BROOKHAVEN BULLETIN
Vol. 39 - No. 2 January 11, 1985
BROOKHAVEN NATIONAL LABORATORY

How Do Nuclear Plants Age?

There are 81 operating nuclear power plants in this country. Thirty percent of them are well beyond their first decade, and no new plant construction has been started in the last five years.

"We should focus more on operating plants and how equipment ages under different environmental conditions," says John Taylor, who heads the Plant Systems and Equipment Analysis Group in the Department of Nuclear Energy. Taylor's group, which includes Mano Subudhi, Bill Gunther and Jim Higgins, has begun looking at the aging of nuclear power plant components under a long-range, comprehensive program funded by the Nuclear Regulatory Commission (NRC) and involving researchers at several national labs. BNL's program has been ongoing for about a year and a half.

The general method for doing an aging assessment involves three separate steps. First, failure data are gathered. In the nuclear industry, all safety-related component failures are required to be reported to the NRC. Included in that information is how a component failed, why, and what was the environment. Analysis of the data can reveal any patterns and also give clues as to how components can be expected to fail.

Second, data from qualification testing are reviewed. Most of the components that go into a nuclear plant must first undergo rigorous testing under conditions that simulate such accident environments as high temperature, high humidity, radiation and seismic stress.

Third, if existing data are insufficient to complete an assessment, the BNL group does its own component testing on aged equipment that is no longer in service for a variety of reasons.

The NRC has an order of priority on components to be evaluated. Included in the first group are motor-operated valves, certain kinds of pumps, batteries, electric motors, diesel generators and shock absorbers. BNL's first task was to examine small motors, and that work was recently finished.

Says Taylor, motors are generally built rugged and reliable, and the group's assessment confirmed that. Only two parts, the bearings and the stationary wiring in the motor housing, take special watching. Properly maintained motors are pretty much trouble-free.

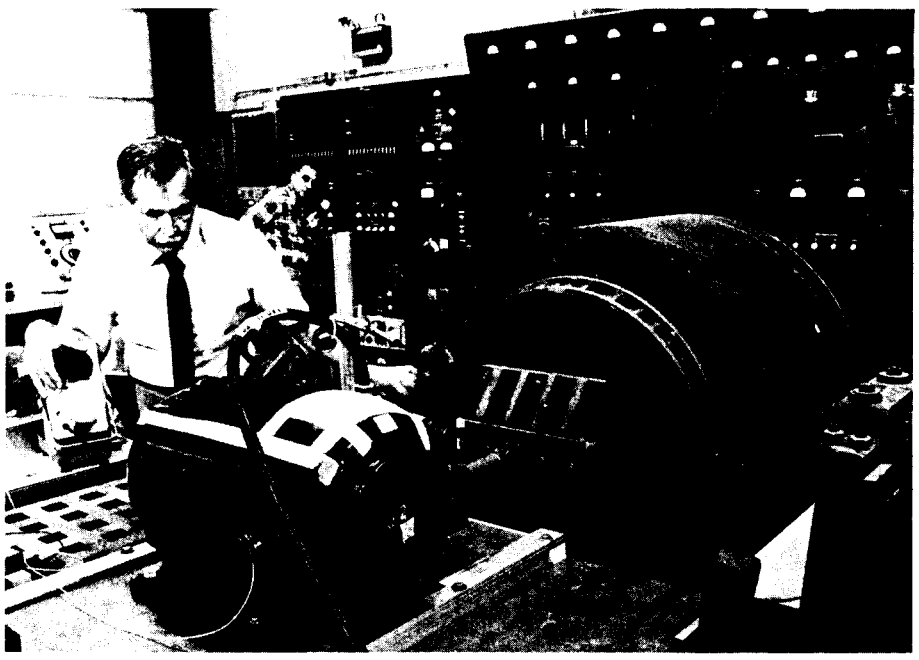
BNL was also given a special assignment: to determine if an aged motor would still meet seismic regulations. As part of that evaluation, motors were shaken up to 24 G's (a measure of the force of gravity during acceleration) by a machine called an electromagnetic shaker. There were no adverse effects from the simulated earthquakes.

The group has just started looking at battery chargers and inverters, which provide power for various safety-related instruments and controls in a nuclear plant. They are now in the process of reviewing data and later may test components from the Shippingport plant now being decommissioned.

Another phase of their work, which is also just beginning, will involve taking an aging assessment and using that information to develop better guidelines on maintentance. Taylor says that while testing standards for components do exist now, only a limited number address aging. The BNL work may lead to extending the life of equipment with better maintenance, better predictions of service life, and recommendations for new standards.

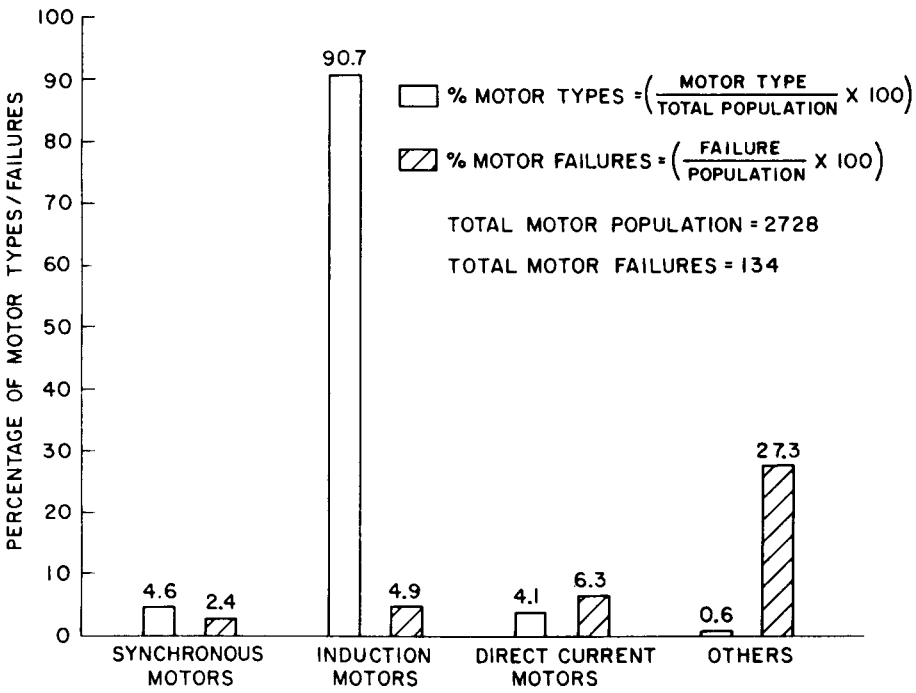
Says Taylor, "Even with proper maintenance, components will age. There is brittleness, chemical decomposition, mechanical, chemical and electrical corrosion, and just general wear. You can determine aging is taking place and you can slow it down, but you can't stop it."

"The work at BNL," he adds, "helps eliminate some of the surprise. Basically, no one wants an unexpected failure." — Mona S. Rowe



Mort Rosen

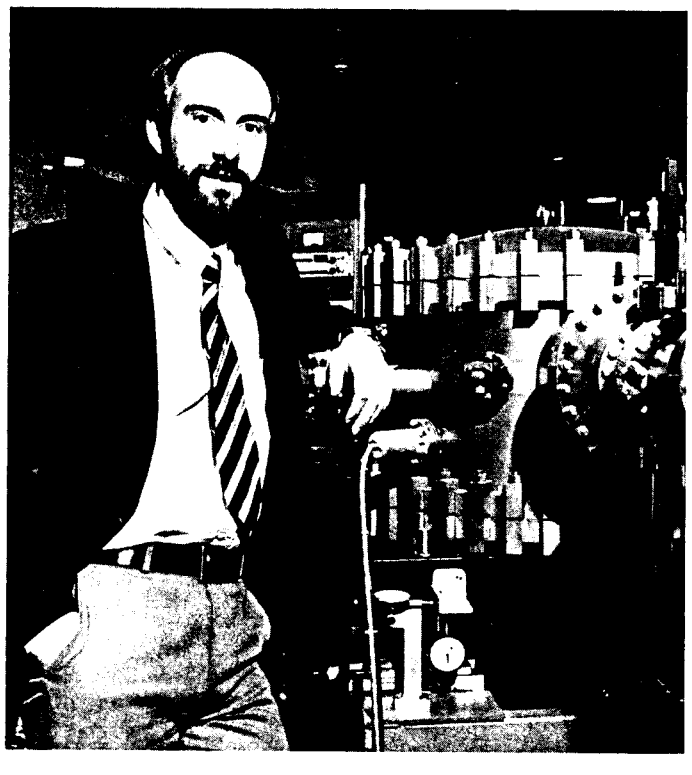
John Curreri, DNE, does a seismic test on a 12-year-old motor using an electromagnetic shaker (right) that applies up to 24 G's.



As the chart shows, induction motors are the workhorse of the nuclear industry, and they have a relatively small percentage of failures. Still, because of the large number of these motors used, the failure rate is significant and requires attention. The chart also indicates that direct current (DC) motors, while few in number, have a high failure rate. BNL work shows that DC motor failures can be reduced by improved maintenance of commutator brushes. The failure rate for synchronous motors is at an acceptable level, and the number of motors in the "others" category is too small to warrant consideration.

BNL Lecture: The Light Fantastic

The National Synchrotron Light Source is the world's brightest source of white light. White light contains all the colors of the rainbow and, in the case of the Light Source, many "colors" beyond. It is with the light between the ultraviolet and x-ray regions that research has been performed at the Light Source and, to date, it is at the vacuum ultraviolet ring that many exciting discoveries have been made.



Alex Reben

Gwyn Williams stands beside an instrument called a monochromator, which selects and delivers a single "color" of light from the white source.

In the next Brookhaven Lecture, physicist Gwyn Williams, who has been one of the principal coordinators of the 32 VUV beam lines designed so far, will discuss how the Light Source is used and what kinds of research have been done. His lecture, "Using the Light Fantastic," will be given at 4:30 p.m. on Wednesday, January 16 in Berkner Hall.

At the Light Source, the researchers and the questions they address are multidisciplinary. Physicists, chemists, biologists and metallurgists work together on diverse studies. For instance, Brookhaven scientists are studying DNA and the effect of carcinogens and subsequent repair mechanisms. They are investigating new superconducting materials called heavy fermion superconductors which appear to operate using an entirely new mechanism. AT&T and IBM are studying new types of semiconductors prepared at the Light Source using new techniques such as molecular beam epitaxy and ion implantation. Exxon and Brookhaven scientists have studied metals and their surfaces, which leads to greater understanding of corrosion, wear and catalysis. Sandia and Brookhaven have begun studies of stress corrosion cracking in glass, which affects many things from fiber optic communication lines to the space shuttle window.

Gwyn Williams obtained his Ph.D. at the University of Sheffield in 1971. As a postdoc in Leicester, England, and during visits to the U.S. and Europe, he was involved in the development of new experiments on existing synchrotrons and, later, in proposals for brighter, dedicated storage ring light sources. When the British synchrotron was closed down, Williams came to the U. S. in 1977 to continue his research. He joined Montana State University and worked with a group using a light source at Madison, Wisconsin. Attracted by the Ken Green-Renee Chasman design for a light source at Brookhaven, Williams came to the Lab in March 1979 to help plan the research program for that facility. He says, "The challenge then was to build experiments which were cleverly matched to this bright new source. Now, the expectations and hopes are on their way to fulfillment as the Light Source approaches the Green-Chasman design."

All those interested in getting together after the lecture are invited to go with the lecturer to a restaurant off-site. If you want to be part of this group, call George Rabinowitz, Ext. 7637.

Two Wheels Are Better Than None

They are the BNL visitors who put on the most miles per borrowed Laboratory bicycle.

After work or on weekends, you can usually sight a contingent at the shopping centers of Middle Island, Shirley, Coram or Rocky Point. You may glimpse a group on its way to downtown Patchogue or Riverhead, or even the Smith Haven Mall.

In the summer, you'll see them along the way to Smith Point Park or to one of the North Shore beaches. They are undaunted by winter's cold. Only rain, snow or ice stops them.

They are visiting scientists from the People's Republic of China.

Adults using the bicycle as their main transportation are unusual on Long Island, as in most of the U.S. "In America, children use the bicycle for play, and adults use the bicycle for sport," explains DNE research collaborator Dazhi Xue who works at the Institute of Nuclear Energy Technology of Qinghua University, Beijing. "In China, we use the bicycle as our main transportation, but then we don't have to ride very far." These visitors are continuing their use of the bicycle in this country.

"It is different in America," observes Physics Department research collaborator Zongren Shi of the Institute of Atomic Energy, Beijing. "In America, if you do not have a car, you have difficulty working. In China, it is not necessary to have a car, and if you do not have a bicycle, you can walk or ride the public bus."

"The people living in the cities of China use the bicycle the most," says Instrumentation research collaborator Zengfu Li who works at the Changsha Institute of Technology, Changsha. "The population density in the cities is very great because the Chinese population is very large. So people in the cities live near to where they work and shop, and use the bicycle because it is convenient and practical. And it is not hard to find a parking spot."

As in Beijing, where he works in the Engineering & Physics Department of Tsinghua University, Medical research collaborator Ri Qing Zhang finds it convenient to bicycle to the office from BNL's Compton House dormitory, as do the other Chinese visitors interviewed. Zhang leaves the bicycle outside and locks it, as he does in China. Regarding bicycle theft, "The situation is the same here as it is in China," Zhang explains. "I have had two bicycles since I came to the Lab. My department loaned me the first one on my first day, and to my surprise, four days later it was stolen from in front of the Medical Department."

The one-speed bicycles owned by the Lab and lent to visitors are similar to the ones the Chinese own at home, except theirs have hand brakes instead of foot brakes and are made in China, not the U.S. or Japan. "Every family has one or two bicycles, and it is very common to maintain your own bicycle," says Xue. Adds Li, "People use the same bicycle for ten to twenty years, and only buy new ones when the old bicycles rust out."

A lot of employees bicycle around site, but very few venture off-site on their Lab bicycles. "When I told my colleagues that I bicycle on the William Floyd Parkway to Shirley, they thought it was dangerous," says Zhang. "I pay more attention on the road and especially at intersections in this country than in China because there are more cars, and cars go faster in America."

Not all of the Chinese scientists run all their errands on bicycle. For instance, Zhang and DAS research collaborator Beilai Hu, from the Physics Department, Nakai University, Tianjin, take the Laboratory car that transports on-site residents to the Shirley shopping center on Saturday.

Alex Reben

(From left) Ri Qing Zhang, Dazhi Xue, Zongren Shi, Beilai Hu and Zengfu Li.

After shopping, however, Zhang takes his bicycle out to sightsee on Saturday afternoon or Sunday morning. "After sitting in the office during the week, on the weekend I want to go fast," says Zhang. "I like to bicycle for physical exercise."

"In China, bicycling as a sport is not as popular as ping pong," says Hu. Though China has 100 million bicycles in use, no Chinese cyclist earned a medal at the Olympics. "Most Chinese, including myself, don't use the bicycle for exercise," comments Xue, "just for transportation." However, "Bicycling is a good habit," adds Shi, "which is begun at a young age and continued into old age."

Since China does not have any highways, its roads cannot accommodate many cars. However, you can get to where you want to go in the city and in the countryside by public bus if the distance is too far to bicycle. "I don't know why you do not have a better public transportation system here," says Hu.

Even if they did own cars, the Chinese who were interviewed could not drive them because they do not know how to drive. "It is not very difficult to learn how to drive," states Hu, "but getting the experience needed to drive safely takes too much time — time I don't have since I'm only going to be in this country for two years and I'm not a tourist."

"In China, you are now allowed to buy your own car," says Li, "but cars are very expensive. Some of the cars are made in China, but most are imported from Japan. Gas is cheap, and it is not very expensive to have your car fixed because in China labor is cheap. Cars must drive very slowly in China because so many bicycles are on the road."

The rules of the road are the same in China as here. Although cyclists do not need a license to ride on the road, the rules of the road are well known. "Accidents involving two bicycles, or a car and a bicycle sometimes happen," says Shi, "but there are not as many serious injuries as in America because bicycles and cars go slowly.

"The bicycle is very cheap to own and operate," continues Shi, "but it is slow and tiring over long distances. A car is fast and comfortable, but it pollutes, and is noisy and expensive." Adds Hu, "The bicycle is not better than the car, but it is better than nothing." — Marsha Belford

On Site

Q: The excavation work now under way to provide central steam and sewage service for the firehouse seems quite extensive. Why are there such mounds of dirt in that area?

A: At different junctions, such as Upton Road and Brookhaven Avenue, the routes assigned to the new services cross other pipes and utilities that have been there for years. In those cases, Plant Engineering has elected to install the new services under the old. In order to get under those existing facilities, the new pipes must be placed from eight to twelve feet down in the ground. At the same time, in order for workers to go in and weld the new lines together, the trenches must be at least six feet wide. The digging of trenches so deep and so wide has resulted in the mounds of dirt now in the excavation area. At this point, trench work has been completed and welding has begun. Once the pipes have been welded and tested, backfilling will begin and should be finished by the end of February.

Less visible, because it's not along a main route, is the excavation going on in the east end of the Laboratory, near Building 526. The purpose of this work is to install water mains for better distribution of water in this area and to connect a new elevated water storage tank. The water main excavation should be completed by April, and the storage tank should be finished by November.

This will not be the end, however. In the spring, Plant Engineering plans to replace steam lines in four other areas of the Lab. More information on dates and any detours will appear then.

1985 I-R 100

The 1985 I-R 100 Competition is under way, and, once again, the Laboratory is encouraging entries. The competition is sponsored each year by Research and Development magazine to select the 100 most significant new technical products. "Technical product" is defined broadly to include any product, material, process, program, or system of scientific or technical origin or use.

Deadline for entries is March 1, and the Laboratory will pay all application expenses. For more information and entry forms, call Bill Marcuse, Ext. 2103.

Last year, Richard Lambrecht, Chemistry Department, submitted a winning entry for Brookhaven. Lambrecht headed a research team that developed a radiopharmaceutical delivery system.

For Your Information

This week, the U.S. Department of Energy decided that there would be no further delay on shipments of spent fuel elements from Brookhaven's High Flux Beam Reactor. Shipments to a reprocessing plant in Idaho will begin in the near future, although actual dates and times will not be announced due to DOE security regulations.

In 1976, New York City prohibited the transportation of spent fuel through the City. Prior to that ban, the Lab had made some 330 shipments of spent fuel over a period of 22 years without incident.

Since 1976, the spent fuel elements have been accumulating in the reactor's storage canal, and the reactor has continued to operate on a routine schedule.

In the intervening years, various court actions have resulted in striking down the N.Y.C. ban. New York City appealed to the Supreme Court, which decided against hearing the City's case in April 1984. Then in June, DOE agreed to the City's request to delay shipments until after January 1, 1985.

Patent Awarded

Terje A. Skotheim, Department of Applied Science, was awarded U.S. Patent #4,471,036 for inventing a process to make improved electrochemical photovoltaic cells. In a typical photovoltaic cell, one electrode is coated with a material which is a semiconductor when exposed to light and an insulator in the dark, and the counterelectrode is transparent. Common coatings include amorphous silicon and polyacetylene.

A persistent problem in making efficient large area amorphous silicon electrodes and photovoltaic cells has been the difficulty of eliminating pinholes that may allow direct contact between the front and back, thereby electrically shorting the cell and severely diminishing the photovoltage and photocurrent.

The process invented by Skotheim includes filling pinholes or porous openings in the coatings by electrochemical oxidation of selected monomers to deposit insulating polymer in the openings.

ANS Meeting

Garman Harbottle, senior scientist in the Chemistry Department, will address the next meeting of the Long Island section of the American Nuclear Society. The dinner meeting will be held in Room B, Berkner Hall, on January 23.

Harbottle will speak on "Archaeological and Art Historical Studies Involving ^{14}C Dating of Miniature Samples." He has applied nuclear techniques to art and archaeology and his studies have involved priceless museum objects; iron artifacts found in the Arctic, pottery from the Mycenian Age, pre-Colombian figurines and turquoise from Middle America.

Members are encouraged to bring their spouses and friends. Cash bar will open at 6 p.m., dinner at 7 p.m. Members and escorts $11.50, nonmembers $12.50. For reservations, call Dorothy Thompson, Ext. 2444 by January 21.

In Memoriam

Thomas G. Russell, Technical Associate in the Physics Department, died on January 8 at Brookhaven Memorial Hospital. He was 55 years old. Russell came to the Laboratory on June 6, 1960. He is survived by his wife, Helen, and his son, Gary. He was a resident of Ridge.

BROOKHAVEN BULLETIN

Published weekly
for the employees of
BROOKHAVEN NATIONAL LABORATORY

BERNICE PETERSEN, Editor
MONA S. ROWE, Associate Editor
ANITA COHEN, Reporter
MARSHA BELFORD, Reporter

35 BROOKHAVEN AVE., UPTON, N.Y. 11973
Telephone (516)282-2345

Swimming Pool

The pool will reopen on Monday, January 14. Season passes for employees and their immediate family members, i.e., those residing in the same household, may be bought at the pool during scheduled open hours.

Fees

Season Tickets (fees not prorated)

Individual Membership	$23.00
Family Membership	33.00
Daily Admissions	
Employee/Family Member	1.25
Guest	1.75

Schedule:

Monday through Friday
Employees only —
11:00 a.m. to 1:30 p.m.
Employees/Families/Guests —
5:00 p.m. to 9:30 p.m.

Saturday and Sunday
Employees/Families/Guests —
1 p.m. to 6 p.m.
The pool will be closed on all Laboratory holidays.

Guest Ruling (Applies to all recreation facilities)
One Guest — An employee is allowed to bring one guest per visit without special permission or prior arrangement. The guest must be accompanied by the employee.
Two to Five Guests — Advance arrangements for two to five guests may be made at the Recreation Office. (No more than five guests per employee are ever permitted.) When such an arrangement is made, the Recreation Office issues an admission card stating the sponsor's name and life number, the number of guests permitted, the date of visit, and the facility to be visited. Guests must be accompanied by the employee, who will be requested to show the admission card at the main gate and at the swimming pool ticket desk.

Tax Tip

If you have a bank loan and are getting ready to prepare your income tax, you will want to know how much interest you paid on it in 1984. Barclay's on-site branch has such statements ready, so drop by and pick up your copy.

PSI News

The PSI monthly meeting will be held on Monday, January 21, in Berkner Hall, Room C, at 6 p.m.

Jack Laurie, Photography & Graphics Arts, and Bronnie Orlowski, Technical Information Division, will speak on procedures for the preparation of technical information. Guests are welcome.

For further information, contact Juanita Heyliger, Ext. 3490, or Audrey Blake, Ext. 5382.

Arrivals & Departures

Arrivals

Kwok H. Fung	DAS
Richard N. Heese	NSLS
Warren E. Jappe	AGS
Emil Prodan	Central Shops
Dinorah Silva	Staff Svcs.

No Departures

Diners Note

The cafeteria will be closed on Saturday, January 12. On that day, snack bar service will be available from 9 a.m. to 2 p.m. at the Brookhaven Center.

Working Out After Work

New Year's resolutions have a way of fading into memory before you can really get a handle on them. But if you're a BERA member who resolved to improve your physical fitness in '85, it's not too late to start. In fact, you're just in time to sign up for the spring exercise sessions offered by the BNL Aerobic Dance Club.

The classes are led by Linda Sandberg, a certified aerobics instructor who began her career as an actress in New York City, often working in musicals and constantly taking dance classes. When a dance studio needed an aerobics teacher, she saw it as a way to supplement her income. "I started out with not too much experience," she recalls, "but from there I took certification classes."

Aerobics took precedence over acting after she married Jon Sandberg (AGS) and moved out to Long Island. For a while she travelled into the city for auditions, but she also found herself more and more involved in leading aerobics classes, first at local dance studios and then at BNL. Since the birth of her daughter almost two years ago, she has ceased all classes except the ones at BNL. Why? "It's really the nicest one," she says. "There's so much enthusiasm."

As outlets for that enthusiasm, Sandberg offers two types of exercise classes: aerobic dance, which emphasizes cardiovascular improvement through vigorous, choreographed exercise, and stretchercize, which concentrates on the stretching and strengthening of various muscle groups. "They're fun in different ways," she says. "Most people in the aerobics class want the upbeat movement and enjoy dancing, rather than straight exercise. But the stretchercize people want to stretch and feel their muscles get a workout."

All classes last one hour. Stretchercize classes meet on Wednesdays, while aerobic dance classes meet twice a week, on Tuesdays and Thursdays. Many students want to do both, so they take one day of each. As Sandberg points out, however, "To get the aerobic benefit, you should exercise aerobically at least three times a week. So people are encouraged to make up that time by doing something outside of class, like swimming, bicycling or jogging."

Sandberg has designed the aerobic dance class to bring her students to individual heart rate levels appropriate for their ages and weights. To get you to that point, a typical class begins with preliminary stretches followed by a warmup dance, perhaps one that Sandberg has choreographed to "New York, New York." Then it's time for some upbeat dancing, usually about three different fast tunes, including a Charleston. Between dances, you'll walk in a circle and check your heart rate. If it's not up to your predetermined standard, you're not working hard enough.

Alex Reben

Joining instructor Linda Sandberg (center) for an aerobics workout at the Brookhaven Center are (from left) Helga Pirozzi (Photography & Graphic Arts), Bill Leonhardt (AGS), Marty Heine (Medical) and Louise Hanson (Applied Science).

Keeping your heart rate up is difficult while you're learning steps. That's why, says Sandberg, "I try to give an aerobic session each time, by doing jumping jacks in between teaching new steps. So even if we're not doing a lot of the dance, we're still getting a workout."

Sandberg also stresses, "You don't have to be a dancer. I don't think people feel they have to do every step exactly right. I'm constantly saying, 'If you can't do the steps, just jog in the general direction.' And most of the dances have the same steps in them. You learn certain steps that you do in different dances at different speeds."

Bill Leonhardt (AGS) has been participating in the Aerobic Dance Club for almost two years now. "I felt awkward in the beginning," he admits. "A lot of my male friends said, 'It must be nice to stand around and watch what's going on.' But I'm so busy trying not to step on my own two feet, I don't even see what's going on. It's a very beneficial form of exercise, and it's as good a workout for a man as for a woman."

After about 25 minutes of aerobic movement, you begin to cool down, perhaps to a Billy Joel tune. Then Sandberg draws from her stretchercize routines to introduce a few stretches. Both aerobics and stretchercize classes end with a yoga relaxation period.

For people who may be hesitant to sign up for aerobic dancing because they lack experience, Sandberg is offering a free orientation lesson. "We'll go over the fundamentals," she says, "heart rate, what to wear, how the class operates, some of the beginning steps."

The orientation will be held at the same time as registration for the spring sessions of both aerobic dancing and stretchercize — on Thursday, January 17, at 5:15 p.m. in the Brookhaven Center. The two-day a week, twenty lesson aerobic dancing session costs $60, while a session of stretchercize — ten classes — costs $30. Full payment for each class is due at registration. Regular classes begin on Tuesday, January 22.

If you have any questions about either program, call Aerobic Dance Club president Helga Pirozzi, Ext. 2384; secretary Marty Heine, Ext. 3563; or Linda Sandberg, 689-8740.

— Anita Cohen

If you think organized exercise is something new to the Lab site, guess again. Back in 1918, these recruits were doing morning setting up exercises at Camp Upton.

Dance Lesson

The BNL Singles Club is sponsoring a Country & Western dance lesson (not square dancing) on Thursday, January 17, in the North Room of the Center from 7 to 8 p.m. A $5 fee is requested and all are welcome. Any questions, call Doris, Ext. 2228.

SCCC Courses

If you plan on taking on-site Suffolk County Community College courses this spring, you have until Friday, January 18, to register. For details, contact Pat Knisely, Ext. 4262, Bldg. 185.

Bowling

Purple League
High games were bowled by Rich Scheidet 237, Ted Erickson 204, Annamarie Spira 183, Nancy Erickson 183, Pat Manzella 180, Mary Eggert 175.

Red/Green League
J. Petro rolled a 222, W. Rasmussen 218, J. Connelly 214, S. Dimaiuta 213, E. Sperry IV 213, H. Marshall 212, J. Di Nicola 203.

Pink League
M-G Meier rolled a 223, S. Asselta 188, M. Larsen converted the 2-4-6-10.

White League
John Connolly bowled a 226, Ed Sperry 217, Jim Petro 214, Jim Griffin 210, Lee Barberich 191, Caryl MacDougall 191/180, Sandy Asselta 187, Joyce Pinelli 187, Millie Connolly 183.

Motorcycle Club

Start the New Year right by attending a meeting of the club on Monday, January 14, at 5:15 p.m. at the Recreation Building.

Runners' Corner

There will be a special meeting of the BNL Roadrunners, Parcourse enthusiasts and other interested parties on Friday, January 18, at noon in Room C, Berkner Hall. Spring events will be discussed. If you can't attend but would like to participate in club activities, contact Bernie Silverstein at Ext. 4934.

Cafeteria Menu

Week ending January 18

Monday, January 14

Cream of mushroom soup	(cup)	.65
	(bowl)	.85
Beef stroganoff over noodles		2.15
Cheese omelet & 1 veg.		2.00
Hot Deli: Turkey breast	(bread)	2.10
	(roll)	2.30

Tuesday, January 15

Beef barley soup	(cup)	.65
	(bowl)	.85
Swedish meatballs on rice		2.10
Fish 'n chips		2.05
Hot Deli: French bread pizza		2.15

Wednesday, January 16

Canadian cheese chowder	(cup)	.65
	(bowl)	.85
Beef & broccoli stir-fry on rice pilaf		2.20
Chili Releno casserole & 1 veg.		2.10
Hot Deli: Pastrami	(bread)	2.00
	(roll)	2.20

Thursday, January 17

Minestrone soup	(cup)	.65
	(bowl)	85
BBQ spare ribs & 1 veg.		2.10
Beef liver & onions w/1 veg.		2.00
Hot Deli: Italian meatball hero		2.20

Friday, January 18

Boston clam chowder	(cup)	.65
	(bowl)	.85
Broiled fresh fish filet & 1 veg.		2.05
Ham & noodle au gratin & 1 veg.		2.05
Hot Deli: Clam boat		2.15

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, 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.

OPEN RECRUITMENT - Opportunities for Laboratory employees and outside applicants.

2168. RESEARCH SERVICES ASSISTANT - Requires experience in the initiation and maintenance of a sheep breeding colony, which includes inoculations, deworming, shearing, etc. Duties include the maintenance of colony, pastures, pens and food inventory. Medical Department.

Autos & Auto Supplies

70 VW - fastback, good for parts, best offer. 286-3851 eves.

84 CHEVETTE - excel. cond., am/fm radio, auto., $6,200, negotiable, or take over payments. 878-2239.

TRAILER HITCH - class 2, for mid-size GM cars, $50. Ext. 2709 or 757-1581.

77 TOYOTA CELICA - hatchback, $2,500. Ron, Ext. 7696 or 289-1003.

BUMPERS - for 69 to 74 Ford Van., brand new, front & rear, white, $50 pair, Dick, Ext. 3273.

SNOW TIRES - C78-13, good cond., $35 pr; other assorted 13" tires on rims. Susan, Ext. 4267.

74 CHEVY LUV - pickup, rebuilt eng., mech. excel., am/fm cassette, $2,000. 821-0729.

73 FORD PICKUP - good cond., $1,300. 331-5118, after 5 (no calls after 9).

63 STUDEBAKER - Crusier, runs great, looks great, $800. Kevin, 281-8031 eves.

70 CHEVY - sta. wagon, p/b, p/s, a/c, auto., 130k mi., fair cond., best offer. R. Perry, Ext. 3270.

78 MONTE CARLO - p/s, p/b, a/c, am/fm stereo cass., 305 V8, rally wheels, 64k mi., $3,000. Stan, 475-0532.

SNOW TIRES - on rims, balanced, new valves, 14-inch, Plymouth. $15 for the pair. Ext. 4475.

75 SKYHAWK - V6, p/s, p/b, 4 spd., runs well, needs some work, $300 or best offer. Bruce, Ext. 7203.

75 DATSUN 280Z - 2+2, 4 spd., a/c, am/fm cass., runs excel., $3,200. Ext. 2629 or 751-7330.

73 CHEVY NOVA - 6 cyl., 58k mi., body fair cond., $450. George, Ext. 4476 or 722-3090.

76 CHEVY CAMPER - van, excel. cond., new auto, trans, tires, $3,500. Ext. 3069 or 286-3538.

75 MONZA - 2 dr., hatchback, sunroof, am/fm cass., new snow tires, 80k mi., Leslie, 878-0375.

74 MERCURY COUGAR - p/w, p/b, a/c, auto, new tires, excel. cond., $1,500. 924-3236.

85 MERCEDES 500 SEL - loaded, metallic brown. 941-4999.

TIRES - Goodyear belted, E-78x14, b/w, almost new, mounted & balanced on Dart-Valiant wheels, $100 firm, 289-8212.

71 AUDI 100LS - 2 dr., auto., needs brake work, $250. John, Ext. 4214 or Dave, 475-5543.

70 OLDS 88 - p/s, p/b, 4 dr., new trans., $30. Jeanne, Ext. 7742 or 281-7568.

77 GRAND PRIX - p/w, p/b, p/s, a/c, 77k mi., immac. cond., asking $2,500. 286-8759 eves., 286-9811 days.

83 HONDA PRELUDE - 5 spd., a/c, am/fm cass., rustpf., p/moonroof, body molding, red, excel. cond., $10,500. 422-1846.

75 VW BUG - excel. cond., am/fm, snows, ski rack, 2 extra rims, $1,500. Bill, Ext. 2906 or 929-6189.

75 VW RABBIT - 4 dr., runs well, good tires and battery, body rusted. Ext. 4587 or 929-8443.

67 VW BEETLE - sunroof, a real sweetie, needs body work, best offer. 689-9289.

60 FALCON - 2 dr., good running cond., $1,400 or best offer. Tom, 884-7333 eves.

71 CHEVY IMPALA, V/8, a/c, p/s, p/b., 82k mi., good cond., $900. Ext. 2673 or 744-8632, after 6 p.m.

TIRES - (2) Pirelli-P3, 175SR14, low mi., $75 pair. Ext. 2253.

72 JAGUAR XJ6 - orig. owner, v.g. mech., all options, green, saddle inter., $4,000. 728-0939 wkends. or 727-3115 days.

83 MAZDA GLC - custom, 5 spd., 2 dr. hatch, am/fm, a/c, good cond., $4,900. Ext. 3293 or 736-5130.

73 HONDA - CB 450, black, 26k mi., lug. rack, excel. cond., $400. Jim, Ext. 3499 or 981-7369.

81 TOYOTA TERCEL - 4 spd., excel., 36 mpg., rust proof, metallic rust color, excel. serv. record, asking $4,200. Ext 2830 or 543-0487.

Boats & Marine Supplies

BARIENT WINCH HANDLES - 10", chrome, lists for $56/ea., sell for $25/ea. Brian, Ext. 2799

12' ALUMINUM BOAT - Sears, 7.5 eng., $350. 878-2421.

20' O'DAY - 6 hp, galvanized trailer, head, galley, 4 berths, bow pulpit & life lines, $6,800. Bill, Ext. 2906 or 929-6189.

15' MARQUIS BOW RIDER - 65 hp, Mercury Cox trailer, all excel. cond., $1,900. Jim, Ext. 3499 or 981-7369.

Miscellaneous

BEAM ANTENNA - tri-band 20, 15, 10 meter, $50; 2 meter beam, $20; 75 & 40 m dipole, $10/ea.; alum. exten. ladder, 24', $50; wheelbarrow, shovel, rake; hoe, $5/ea. 732-5004.

STEREO - Ampex 4 track portable, recorder/player, good cond. 941-4328.

BOY'S FOOTBALL SHOULDER PADS - Maurice, Ext. 2487 or 928-6930.

ARC WELDER - 230 amp., with 10 lb. rods and mask, $100. Walt, 298-8601.

PUMP - 12 V, Simer impeller type with hoses, 300 gph., slightly used, list for $83, sell for $25. Ext. 4745 or 744-3225.

ELECTRIC GUITAR - Gibson, strings, 2 pickups with case, $75. Lydia, Ext. 2380 or 929-8142.

DINING ROOM SET - Mediterranean, excel. cond., solid wood, $700. 878-2421.

FIREWOOD - seasoned, split & delivered, full cord, mostly oak, some maple, $125. 473-3714.

SPANISH OAK STEREO - 7' w/hutch bar, 8 track tape, mint cont., $500; foyer wall table mirror, $35. 281-6944.

HI-RISER BED - $50. Li , Ext. 5012 or 369-0539 eves & wknds.

SOFA - Castro, opens to queensize bed, $50; wood china closet, $100; large dining room table, $40. 878-6637.

SKI BOOTS - Raichle, man's size 12, like new, $45. Ext. 3604 or 878-0516.

MASTER BEDROOM - triple dresser, mirror, chest, night stand, $300. 563-2847.

SKIS - Kneissl epoxy, 215 cm., w/Scott poles, $75; Head std. 210 cm, w/look Nevada bindings, $75; roof racks, $5; boot carrier, $10. Ext. 4438 or 472-1585.

MOVING SALE - furniture, including bdrm. set, dining rm. set, kit. set, recliner, youth bed, make an offer, Ext, 3293 or 698-6437 eves.

COUNTRY STYLE COUCH - convertible love seats (2), chair and metal folding table, will deliver, 929-8287.

CITRUS FRUIT - pink grapefruit, $8; Temple oranges, $9.50; order now for delivery Feb. 11, G. Price, Ext. 3336.

MAN'S BIKE - 12 spd., new, in original carton, $100. 472-1243 after 6 p.m.

LAB PUPS - AKC championship background, black female, dame on premises, 289-7141 after 8 p.m.

BUNK BEDS - v.g. cond., box springs, mattresses, converts to two twin beds, 924-7476.

GAMES - ping pong, dart board, croquet, badminton, $5 ea.; WWI helmet, best offer; home movie screen 4', $5; giant 6" nixie tubes and drive boards, $2 ea., Victor, Ext. 2395.

LINEN CALENDARS '85 - authentic Hummel collectors limited edition, will bring to Lab, $5. Hank, 924-6521 after 5 p.m.

DINETTE TABLE - and 4 chairs, solid maple, v.g. cond., $95. Jim, 734-5556.

SWAG LAMP - 16" brown wicker shade, $30; Brass headboard for double bed; Zenith B&W TV, $25. 744-6874.

CAPTAIN'S BED - officer's quarters by Lea, 2 lg. drawers, 4 shelves, like new, $200. 281-2159.

SKI RACK - for VW bug, locking, $15; ceiling paint, sand texture, 3 gallons, unopened, $15. Bill, Ext. 2906.

GIRL'S TRICYCLE - like new, $20; boy's 20" bike, $15; Atari 2600 2/8 tapes, $75. Fran, 399-4822.

BLANK TAPES - VCR, VHS, T120, high quality, $4 ea., Bill, Ext. 2807.

DISHWASHER - GE, harvest gold, front panel, vg. cond., $75. Tom, Ext. 4084 or 878-1060.

FIREWOOD - split seasoned oak, 4'x16'x20-22" pieces, $110 delivered. 732-2849.

CONSOLE STEREO - Colonial, beautiful piece of furniture, excel. cond., $120. Larry, Ext. 2021 or 281-7240.

OAK FURNITURE - 2 bedframes, 2 dressers, 2 mirrors, vanity table and chair, good cond., $450; 4 piece suit, size 40, brown, excel. cond., $30. 289-0687.

COPIER - desk top, 3M model 149, mint cond., lots of paper, $50. John, 862-6777.

KITCHEN CABINETS - Birch, L shape, upper & lowers, apt. size stove, dishwasher; $250 all, Joe, Ext, 5233 or 369-0432 eves.

TURNTABLE - Pioneer PL-7, Direct drive, automatic, w/pioneer PC50 cartridge, good cond., $65. 289-0687.

Free

PIANO - old but functional, you transport. Foley, 744-9682.

CHIHUAHUA - needs good loving home, Ext. 5036.

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

E. PATCHOGUE - S. of S. Country Rd., 2 bdrm. apt., l/r, eik, priv. ent., avail. Feb. 1st, no pets, $410/month, Walt., Ext. 2907 or 698-0576.

BELLPORT VILLAGE SOUTH - near bay, fully furnished, spacious modern house, includes all appliances & piano, available until June, rent negotiable to responsible tenant, adults only, 286-0379.

ROCKY POINT - one bdrm. apt. w/private entrance, $350/mo. plus utilities. 744-8901 eves.

STONY BROOK - 2 bdrm., bungalow, eik, l/r, basement, 10 min to Stony Brook Univ., $600/mo. plus utilities. 588-1889.

For Sale

MILLER PLACE - colonial, 4 bdrms., formal l/r & d/r, cty. kit., 4 baths, fam. rm. w/brick wall f/p., 331-1718.

NO. CORAM - Town house, bsmt., 2 bdrm., redwood deck, fenced yard, w/d, 1-½ baths, 10 min. to Lab, $74,900 appointments only, 331-5118, no calls after 9 p.m.

HAUPPAUGE - 9 rm. hi ranch, mother/daughter sep. ent., patio & two screened in porches, prime area, low taxes, 80x200, 3 min. to L.I.E, $139.000. 724-4268 after 6 p.m.

ROCKY POINT - adorable starter/retirement home, 15 min. to Lab, quiet st., wall-wall carpets, full bsmt., alum. siding, easy to heat. Ext. 2697.

SETAUKET - energy effic., 4 bdrm. cape on quiet circle, solarized ctry. eik, d/r, l/r w/fplc., 2 baths, fin. bsmt. & garage, new deck, Ext. 3631 or 689-8040.

Wanted

ROUTER - 1-½ hp, Maurice, Ext. 2487 or 928-6930.

RUGBY ANYONE? - no exper. nec., just love of good clean fun, for more info. contact Pierrick, Ext. 3464.

GYMNASTICS/WRESTLING MAT - usable condition, reasonable, 281-2471.

HOUSEMATE - to share large house, 8 min. to Lab, $200/mo. plus ¼ util., Roland, Ext. 3969 or 924-3669.

DESK - for college student, John, Ext. 4214 or Dave 475-5543.

Lost & Found

FOUND - grey & green woman's wool sweater in recreation hall, Ext. 4142.

LOST - would the person who borrowed my London Fog trench coat, size 42, from Berkner Hall on Jan. 2, kindly return it, no questions asked. Ext, 3307.

Classified Ad Policy

Deadline is 4:30 p.m. Friday for publication Friday of the following week.

1. The Brookhaven Bulletin's classified section may be used only by active and retired Laboratory employees.
2. All items for sale or rent must be the advertiser's property.
3. Ads for material acquired for resale in association with a full or part-time business cannot be accepted.
4. Ads for the sale or trade of firearms will not be accepted.
5. Ads not carried because of space restrictions will be held for publication in the next issue.
6. Ads are run only once and must be resubmitted if they are to be repeated. One ad per person per week.
7. **Property for sale or rent cannot be accepted on this form. Special Real Estate Ad Forms are available at the office of the Brookhaven Bulletin, Building 134.**

☐ For Sale: Autos & Auto Supplies
☐ For Sale: Boats & Marine Supplies
☐ For Sale: Miscellaneous
☐ Car Pools
☐ Lost & Found
☐ Wanted
☐ Free
☐ _____

Please print your ad below in 15 words or less using one word per block. Include name and phone number to call.

Note: The following must be completed for your ad to appear.

NAME (Please Print) .....

Employee's Signature ..... Life No. ..... Ext. .....

Send to: Brookhaven Bulletin, Building 134 (Ext. 2345).