BROOKHAVEN BULLETIN
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BROOKHAVEN NATIONAL LABORATORY

Beam Enters Linac-to-Booster Transfer Line for First Time

The first milestone in commissioning the Booster preaccelerator of the Alternating Gradient Synchrotron (AGS) was marked at 10 p.m. on Wednesday, April 3, when the first beam was sent 74 feet through the Linac-to-Booster (LTB) transfer line.

At that time, a pulse of negative hydrogen ion (H^-) beam that was 30-microseconds wide with a 24-milliampere current came from the AGS linear accelerator (Linac). The H^- beam was diverted 7.5 degrees by a pulsed dipole magnet, shunting it from the AGS transfer line down the LTB transfer line. After negotiating an additional 126 degree bend in the LTB transfer line, the beam was halted as planned in a carbon beam stop.

"This milestone culminates four years of relentless effort to construct the Booster," says William Weng, Manager of the Booster Project. "Although we were careful in testing, calibrating and aligning the components, only a successful beam test such as this can certify that we've done our jobs properly. What we learn from this test will benefit the rest of the Booster commissioning."

An accelerator one-quarter the size of the AGS, the Booster is designed to increase AGS proton and polarized proton intensity, and to allow the AGS to accelerate heavy ions up to the atomic mass of gold. As a link between the Tandem Van de Graaff and the AGS, the Booster will also complete the chain of accelerators that will form the injection system for BNL's Relativistic Heavy Ion Collider, for which a "Beginning of Construction Ceremony" is being held today (see box).

Headed by AGS Physicist Leif Ahrens, Booster commissioning began on April 3. Over the next few months, it is expected that beam will be circulated, accelerated and extracted.

Under the direction of AGS Project Engineer Ken Reece, who is in charge of commissioning the injection line, this LTB milestone tested the calibration of magnets that bend and focus the beam, as well as the precision of the control system and instrumentation responsible for monitoring and correcting the beam's position. The beam stop had been installed two thirds of the way down the line so that the beam would pass through at least one of each type of transfer line device during this test.

Along with testing LTB transfer line components, the commissioning milestone relied on the latest generation of the AGS distributed control system, which is a network of computers that operates the Booster.

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RHIC Ceremony Today; Buses Start at 10:30 a.m.

All are invited to attend today's "Beginning of Construction Ceremony" for the Relativistic Heavy Ion Collider (RHIC), which begins at 11 a.m. atop the RHIC ring. The keynote speaker will be D. Allan Bromley, Science Advisor to President George Bush.

To keep traffic in the area of the ceremony to a minimum, employees, retirees and visitors are asked to avoid driving. For those who choose not to walk, bus transportation will be provided for both the morning ceremony and afternoon tours of the RHIC facilities.

Starting at 10:30 a.m., four school buses will begin picking up passengers in a loop that will include Berkner Hall, Accelerator Development Bldg. 902, AGS Bldg. 911, Physics Bldg. 510, and NSLS Bldg. 725. Return transportation will be provided at the ceremony's end. Pickup for the afternoon tours will begin at 1:30 p.m. and continue until 3:30 p.m.

Booster Power System Passes Major Test

The first test of the system that will supply power to the string of magnets for the Booster was successfully concluded in early March by the high power team of the AGS Power Supply Group.

This system was designed to give the unusual cycle flexibility required for the Booster to link the Linac and Tandem Van de Graaff accelerators to the Alternating Gradient Synchrotron (AGS) and, soon, to the Relativistic Heavy Ion Collider.

The system is unique in that it contains six pairs of controlled rectifier power modules in series that are capable of providing cycle-repetition rates up to 7.5 hertz (pulses per second).

Said Anastasios Soukas, head of the Booster Magnet Power Supply Systems Group and AGS Chief Electrical Engineer, "Because the Booster will accelerate protons, polarized protons and heavy ions, each requiring different magnet cycles, we need a lot of controlled, direct-current power for the various operating modes, and it must be easily changed. Modules in series are much more complicated to set up than a fixed system, but they give us the flexibility that we want."

"So far, we've fulfilled project requirements," said Soukas. "This is thanks to the expertise, enthusiasm and close coordination of many different AGS groups — Power Supply, Mechanical Engineering, Mechanical Services and Booster Ring Component Production Facility staff; Power Room, 200-MeV Linac, Experimental Area Operations Installation, and Computer Controls. We also thank the Central Shops Division, the Plant Engineering Division (PE) riggers and an electrical installation group coordinated by PE [see story] — to name a few!

(continued on page 2)

Cable Effort in Home Stretch

Roger Stoutenburgh

Standing by some of the 180-plus miles of Booster cable are: (clockwise, from left) Tom Nehring, Joel Spinner, Bill Slavinsky (back), Fred Kuel, John Czachor, Mike Clancy and Don Bastedo. Not pictured is Frank Heimburger. (See story on page 3.)

Darrel Joel Chairs Medical

BNL Senior Scientist Darrel Joel began serving an appointment as Chairman of BNL's Medical Department on April 1.

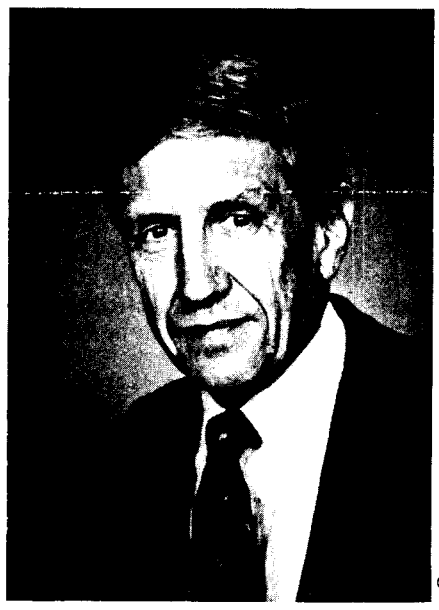
In announcing Joel's new position, Laboratory Director Nicholas Samios noted, "[Joel] has been at Brookhaven since 1964 . . . carrying out his own research program, which is now centered on [boron] neutron capture therapy. He and his collaborators were the first to show that the therapy is efficacious in curing an appreciable fraction of malignant brain tumors in rats. The success of these studies — a collaborative interaction among the disciplines of medicine, veterinary medicine, pharmacology and reactor physics — has opened the door to extending such therapeutic techniques to humans."

Joel replaces Arjun Chanana, who fulfilled a five-year term that began in 1986.

As Samios stated, "Chanana did a superior job in restoring the vitality and strength of the Department. He was instrumental in obtaining five new Department of Energy-supported budget lines . . . worked hard and successfully to help [re]open . . . the Inhalation Toxicology Facility and the Whole Body Counter . . . [and] was Brookhaven's point man in making arrangements for a Radiation Therapy Facility . . . that will be operated jointly by the State University of New York at Stony Brook and the Medical Department of BNL. He deserves our thanks for a job well done."

"Thanks to Arjun, several very productive programs are now in place in this department," adds Joel. "My responsibility as chairman will be to try to expand the support for these ongoing programs, as well as to encourage new initiatives. Particularly, it will be important to bring in more young scientists. Further, I feel that it is the responsibility of the support staff to maintain a work atmosphere where scientists are free to do their research."

In addition to the present research going on in the Medical Department, a program that Joel would like to see come to the Lab is linked to the possible construction of a heavy-ion radiation facility by the National Aeronautics and Space Administration (NASA) to be located at the Booster of BNL's Alternating Gradient Synchrotron.



Roger Stoutenburgh

Darrel Joel

"If this facility is built, then I foresee a major radiobiology program that will complement ongoing work on DNA damage and repair, leukemogenesis and microbeam radiation studies of the central nervous system," explains Joel. "NASA is concerned about the potential effects of galactic radiation, of which heavy-ion radiation is a major component, on astronauts during extended space missions.

"The Medical Department is alive and well, and I hope that I can help it grow while I am chairman," says Joel.

Darrel Joel earned his D.V.M. and Ph.D. in veterinary pathology from the University of Minnesota in 1958 and 1964, respectively.

He came to Brookhaven's Medical Department in 1964 as an assistant scientist, to serve as Director of Veterinary Services at the Medical Research Center and to extend his thesis research on the function of lymphocytes. He worked with BNL Senior Scientist Eugene Cronkite, employing Cronkite's technique of irradiating blood outside the living body to eliminate circulating lymphoid cells from the blood.

"I came for only one year," com-

(continued on page 3)

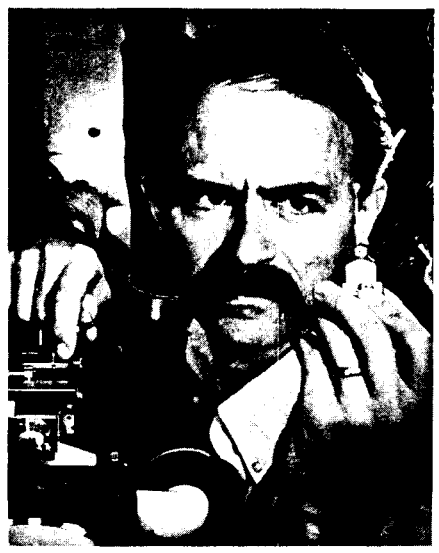
BNL Lecture: Making Protein Structure Crystal Clear

In architecture, form has been said to follow function. But in biology, an enzyme's function is almost certainly determined by its form.

Uncovering the link between form and function is the role of structural biologists, some of whom study protein enzymes using crystallography.

When grown as crystals, an enzyme's molecules are aligned in a small number of symmetric orientations. Thus, anything that is done to the crystal will be amplified by the number of molecules in it. Anything learned about one molecule will be true for all, and anything learned about the entire crystal will be true for each individual molecule.

These are the principles guiding Scientist Robert Sweet, Biology Department, in his research at the protein crystallography beam line at the National Synchrotron Light Source (NSLS). Sweet will discuss his efforts at "Making Protein Structure Crystal Clear" when he delivers the 269th Brookhaven Lecture on Wednesday, April 17, at 4 p.m., in Berkner Hall. His talk will be introduced by Biology Department Chairman William Studier.



Roger Stoutenburgh

Robert Sweet

The study of crystal structure is relatively new. In 1972, for example, the Protein Data Bank in BNL's Chemistry Department contained information on the structure of only seven molecules. Today, nearly 1,000 molecular structures have been deposited in the Protein Data Bank.

Sweet will show how some of this expansion is owed to synchrotrons, such as the x-ray ring at the NSLS, where x-ray diffraction experiments are used to explore crystal structures. In these experiments, x-rays hit a crystal and are scattered, forming a characteristic and often symmetric diffraction pattern, which can reveal the true structure of the specimen.

Using x-ray diffraction techniques, Sweet and his colleagues are conducting two types of experiments at the NSLS. First, he will describe the studies going on at beam line X12C where researchers are obtaining digitized two-dimensional structural images using monochromatic x-ray light having one wavelength.

Then, Sweet will talk about his work at beam line X25, using all the wavelengths available at the x-ray ring in a polychromatic beam to probe enzymes even further, to learn how their function relates to their structure. Ultimately, this experiment could produce three-dimensional movies of the proteins' operation.

Robert Sweet received his B.S. degree from the California Institute of Technology in 1965. He did his graduate work at the University of Wisconsin, earning his Ph.D. in physical chemistry in 1970.

From 1970-73, Sweet did his postdoctoral research on protein crystallography at the Medical Research Council Laboratory in Cambridge, England. He joined the faculty of the University of California, Los Angeles (UCLA) in 1973, teaching chemistry and biochemistry. In 1983, Sweet left UCLA to join the staff of BNL's Biology Department.

After the lecture, those attending are invited to join the speaker for discussion and hors d'oeuvres. To join the lecturer for dinner at a restaurant off site, call Tina Hale, Ext. 3415.

AUI Distinguished Lecture

On the Greenhouse Threat

Recent global temperatures may confirm for skeptics that the greenhouse effect is a real threat. The hottest year on record, 1990 continued a warming trend detected during the 1980s, in which occurred six of the world's warmest years ever recorded. Since the beginning of the century, the earth's average atmospheric temperature has increased by 0.5°C.

Global warming is thought to be caused by the greenhouse effect, an increase in carbon dioxide and other gases in the atmosphere due to the combustion of fossil fuels.

In an AUI Distinguished Lecture to be held in two parts on Thursday, April 18, and Friday, April 19, Arthur H. Rosenfeld, one of the nation's foremost researchers in energy conservation and efficiency, will discuss ways in which the federal and local governments can initiate conservation policies to respond to the greenhouse effect. Entitled "White House and State House versus Greenhouse: 'No Regrets' Responses to the Threat," both talks will begin at 4:30 p.m. in Berkner Hall.

Rosenfeld is a professor of physics at the University of California, Berkeley, Director of the Center for Building Science at Lawrence Berkeley Laboratory (LBL), and author of four best-selling science books, including *Nuclear Physics*, which he coauthored with his former instructor, the Nobel Prize-winning physicist Enrico Fermi. Rosenfeld's most recent book, published in 1983, is entitled *Supplying Energy Through Greater Efficiency: The Potential for Conservation in California's Residential Sector.*

In 1986, Rosenfeld won the Leo Szilard Award for Physics in the Public Interest presented by the American Physical Society's Forum on Physics and Society. In the presentation of the award, Rosenfeld and his colleagues from LBL were credited with helping to reduce the cost of meeting the nation's energy needs by about $150 billion per year.

Arthur H. Rosenfeld

Note to Employees:

Attendance at lectures, meetings and other special progams held during normal working hours is subject to supervisory concurrence.

Roger Stoutenburgh

Among the AGS staff involved in the first test of the power system for the Booster magnets are: (at left) Steve Savatteri and Gary Danowski, shown monitoring one of the rectifier power modules lined up behind them; (right foreground, from left) Neil Wade, Jim Makoulis, Mike Bannon and Andy Soukas, checking the results of the magnet cycle pulsing; and (right background, from left), Frank Toldo and Niels Schumburg, staffing the computer controls.

Power Supply (cont'd)

"To get good results in putting such a major installation together," continued Soukas, "support has to come from every member of each team. We've been able to depend on everyone — with special thanks to AGS Group Leader Jon Sandberg and team leaders Joseph Geller, Frank Toldo Sr., and Shou-Yuan Zhang."

Physically, the power supply is a series connection of six pairs of controlled rectifier power modules equipped with bypass switches. The modules, the controlling electronics, cooling and computers have a special building erected around them.

The rectifier power modules contain the heart of the system — 180 silicon control rectifiers, which, at 100 millimeters in diameter, are the biggest available in the world.

Combined, they produce a 24-phase direct current with a maximum of 3,000 amperes at 6,000 volts. In comparison, most homes are supplied with from one to three-phase alternating current of 150 amperes and 115 volts.

A large number of phases can give a more closely controlled current flow. The 24 phases available for the Booster will allow power to flow smoothly or in bursts, as required.

The rectifier power modules are linked to transformers lined up outside the building. The current is then carried by cable to the set of power modules and, thence, to the Booster magnet.

When an operator programs the computers controlling the system to get a specific wave cycle — which will vary according to the type of particles being accelerated — the local computers take the programmed message and send a different cycle to each rectifier module. The combined cycles from all the modules give the desired waveform for the ring magnets.

Said Soukas, "The system is flexible enough to accommodate additional requirements for the future as well as our present needs. If a cycle can be programmed, we should be able to carry it out." — Liz Seubert

Transfer Line (cont'd)

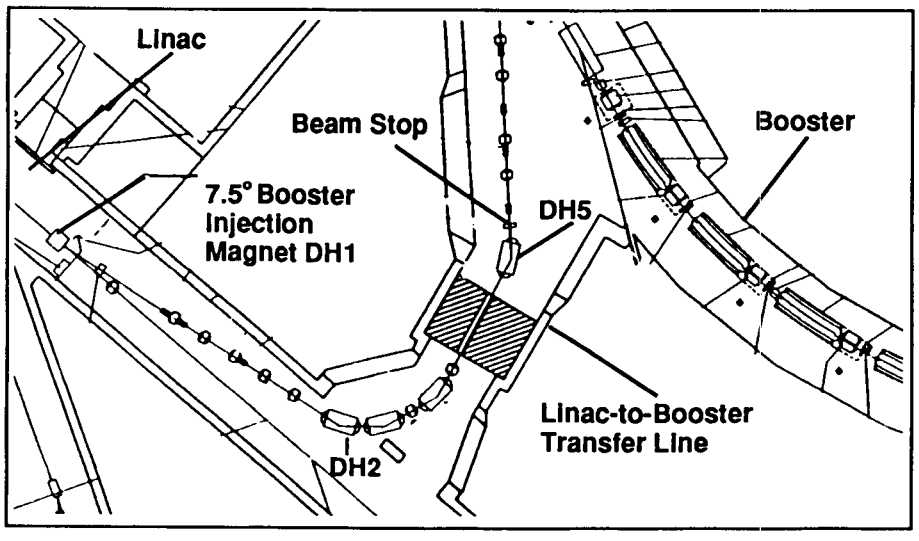
Before the commissioning test could be performed, the AGS main control room operators, under the direction of Supervisor Raymond Zaharatos, conducted the first security sweep of the Booster ring, to ensure that it was safe to operate.

Along with Reece, Ahrens and the AGS operations crew, others in the control room that night who participated in the test were: Brian Brisco, Ahovi Kponou, Alfredo Luccio, Brian Oerter, William Sims, Joseph Skelly and Richard Witkover.

This milestone was made possible by many AGS groups that have been working on different aspects of the Booster Project under Weng and Deputy Manager Andrew McNerney. Recent accomplishments with cabling and power supplies are described in the accompanying stories.

Other AGS teams responsible for this milestone are: the Controls Group managed by Donald Barton, the Experimental Areas Group led by Alexander Pendzick, the Instrumentation Group under William Sims, the Mechanical Engineering Group headed by Rudolph Damm with major contributions by John Brodowski, the Security Group supervised by Austin McGeary, and the Survey Group under Francis Karl.

— Marsha Belford



Drawing of the Linac-to-Booster transfer line showing the 7.5° bend from the Booster injection magnet DH1 and the 126° bend from dipole magnets DH2 to DH5.

Weight Watchers Change Places

On April 15 only, the Monday lunchtime Weight Watchers group should report at the usual time, noon to 1 p.m., to Room B, Berkner Hall, instead of the Brookhaven Center, which is the regular meeting place.

Whether it rains violets or cats and dogs, don't forget to give to the BNL Food Drive! Personal checks and receipts from King Kullen and Finast, which give rebates, are also welcome. Send them to Carole Kerr, Bldg. 460.

Darrel Joel (cont'd)

ments Joel. "I found it to be a great place to work and was fortunate to be able to stay." He was promoted to Associate Scientist in 1966, to Scientist in 1972 and to Senior Scientist in 1979.

Following this research, Joel began studying the fate of injested particles. "It was not understood whether or not the intestinal lining is a complete barrier to particles. We found that it is not — ingested particles not only cross the intestine, but also make their way into the regional lymph nodes and may even become systemic," explains Joel.

Teaming with Chanana, Joel then shifted his focus to the host-defense mechanism in the lung. One of the problems that they studied was how the lung responds when challenged with various antigens, which are substances that stimulate the immune system to make antibodies.

Then in 1985, Joel and BNL Scientist Daniel Slatkin received one of the Director's Exploratory Research Grants to develop animal models for boron neutron capture therapy (BNCT). In the late 1950s and early 1960s, BNCT was used at BNL for treatment of malignant brain tumors in human beings. Although this first trial of BNCT was largely unsuccessful, the method has been improved and revived in recent years.

"There is sufficient new data indicating that BNCT can effectively control malignant brain tumors in animals, so I think that, in two or three years, BNCT will be again used in clinical trials," concludes Joel. "As chairman, I hope to stay involved, at the very least in the planning of BNCT experiments."

— Marsha Belford

Support Group For Women

The Women's Support Group, conducted by Marion Davis-Parzen and sponsored by the Hospitality Committee, will meet Tuesday, April 16, from 10 a.m. to noon, at the Recreation building in the apartment area on site. To discuss any problems or concerns facing women, come and share your experiences. Wives of Laboratory employees and guests are welcome.

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WISE Career Day Coming Up

Students from high schools all over Long Island will come to the Lab on Saturday, April 20, to participate in the BNL-sponsored Women in Science and Engineering (WISE) Career Day.

BNLers are invited to participate in three ways: They can encourage the high school students, science teachers and counselors that they know to attend the WISE Career Day; they can attend the event themselves; or, if qualified, they can be one of the WISE volunteers who will interact with and provide role models for female students.

Under the leadership of Victoria McLane, Brookhaven Women in Science is organizing the career day, with cooperation from the Office of Educational Programs, the Office of Scientific Personnel, the Tour Program in the Public Affairs Office, and Women's Program Coordinator Virginia Brown.

The day's events will begin at 9 a.m. and will include:

- Keynote address by Judith Wishnia, Associate Professor of History and Women's Studies, State University of New York (SUNY) at Stony Brook, "Women in Science: New Opportunities, Old Oppositions."
- Student seminar led by Jeanette Yen, Assistant Professor, Marine Sciences Department, SUNY at Stony Brook, on "Research at the Bottom of the World: An Antarctic Adventure."
- Teacher/parent seminar led by Janice Koch, Science Education, Hofstra University, on "Encouraging the Participation of Young Women in Science."
- Displays on scientific disciplines, staffed by women in those fields.
- Awarding of prizes from BNL-sponsored poster contest for students in grades 7-12, to celebrate Earth Day and National Science and Technology Week.
- Tours of the Exhibit Center/Science Museum, where women who do research at BNL will have demonstrations about their work.

Because there are only a limited number of spaces available for tours, preregistration is suggested. A preregistration fee of $5 will cover the cost of lunch. Those who register at the event should bring their lunch.

To become a WISE volunteer, to preregister or to obtain more information, contact Victoria McLane, Ext. 5205.

Bowling

Red/Green League

R. Larsen had a 235/207/614 scratch series, R. Mulderig 223/200, W. Cahill 216, M. Verderosa 211/204, K. Asselta 211, F. Hohmann 207, W. Kollmer 207, H. Marshall 205, A. Warkentien 203, C. Bohnenblusch 202, H. Dawson 202, A. Pinelli 202.

White League

Gil Spira had a 221, Jim Petro 214, Jim Goode 205, Dick Adams 201, Gerry Riker 198/189, Jeanne Penoyar 198, Maryann Reynolds 184.

Purple League

Pat Manzella had a 226, Alice Belmonte 222, Sharon Smith 180, Ruth Sheehan converted the 4/7/10 split.

Nursery School To Reopen in Fall

Due to the positive response to a recent survey of all employees, the Upton Nursery School will reopen next fall.

Registration is now going on for classes at the nonprofit, parent-cooperative school for three- and four-year-old children that is held three mornings a week. Teachers Renée Bloch and Judith Van Asselt will be at Berkner Hall from 11:30 a.m. to 1 p.m., Tuesday and Wednesday, April 23 & 24, to meet parents, answer questions and accept registration forms.

The school year runs from September through mid-June; children must be enrolled for at least three months of that period. Parents can register their children anytime between now and the first day of school, but the classes fill quickly, so sign up as soon as possible.

For more information, call Elaine Gerhardstein-Wong, enrollment chair, 474-4525, or Cathy Lombardo, president, 924-2205.

Toastmasters Club

The District 46 Governor of Toastmasters International will present the BNL Toastmasters Club with their charter at the next club meeting on Tuesday, April 16.

As at any regular meeting, club members will have opportunities for impromptu speaking and for receiving constructive feedback on prepared talks. Guests are always welcome. For further information, call Margaret Foster, Ext. 3644, or Greg Van Tuyle, Ext. 7960.

Microcomputer Club

The Microcomputer Club's next presentation, "Communications at BNL," will be given by Ralph Trondle and George Rabinowitz, Computing & Communications Division, on Thursday, April 18, at noon, in the conference room in Bldg. 475.

The talk will describe BNL's next telephone system, which could provide expanded data-handling capabilities and ISDN services; recent enhancements to the existing system; and evolving network strategies.

All are welcome. For more information, call Irv Montanez, Ext. 2540.

Cable Effort in Home Stretch

Stretching out around the Booster construction site — on the berms and in the tunnel, in related buildings and outside — are literally miles of what look like tiers of horizontally placed ladders, filled with a multitude of different types and sizes of cable.

The ladder look-alikes, called cable trays, hold the cables required to transmit power to the Booster magnets and radiofrequency accelerating stations, to generate lighting, and to provide communication and control for electrical equipment, protection devices and safety systems.

Each cable may be a single insulated conductor with a protective metal shield carrying thousands of amperes of current, or an enclosed bundle of many small-diameter insulated wires, each carrying a fraction of an ampere.

Now, with about 180 miles of cable laid, and only five or so miles to go, "We're into the home stretch," said Thomas Nehring.

Nehring, along with William Slavinsky, has been loaned to the Alternating Gradient Synchrotron (AGS) Department by the Plant Engineering Division (PE) to help expedite and supervise the installation of the Booster cables and the remaining electrical work. With Donald Bastedo and Michael Clancy, both of the AGS, and assisted by Cynthia Morgan, PE, they hold daily field meetings to ensure the effort's success.

"It has been a complicated undertaking," said Nehring. "The electrical network had to interconnect equipment and control systems located in four buildings, as well as the heavy-ion transport line, the AGS main control room, and the Booster and AGS tunnels."

The multitiered system used by the Booster isolates cables of each type — for example, power cables on one tray level, control cables on another and instrumentation on yet another. This arrangement minimizes "cross talk" arising from different voltage fields around the cables, and is easier to install and maintain.

John Czachor and Fred Kuehl, both of the AGS, conceived and designed the cable support system. Bastedo then developed a computer program to route the network, and to monitor the receipt and installation of all cables. Frank Heimberger and Joel Spinner, AGS, engineered the 13,800 and 480-voltage distribution systems needed to operate the Booster and its injection and extraction lines.

The timetable to lay specific cables was coordinated with the AGS scientific program, as well as with the installation of the Booster ring magnets. For example, the AGS cables were laid during the accelerator's scheduled shutdown so that it could come back on line with no delay this past January.

"The last five percent of work on a big project always seems the toughest," said Nehring. "But the crews are very experienced, and the job was planned to allow for most contingencies. Thanks to everyone's cooperation, we expect the ends to be tied up in a timely manner." — Liz Seubert

Golf Tournament

The first 1991 Brookhaven Golf Association (BGA) golf tournament will be held on Monday, April 22, at the West Sayville Suffolk County golf course. Tee-off times are 10 a.m. through 12:30 p.m; starting times can be obtained by calling Joe Carbonaro, Ext. 5139.

Priority will go to completed foursomes, so sign up as soon as you can; deadline for sign-up is April 19. The tournament will be handicapped-based on the Callaway system so that golfers without BGA handicaps can compete for prizes.

Greens fees are $13 for Suffolk residents; $27 nonresidents and $7 senior citizens. The entry fee is $1 for both BGA members and nonmembers. Riding carts may be rented for $24 and pull carts for $4.

Arrivals & Departures

Arrivals

Deborah G. Blasco.....Con. & Proc.
Eric B. Blum.....NSLS
Rosalbino A. Grandinetti.....Acc. Dev.
Manbubul Hassan.....Nuc. Energy
Clifford J. Ostarch.....Plant Eng.

Departures

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

Concetta Angilella.....Con. & Proc.

Coming Up

The Atlantic Brass Quintet will appear in concert in Berkner Hall at 8 p.m. on Tuesday, April 23. The quintet's program will include works by Johann Sebastian Bach, Georges Bizet, Victor Ewald, George Gerhswin, Gustav Holst, Witold Lutoslavsky, Modest Mussorgsky, Michael Praetorius and Georg Philipp Telemann.

Tickets may be purchased at the door for $12 general admission, $9 for students and people over age 65, and $5 for youths under 18.

Join the BNL-BERA WalkAmerica Team

Celebrate the 21st year of the March of Dimes WalkAmerica for Healthier Babies by joining the BNL-BERA team on Sunday, April 28. Funds raised by WalkAmerica help support efforts to reduce infant mortality and the incidence of low birthweight.

To join the BNL-BERA team, pick up a WalkAmerica sponsor sheet at the BERA Sales Office in Berkner Hall, weekdays from 9 a.m. to 2 p.m., or at the Recreation Office in Personnel, Bldg. 185. For more information, call Louisa Barone, Ext. 3347, or M. Kay Dellimore, Ext. 2873.

This year, a parent-toddler group will be joining the walk with strollers. If interested in walking with them, call Terry George, 282-3009.

Basketball

Week of April 4

Trailblazers 55*		Celtics 35	
D. Evans	17	B. Turner	12
T. Mayo	15	G. Mack	7
C. Edwards	10	J. Wells	7
R. Domenech	5	L. James	7
A. Ratti	4	R. Schullman	2
S. Springston	4		

Three-point shots: T. Mayo
**Clinched second-round playoff spot.*

Deep Six 66		Scram 56	
T. Buck	27	E. Gregory	21
B. Brown	16	V. Cassella	18
J. Willi	11	T. Powers	7
C. Saxton	4	J. Barkwill	6
D. Eleazer	3	J. Duggan	2
S. Worm	3	S. Nappi	2
R. Hart	2		

Three-point shots: J. Barkwill, J. Willi

Bulls 56		Runaways 55	
W. Cummings	23	P. Ratzke	18
F. Ligon	15	J. Desmond	13
B. O'Brien	5	G. Shepherd	13
L. Furenlid	4	J. Belz	11
P. Brohwiler	4		
J. Hrilijac	3		
M. Williams	2		

Three-point shots: W. Cummings J. Desmond (2), G. Shepherd

Volleyball

Standings as of April 4

League I*		League II	
Cannonballs	44-16	Fossils	51-9
Upfagrabs	38-22	NetWits	47-13
Dinkers	32-28	Nuts & Bolts	45-15
Rude Dogs	30-30	Pteropods	35-25
Network News	28-32	Upton Ups	20-40
Upsetters	8-52	Chunga's Revenge	19-41
		Slammers	18-42
		Aces	5-55

**Final standings for playoffs*

Playoff Games

Open League

GTEAM rose above Phoenix.
Penetrating Vollies grounded Jet-Setters.
Magnum beat Penetrating Vollies.
Me & the Boys defeated Dig It.

League III

Nutcrackers lowered High Volley'em.
NoKaOe knocked out Good Timers.
Undertakers buried Sourcerers.

Cafeteria Menu

Monday, April 15

Soup: Minestrone	.75/.95
Entree: Spaghetti w/meatballs & 1 veg.	3.10
Entree: Baked spareribs w/1 veg.	3.45
Fitness: Lemon-pepper catfish w/1 veg.	3.45
Carvery: Hot pastrami sandwich	2.85
Grill: Reuben w/cole slaw	2.85
SPICE: California turkey bagel	

Tuesday, April 16

Soup: Chicken gumbo Creole	.75/.95
Entree: Sauteed liver & onions w/1 veg.	3.10
Entree: Naverine of spring lamb w/rice	3.45
Fitness: 5-vegetable plate w/roll	2.45
Carvery: Hot roast beef sandwich	2.85
Grill: 2 chili dogs w/fries	2.85
SPICE: Chicken salad bagel	

Wednesday, April 17

Soup: Navy bean	.75/.95
Entree: Pizza	(slice) .75
Entree:Cajun catfish w/1 veg.	3.10
Fitness: Baked pork chop w/1 veg.	3.45
Carvery: Hot Black Forest ham sandwich	2.85
Grill: 3-D burger w/fries	2.85
SPICE: Bagel Italiano	

Thursday, April 18

Soup: French onion soup	.75/.95
Entree: Baked macaroni & cheese w/1 veg.	3.10
Entree: Shrimp fried rice w/1 veg.	3.10
Fitness: Spaghetti marinara w/Italian sausage	3.10
Carvery: Hot corned beef sandwich	2.85
Grill: Sloppy Joe w/fries	2.85
SPICE: Corned beef bagel	

Friday, April 19

Soup: Manhattan clam chowder	.75/.95
Entree: Grilled veal chop w/1 veg.	3.65
Entree: Chicken cordon bleu w/1 veg.	3.45
Fitness: Baked fish bella vista w/1 veg.	3.10
Carvery: Hot turkey sandwich	2.85
Grill: Tuna melt w/fries	2.65
SPICE: Neptune bagel	

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.

The vacancies listed below have been exempted by the Director's Office from the current freeze on open requisitions.

LABORATORY RECRUITMENT - Opportunities for Laboratory employees only.

DD 0632. OFFICE SERVICES POSITION - Requires AAS or equivalent experience and excellent communication skills. Will perform varied secretarial duties for Training and Procedures Group. Responsibilities will include preparing procedures, correspondence and reports, arranging travel, and organizing and maintaining files. Word-processing experience is required; IBM PC experience preferred; dBase experience helpful. Must be able to obtain and maintain a security clearance. Reactor Division.

NS 0926. ENGINEERING POSITION - Requires BS/MSEE and experience in the design, regulation and control of high-current precision dc power supplies driving inductive loads. Experience in feedback systems using both digital and analog components necessary. Experience supervising engineering personnel is required, as well as a background in system planning, program management, administration and budget control. Will be responsible for the design, procurement, installation and test of all components necessary for the RHIC magnet electrical systems. RHIC Project. Accelerator Development Department.

OPEN RECRUITMENT - Opportunities for Laboratory employees and outside applicants.

NS 0929. ENGINEERING POSITION - Requires BS/MSME and experience in technical system planning, program management and administration. In addition, competence in cryogenics and vacuum principles, and a good understanding of structural mechanics and welding principles are also required. Will be responsible for heading the RHIC Collider Installation Section and for the transportation, positioning and installation of all magnets in the RHIC tunnel. RHIC Project. Accelerator Development Department.

Motor Vehicles & Supplies

89 HONDA CIVIC - 4-spd. h/b, ac, am/fm ETR w/cass., rear hatch cover, dual mirrors, new tires, $5,200. Bob Rooks, Ext. 4417.

88 TOYOTA TERCEL - h/b, 5-spd., ac, 80k mi., excel. cond., $3,200. Dave, Ext. 5465 or 264-0543.

87 NISSAN SENTRA - 4-dr., a/t, p/s, p/b, new brakes & muffler, 52k mi., excel. cond., $4,075. 874-4845 after 6 p.m.

87 NISSAN SENTRA - 2-dr. h/b, ac, 5-spd., 88k mi., excel. cond. Bob, Ext. 5851.

87 NISSAN STANZA GXE - 4-dr., loaded, 70k mi., good cond., $4,990. Ext. 2610 or 924-5272.

86 COUGAR - white, 6-cyl., p/b, p/s, p/w, cruise, new tires & brakes, 50k mi., excel. cond., $6,000. Clare, Ext. 7812 or 757-8994.

86 CHRYSLER NEW YORKER - turbo, white, white vinyl roof, leather int., all avail. options, voice alarms, $6,200. Jim, Ext. 4040 or 289-0876.

85 FORD LTD - s/w, 6-cyl., ac, 68k mi., a/t, am/fm, cruise, excel. cond., $3,000. Barbara, Ext. 2456.

85 HONDA CIVIC DX - 5-spd., new tires, good working cond., $1,800. Jon Sanborn, Ext. 7289 or 751-6404.

Boats & Marine Supplies

25' MAKO - twin ob. 175-h.p. motors, center console, DF, radar, low hrs., excel. cond., must see. 289-7902.

24' C&C MIRAGE - 6 sails, 8-h.p., rigged aft, spinnaker, custom extras, cradle, ready for water, immac. cond., $6,500/offers. Damian, 744-7865.

20' BAJA FORCE 200 CUDDY - 1984, full canvas, 170-h.p. Merc. i/o, 4-wheel Highlander trailer, $8,500 neg. Sue, Ext. 7235 or 281-4242.

19' O'DAY MARINER - CB, 6-h.p., excel. sails, excel. cond., $1,950. Ext. 2109.

19' STEVRY CUDDY - 1979, w/1986 90-h.p. Evin., VRO, trim/tilt, sink, full canvas, potty, CB, 30-gal. gas tank, trailer, $5,975. George, Ext. 5288.

16' BOWRIDER - 95-h.p. Merc. o/b, hull good, motor needs work, $500. Anthony, 286-7583.

16' HOBIE CATAMARAN - yellow hulls, full color sails, all lines, ready to launch, excel. cond., asking $1,500. S. Aronson, Ext. 2051 or 689-8685.

14' ALUMINUM BOAT - w/trailer, motor & equipment, excel. cond. 289-5134.

14' HOBIE CATAMARAN - roller reefing jib, trailer, v.g. cond., $1,600 or best offer. Ext. 7657 or 298-9560.

13½' KAYAK - pvc, bay boat, high volume, excel. cond., $125. Sue, Ext. 3492.

13' BOMBARD - 1987, inflatable, 30-h.p. Mariner, w/1987 trailer, all access., great scuba diving, moving, must sell, asking $2,800. 474-5715.

Tools, House & Garden

ANNUALS - $11/flat; hanging baskets, $11; geraniums, vinca vine, azaleas, shrubs, large variety. Ken, 744-0722.

FIREWOOD - hardwood, order now for next fall, free delivery near Lab, $90/cord. John, 929-5358.

GARDEN HOSES - $3/ea.; lawn sprinklers, $2/ea.; other garden supplies. 744-9022 eves.

LAWN MOWER - Sears, 22", self prop., rear bagger, extra blade, filters, v.g .cond., best offer. 744-8386.

SLIDING DOOR - 8', double pane, w/all hardware, like new, brown, $50. Brian, Ext. 2238.

LAWN TRACTOR - Sears, 36" cut, 10 h.p., $300 or best offer. Carl, Ext. 5270.

TRACTOR - Ford, w/front loader, 3-point hitch, P.T.O, detachable backhoe, $6,800. 929-5872 after 6 p.m.

CANDY VENDING MACHINE - new, mech., 4'w x 2'w x 20½"d, $200; Rickel lawn mower, 22", $60; more. Dan, Ext. 4987 nights or 698-7322.

WHITE PINES - & spruces, nursery grown, up to 3', $2/foot. John, 744-5867.

WINDOWS - new, vinyl, 23¾"x45½, tilting sashes, double hung; replacement windows, 18¾"x37½", vinyl. 874-2614.

WELDER - 200A, powered by Continental 4-cyl. engine, asking $1,500. 744-3204 after 6 p.m.

Sports, Hobbies & Pets

BASS GUITAR - Aria Pro, like new, black, w/carrying case, free amp included, $200 or best offer. Kathi, 698-1971.

BICYCLE - carbon fiber. Ext. 3499 or 325-9580.

BICYCLE - Lotus Elite, 56cm, 700x25 wheels, Hi-lite road tires, 18-spd., extras, ideal for commuting. Trevor, Ext. 4374.

CAMERA - Nikkon 35mm, FE2 w/f1.4 50mm AI, f3.5 28mm AI, f3.5 135mm lenses, $300. 286-1253.

CAMERA - Bronica ETRS w/50, 75 & 150 lenses, AE & waist level finder, 2 backs, speed grip, case, mint cond. Irv Meyer, 929-4326.

CELLO - Nagoya-Suzuki, ¾ size, well-balanced sound, premium strings, w/bag, used by Julliard pre-college student, $650. Ext. 4356 or 928-3371.

COCKATIELS - 5-6 mo. old, gray, $40/ea.; Lutino, white, $65/ea. Herb, 924-5621 or 286-0271.

DRYSUIT - Poseiden, man's, large, like new, must sell, moving, cost $1,500, asking $500. 474-5715.

EXERCISE BICYCLE - used 3 times, like new, $40. Jim, Ext. 7971.

HUNTING JACKET - bright orange, size 42, used 2 times, like new, $30. D.J., Ext. 7643.

POOL EQUIPMENT - 25 lb. dia. earth, s.s., ladder, vac, hose & head, w/pole. E. Raka, Ext. 4727.

POOL - 16'x32', Doughboy, Hayward D/E, EC-40, filter, 1-h.p. motor, fiberglass, above-ground, slide, vac & skim, $1,200/all. Carl, Ext. 5270.

TYPEWRITER - electric, good for student, $45. Joe, Ext. 3783.

Audio, Video & Computer

AUDIO CABINET - glass door & top, $30. Ed, Ext. 4939.

TV - GE, color, 21", like new, $150. Joe, Ext. 3783.

VIDEO GAME - Atari 2600, w/20+ games, 4 sets of controllers, $75 or best offer. Mike, Ext. 4199.

Misecellaneous

TICKETS - 2, Mets vs. Mont., box seats, Sunday afternoon, April 14, $32/pair. Bill, Ext. 2171.

TICKETS - Tom Paxton concert, Sayville JHS, April 20, $10. Joe, Ext. 3966.

Free

CAT - pregnant, calico, needs home, loving. 298-2005.

REFRIGERATOR - working, you pick up. Annamae, 284-6179 or 744-6648.

Yard & Garage Sales

LAKE RONKONKOMA - Apr. 13-14, 10-6 p.m., R/D, 20-21, baby items, furniture, housewares, more, 29 Peter Road, off Foster. Ext. 7238.

Lost & Found

FOUND - watch, by Bldg. 914, must identify. Charles, Ext. 4639.

Real Estate

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

For Rent

BAYSIDE - 1-bdrm. co-op, breakfast nook, kitchen, 1 bath, California closet, tennis, pool, beautiful area, first-class shops, rent/lease/option buy. Julia, 718-468-8097.

BELLPORT VILLAGE - 4-bdrm. house, 2 baths, l/r, d/r, 2-car gar., oil heat, fp, all appl., furn., nonsmoker, no pets, Sept.-Jan., $1,000/mo. Ext. 4332, 286-2114.

CENTER MORICHES - 2-rm. studio, bath, $525/mo. incl. util. Ruth, 878-1814 days.

COMMACK - 3 bdrm., l/r, d/r, eik, deck, ac, w/d, nice area, $1,275 incl. all. 744-8659 or 499-7192 after 6:30 p.m.

CORAM - 2-bdrm. townhouse, 1½ baths, w/d, fully carpeted, cac, priv. patio, use of clubhouse and pool, no pets, nonsmoker, refs., 1 mo. sec., $1,000/mo. + util. 331-9121.

EAST PATCHOGUE - waterfront, large kitchen, living area, 1-2 bdrm., bath, very priv., $850mo. + sec. & refs., couple preferred. 474-4199.

MASTIC - 2-bdrm. apt., priv. ent., yard, near water, 15 min. to Lab., $650/mo. pays all, avail. May 1. 399-2825.

MATTITUCK - 1-bdrm. apt., w/d, large l/r & closets, full bath, kitchenette, sep. ent., quiet wooded area, near water, nonsmoker, $375/mo. Ext. 7657 or 298-9560.

MATTITUCK - 3-bdrm. house, 1½ baths, l/r-d/r w/2 bay windows, sliding glass door to sun deck, w/w, drapes, all appl., on ½ acre, in town, $850/mo. + util. Ext. 5161 or 298-2166.

MILLER PLACE - 10 mi. from Lab., 12 mi. from SUNY, Stony Brook, room in home for single student. 744-8386.

NORTH SHIRLEY - 1-bdrm. apt., furn., l/r, eik, w/w, 5 min. to Lab. & stores, priv. ent., 1 person only, nonsmoker, no pets, $490/mo. all. 281-8044.

PATCHOGUE VILLAGE - 1-bdrm. apt., full bath, furn. or unfurn., full kit., fenced-in yard, quiet area near town. Ext. 4087 or 289-7902.

SHIRLEY - 2½-rm. apt., priv. driveway & ent., employed person, nonsmoker preferred, 7 mi. from Lab., $450/mo. 281-6263.

SMITHTOWN - 3 bdrm., all brick, 2 baths, l/r, d/r, modern eik, all Andersen windows, den, fin. bsmt., gar., gas heat, 2 zones, option to buy, rent, $1,100/mo. + util. Bawa, Ext. 3499 or 331-8128.

SOUND BEACH - 1-bdrm. apt., full bath, kitchen-l/r combo, cable, priv. ent., $600/mo. incl. all; also, 2-bdrm. apt., bath, l/r, eik, near all, $675/mo. + elec. Ext. 2671 or 744-3284 after 4 p.m.

CLAREMONT, NH - 2-bdrm. condo, less than 40 mi. to ski: Killington, Okemo, Magic Mt. & Mt. Sunappe, $300/wk., $225/wknd. Frank, Ext. 7749.

POCONOS, PA - 1-bdrm. RV sleeps 4, TV, VCR, stero, boat, golf cart, fishing, swim pool, lake, avail. $450/wk. or $150/wknds., close to all attractions. Artie or Marie, 399-3401.

ORLANDO, FL - 3-bdrm. timeshare apt., furn., jacuzzi, kitchen w/dishes, 10 min. to Disney World, week of 7/26-8/2, $900. Ext. 2683 or 751-2469 eves./wknds.

For Sale

BELLE TERRE - residential one-acre bldg. lot, English Tudor section, 24-hr. police, beach, children's program, golf, tennis, $245,000, terms. 928-1020.

BROOKHAVEN HAMLET - 4-bdrm. Cape Cod, 2 baths, d/r, l/r, eik, 2-car gar., 20' deck, patio, more, close to bay, ¾ acre, red. to $219,000. Vera, Ext. 7108, or Carl, 214-708-2058.

BROOKHAVEN HAMLET - south of S. Country Rd., custom exec. Colonial, 3+ bdrms., 2½ baths, 2 fam. rms., fp, 2-car gar., deck, all appl., extras, immaculate, $255,000. Milian, 286-0336.

CORAM - Strathmore East, 4-bdrm. ranch, 2 baths, cathedral l/r, 2-car gar., gas heat, fenced corner lot, $120,000. Ext. 3791 or 928-7154.

EAST MARION - beautiful 1 acre bldg. lot, adjacent to Greenbelt, walk to Sound. 325-0447.

LEVITTOWN - 3-bdrm. Cape, full bath, eik, laundry rm., l/r, new bay window, 2 new outside doors, 1½-car. gar., covered patio, fenced yard, agp. Bob, 796-4320.

MASTIC BEACH - 3-bdrm. ranch, newly remodeled, l/r, eik, appl., $850/mo. rent w/option to buy, or sell for $85,900, neg. 281-8044.

NESCONSET - 3-bdrm. ranch, extra large bdrms., large office, 2 baths, new roof, appl., deck, cac, heating system, attic, no bsmt. Setphen, 360-7972.

PT. JEFFERSON STATION - 1-2 bdrm., l/r, d/r, eik, 1½ car gar., bsmt., w/d, OHWH, excel. cond., $99,500. 331-7812. Mike, Ext. 7861.

RIDGE - 2-bdrm. house in adult community Leisure Knoll, ac, newly carpeted & decorated, walking distance to rec. hall, pool, tennis, lots of extras, 5 mi. to Lab, $135,000. 744-3366.

SELDEN - 3-bdrm. L-shaped ranch, l/r, d/r, eik, den, gar., new heating system, ac, w/w, custom fence, agp, shed, walk to schools, $117,000. Ben, Ext. 7732.

SHIRLEY - 3-bdrm. contemp., 3 baths, eik, d/r, balconies, deck, energy eff., fp, cath. ceilings throughout, 2-car gar., bsmt., $249,000. 399-1868.

SHIRLEY - 4-bdrm. center-hall Colonial, 1½ baths, fam. rm., den w/wood stove, eik w/all appl., form. d/r, sliding glass door & 3 decks to igp, bsmt., walk to all, $129,000. 399-1868.

SHOREHAM - SWR SD, 3-bdrm. ranch, 5 min. from Lab., stone fp, den, l/r, d/r, 1¾ baths, atrium, storage rm., prof. landscaped, all appl., ig sprinklers, $149,500. Ext. 2833 or 744-7172.

SHOREHAM - 3-bdrm. brick Cape, eik, den, playroom, gar., full bsmt., 1½ baths, conven. loc., SWR SD, $140,000. Carol, Ext. 3315 or 744-7493; or Janet, Ext. 2345 or 929-3910.

Wanted

BABY-SITTER - for 5-yr.-old in my home, 11 a.m. to 2 p.m. Joann, 395-4734, 11-2 p.m.

BOAT TRAILER - for 20' boat, 3,000 lb. capacity, in good shape, reasonable. Bob, Ext. 4446.

EXERCISE BIKE - for handicapped person. 281-7844 eves.

GAY MEN & WOMEN - to join us, next on-site meeting Fr. 4/19, dinner to follow. Call for details, 758-0930.

GOLF CLUBS - used, complete set preferred. Marty, Ext. 3475.

HORSE TRAILER - any shape. 231-4613 after 5 p.m.

HOUSE TO SIT - free, experienced, reliable, any period after May 10. J. Allentuck, Ext. 2412.

HOUSEMATE - to share home, $300/mo. + ½ util., large sunny rm., kitchen facilities, deck, walk/rr, shopping, 10 mi. Lab. Marilyn, Ext. 2259.

PEOPLE TO JOIN - non-denominational Christian fellowship group, every Thurs. at Snyder Conf. Rm., Bldg. 911A at noon. Pete, Ext. 3297.

TUBED AUDIO STUFF - working or not, by Precedent, Acro, ARC, Fisher, Marantz, Macintosh, West. Elect., Scott consoles. Jim, Ext. 4584.

TWIN BED FRAMES - two. Karen, Ext. 4262.

In Appreciation

Alisha and her family wish to thank everyone for keeping her in their prayers and for your help. She is doing well now, and the outlook seems good. — Mitchell Sussman

Ads left out of this issue due to lack of space need not be resubmitted to appear in the next issue.