BROOKHAVEN BULLETIN
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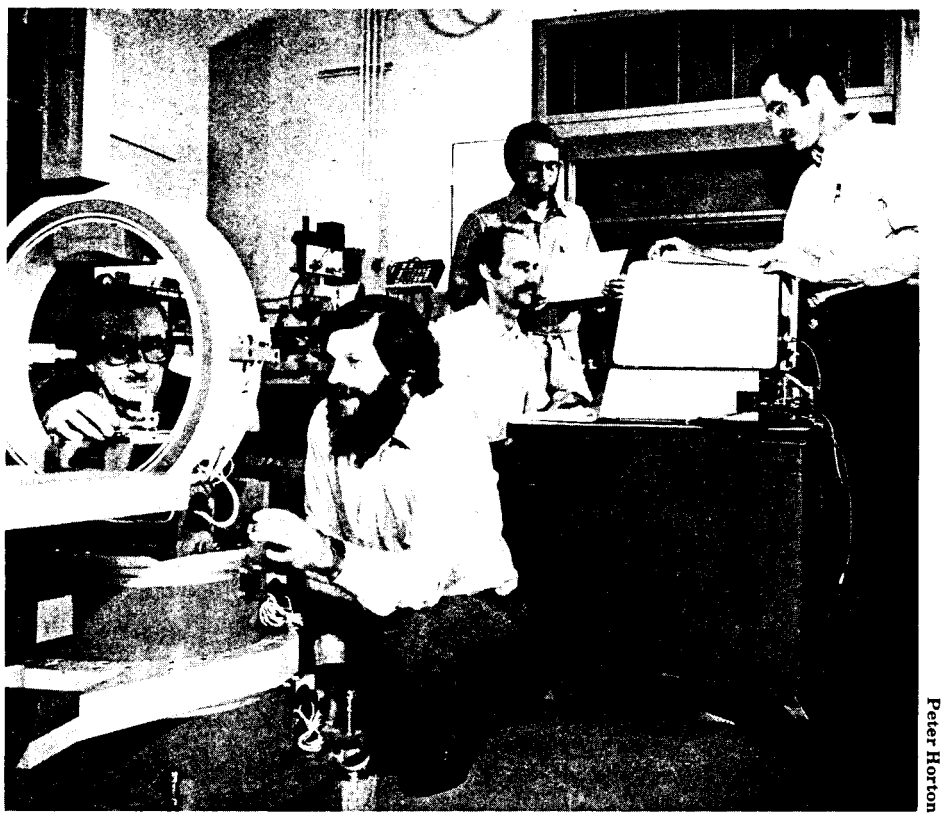
BROOKHAVEN NATIONAL LABORATORY

A Novel Technique to Filter X-rays

They have given themselves about a year. It's an ambitious time schedule for what they have in mind. Their goal is to demonstrate a novel technique of using nuclei to filter x-rays from the National Synchrotron Light Source (NSLS). The resulting x-ray beam would have an extraordinarily small energy width, uniquely applicable in a variety of research areas.

The project involves a collaboration of scientists: Peter Haustein, J. Robb Grover, and Gyula Faigel in the Chemistry Department; and Jerome Hastings and D. Peter Siddons at the NSLS. Faigel, who is on leave from the Central Institute for Physics Research in Hungary, came to work specifically on this project. The rest of the group spend most of their time on other research. The x-ray project is headed by Peter Haustein and supported by BNL's Exploratory Research Program, which was established in 1984 to provide seed money to scientific projects that show promise and that need further development before regular sources of funding are sought.



Peter Horton

In the foreground, J. Robb Grover (left) and D. Peter Siddons are adjusting a crystal in a goniometer, a device that can orient the crystal at various angles with respect to an x-ray beam. In the background, Jerome Hastings (right) is providing input data to Gyula Faigel (seated), who is running programs for analyzing nuclear Bragg scattering experiments on a personal computer. Peter Haustein is looking at printed results from the computer analysis. All are involved in an exploratory research project that will demonstrate filtering of x-rays with nuclei.

A New Field

"This is a brand new field," says Haustein, who can name only two earlier attempts, both outside of the United States, to achieve an extremely narrow energy beam of x-rays from synchrotron radiation. He says the more successful work was done about a year ago at DORIS, which is the part of the German accelerator DESY that makes synchrotron light.

The BNL group aims to produce a beam a thousand times brighter than the one at DORIS. Giving them a head start is the fact that the NSLS is much brighter.

The NSLS produces "white" light that contains a broad spectrum of light at many wavelengths. But because most experiments need light of a particular wavelength, a monochromator is used to do the selecting. Monochromators commonly operate by scattering x-rays off electrons, and this is fine for a number of important applications, for example, crystallography. There are limits, however. Says Haustein, "If you want an exact wavelength or energy, it's tough. To get a very, very small energy width, you can't rely on scattering x-rays off electrons. Instead, you have to scatter off nuclei to get the desired energy resolution. And only x-rays within a very narrow energy range can excite nuclear levels." In physics parlance, this technique is called nuclear Bragg scattering.

Specifics of the Beam Line

Here is how the BNL experiment will work. Light from the synchrotron will first enter a two-stage pre-monochromator, where it will scatter once off silicon and a second time off germanium. The pre-monochromator is specially designed to preselect x-rays with the energy of 14.4 thousand electron volts (keV) and as small an energy width as practical using electronic scattering of the x-rays. This beam will then intercept one or more specially prepared crystals of iron oxide enriched with iron-57 nuclei. (The 14.4 keV matches the energy of the lowest excited state of iron-57, a stable nucleus that makes up about 2% of all iron atoms in nature.) The x-rays scattered by the iron-57 nuclei in the crystals will then enter a detector system.

(Continued on page 2)

New VP at AUI

His name is Thomas J. Davin Jr. and he is the recently appointed Vice President - Corporate Affairs of Associated Universities, Inc. (AUI). He will also have the duties of Controller and General Counsel.

The titles may sound complex but his new job is quite clear-cut, says Davin. To put it briefly, he has corporate responsibility for the business and financial matters of BNL and NRAO. Breaking this down a little further, he will deal with the prime contracts between DOE and BNL, and between NSF and NRAO. At the corporate level, he will coordinate administrative policy at the two laboratories; keep his eye on corporate investments; and oversee legal matters. In the latter he will be assisted by Michael Goldman, AUI Deputy General Counsel, who is also the BNL Counsel. The staff of the Internal Audit Group, headed by Frank Federmann, will report directly to Davin.

Davin comes to AUI after 30 years in government. He retired recently as Deputy Director of DOE's Procurement and Assistance Management Directorate. The Directorate is responsible for the functional management of DOE's procurement, assistance, industrial mobilization and personal property activities.

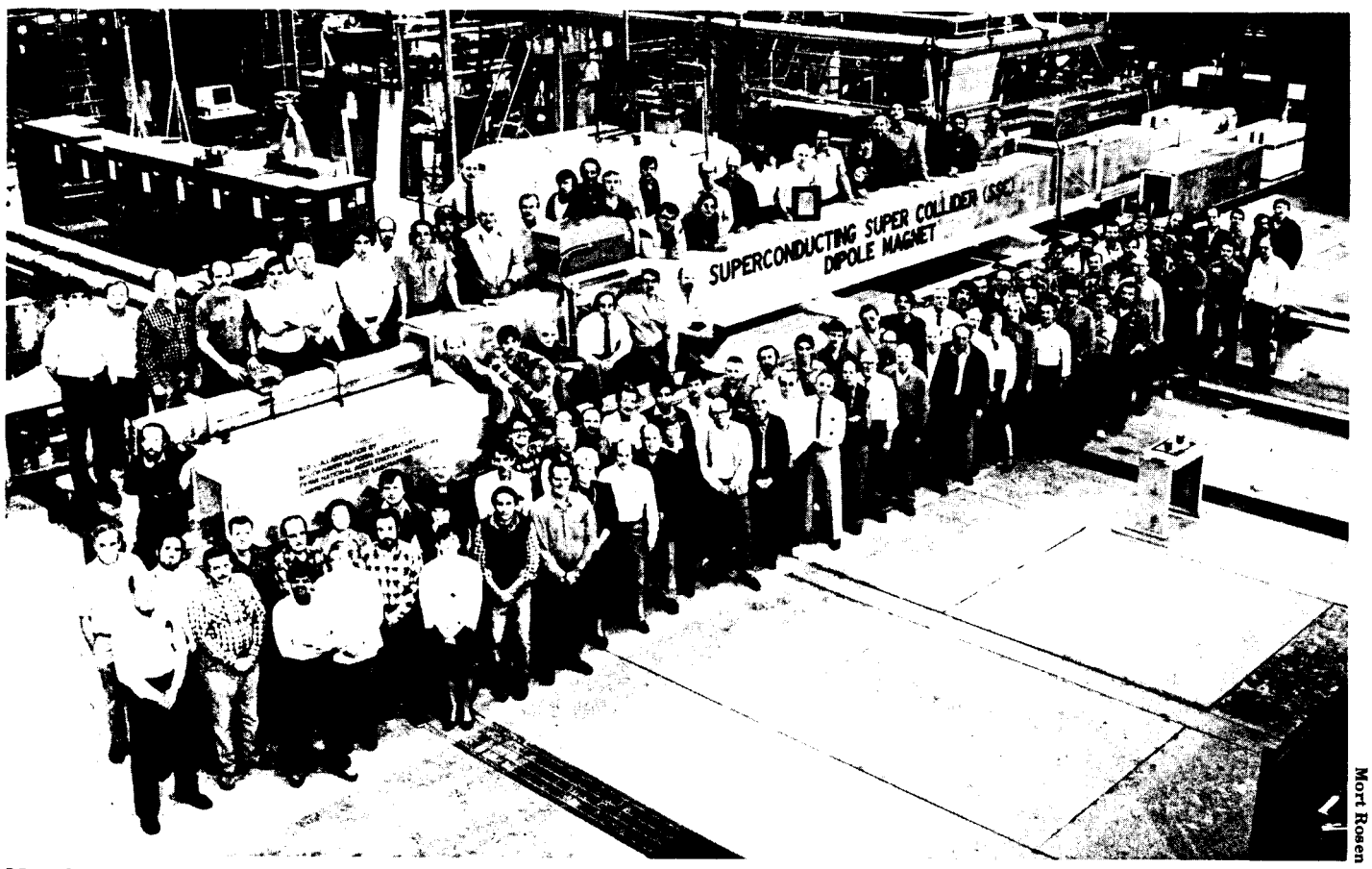
In 1957, with two years in the U.S. Air Force behind him and an M.A. in government and public administration from St. Louis University, he went to Washington as a management intern at the Atomic Energy Commission. By 1963 he was an inspection specialist and had acquired a law degree at Catholic University. He remained at the AEC and its successors, the Energy Research and Development Administration and the Department of Energy. In fact, he held the same job in Washington — Director of the Contracts Business Clearance Division — when the agency went from the AEC to ERDA to DOE in the 1970's. Other senior positions he filled at DOE included deputy director, Office of Procurement Operations; and director, Office of Policy, Procurement Directorate. He is admitted to the Bar in the District of Columbia.

Mort Rosen

Thomas Davin

Although he traveled a great deal in his 30-year career and is familiar with national laboratories, particularly Argonne and Fermilab, last week was only the second time he had been at Brookhaven. He will be based in Washington, but expects to be in residence at Brookhaven about one week per month.

Davin is a strong believer that research is important to the future of the country and says he is pleased that after a rewarding career in government he can continue in the field of public service through AUI.



Mort Rosen

Members of the Accelerator Development Branch of High Energy Facilities gathered to speed the first SSC full length prototype dipole magnet on its way to Fermilab. The 17-meter magnet was loaded aboard a flat-bed truck on April 24 and arrived safely in Illinois. The magnet, which was fully assembled at BNL, is now being tested at Fermilab. First reports indicate that it has passed preliminary electrical tests.

Volleyball — The Net Effect

WANTED

Volleyball Team - 7 or 8 "over the hill" athletes desiring to compete in volleyball league being formed. Spirit willing but flesh weak guys preferred. Play after work once a week starting October. Call G. Jackson, Ext. 396.

A lot has changed since that ad ran in the Bulletin Board of September 16, 1959. The Volleyball League has mushroomed from four teams to 25. The 25 teams are spread over four leagues, which take over the gymnasium for official games on Monday and Wednesday evenings, for pick-up games on Saturday mornings and for practice at lunchtime on Thursdays. And guys have been joined by gals in all leagues.

In volleyball, which originated in Holyoke, Massachusetts, in 1895, each team has six players arranged in set positions on one side of a net almost eight feet high. The object of the game is to "volley" a large inflated ball back and forth over the net between two teams. Each time a team fails to keep the ball in play, the other team gets a point and the serve. To serve, the player in the rear right position (facing the net) strikes the ball to send it over the net. That player serves until his or her team fails to keep the ball on the other court. When the serve returns to the first team, the players rotate clockwise so a different person serves. Play continues until one team has at least 15 points and is winning by at least two points.

Volleyball League President Bob Marascia explained that the league is structured to allow everyone to play this exciting game at his or her own level and to have fun doing it. Each of the three Mixed Leagues represents a different level of skill, but all follow rules designed to compensate for the fact that, in Olympic play, the net would be lower for women than for men. These rules include prohibitions against overhand serves and hard spiking, and the requirement that, if a ball is hit on one side three times running, one of those hits must be by a woman. The fourth league, the Open League, also includes women but follows official volleyball rules. Like Marascia, who plays on the Bumpers in the Mixed League and the Court Jesters in the Open League, many players enjoy both types of competition.

In all, over 200 employees participate in BNL volleyball. Dennis Weygand, captain of Phoenix and a member of the Dinkers, likes the sport because "it's convenient. It's right here at the Lab and I'm too old for basketball." Pat Webster of Net Results likes it "because it's a team sport and my favorite sport. And it's a good tension reliever and a challenge." And Kathi Barkigia, who plays for X-Rayted, admits, "I like volleyball better than softball. I like the competition and you get a lot of exercise."

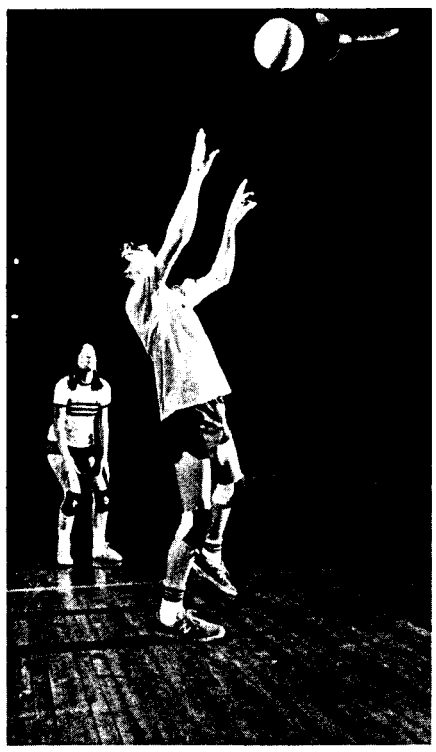
To make sure everyone follows the appropriate rules, each game is refereed by two other members of the same league. The Volleyball League's Chief Referee is Frank Haibon, who plays for the Phoubars and the Court Jesters. It's his job to train other referees, who are paid by the League for their services.

The volleyball season, which runs from October through May, has just concluded its final phase — the playoffs.

Congratulations to the winners:
Open League - Odds & Sods
Mixed League I - Dinkers
Mixed League II - Phoubars
Mixed League III - Printouts

So as not to influence the outcome of any playoff game, these photos by photographer Mort Rosen were taken during practice.

— Anita Cohen

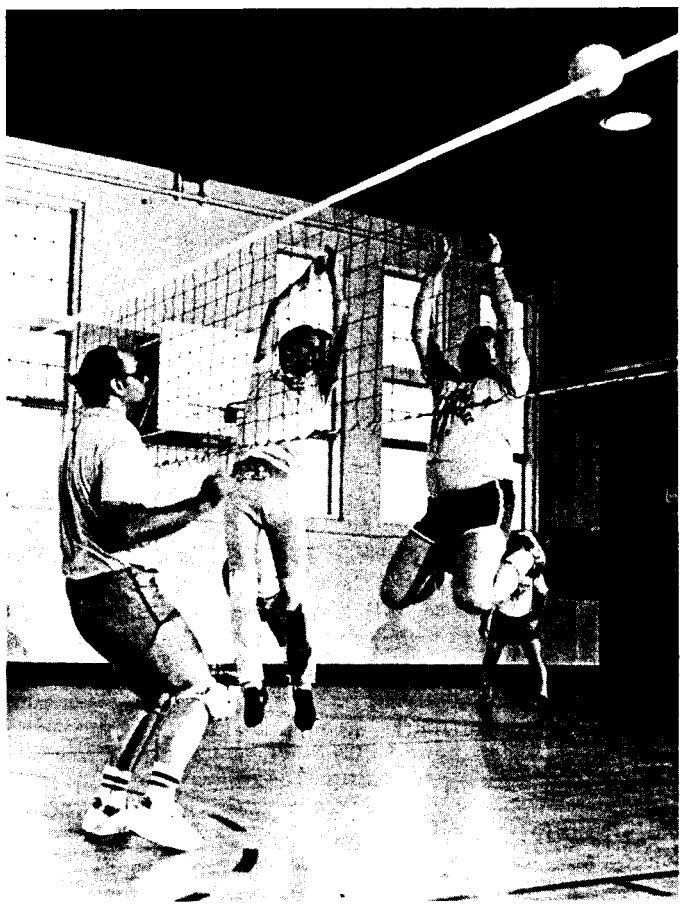


Eric Kneedler (Light 'n Lively) puts his all into this set of the volleyball, as Nancy Lazarz (Light 'n Lively) remains alert for whatever happens next.

Nancy Lazarz (Light 'n Lively) "blocks" an attempt by Pete Stillman (X-Rayted) to send the ball into her court.

—photos by Rosen

Barbara Royce (Nuts & Bolts) "bumps" the volleyball toward players closer to the net. Behind her are Bill Stuono (The Buddys) and Eric Kneedler (Light 'n Lively).



Peter Lane (captain, Chungas Revenge) and Vladimir Kirzhner (right) jump towards a mutual goal: getting the volleyball back over the net, but away from the waiting arms of Bill Horak.

X-rays

(Cont'd)

"A trick is employed here," says Haustein. "Because of special crystallographic properties, the iron oxide crystals can be oriented in the x-ray beam to suppress ordinary electronic scattering and still permit nuclear scattering to take place and be detected."

Crucial to the success of the experiment is how well the pre-monochromator works, how perfect the crystals are, and how good a job the detector does of selecting only signals that come from x-rays from nuclear Bragg scattering. The pre-monochromator and the detector are being built by the BNL scientists. The crystals have been grown by Joseph Remeika at AT&T Bell Labs, with iron-oxide material enriched to 93% iron-57 on loan from Oak Ridge National Laboratory. Earlier, Remeika made some practice crystals of natural iron so that the BNL group could check that they are of suitable quality.

X-ray beams from nuclear Bragg scattering, as the BNL scientists hope to do it, will be an improvement on nuclear resonance (Mössbauer) spectroscopy, which relies on radioactive sources. "Nuclear Bragg scattered beams are brighter and more convenient to use," says Haustein, "and there are a number of isotopes to be studied for which Mother Nature has not provided the appropriate radioactivity. So we will be able to do studies that simply were not possible before."

What Haustein is saying is that by using crystals made of different materials and by adjusting the pre-monochromator, the scientists can study different systems. Iron-57 was the first choice for the project because perfect single crystals of its oxide can be made. Also, the energy and lifetime of the iron-57 excited state nicely match the capabilities of the NSLS to produce intense x-ray beams at 14.4 keV.

The Payoff

The first part of the program is to get a good, bright, monoenergetic beam. "Then the big payoff is research — studies of systems that haven't been accessible up to now," says Haustein. "We have a long list of experiments that we would like to do with such a beam." These experiments include studies of semiconductors, magnetic materials, metallic glasses, and the dynamics of chemical reactions. "We would also like to look at model systems for x-ray lasers that may eventually operate by stimulating the de-excitation of nuclear isomeric states."

"The beam line is going to take a lot of fine tuning and fussing with," adds Haustein, "but the group hopes to do a demonstration experiment in the next year or so." — Mona S. Rowe

Note to Travelers

Take a minute to look at your Avis Discount Card. If the number is A/A298900, the card is not valid. Please come to the Travel Office for a new card.

Speakers Bureau

Eleanor Grist (Bio.); **Avril Woodhead** (Bio.), 21st Annual Science Fair at Shelter Island High School, Science Fair Judges, January 10.

Lewis Jacobson (PE), Suffolk County Boy Scout Troop #117, General View of Photography, January 14.

Meyer Steinberg (DAS), Rotary Club of Hicksville, Applied Research, January 16.

Meyer Steinberg (DAS), Long Island Forum for Technology, Engineers: Turning Ideas Into Reality, February 13.

Betty Heldman (Med.), Town of Islip Women's History Week, Careers for Women in Science, March 5.

Jack Fontana (DAS), Science Museum of Long Island, The Development of Polymer Concrete and its Applications, March 5.

William Love (Phys.), Villanova University, Particle Physics Research at BNL, April 2.

Robert Brown (DAS), Cub Scout Pack #243, Air Pollution, April 8.

In Memoriam

James A. Johnson, General Communications Clerk, Staff Services Division, died suddenly on April 18. He was 45 years old. Johnson had been with the Laboratory since April 10, 1978. He is survived by his wife Nancy of the Nuclear Energy Department, and two sons, James A. Jr. and Daron. Johnson was a resident of Riverhead.

Service Awards

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

Thirty-Five Years

Jules B. Godel ..... Light Source
Bernard F. McLaughlin ..... HEF

Thirty Years

Carl I. Anderson ..... Nuclear Energy
Margaret Dienes ... Tech. Information
Charles R. Staal ..... AGS
Frank R. Thomsen ... Applied Science

Twenty-Five Years

Stanley S. Dobzeniecki ... Plant Eng.
Nancia Gargliardo .... Staff Services
Andrew P. Hull ..... S&EP

Twenty Years

Robert Barone ..... Applied Math
Andrew T. Como ..... Applied Math
James A. Morris ..... Plant Eng.
John P. Nicoletti ..... Central Shops
Jose Sanchez ..... Plant Eng.
Lawrence E. Toler ..... Physics
Ralph A. Trondle ..... Applied Math

Ten Years

Pilar Alverio ..... Central Shops
Arlene F. Benkenstein .... Plant Eng.
Frances A. Burr ..... Biology
Barbara J. Langella .... Budget Office
Charles P. LaSalla ..... Sfgds & Sec.
Peggy L. Micca ..... Medical
Joyce C. Montag ..... Applied Math
James A. Niederer .... Applied Math
Charles J. Ruger ..... Nuclear Energy

Self-Help Health Fair

Representatives of and information about some of the self-help programs and mutual-support groups on Long Island will be available on Thursday, May 8, from 11 a.m. to 2 p.m. in Berkner Hall. This Self-Help Health Fair, a Health Promotion activity of the Occupational Medical Clinic, is open to the Laboratory community.

The groups sending representatives include Mended Hearts (groups for open-heart surgery patients and their families), Parents Without Partners (single parent groups), American Lung Association (environmental health lobbying and smoking cessation workshops), Epilepsy Association, Disabled American Veterans (advocacy and support groups), Friends of Hospice (support for dying patients and their families), Women Returning to Higher Education (groups for women re-entering college), For Our Children & Us (advocacy for battered, separated and divorced wives and their children), Coma Recovery (support group for the families of head-trauma victims) and Reach Out to Parents of an Unborn Child (support groups for parents of stillborn and miscarried babies).

In addition, pamphlets and other information will be available from the Juvenile Diabetes Association, Phenix I (for drug rehabilitation), Autism Society, Early Childhood Direction Center (for learning-disabled children), Long Island Coalition for Adoption and the Independent Group-Home Living Program (for retarded adults).

All film badges will be changed tomorrow. Please place your badge in its assigned rack space before leaving work today.

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Are You Friendly With Your PC?

Discussion is now under way in Personnel and Applied Mathematics to develop a training program for new users of personal computers. Mary White, training and development administrator in Personnel; and Kurt Fuchel, Applied Math's manager of computer information and support services, are spearheading the effort.

More and more, secretaries and administrative assistants are using personal computers to enhance their productivity and efficiency. The user must acquire a significant amount of knowledge, not only of the PC itself, but also of the various software packages.

Says Fuchel, "There seems to be a view that PC's are so 'user friendly' that suitable instruction is not needed. The result is that a secretary is told: 'We're giving you this brand-new PC AT! Please learn Display Write 3, Lotus and dBase, while continuing to perform all your old duties.' This is both unfair and unproductive."

Whereas some classroom instruction is clearly desirable, how much is needed, and on what topics? Also, not all new users can be available to take instruction at the same time, let alone learn at the same speed.

Fuchel and White are already considering options such as off-site, vendor-supplied courses; on-site ones given either by outside consultants or BNL personnel; small informal groups, perhaps meeting during non-working hours; or PC-based tutorials with people available to answer questions.

Any comments and suggestions are welcome. They should be sent to White, at Bldg. 185, or Fuchel, Bldg. 515.

Addled Addresses

Brookhaven Nut Lake
Brookhaven Natl Laccelera
Brooklawn Nat'l Lab
Natl Lavs
Brookhover Natl Lab
Brackhaven Lab
Brookhaven Natl Lab
Upjohn, N.Y.
And the much dreaded . . .
Brokehaven National Laboratory

Postscript

Last week, in honor of Professional Secretaries Week, radio station WALK invited listeners to call in each day to make nominations for a "Secretary of the Day". On Friday morning, Nick Tsoupas, a physicist with the Neutral Beam Division of the Department of Nuclear Energy, accepted that invitation. He nominated his group's secretaries, Ginny Diebel and Debbie Faivre, and they were chosen in a random drawing. A singing telegram to their office in Bldg. 902C announced their selection. Then at lunchtime, WALK announcer Robert Klein arrived in a white limousine, bearing flowers, prepared to take Diebel and Faivre to lunch. Though they were extremely honored, previous engagements prevented them from joining him.

Arrivals & Departures

Arrivals

Michael F. Clancy ..... S&EP
Phyllis L. Strahm ..... P&GA

Departures

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

Frank H. Atkinson ..... AGS
Mary S. Austin ..... Personnel
Mark A. Catan ..... DAS
Stanton H. Cohn ..... Medical
Robert F. Doering ..... DAS
Seymour Fink ..... DAS
Joseph Forrest ..... DAS
Warren J. Johnson ..... DAS
Merrith T.E. Knight ..... Plant Eng.
Frank T. Kulesa ..... DAS
William E. Lenz ..... Physics
Otto Peters ..... Plant Eng.
Richard R. Skelaney ..... Plant Eng.
Richard E. Stanton ..... Chemistry
D. Hywel White ..... Physics
William Wilhelm ..... DAS

Retirement Notes

Carving decorative birds out of wood has been Ed Hunter's hobby for a long time. When the former site superintendent left BNL in May 1975, the Bulletin noted that he had already carved 35. Since then, from his Catskill retirement home in Margaretville, N.Y., he has increased that number to about 120.

Now, Hunter has donated his hand-painted, New York State birds to the state's Department of Environmental Conservation (DEC). The carvings will be on permanent exhibit in the Rogers Environmental Education Center at Sherburne, N.Y. In an announcement of the exhibit in the Catskill Mountain News, a DEC spokesman, said, "Mr. Hunter, a master carver, has long been considered a 'national treasure' in the community.

Ed Hunter's full-size, white pine model of a male wood duck.

His birds are true reproductions, exquisite in every detail. It is rewarding to know that now these birds will be permanently exhibited for both their educational and creative value."

Check the Contract

If you require a contractor's services for home improvements, the Suffolk Country Cooperative Extension offers the following tips:

- Make a list of the improvements you want done in order of importance.
- Request several estimates. Shop for price, quality and competence.
- Check references. Ask friends and neighbors for recommendations. Visit the sites of completed work and the contractor's place of business. Check the contractor's reputation with suppliers. Choose a firm that is licensed in Suffolk County.
- Get everything in writing. Contracts should include:
  - start and completion dates.
  - quality and types of materials.
  - diagrams and sketches.
  - payment schedule. Avoid making large deposits or advance payments to the contractor.
  - written warranties on materials and workmanship.
  - name and address of contractor's compensation carrier.
  - statement that materials are free of supplier liens.
  - responsibility for clean up.
  - building and zoning permits.
  - cancellation policy.
- Be at home while the work is in progress. Inspect each day's work and contact the contractor immediately if you are dissatisfied. Do not sign a completion certificate until all the work has been completed to your satisfaction and until you have proof that the suppliers have been paid.

Cafeteria Menu

Week of May 5

Monday, May 5

Cream of chicken soup	(cup)	.65
	(bowl)	.85
Chicken finger basket w/1 veg.		2.45
Pepper steak on confetti rice		2.45
Hot Deli: Veal Parmesan hero		2.65

Tuesday, May 6

Turkey noodle soup	(cup)	.65
	(bowl)	.85
Baked chicken w/1 veg.		2.45
Chicken burrito w/hot sauce and 1 veg.		2.45
Hot Deli: Pastrami	(bread)	2.30
	(roll)	2.45

Wednesday, May 7

Cream of mushroom soup	(cup)	.65
	(bowl)	.85
Broiled filet of fish w/1 veg.		2.65
Polish style stuffed green peppers		2.45
Hot Deli: Smoked turkey	(bread)	2.30
	(roll)	2.45

ALL YOU CAN EAT!!!
Spaghetti with garlic bread 2.85
(No Take Outs)

Thursday, May 8

Chicken gumbo soup	(cup)	.65
	(bowl)	.85
Super sausage pizza		2.45
Salisbury steak w/1 veg.		2.45
Broiled chicken livers w/1 veg.		2.45
Hot Deli: BBQ chicken patty		2.45

Friday, May 9

Seafood gumbo	(cup)	.65
	(bowl)	.85
Broiled flank steak w/1 veg.		2.45
Turkey sukiyaki on rice		2.45
Hot Deli: Denver sandwich on onion roll		2.50

-BERA News-

Cricket

The annual meeting of the Brookhaven International Cricket Club will be held on Thursday, May 8, at noon, in Room C, Berkner Hall. As usual, matches will be arranged against other clubs during the summer. Anyone interested in participating is invited to attend. For more information, call Dave Cox, Ext. 3818, or John Millener, Ext. 3853.

Bowling

Pink League
High games were bowled by Kathy Kissel 231, Sharon Smith 211/203.

Purple League
Clem Auguste rolled a 243, Ken Asselta 223/212, Joe Sheehan 222, Ken Riker 210, Ed Meier 203, Lee Barberich 202, Denise Miesell 200.

Red/Green League
J. Morris had games of 256/211 for a 642 scratch series, H. Marshall 220, R. D'Alsace 219, N. Combatti 216, R. Eggert 211, T. Prach 205, R. Larsen 204, E. Meier 203, J. Connelly 202/202, W. Kristiansen 201, K. Asselta 200, J. Petro 200.

White League
Jim Petro rolled a 221/201, John Hanlon 209, Dan Clemente 202, Ben Belligan 200, Frank Gaetan 200.

Cooking Exchange

The Cooking Exchange meeting on Wednesday, May 14, will feature children's party favorites.

Meetings are held in the Recreation Building on Wednesdays between 12:30 and 2:30 p.m. They are open to employees and their immediate families. A donation of $1.25 per person entitles those present to a copy of the day's recipes, samples of the prepared dishes and coffee or tea. Babysitting is provided at 50¢ per child.

For further information, call Madoka Miake, Ext. 3131; Sara Morse, Ext. 1712; or Susan Sears, 744-7831.

Volleyball

The Volleyball Awards Dinner will be held at the Rock Hill Country Club in Manorville on Friday, May 16, at 6 p.m. Tickets are $7 for league members and $11 for guests. The price includes a hot and cold buffet, free beer and a deejay. A cash bar will be open. Tickets are available from the team captains and will not be sold at the door.

R/C Model Plane Club

The regular monthly meeting of the R/C Model Airplane Club will take place on Tuesday, May 6, at noon, in the cafeteria. All interested are invited to attend.

Classified Advertisements

Placement Notices

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

Each week, the Personnel Office lists new personnel placement requisitions. The purpose of these listings is, first, to provide open placement information on all non-scientific staff positions; second, to give employees an opportunity to request consideration for themselves through Personnel; and, finally, for general recruiting purposes. Because of the priority preference policy stated above, each listing does not necessarily represent an opportunity for all candidates. As a guide to readers, the listings are grouped according to the anticipated area of recruitment.

Except when operational needs require otherwise, positions will remain open for one week following publication date.

For further information regarding a placement listing, contact the Employment Manager, Ext. 2882.

THE VACANCIES LISTED BELOW HAVE BEEN EXEMPTED BY THE DIRECTOR'S OFFICE FROM THE CURRENT FREEZE ON OPEN REQUISITIONS.

LABORATORY RECRUITMENT - Opportunities for present Laboratory employees.

2429. SENIOR DEPARTMENT ADMINISTRATOR - Reports to the Department Chairman. Will be responsible for administrative, financial and personnel management of the Department as well as the supervision of the business staff. Requires a bachelor/master degree in business or science, demonstrated ability in administrative, financial and personnel management, excellent analytical, communications and decision-making skills. Extensive knowledge of Laboratory administrative policies and procedures is required. Technical background and/or knowledge of computer business applications desirable. Please submit resume to Marsha R. Kipperman, Personnel Division. Physics Department.

OPEN RECRUITMENT - Opportunities for Laboratory employees and outside applicants.

2430. MEDICAL RECORDS TECHNICIAN - Requires ART/RRA/RN or epidemiologist experience or equivalent background to assist in studies for the Injury Prevention and Analysis Group. Familiarity with medical/surgical terminology is essential. ICD 9-CM and/or AIS/ISS coding experience preferable. Some travel and flexible hours necessary. Department of Applied Science.

2431. DATA ENTRY/WORD PROCESSOR - Experience with key entry form questionnaires, etc. is essential. Preparation of tabular and related material from database management systems or statistical systems in a pc or mainframe environment preferred. Familiarity with SPSS, R-Base 5000, WORD PERFECT and/or SUPERCALC 3 desirable. Injury Prevention and Analysis Group. Department of Applied Science.

Autos & Auto Supplies

SUZUKI GS250T - 10k mi., extras, excel. cond., $649; custom fiberglass truck cap, Toyota short bed, $249. Jack, Ext. 4411 or 929-8287.

67 DODGE POLARA - 383 ci, V8, a/c, a/t, needs paint, best offer; 75 HONDA CB200T, w/windshield and helmet, needs left muffler, best offer. Dave, 588-3365 eves.

OWNER'S MANUAL - 1977 Chevy Nova, $5. Tony, Ext. 7214.

85 SUZUKI DS80 - off-road bike, less than 1 yr. old, new cond. Richie, Ext. 2175 or 734-7342.

82 HONDA ACCORD - 4 dr., 5 spd., extras, silver, excel. cond., $5,500. Russ, Ext. 3059 or 698-9364.

72 YAMAHA MC - 250 cc, needs minor work, $100. Roy, Ext. 4664 or (212) 691-4396.

85 DODGE CHARGER - 2.2 liter, h/b, 5 spd., manual, w/extras. 727-2861 after 6 p.m.

WHEELS - (5) Chrysler, 15"x6", heavy duty; (3) GM, 14"x5", $10 ea. Bob, Ext. 4824, beeper 343, or 744-5098 eves.

MC FAIRING - Vetter Quicksilver, black, fits Suzuki GS550, 850+ others, new, $175 neg. Henry, Ext. 5110.

75 BUICK LESABRE - 66k mi., perfect cond., fully loaded, $2,300. 924-3236.

76 TOYOTA COROLLA - 4 dr., 2-TC eng., new brakes, excel. running cond. 929-3824.

77 MONTE CARLO - 77k mi., p/s, p/b, a/t, new exhaust sys., excel. cond., $1,900. Jim, Ext. 4758.

78 FORD TAILGATE - fits 1972 thru 1979. 589-1069 after 6 p.m.

74 VALIANT - 6 cyl., 4 dr., std., reliable, best offer. Al, Ext. 4122.

83 TRANS AM - mint in/out, 5 spd., T-tops, a/c, more, $10,900. John, Ext. 4987 or 744-0290.

76 TOYOTA COROLLA - 2 dr., h/b, 4 cyl., a/t, good mpg, $995. Hank, Ext. 3848 or 472-0553.

83 DODGE ARIES - 4 dr. sedan, p/b, a/c, p/s, a/t, c/c, am/fm stereo, good cond., $4,290 neg. Bob, Ext. 5308 or 878-1731.

77 KAWASAKI KE100 - good cond., $225. 924-8213 after 5 p.m.

80 HONDA ACCORD - h/b, beige w/beige int., fm, CB, new tires, $2,800. Henry, Ext. 5110.

TIRES - large, for pickup, 11-15LT, sell or trade for standard size. Ext. 3841 or 286-9450.

75 FORD GRANADA - 87k mi., stand., excel. running cond., dependable, $595. Ext. 2455 or 331-1432.

77 HONDA MOTORCYCLE - 750cc, 4 cyl., fully equip., excel., 3,500 mi., $1,400. Ernie, Ext. 2957.

78 CADILLAC - Fleetwood Brougham, like new, $3,900. 475-4596.

79 TOYOTA CELICA - 5 spd., sunroof, h/b, am/fm cass., new radiator, 80k mi., $3,100. 567-8609.

75 PLYMOUTH VALIANT - 6 cyl., 4 dr., good running cond., $600 or best offer. Ext. 4099 or 689-9214.

84 ELDORADO - moonroof, mint cond., ivory w/brown leather int., $13,500. Ext. 3960 or 360-0547.

RADIO - am only, like new, $15. Les, Ext. 2920.

82 SUBARU - 4 WD, 4 spd., s/w, 37k mi., excel. cond., $3,750. Ext. 2304 or 286-2749 eves.

75 CHEVY MALIBU - 4 dr., a/t, a/c, p/s, p/b, stereo, runs well, $250. Ext. 5196 or 3233 after 6 p.m.

77 BUICK REGAL - 2 dr., a/c, a/t, p/s, p/b, 350, a/c needs work, $1,500. Jim, Ext. 7669 or 399-1790.

76 VOLVO 264 GL - excel. cond., 79k mi., 4 dr., $2,500 or best offer. 472-0612 after 6 p.m.

82 TOYOTA SUPRA - 5 spd., loaded, garaged, anti-theft device, 30k mi., $9,200. 698-9301.

TIRE - 4 ply, on GM rim, 15x78, $35. Ext. 3312.

77 VIKING POP-UP CAMPER - sleeps 8, elec., refrig., new spare, excel., $1,900. Dan, Ext. 4987 or 698-7322.

84 CHEVY CUSTOM TRAVEL VAN - a/c, CB, security system, low mi., extras, $14,000. Ext. 3624 or 929-3860.

TIRES - rims, caps, (2), Sears Roadhandler SR P185/75R14, w/w, in 14" Toyota rims, excel., $125 pr. Lloyd, Ext. 3381 or 266-1024.

79 SUBARU - 4 WD, GL wagon, 4 spd., roof rack, am/fm cass., rel. transp., $1,500. Peter, Ext. 4923 or 821-9513.

74 CADILLAC - Fleetwood Brougham, fully loaded, p/s, p/b, a/c, am/fm, 4 dr. sedan, 68k mi., $1,975. Fred, Ext. 3259.

TIRES - 15", mounted & bal. on Chevy rims, brand new, $25 ea. Jim, Ext. 4688 or 286-8611.

82 ESCORT - a/t, a/c, p/s, p/b, am/fm cass., 4 dr., 2-tone blue, $4,000. Neil, Ext. 2023.

83 PLYMOUTH CHAMP - 4 dr., 62k mi., a/c, 4 spd., am/fm. Joe, Ext. 5308/3172 or 929-4168.

80 PUCH MOPED - for parts, $150. Warner, 475-7025.

80 DATSUN 200SX - h/b, luxury pkg., new batt., (2) tires, exhaust, shocks, 74k mi., excel. cond., $3,300. Louise, Ext. 3397.

78 CAMARO LT - V8, a/t, a/c, p/s, p/b, stereo, custom wheels, $3,900. 269-9510.

82 CHEVY MALIBU CLASSIC - s.w., very good cond., $3,900. 475-4596.

73 HORNET - a/t, a/c, am/fm, best offer over $400. Jerry, Ext. 7427 or 475-5591 after 5 p.m.

Boats & Marine Supplies

GAS TANK - OMC, 6 gal., w/hose, $20; paint, fiberglass Bottomkote, green, (1) gal., $40; Autohelm 1000, old model no., used 1 season, $220. Bill, Ext. 7229 or 473-1813.

OUTBOARD - 115 HP, 1985, new, still in box, Yamaha, 2 yr. warranty, power tilt/trim, all gauges, access., $4,800. John, Ext. 3292 or Chris or Jeff, 286-1348.

BOAT HEATER - Boat Pal, w/alcohol, $25; anchor light, dry cell, $10. Ext. 4745 or 722-4076.

32' LUHRS - 1969, flybridge, fiberglass, sedan cruiser, twin 225 HP eng., fresh water, UHF, CB, $16,000. 821-9015.

30' MAST - alum., Hobie Cat type, good cond., $75. Slim, Ext. 3084 or 472-0706 after 6 p.m.

23' F/G SLOOP - fin keel, asking $10,000, will sacrifice for $6,500 or best offer. Ext. 4605 or 938-8353.

18' BOWRIDER - 1982, Four Winns, 90 HP Mercury, galvanized trailer, low hrs., loaded, $7,900. 981-6141.

16' SLOOP - sailboat, wood, fiberglass bottom, trailer, anchor, $650. Ext. 3773 or 878-8113 after 5/13.

23' O'DAY - 1980, 7.5 HP Honda, 6 sails, full race equip., keel ctr. bd., electronics, extras, excel. cond., $15,400. Lloyd, Ext. 3381 or 286-1024.

8' PRAM - plywood, structurally sound, needs good facelifting. Mike, Ext. 4987.

26' PEARSON - 1972, 15 HP Evinrude, 5 sails, incl. Spinnaker, d/f, VHF, extras. Ext. 4099 or 689-9214.

18' DONZI - 1983, V6 150 HP Mariner, w/p trim, deep V, open sport fisher, great for fishing & skiing, extras, $5,900. 472-3342.

27' BRISTOL WEEKENDER - inboard diesel aux., 5 sails, fully equip. Ext. 3311 or 941-9423.

SAILFISH - excel. cond., yellow, $450. Ext. 3428 or 427-6738 eves.

Miscellaneous

TRAINS & ACCESS. - Lionel, A.F., Marx, engines, elec. & clock works, tin type cars. Al, Ext. 4615 or 751-8462 eves.

LAWN SPIKER - old but good, $25. 289-8212 eves.

DOUBLE BED - mattress & box spring, $15; 4-drawer dresser, $10. Bill, Ext. 2906 or 929-6189.

FLOWER/VEGETABLE PLANTS - 4 & 6 pack, large selection, del. week of 5/12, 80¢ pack. Ray, 727-6818.

AIRPLANE TICKET - Islip-Chicago-Islip, good till 6/15, $150 value, $50. Neal, Ext. 2060.

B&H SUPER 8 MOVIE CAMERA - $40; Yaschica, 35 mm camera with w/a & tel. lens, $45; maple crib, $40. Sal, Ext. 2460.

PICNIC TABLE - 6' w/4 benches, seats 8, $50. 928-7042 after 6 p.m.

LIVING ROOM SET - coffee table, end table, lamp table, sofa bed, loveseat, wall unit, sold as set or couch & tables separate. Susan, 928-0944 after 6 p.m.

AIR CONDITIONER - Sears, 5,000 BTU, like new, $100. Ext. 4312.

DOUBLE HUNG WINDOWS - (2) wooden frames, double glazed, $95. Les, Ext. 2920.

COLOR TV - 25" console, tube type, works, $20; bench press, w/metal weights, $25; electronic organ, $200. Russ, Ext. 3059 or 698-9364.

COMPUTER MONITOR - color, RGB, 14", TOEI for IBM or Commodore, $175. Roy, Ext. 4664 or (212) 691-4396.

SONY DUAL CASSETTE BOX - CFS-W30, perfect, warranty until Aug., $75. 286-0252 after 6 p.m.

RIDING MOWER - Yardman, 25", completely reb., w/new 5 HP eng., $350; shredder/mulcher, Kemp, heavy duty, 5 HP, excel. cond., $175. Tom, Ext. 4084 or 878-1060.

OVEN/BROILER ROTISSERIE - Sears, auto., A-1 cond., $15. 924-3236.

COCKTAIL TABLE - hardwood, 56"x21", 2 draws, excel. cond., $95. Al, Ext. 4615 or 751-8462 after 6 p.m.

OIL TANK - 275 gal., good cond. 589-1069 after 6 p.m.

METS TICKETS - (2), Loge box, 1st base, 5/7, night, vs. Astros, $9.50 each. Tony, Ext. 3194.

PORTABLE SEWING MACHINE - new, w/attachments, Singer, $175. Jean, 286-4815 or 286-8698.

LEAF MULCHER - heavy duty, needs eng., $25; 2-man saw, 5' long, old but good cond., $25; fence posts, 2" steel pipe, 5' long, (24) ea., $20. Ext. 4043.

90" SOFA - crescent tufted, $150; Electrolux polisher/scrubber, $60, 59" loveseat, $100. Paul, Ext. 4156.

TAPE DECK - for home stereo, Technics w/Dolby, all tape compatible, make offer. 473-7667.

GIRL'S BICYCLES - (2), 18", pink, 20" green, $12 ea.; girl's roller skates (2), size 4 and 5, used once, $12 ea. Ext. 3187.

WET BAR - (4) stools, locked liquor closet, excel. cond., formica top, make offer. 475-1254.

19" B&D CORDLESS MOWER - needs batt., uses reg. car batt., $20. Hank, Ext. 3848.

ANTIQUES - oak dining room set and huge gun cabinet. 929-3824.

AZALEAS - field grown, 2-1/2'-3', balled & burlaped, $4 ea., min. of 5; annuals, $9 flat; 4-1/2" pot geraniums, $2.25; 8" hanging Fuscia baskets, $10; 4" pot Impatients & Begonias, $1.50. Ken, 744-0722.

BICYCLES - Schwinn Twinn Delux 5 spd. tandem, $100; girl's Schwinn Traveler, 10 spd., 27" tires, 22" frame, $200. 472-2394.

FLUE HEAT RECOVERY DEVICE - $35; personal metal file box, w/lock & key, $5. Susan, Ext. 4267.

QUEEN SIZE BED - mattress & boxspring, custom-made, pine frame, good cond., $125. 821-0945.

ROUND POOL - 15', filter, ladder, winter cover, will help dismantle, $100 or best offer. 475-2598 after 5 p.m.

WHITE DWARF RABBIT - w/cage, water bottle, $10. Nancy, 821-9547.

MOLDING - 2-5/8" Sprung Crown, white, good cond., 190', 25¢ ft. or $40 for all. Ext. 2452.

WINDOWS - double-hung, single & double, w/wood storms, used. 286-1205.

CANNA THE PRESIDENT - lg. scarlet flowers & green leaves, $4 ea. Bob, 732-9517.

GIRL'S BICYCLE - Ross compact, 26" wheels, hand brakes, 3 spd., blue, like new, $70. 751-8403 after 6 p.m.

ELECTRIC MOTOR - 3 HP, single phase, good cond. 325-0447 after 6 p.m.

BICYCLE - new, 3 spd. (m), $65; old oak butcher's meat hook rack, $35; lg. crock, $15. 878-6637.

WESTINGHOUSE FREEZER - 16 cu. ft., upright, old but good mech. cond., $65. Gerry, Ext. 3694 or Bob, 281-8296.

GREENHOUSE - poly type, 22"x100", boiler, sprinkling sys., fan ventilating sys., heavy duty struct., $3,000. Jim, Ext. 4040 or 289-0876.

GE RECORD PLAYER - $10; racquetball racquet, $10; metal bed frame, $5. Joe, Ext. 2898.

SEARS AIR COMPRESSOR - 150 psi, 1/2 HP GE motor, $165. Karen, Ext. 4262.

CLAMMING EQUIP. - rakes, handles, cull rack, etc., best offer. 758-6291 after 5 p.m.

COLONIAL HUTCH - trestle table, ladder-back chairs, drum table, coffee table, access. 286-1205.

VIOLIN - 1/2 size Suzuki, $150. Peter, Ext. 7687 or 744-1112.

MAXELL DISKS - 5-1/4", ds/dd, new, 10 for $10; portable typewriter, $25. Jim, Ext. 3372.

SOFA - gold, excel. cond. Ext. 4192 or 751-7787.

3-PIECE SUIT - for Communion, navy blue, size 8, like new, $20. Frank, Ext. 2314 or 567-5131.

MAGNAVOX STEREO - hi-fi console, $100; Wurlitzer organ, spinet, cherry, multimatic percussion, $700; Vespa Bravo moped, Super Deluxe, Class B, excel. cond., $400. Lloyd, Ext. 3381 or 286-1024.

LAWN ROLLER - Mike, Ext. 4987.

HOSPITAL BED - excel. cond., $1,000, neg. 281-2443 after 6 p.m.

HUFFY H1054 LAWN TRACTOR - 8 HP pullstart, B&S, 26" cut, tuned-up, $450. Ext. 3428 or 427-6738 eves.

STORM WINDOW PANEL - white, alum., glass, 33x54", $5; square slates, 1 ft., about 40, $1 ea.; Singer Tiny Tailor mending machine, $10. Ext. 4166.

DINING ROOM SET - dark pine, 48" round table w/(2) 12" leaves, (4) arm chairs, 60" buffet, white knobs, $325. 654-5888.

HUTCH - & buffet, small, white, $75; entertainment center, fruitwood; radio & record player, works. 289-0687.

CRAFTSMAN CIRCULAR SAW - 2-1/8 HP, 7-1/2" blade, like new, w/carrying case, $25. Bill, Ext. 4428.

MEN'S BICYCLE - 10 spd., 27", $40. Ext. 4532 or 331-3785.

BREAKFRONT - beveled glass doors, traditional, dark, lighted, (3) drawers, (2) cabinets, 5'x18"x7', excel., $850. Otto, 472-0339.

Yard Sales

BELLPORT - 13 General McLeon Dr., 5/2-5/3, 10 a.m.-4 p.m., multi-family, rain or shine.

CENTEREACH - 130 Stanley Dr., behind 7-11 on Mark Tree Rd., 5/2-5/4, 9 a.m.-5 p.m., rain or shine, collectibles.

Car Pools

HUNTINGTON - N. of Jericho Tpke., 1-2 person, w/cars, 8:30-5:00. Brown, Ext. 2827.

NASSAU - Sunrise to Wantagh Ave., S. State SOB-135 to LIE, van pool. Roger, Ext. 5292.

Free

BABY GUINEA PIG - all rust, Abby, very cute, ready to go. 924-3756 days.

SEASHELLS - for crafts; 15 cu. ft. freezer, needs gasket, chest type, good cond. 878-6637.

LAB MIXED PUPPIES - 588-3365 after 5 p.m.

Real Estate

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

For Rent

N. SHIRLEY - lg. furn. studio, w/kit., priv. ent., 1 person only, nonsmoker, no pets, security, 5 min. from Lab. and stores, $400 mo. incl. util. 281-8044.

HUNTINGTON - spacious studio apt., full size stove & refrig., access. to washer/dryer, priv. ent., wet bar, near shopping & highways, $500 mo. 472-2544.

HILTON HEAD, SC - 2 bdrm. condo., sleeps 6, beach, pool, tennis, golf, $400 wk. 585-9149.

SHIRLEY - 1 bdrm. apt., priv. ent., walk to beach, cable, single mature woman only, no pets, 1 mo. sec., $475 mo. incl util. Ext. 2905 or 281-8306 after 6 p.m.

FLORIDA - W. Coast, 2 bdrm. fully furn. house, avail. weekly or monthly, (2) golf courses in community, near swimming. Ext. 4530 or 261-2719.

SHIRLEY - room, share kit., l/r, bath w/1 person, $275 mo. 399-2132.

SHIRLEY - studio apt., priv. ent., 5 min. from Lab, walk to stores & RR sta., $400 mo. incl. util plus cable. 281-7187.

CATSKILLS - 3 bdrm. chalet, sleeping loft, fully furn., near Hunter Mt. Music Festival, golf, game farm, fishing & rafting, weekly or weekends. Judy or Kay, Ext. 3595 or Bea, Ext. 3642.

SHAWNEE VILLA - vacation resort in the Poconos, full accom. for 6, week starting 6/7-6/14, $400 wk. Charlette, 348-2856 or 286-0913 after 5 p.m.

For Sale

MANORVILLE - large ranch, on 1-1/2 acres, 3 bdrms., l/r, d/r, eik, full cellar, 8 mi. to Lab., 2+ car garage. Ext. 4043 or 878-6670 after 6 p.m.

OTSEGO COUNTY - 3 bdrm. house, modern kitchen and bath, furn., 1-1/2 car garage, 17-1/2 wooded acres incl. stream. $49,900. 929-8287.

RIDGE - N. Rt. 25, one acre+, cleared bldg. plot, 100+ ft. x 400+ ft., partly wooded, est. res. neighborhood, $49,500. 924-3236.

SHOREHAM - 4 bdrms., 2 baths, farm ranch, f/p in den & l/r, fin. bsmt., oversized gar., 1/2 acre, landscaped, $192,500. Ext. 4853 or 821-2932 after 6 p.m.

BROOKHAVEN HAMLET - 12 prime acres, trees & shrubs, large barn, 14" top soil, estate surroundings, sub-division in progress, terms. Jim, Ext. 4040 or 289-0876.

PORT JEFF STA. - 2 bdrm. condo., 1-1/2 baths, central a/c, all appl., club house, pool, tennis, $105,000. 928-8522.

OAKDALE - Idle Hour Section, near water, 2-story Tudor, 4 bdrms., 2 baths, gar., attach. full apt. w/priv. ent., located on 1/2 acre on dead end st., $210,000. 363-6940 eves.

Wanted

HOUSE TO SIT - going away on vacation or business, I will stay with your house. Ext. 3671 or 736-2131 eves.

HOUSE TO RENT - in SWR School Dist., needed by family of 4, June-Jan., or summer. Per Spanne, Ext. 5125 or 744-2275.

HAMSTER HABITRAIL - 289-8212.

Services

*Services are listed as a courtesy to BNL employees. They are neither screened nor recommended by the **Bulletin**.*

KAYAK LESSONS - coastal and slalom, recreational, LI Sound, bays, rivers, basic to advance. Tim, Ext. 3496 eves or 281-7873.

CERAMIC TILE - installed professionally, free est. Tony, 467-1064 after 6 p.m.

SHEETROCKING - spackling, free est. Kevin, 563-1189.

JEWELRY REPAIR - gold and silver. Dan, Ext. 2319.

BABYSITTER - my home, Shoreham, exp. mother, part/full time. Amy, 821-3373.

TREE SERVICES - expert. 281-2746.

MAGIC SHOWS - children's parties our specialty, clown and balloon sculpture avail., 10% disc. to Lab employees. 395-3963 after 6 p.m.

BRICKWORK - walks, patios, brick, sand, Belgium block, landscaping ties, custom decks. Tony, 698-9274.

TREE REMOVAL - free est. Ken, 289-8212 eves.

CARDS - vibrant pressed flowers displayed in framable oval cards, your initials calligraphed on lacy, delicate notes, samples and order form. 929-3795.

PAINTING - interior, exterior, reas. rates, BNL refs. Pat, 924-7723.

PARTY TENTS - for rent, we set up & take down. Fred Kuehl, Ext. 7947 or 4823, pager 792 or 588-2268.

ODD JOBS - raking, painting, clean ups, etc. Frank, 744-9573.

CABINET MAKER - specialize in kitchens & bathrooms. Joseph Mead, 273-2723 after 5:45 p.m.

VIOLIN LESSONS - by exper. teacher, all ages, also Suzuki method. 821-0754.

CHILD CARE - exper. 15 yr. old, my home or yours. Liz, Ext. 2430 or 286-8563.

CALLIGRAPHY - wedding invitations, envelopes & certificates. Andrea, 821-0260.

In Appreciation

Our thanks to all those at Brookhaven for their support and expressions of sympathy on the death of my husband.

— Nancy Johnson and sons.

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

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