body composition analysis screening, to be conducted on Tuesday, February 28, from 8 a.m. to 11 a.m., in Berkner Hall, Room C, by the American Heart Association, Long Island Region.

The fee is $4, payable at the screening, but since there are only 90 slots available, make your appointment now by returning the bottom portion of the Healthline flyer recently sent to all employees to: Mary Wood, Bldg. 490. For more information, call Ext. 5923.

Combustion (cont'd)

engineer. During the design, engineering and construction, Joseph Curtiss, Joseph Jahelka and Constantino Economos contributed to the project. Jean Frejka provides administrative support. ESAG is within the Department of Advanced Technology's Safety & Risk Evaluation Division (SRED), which is headed by Trevor Pratt, with John Boccio as his deputy.

Commissioned in 1992, the SSDA was used for 300 experiments over less than one year to measure mixture sensitivity or what is called detonation cell size, detonation pressure and wave speed of mixtures of hydrogen, air and steam detonated at temperatures between 300 and 650 K.

Ginsberg and his group found that temperature increases the sensitivity of hydrogen-air-steam mixtures to detonation. While experiments were done with mixtures containing up to 60 percent hydrogen, the researchers measured the minimum hydrogen concentration necessary for a detonation of hydrogen-air mixtures in the SSDA at 300 K to be 15 percent; at 650 K, it went down to 9 percent.

They also found that increasing the concentration of steam decreases the sensitivity of these mixtures, but increasing the temperature decreases the damping effect of steam.

Finally, they found that mixtures of hydrogen, air and steam cannot be sustained for long, since, at high temperature, hydrogen oxidizes without being ignited and thus reduces the sensitivity of these mixtures to detonation. These findings generally agree qualitatively with predictions made by theory.

SSDA was also a proving ground for concepts and design used in building the High Temperature Combustion Facility, which was inaugurated last spring and dedicated this fall. Also located in Bldg. 939, the HTCF is allowing Ginsberg and company to test how readily mixtures with lower concentrations of hydrogen detonate at high temperatures.

Like the SSDA, the heart of the HTCF is a detonation tube, a 25-millimeter (mm) stainless steel pipe in which combustion takes place. Both combustion-test vessels are made up of 3-meter-long modular sections connected by bolted flanges. While the SSDA has an inside diameter of 103 mm and a length of 6.1 meters (m), the HTCF is 270 mm and 21 m, respectively, but up to four more 3-m sections may be added to its length.

While the SSDA can withstand up to 120 atmospheres, the HTCF, because of its greater diameter, can contain a peak pressure up to 100 atmospheres, which is more than sufficient. The SSDA has ten instrument ports, but the HTCF has 65, so measuring and sampling devices can be mounted on the length of the tube.

With HTCF construction completed last April, the first detonation was conducted last May. So far, in addition to confirming much of what was observed in the SSDA experiments, new features of hydrogen-air-steam mixture detonations have been observed: For instance, the dependence of the mixture cell size on temperature and diameter had not been demonstrated for mixtures as lean as 7.4 percent hydrogen before the HTCF work.

After the first phase of experiments answers questions about the relationship between temperature and mixture sensitivity, a second set of experiments will be conducted: Given that, within a reactor's containment, there is no source of energy large enough to initiate a detonation, Ginsberg and company are interested in determining what conditions involving the acceleration of a low-speed flame initiated by a small energy source could result in hydrogen-mixture detonation.

Specifically, they will look at what is called the deflagration-to-detonation transition. A deflagration is a chemical reaction whereby a solid, liquid or gas such as hydrogen burns with a low-speed flame as the reaction propagates into the unreacted material. To make the transition from deflagration to detonation, the advancing reaction must accelerate to supersonic speed, which is faster than the speed of sound.

This will be done by inserting arrays of what are called orifice plates in the combustion vessel, to create turbulence upstream of a flame as it moves down the tube. To confirm whether or not the transition has occurred, researchers will measure flame velocity and vessel pressure.

In phase three, experiments will be performed to understand how a flame in a hydrogen-mixture would undergo transition if there were "relief paths," openings in the combustion vessel inserted to simulate vented pathways in the containment building.

By November 1995, the three sets of experiments are expected to be finished, so the HTCF will be available to users from industry, academia or other laboratories.

"The data from the HTCF phase-one experiments will now allow detailed comparisons with available theories for mixture cell size and improvement of mathematical models that are then used to make predictions about the conditions during severe accidents under which detonations may occur in containment buildings at high temperature," concludes Ginsberg. — Marsha Belford

Cotton CRADA (cont'd)

coat. Only a fraction of these cells will grow into fibers, and still fewer cells elongate into useful fiber.

The Brookhaven researchers will apply various treatments to developing cotton fibers, to learn which biological and environmental factors determine the natural selection of cells that will differentiate into long fibers.

Identifying Key Genes

The Brookhaven team will also determine the sequence of nucleotides, the building blocks of DNA, in genes that function in cotton fiber. These data will allow them to identify the genes that affect fiber strength, diameter and length. About half of the sequences will provide information on the genes' functions based on homology — similarities with genes that have a known function in other plants and animals.

To discover the functions of the remaining genes, the researchers will induce mutations in them, so that the functions they control will be disrupted — either magnified or diminished — and thus, can be identified.

Burr explained that the Biology Department has a strong tradition in plant genetics and is an important player in the Human Genome Project. Thus, he said, the department has the expertise and equipment needed to expedite this CRADA.

The BNL team will also develop molecular markers based on short, repetitive DNA sequences. Using these markers, they will make a genetic map of the cotton plant, which will show the arrangement of genes on its 26 chromosomes. Cotton plant breeders will use the map to grow plants with such desirable traits as high yield, high fiber quality, disease and insect resistance, and tolerance to environmental stress.

Future projects in this CRADA include the making of a physical map of the cotton plant's genome, which will measure the physical distance between genes, another important tool for plant breeders. Also, DOE's Lawrence Berkeley Laboratory will create a database to promote efficient use of the information generated by the project.

Brookhaven's participation in this CRADA is funded by DOE's Office of Energy Research Laboratory Technology Transfer Program. The BNL research program that provides the foundation for this project is funded by the DOE's Office of Energy Research, Office of Health and Environmental Research. — Diane Greenberg

A³ – Committed to Mission of Equality

The charge of BNL's Affirmative Action Advisory Committee, also known as A³, is to advise the Laboratory Director on the progress of affirmative action and equal employment opportunities at the Lab.

A³ members make recommendations on Lab policies and procedures in appropriate areas to ensure that equal opportunity and affirmative action endeavors are supported throughout the workforce. During the year, in an ongoing review of Labwide affirmative-action efforts, the group meets with each department chair and division head. In addition, monthly committee meetings allow members to hold interactive discussions on women's issues, the Americans With Disabilities Act and other current equal-employment opportunity issues. Minutes are sent to the Directorate, which also receives and discusses the committee's annual report.

Said Committee Chair Jeffrey Taylor, Office of Equal Opportunity (OEO), "A³ is an excellent vehicle to help the Lab keep a high level of concern for affirmative action and equal opportunity as a forethought rather than an afterthought. In addition to its work as a check and balance to other Lab efforts, A³ performs a key function in communication — ensuring information exchange among the Directorate, the Personnel Division, the departments and divisions, OEO and Lab staff."

The A³ Chairman is elected by the committee, which is selected from a diverse cross-section of the Laboratory. Nine of the 14 members are chosen for a three-year term on the recommendation of the committee, subject to the Director's approval, and one person is appointed every three years from Personnel management staff. The Deputy Director, the Women's Program Coordinator, and two OEO members are all ex officio members. Another OEO member is appointed as a non-voting secretary.

Pictured at a recent A³ meeting are: (standing, from left) Wai Lin Litzke, Department of Applied Science (DAS); Nancy Hoey, Secretary, OEO; Hue-Anh (Ann) Pham, Alternating Gradient Synchrotron Department; Richard Melucci, A³ Vice-Chair, DAS; Sandra Sullivan, Department of Advanced Technology; Myron Strongin, Physics Department; Frances Ligon, OEO, ex officio; (seated, from left) Jeffrey Taylor, A³ Chair, OEO, ex officio; Elizabeth McBreen, Physics; Marsha Kipperman, Personnel Division; Michelle Cummings, Management Information Systems Division; Barbara Pringle, Contracts & Procurement Division. Not present: Deputy Director Martin Blume, Women's Program Coordinator Victoria McLane and William Sells, Safety & Environmental Protection Division.

Amateur Radio Club

The Amateur Radio Club will next meet on Thursday, February 23, at noon, in Room D, Berkner Hall.

All Lab employees, guests and licensed amateur-radio operators are invited. For more information, contact Chris Neuberger, Ext. 4160, or Nick Franco, Ext. 5467.

Arrivals & Departures

Arrivals

Kent Brace ..... RHIC
Catherine L. Eylem ..... App. Science
Jeffery T. Mitchell ..... Physics
Weimin Zhou ..... App. Science

Departures

None

Volleyball

Standings as of February 14

Open League		League 1	
The Men and Me	40-14	Rude Dogs	37-17
GTEAM	38-16	Koopas	35-19
Farside	32-22	Network News	34-20
The Roofing Co.	22-32	Underdogs	18-36
Bud Men	3-51	Safe Sets	11-43
League 2		**League 3**	
Fossils	35-10	Silver Bullets	39-6
Safe Sets II	30-15	Take Five	37-8
Mon. Night Live	29-16	Upton-Ups	26-19
Net Wits	24-21	High Volley'em	25-19
Jolly Vollies	21-24	DO-DAT	19-26
Nuts & Bolts	19-26	For Play	15-30
Spiked Punch	17-28	Harlem Knights	10-35
Night Court	5-40	Bonnie's Bombers	8-36

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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

BWIS Offers Third Financial Seminar

To follow up on the two very successful sessions on money management presented earlier this month, Brookhaven Women in Science (BWIS) has invited financial consultant Valentina Solomita, a senior bond specialist with Smith Barney in Jericho, back to deliver a third talk. With a focus on retirement planning, this workshop will feature more opportunities for questions and answers and will be held on Thursday, February 23, at noon, in Room C, Berkner Hall.

All are invited; please bring your lunch. If possible, notify Susan Eng, Ext. 7988, or Eena-Mai Franz, Ext. 7103, of your plans to attend, by Wednesday, February 22.

Speakers Bureau

The following speakers gave talks on behalf of the Laboratory during the last quarter of 1994:

Mona Rowe, DO: Rotary Club of Riverhead, "BNL in General," October 5.

Eva Emmerich, AGS; **Veronica Evans,** CCD; **Terri Lacker,** Reac.: Suffolk County Displaced Homemaker Center, "Women in Technical Careers," October 6.

Swapna Mukherji, PE: Half Hollow Hills East High School Career Awareness Day, "Careers in Engineering," October 21.

Ruth Fernow, DO; **Elaine Lowenstein,** DO: Science Teacher's Association of New York State, "Hands on Science," November 7.

Sue Ellen Gerchman, Bio.: Academy of St. Joseph Career Day, "Careers for Women," November 16.

Eleanor Grist, Bio.; **Avril Woodhead,** TID: 30th Annual Science Fair at Shelter Island High School, "Science Fair Judges," December 2.

Bowling

Red and Green League

R. Larsen 248/240/210/698 scratch series, K. Asselta 235/614 scratch, J. Griffin 234/225/212/671 scratch, R. Pwrivo 234, E. Larsen 231/209/622 scratch, J. Goode 230, A. Warkentien 227, R. Eggert 222/222/201/645 scratch, R. Mulderig Jr. 215, R. Mulderig Sr. 211/211/621 scratch, W. Powell 212, J. Cuccia Jr. 210, H. Arnesen 208, R. Raynis 203, M. Palumbo 202, A. Pinelli 200.

Purple & White League

S. DiMaiuta 225/194, G. Munoz 208/193, P. Bounauito 197, N. Besemer 192/182, M. DiMaiuta 190, M. Picinich 189, E. Sperry IV 188, J. Addessi 185/180, J. Sheehan 184, D. Fisher 185, P. Callegari 183, R. Picinich 180, F. Brown 170, L. Farmer 170, M. Haller 170, I. Batchelor converted the 3/9/10 split.

Scotch Doubles — Sunday, February 26; sign up at BERA Sales Office by February 24. For information, call Maryann Reynolds, Ext. 2352, or Debbie Botts, Ext. 7218.

Art Bus Trip Going To Philadelphia

On Saturday, April 8, leap at the chance to join the Art Society-sponsored bus trip to see the renowned Barnes Foundation collection of mainly Impressionist paintings, on show at the Philadelphia Art Museum.

But before abandoning yourself to glorious art, stoke up on regional eatables while exploring the city's covered Reading Terminal Market, started by the Amish in 1892 and boasting more than 60 fresh food stalls and lunch counters. Or quickly tour the nearby Liberty Bell, or shop and eat among the 200 shops and restaurants at The Gallery at Market East, a few blocks away.

The bus will leave BNL from the tennis courts parking lot at 6:15 a.m. and, after a coffee stop, get to Reading Market at about 10:45 a.m. At 1:30 p.m., art lovers may rejoin the bus for the Art Museum, to arrive at 2 p.m. and see a slide show on the Barnes exhibit from 2:30 to 3 p.m., before taking a self-guided tour of those paintings and the rest of the museum until 5:15 p.m. Those who prefer to visit other sites independently will be picked up at the market at 5:30 p.m. as the bus leaves to return to BNL by 10:30 p.m., with a quick, grab-a-hot-dog stop on the way.

Cost is $21 for the bus and $13 for the Art Museum. For reservations or information, call Liz Seubert, Ext. 2346, 286-8563.

Basketball

Games of February 9

Mustangs 69		Magic 68	
Wayne Cummings	23	Troy Mayo	26
Greg Mack	12	Terry Buck	15
Rich Domenech	7	Ray Jackson	9
Bill Gunther	7	Al Langhorn	6
Charlie Edwards	6	Mitch Williams	6
Lars Furenlid	6	Pat Browne	2
Jerry Cook	4	Ed Gregory	2
Jamie Sims	2	Fred Maier	2
Hal Van Deroef	2		

Three-point shots: Buck, Domenech, Mayo (3), Williams (2)

Scram 74		Runaways 73	
Doug Wallace	24	Jim Desmond	23
Al Boerner	14	Jerry Gaeta	21
Jim Rank	13	Ed Meier	13
Tim Powers	12	Pete Ratzke	6
Joe Barkwill	7	Neil Donahue	4
Victor Cassella	4	Chris Ingoglia	4
		Bob Wells	2

Three-point shots: Barkwill, Boerner, Desmond, Gaeta (2), Meier, Powers, Rank, Wallace (3)

Deep Six 67		Air America 56	
Tracey Fountaine	24	Doug Aichroth	21
Brian Hobson	14	Kevin Woodson	16
Charles Bennett	9	Jeremy Middleton	7
Calvin Butts	9	Angelo Bosco	4
Neil Tyler	8	Ed Calhoon	2
Dwayne Eleazer	3	Mike Mallardi	2
		Alex Ratti	2
		Ed Taylor	2

Three-point shots: Aichroth (2), Hobson, Middleton

Pick a Student

Those interested in sponsoring students this summer are invited to review the applications that have been submitted for the two summer programs run by the Office of Educational Programs (OEP):

• **Summer Students** - In the traditional summer program junior and senior undergraduates receive ten-week research appointments, June 5 to August 11. OEP pays individual stipends of $225 per week and round-trip transportation. The sponsoring department pays for the student's housing at $83 per week.

• **Summer Interns** - This is the same as the Summer Student Program except that appointments are offered to students who have participated in a previous Department of Energy (DOE) High School Honors Program at BNL. Generally, these students are finishing their college freshman year, but a few may be recent high school graduates. OEP pays all costs with these students: stipend, travel and housing.

Review applications through February 24, in the Science Education Center, Bldg. 438, and submit requests for students to departmental coordinators by March 1. A special effort is made to offer minority students summer research opportunities at BNL. So, if your student choice is a minority, then you will substantively contribute to this effort. For more information, call OEP, Ext. 4503.

Note to Diners

BNL will be closed on Monday, February 20, for Presidents' Day, and food services will be affected as follows:

• The **Center Club** will be closed Sunday, February 19, and will reopen on Monday evening at 5 p.m.

• The **Cafeteria** will be open from 9 a.m. until 2 p.m., Saturday through Monday, February 18-20.

• The **vended food** service in Bldgs 912 and 179 will be in operation continuously.

Cafeteria Menu

Monday, February 20 - Presidents' Day
Snack bar service - 9 a.m. to 2 p.m.

Tuesday, February 21	
Soup: Provencal spinach w/ham	.90/1.20
A la Carte: Chicken w/tortillas	3.95
Lite: Gingered pepper steak	3.85
Deli: Brisket of beef w/cole slaw	3.20
Grill: Harvest vegetables	3.30
Wednesday, February 22	
Soup: Chicken chili	.90/1.20
Display Cooking: Asian kitchen	4.75
Deli: Calypso pork roast	3.20
Grill: Beef brochettes over rice	3.30
Thursday, February 23	
Soup: Turkey rice	.90/1.20
A la Carte: Macaroni & cheese	2.95
Lite: Sauteed chicken w/shallots	3.95
Deli: Creole sirloin w/corn bread	3.20
Grill: Two-cheese quesadilla	3.30
Friday, February 24	
Soup: French vegetable	.90/1.20
A la Carte: Turkey w/dijon pecan glaze	3.85
Lite: Halibut w/garlic & mushrooms	3.95
Deli: Pastrami	3.20
Grill: Mahi Mahi	3.30

Oracle Meeting

The Oracle Database System will be discussed and demonstrated by Charlie Mitchell and Dave Natelson of Oracle Corporation on Thursday, February 23, at 1 p.m., in Room B, Berkner Hall. This software is now being used in several applications at BNL and is widely used at other DOE labs. Brief descriptions of Oracle applications currently being developed at BNL will also be presented.

All are invited. If you would like to present your application, contact Sharon Spark, Ext. 4111, e-mail spark@bnl.gov.

Environmental Report Available

A report detailing environmental contamination in the area of the BNL site known as Operable Unit IV (OU IV) has been finalized by the Office of Environmental Restoration. The Remedial Investigation/Risk Assessment Report evaluates the nature and extent of contamination in OU IV, and the potential risks and hazards to human health from that contamination, which includes a 1977 oil/solvent spill at the Central Steam Facility, leaking sewer lines, a recharge basin and the sump outfall of the Reclamation Facility Building, Bldg. 650.

The public comment period on the report ends February 20, although it may be extended upon request. BNL's Research Library, Bldg. 477, is one of several local repositories for the report. A summary fact sheet can be obtained from Kathy Geiger, Ext. 3129.

Camera Club Plans Darkroom Classes

The BERA Camera Club will hold a four-session seminar on developing and printing, to be given by members who are advanced amateur and professional photographers. Participants at all levels are invited to join the club and attend the seminar. The choice between black-and-white or color processing, and the dates and location for the meetings will be made after discussion with those interested in participating. For information, call Ripp Bowman, club president, Ext. 4672.

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 - Doctorate normally required. Candidates may apply directly to the department representative named.

POSTDOCTORAL RESEARCH ASSOCIATE - Trained in physical or analytical chemistry, to join a research group involved in the development of remote detection technologies. Additional requirements are familiarity with time-resolved optical spectroscopies (UV/Vis fluorescence and Raman), experience with both cw- and pulse-laser systems, and a working knowledge of state-of-the-art high-performance liquid chromatography, including column packing procedures. Contact: Arthur Sedlacek, Department of Advanced Technology.

LABORATORY RECRUITMENT - Opportunities for Laboratory employees.

DD 3715. SECRETARIAL POSITION - Requires an AAS in secretarial science or equivalent, excellent communication and organization skills, and a thorough knowledge of Laboratory practices and policies. The ability to prepare technical documents using WordPerfect or Word for Windows also required; experience organizing conferences and workshops desirable. Will provide varied secretarial support, including file maintenance, report and document preparation and arranging travel. Department of Applied Science.

OPEN RECRUITMENT - Opportunities for Laboratory employees and outside candidates.

NS 2439. ADMINISTRATIVE/BUDGET POSITION - Requires a bachelor's degree in business administration, with an emphasis in accounting and experience in budget development, administration and monitoring. Must be proficient in PC applications (spreadsheets, database, word processing). Responsibilities include assisting with the review, coordination and control of data used for the preparation of budgets and forecasts, and maintaining and analyzing records and preparing reports. Will also perform MIS studies and assist in the preparation of special requests and analysis. Budget Office.

LS 0553. ENGINEERING POSITION - (term appointment) Requires a BSME or equivalent and several years' experience planning, designing and installing utility systems. Project-management skills and knowledge of mechanical and electrical utilities and safety systems are required. Specific experience with large accelerator physics experimental detectors is desirable. RHIC Project.

LS 3312. AUTOCAD SPECIALIST POSITION - (term appointment) Requires extensive experience in AutoCad 12, with a minimum of five years' computer-aided drafting experience, as well as computer experience in multidiscipline construction document preparation. Familiarity with contract-document content requirements and the preparation of the various components that make up these documents is required. Must be able to support architectural and mechanical design groups. Plant Engineering Division.

Motor Vehicles & Supplies

94 HONDA ACCORD LX - 4-dr., full power, dark blue, 12k mi., gar., full warr., $15,500. 289-8105.

93 GEO TRACKER 4x4 - conv., p/b, p/s, ac, am/fm cass., 18k mi., ask. $10,600; '87 Isuzu Trooper II 4x4, 135k mi., ask. $3,000. John, Ext. 7313 or 395-5922.

93 GMC SAFARI VAN - 24k mi., barn dr. & liftback, ac, p/w, p/l, excel. cond., $16,000. 473-1658 after 6 p.m.

93 OLDS CUTLASS - Special Edition, all power, 21k mi., ABS, red/red, $12,500. Rod, Ext. 3243.

91 GEO METRO - blue, 2-dr., 5-spd., am/fm cass., 61k mi., 50+ mpg, runs well. Joe, Ext. 2898.

90 NISSAN PICKUP - 45k mi., bedliner w/cover, Benzi box, fog lights, 5-spd., 4-cyl., runs well, mint cond., $5,500 neg. Joann, 584-3830.

90 FORD SUPER CLUB XL E350 VAN - 15-pass., power, new tires, $8,900; '88 Mercury Sable LS s/w, loaded, $5,200. Sharon, Ext. 5919 or 929-1099.

89 JEEP WRANGLER - 57k mi., soft & hard tops, v.g. cond., asking $5,500. 472-1302.

88 HONDA ACCORD DX - a/t, 4-dr., sunroof, alarm, new brakes, high hwy. mi., am/fm cass., v.g. cond., $7,000 neg. Ext. 2554 or 727-0738.

88 HYUNDAI - a/t, ac, 101k mi., very clean in/out, eng. needs work, $1,000. Ext. 2769.

87 MAZDA B2200 PICKUP - 5-spd., bedliner, 79k mi., new tires, exhaust, excel. cond. Shep, 423-8732.

87 MAZDA 323 LX - 4-dr., ac, as, a/t, 110k mi., $1,900. Valeri, Ext. 4984.

86 SUBARU SEDAN - 120k mi., runs well, needs exhaust system, $400 or best offer. Tim, Ext. 7150.

85 FORD MUSTANG LX - 4-cyl., a/t, p/s, p/b, p/l, 85k mi., mint eng., needs body work, $600; 2 P225/75R14 Goodyear tires, new, $40 ea. 368-7207.

85 JETTA - tan, many extras, mint cond., must sell, moving, $2,800 or best offer. Mark, 924-0960.

85 BRONCO II XLT - V-6, 5-spd., p/w, p/l, p/lumbar seats, moonroof, v.g. cond., $2,600. Mark, Ext. 4289 or 281-5060.

85 PONTIAC BONNEVILLE - p/w, p/b, tilt wheel, new trans. & radiator, smooth ride, decent cond. 744-9368.

85 FORD ESCORT - 4-dr., 5-spd., ac, am/fm cass., 87k mi., good cond., $850. Ext. 3439 or 878-0897.

85 LINCOLN TOWNCAR - white w/red int., 5.0L w/od., loaded, v.g. cond. Bob, Ext. 2710 or 467-4222.

83 BUICK SKYHAWK - white, 4-dr., 5-spd., ac, v.g. cond., $500. Bob, Ext. 3509 or 289-9533.

83 FORD VAN - 80k mi., captain's chairs, sofa, TV, icebox, runs well, carb. needs rebuilding, $2,650. John, 758-0975.

80 TOYOTA CELICA GT - clean, high mi., 5-spd., new tires, water pump, alt., exhaust, manifold, runs well, $1,100. Steve, Ext. 4324.

78 INTERNATIONAL SCOUT - 4wd, w/plow, 304 V-8, a/t, p/s, solid frame, body rust, $1,600. Rich, 744-4974.

76 CHEVY MALIBU CLASSIC - 350 small block, Holley 4-bar. carb, Edelbrock manifold, chrome headers, B&M quicksilver slapshift, posi rear. Phil, 286-1348.

76 FORD GRANADA - gar., needs V-6 motor, $100. Rich, Ext. 3354 or 589-9103.

66 FORD MUSTANG - good cond., $1,200. John, Ext. 4028.

CORVAIR PARTS - parting out '65 Corsa coupe, turbo eng., 140-h.p. eng. block, numerous extras, call for complete list. Ext. 3179.

T-TOPS - various for Camaro, Firebird, Monte Carlo, late '70s, early '80s; 327 Chev. eng., 30 over, roller cam., $700. Rich, 929-8514.

TIRES - 4, P195/70R14, Goodyear, excel., $20 ea., $60/4. Gene, Ext. 7113.

CASSETTE DECK - Pioneer, auto reverse, loud button, no am/fm, like new, excel. cond., $50 or best offer. Sue, Ext. 4931.

SIDE BOARDS - aluminum, for Chevy S10 Blazer or truck, excel. cond., $50. 289-8105.

TIRES - 4, Firestone radial ATX 235/75-15, good cond., half of tread left. Dave, 351-4771.

90 DODGE RAM VAN 250 - hightop conversion, loaded, high mi., runs well, $3,950. John, 696-2961.

88 FORD DUMP TRUCK - 12' rack, a/t, new motor, trans., rear toolboxes, hitch, 8' sander, asking $9,500. Roy, 286-5962.

88 JEEP GRAND WAGONEER - 75k mi., new paint, blue, no rust or dents, $8,500 neg. Ext. 2417 or 654-5510.

87 MERCURY TOPAZ - fully loaded, mint cond., well maint., 96k orig. mi., blue, $2,200. Otto, 929-3924.

86 BONNEVILLE - 4-dr., 127k mi., runs, make offer. Tom, Ext. 7115.

86 ISUZU IMPULSE - 2-dr., ac, 5-spd., cruise, am/fm stereo, new eng., brakes, clutch, alt., excel. body, $3,000 neg. Guiying, Ext. 5704 or 399-7309.

85 MAZDA G26 - 4-dr., ac, a/t, 88k mi., $2,600. Ext. 2165 or 929-6610.

83 GMC S-15 PICKUP - super cab, 80k mi., many new parts, $2,300 neg. John, 345-5537 after 6:30 p.m.

83 CHEVY S-10 BLAZER 4x4 - 5-spd., V-6, 140k mi., runs well, some rust, $1,800. Liz, Ext. 3348 or 298-3235.

82 CADILLAC COUPE DEVILLE - white w/blue carriage top, excel. cond., 3k mi on trans., needs motor, make offer. Kathy, Ext. 3805 or 981-5993 after 6 p.m.

81 PLYMOUTH RELIANT WAGON - runs, clean int., or use for parts, $500. Ed, Ext. 2007 or 751-1474 eves.

79 CHEVY PICKUP - cap, 3-spd., no power anything, runs well, $1,000. Bob, Ext. 5314.

74 MGB - convertible, used on road through '92, new top w/zippered window, ran well, $1,500 neg. Marcia, Ext. 7796.

71 VW KARMAN GHIA - a/t, 62k orig. mi., repainted by VW, trophy winner, immac., orig. owner, all orig. & perfect, $7,500. Rich, 929-8514.

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

69 MUSTANG - convertible, 6-cyl., 3-spd., new tires, brakes, shocks & exhaust, runs well, looks very good, best offer. Tirre, Ext. 3288 or 281-0360 eves.

RIMS - Centerline, 4 lugs, tires incl., $275. Dan, Ext. 4605 or 475-3527 after 5 p.m.

Boats & Marine Supplies

25' AQUASPORT - 1987, 200-h.p. Merc., 9.5 Yamaha kicker, new batt., Loran, radios, full canvas, excel. cond., $13,000 neg. 878-0480.

21½' PURSUIT - 1991, deep V cuddy, 150-h.p. Yamaha, 140 hrs., o/b, loaded, '93 E-Z trailer, full canvas, mint cond., $18,000. Lloyd, 587-7876.

20' IMPERIAL - fg, cuddy cabin, 100-h.p. Johnson, galv. trailer, needs TLC, $995 or best offer. Frank D., Ext. 2022 or 399-4480.

OUTBOARD - 115-h.p. Suzuki, p/trim, needs work, all parts available, many other marine engine parts available for i/b & o/b. Jim, 727-3469.

23' SAILBOAT - swing keel, 3 sails, 7.5-h.p. Honda ob., DF, VHF, trailer, everything incl., ask. $3,200. John, Ext. 5599.

18' FORMULA - fg., 135-h.p. Evinrude, w/trailer, new int., new prop., 2 spare props., $600. Chris, Ext. 3243.

PROPELLER - 2, 13¼"x17" OMC props. from 70-h.p. Johnson, excel. cond. Brian, Ext. 2799.

MERCRUISER 454 - V-8, i/b engine, rebuilt, 350-h.p. Caterpillar 3208 3160 V-8 FWC diesels; many marine i/o parts. Jimmy, Ext. 3082.

OUTBOARD - 18/25-h.p. Merc., low-low hrs., elec. start, gas tank, stand, mint cond., $900. 929-5880.

Furnishings & Appliances

BEDROOM - modular, Formica, 10 pieces incl. loft bed, tan & woodgrain, fits 9'x10' room minimum, orig. $4,000, asking $1,500. Ext. 3492 or 734-2593.

BEDROOM SET - Lane, contemp., solid wood, 7 pieces, unique headboard, asking $1,000. 751-7847.

DINING ROOM - 48" round table, pedestal, oak, w/24" leaf, 6 chairs, china cabinet, hutch w/etched glass, $1,300/all. Bonnie, Ext. 2875.

FLOOR WAXING MACHINE - professional, 20", General line, variable-speed, $400, like new. Mark, 924-0960.

HEADBOARD & FOOTBOARD - oak, w/slats, 32", oak vanity w/clamshell sink & faucet; stove fan, light almond color. Ext. 4612.

HOOSIER - antique, solid oak w/pulldown porcelain surface for baking, excel., $650. 399-6367 eves.

REFRIGERATOR - GE, self-defrosting, 8 yrs. old, almond, 66"x34", good cond., $175. Phil, 924-6790.

SOFA & LOVE SEAT - beige w/floral pattern, like new, $250. Richie, Ext. 2175 or 734-7342.

WASHER - Whirlpool, large-cap., heavy-duty, 2-speed, 6 cycles, white, runs well, $75. Ext. 7631.

BEDROOM SET - art deco, 3-pc., wall unit, queen platform bed w/4 locking drawers, $600 neg.; assorted Hummel plates & bell. Jeanne, Ext. 7722.

BEDROOM - fruitwood, triple dresser, chest, nightstand, king bed, brass hdbrd.; 2 Chippendale wingback chairs, sofa; student desk, chair. Shirley, 689-8665.

DINING ROOM - Broyhill, hutch, benches, 2 chairs, table, $500; Ethan Allen dinette table, 4 chairs, $200; boy's junior bdrm. set, $100. 928-7265 eves.

DRESSERS - 2, nightstand, fullsize bed, boxspring, sofa bed w/futon mattress; Crate 20CXL guitar amplifier, w/case, $120; Vivitar 550FD flash. Ext. 5826.

ENTERTAINMENT UNIT - black w/gold trim, 49"Wx54"Hx20"D, $100. Bert, Ext. 5156 or 581-4436.

ETAGERE - rattan, 6'x6', glass shelves, $200. 325-1907.

SOFA BED - new cond., queen innerspring mattress, tan tweed, Scotchguarded, $300. Kathy, 369-4238.

WALL UNIT - 3-pc., black w/brass trim, glass doors, entertainment center, bar. George, 878-9239.

Tools, House & Garden

SAW - radial arm, Sears, extras, $275. Bill, Ext. 3278.

SWIMMING POOL - aboveground, Harrows Safari, 18'x40', like new, carpeted deck, alum. posts, orig. $4,000, make offer. 924-3104.

Sports, Hobbies & Pets

BIKE - 20" 18-spd. Diamond Back mountain, mint cond., includes helmet, chain, shoulder bag, $250. 467-0351.

EXERCISE BIKE - moving handlebars, total body workout, mint cond., $45. Peter, 345-9042.

EXERCYCLE - $25; 2 small Army-type trunks, $10/ea.; large Avon collection, all or separate. 286-0376.

GUITARS - 12-string, Roderich Paesold, w/case $300; Arbor stilletto electric, $250; GNU snowboard w/bindings, $100; blinds, $25. Michael, Ext. 5927.

PIANO - Kimball Studio, upright w/bench, excel., Casio Tonebank CT-650 keyboard; exercise bike, Airdyne, orig. $750, now $500. John, 758-0975.

SKI BOOTS - men's, Technica, size 10, used only 6 times, $75. Mark, Ext. 4289 or 281-5060.

BIKE - 20" BMX, Cobra Lotus, mint cond., chrome & blue, $25. Bill, 924-6940.

DRUM SET - 8-pc., Tama, single bass, snare, 2 toms, floor tom, 3 roto toms, zildjian cymbals, high hats, all hardware, stands, $800. 281-1679.

ENLARGER FOR ARTISTS - 2 lenses, hardly used, orig. $300, now $100. Joe, Ext. 4661.

JOGGING SUIT - Gortex, med., $25; running tights, med., $10; wool pants, size 32, $15; sleds, 4' flexible flyers, $13/ea.; 44" Airline Patrol, $9. Jack, 744-3919.

SPORTS CARDS - assorted, hockey, football, baseball, basketball, reasonable prices. Matt, 751-7023.

SPORTS CARDS - all sports, 69 sets, $1,500 value, now $500; 27 wax boxes, $150; starting lineup collections, approx. 200 pieces, now $350. Paul, 289-9152.

Audio, Video & Computer

COMPUTER - Commodore 64, includes keyboard, disk drive, 13" Magnavox monitor, many games, great cond., asking $150. Kristin, Ext. 3082.

COMPUTER - 486 DX2 66, 420 HD, 8 M RAM, sound card, 15" Magnavox monitor, software loaded, 10 mos. old, $1,300. Ext. 7891 or 632-2241.

KEYBOARD - Miracle Piano teaching system, cables, Mac software, song collections, volumes 1 & 2, stand, orig. $350, sell for $225. Varouj, Ext. 7718.

PRINTER - Apple LaserWriter, AppleTalk cables, book, new toner, works well, asking $250. Phil, Ext. 2080 or 473-1067.

PRINTER - Macintosh ImageWriter II, for 6.0 system or later, cable, manuals, ribbons, $250. Margaret, 727-3863.

SOFTWARE - Lotus Ami Pro, ver. 3, wordprocessor/publisher, w/manuals, user registration card, $30; hand-held vacuum, Dirt Devil, $20. Bob, Ext. 4551.

SOUND CARD - 16-bit, speakers, related software, Gateway 2000, 7 mos. old, $100. Peter, 345-9042.

STEREO SYSTEM - Lafayette LR200A, am/fm receiver, Criterion 333 speakers, BIC 911 turntable, in cabinet, excel. cond., best offer. Sue, Ext. 4931.

COMPUTER - IBM XT, not working, best offer. 653-8251.

MOTHER BOARD - ISA-486-DLC-40 MHz, $200; 8 each, 1MB, 30-pin SIMMS, $40/ea. or $300/all. 585-4202.

TV - Sharp, 19", color, wood grain, $50; Sears TV, 12", b&w, $10. Shane, Ext. 7145.

TV - Mitsubishi, 50", used 2 yrs., $1,700. Mark, Ext. 7859.

VIDEO - *Civil War*, set of Ken Burns film, like new, orig. $179, now $100. Brian, 234-9487.

Miscellaneous

BABY'S ITEMS - Fisher Price swing, $25; port. crib, $25; copy of 1919 contract to sell Babe Ruth to Yankees, neg. O. Booker, Ext. 3082 or 727-5912.

DIAMOND ENGAGEMENT RING - pear shape w/24 side stones, approx. 1 carat, appraised $3,000, asking $1,500 neg. John, Ext. 7313 or 395-5922.

DIAMOND ENGAGEMENT RING - 0.93 carat w/2 tapered diamond baguettes, appraised at $5,000, asking $2,700. Mike, Ext. 4293.

LEATHER JACKET - genuine, brand-new, unused, detachable sleeves, $175. Peter, 345-9042.

TYPEWRITER - $25; turntable, $20; brass desk lamp, $20; table, oak & glass, 4 chairs, $150; electric heater, new, $30. Kathy, 744-2203.

Free

23' THUNDERBIRD - fg hull w/cuddy cabin, excel. cond., no motor or trailer, you haul away. 281-1832 eves.

BATHROOM VANITY - 30" w/sink & faucet, white, you pick up. Karen, Ext. 4262.

CAT - all black male, neutered, 5 yrs. old, friendly. Doug, Ext. 4484.

FIREWOOD - many hardwood trees stacked up, bring saw, backhoe avail. to help you load. Frank, 234-0538.

SNOW PLOW - large, self-propelled, 5-h.p. unit, engine partially overhauled, now a basket case, free or trade for mower. Cadwell, Ext. 2934 or 744-2816.

AIRLINE TICKET - NY to Columbus, Ohio, 2/20, USAir. Ken, Ext. 4660.

Car Pools

HICKSVILLE & HUNTINGTON - BNL-sponsored van pool, passengers needed, est. cost under $100/mo. Ron, Ext. 2175.

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

Wanted

BABY-SITTER - for 8-yr.-old, some evenings, $3/hr., Mastic Beach area. 395-1770.

COMPUTER - Apple Macintosh. Vic, Ext. 3765 or 744-5079.

GORDON LIGHTFOOT RECORDS - *Old Dan's Records*, LP/cassette to buy or borrow. Wickham Case, Ext. 7527.

HOUSEMATE - to share house, 2 private rooms, priv. bath, share kitchen, l/r, d/r, utilities. Skip, Ext. 3806.

MINIBIKE - or small dirtbike, for 10 yr. old, good running cond., reasonable. Ext. 5750 or 821-6151.

SKIERS - to ski Windham 2/22, Hunter 3/8, send $42 for bus & lift to Augie Hoffmann, Bldg. 510C by 3/1.

USED FURNITURE - don't throw it out, desperately needed, would be greatly appreciated, immediate pickup. Margaret, Ext. 2529 or 588-7989 eves.

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