BROOKHAVEN BULLETIN
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BROOKHAVEN NATIONAL LABORATORY

PETT VI Increases Knowledge Of The Brain

The brain is an energy user that fuels itself by burning glucose. PETT VI is an instrument for measuring the amount of fuel used by the brain.

PETT stands for positron emission transaxial tomography. This technique is at the heart of a method for quantitatively measuring the rate of regional glucose metabolism in the human brain. The method relies on the radiotracer ^{18}F deoxyglucose. This chemical compound was first developed by a team of Brookhaven scientists, working in collaboration with researchers from the University of Pennsylvania and the National Institutes of Health.

That was seven years ago and the measuring tool at BNL was called PETT III. For over a year now, the Laboratory has had an even more sophisticated machine. PETT VI, as it is called, provides scientists with a more accurate means for investigating the mysteries of the brain. Alfred P. Wolf is principal investigator of the project, a joint venture between BNL's Medical and Chemistry Departments. Their research is funded by the Department of Energy and the National Institutes of Health.

Both PETT III and PETT VI scan and reconstruct slices of the brain. But PETT VI is faster and more sensitive, providing more detail than the earlier version. While PETT III could scan only one slice of the brain in ten minutes, PETT VI can do seven slices in one minute.

The glucose-measuring technique that relies on PETT VI also relies on other forms of high technology. "That's one of the reasons this work is done here," said Wolf, who is chairman of the Chemistry Department. "It requires the kind of expertise that resides at Brookhaven, everything from computers to cyclotrons. And it draws on the Lab's long history of developing labeling methods with isotopes of short half-lives."

A PETT VI scan begins after a patient receives an injection of a radioactive tracer, either ^{18}F deoxyglucose or ^{11}C deoxyglucose. Both ^{18}F and ^{11}C deoxyglucose are manufactured at Brookhaven, utilizing a cyclotron as a source of radioisotopes.

The radiotracer imitates the metabolism of natural glucose in cells, and the decay events of the radioisotope are tracked by PETT VI's sensitive detectors. With the patient's head positioned inside its circular frame, PETT VI measures the rate at which the compound is taken up by the brain and provides data for analysis. Photographs of slices of the brain are the result of feeding this information into a computer. The data are presented as a color display, where the different colors represent the rate of glucose metabolism in specific regions of the brain. Though the end products of PETT III and PETT VI are in much the same form, Wolf said PETT VI pictures are far more detailed.

The improvements seen in PETT VI are due to the unique structure of the machine, which was designed at Washington University in St. Louis. The original PETT VI built there served as a model for BNL's, the second such machine to go on stream anywhere. Two others are approaching service, in Chicago and Vancouver. PETT VI has allowed these scientists to go into exciting new areas of neurological research. However, Wolf emphasizes, "The important thing is not the machine itself, but the fact that it allows us to investigate new things in nature. Actually, PETT has not yet solved anyone's medical problems. It is a tool for basic research. If you are going to make advances, you have to know what the

(Continued on page 2)

These scans from PETT VI were taken during Alfred Wolf's recent experiment. The lightest areas shown were the most active parts of the brain. As the slice on the left was photographed, Wolf read music, which activated analytical centers on the left side of the brain. Activity increased on both sides of the brain when Wolf also listened to a stereo recording of the sonata.

Mort Rosen

His head in position in the scanning area of PETT VI, Alfred Wolf awaits the start of a second set of scans, while Dr. Barry Bittman makes a final check.

Inside PETT VI

Last month, Alfred P. Wolf, principal investigator of the PETT VI project, assumed the roles of both researcher and patient by making himself the subject of his own experiment.

The experiment was designed to test hypotheses about which areas of the brain are activated when a patient reads music, or reads and listens to music simultaneously. "From experiments like this," said Wolf, "we can learn more about how training and education affect the brain. It's a prelude to some of the things we will do in aphasia."

People with aphasia suffer from abnormalities in their sensory-neural apparatus that causes difficulties in transmitting or receiving ideas through written or spoken language. In reading and listening to music, ideas are received. The information obtained from Wolf's experiments as a normal subject can be used later to understand results with aphasic patients.

In the first phase of the experiment, Wolf, who plays the piano, read the sheet music for Beethoven's piano sonata No. 5. Lying with his head in PETT VI, Wolf was immobilized and wore earphones to block out any distracting sounds. Turning pages for Wolf was fellow musician Dave Christman, who usually runs the computers when PETT VI is operating. The experiment's second phase was a duplication of the first, except that this time Wolf listened to the sonata through his earphones and read the music while listening. In all, Wolf spent a total of four hours within the confines of PETT VI.

As a subject, Wolf experienced the same procedures any PETT VI patient would. To avoid raising his glucose level, he started fasting about two hours before the procedures began. About one-half hour before each PETT scan, a pre-scan, similar to a CAT scan, was taken to provide information for later corrections to PETT data. When everything was in order, Wolf was injected with the radioactive compound, ^{11}C deoxyglucose. At that point, all clocks were synchronized for a precision accounting of the decay of the isotope, which has a half-life of only 20 minutes.

During each eight-minute scan, while Wolf concentrated on the music, others concentrated on him. Nurse Noelwah Netusil, assisted by orderly Theo Gray, took periodic blood samples — roughly twenty 1½ cc samples — for glucose analyses later carried out by Norma Cicale. The physician in attendance, required at every PETT scan, was Dr. Barry Bittman, a neurology resident at SUNY Stony Brook.

Running the computers, as well as PETT VI itself, was operator Bob Stamm.

As a researcher, Wolf was pleased with the results of his PETT scan. "We could definitely see how specific regions of the brain respond to sound — both heard and imagined," he said. "The hypotheses do hold together."

In addition, Wolf's experiment was a good test for the new short-lived radiotracer ^{11}C deoxyglucose. "The only reason we could do this experiment is because we can produce ^{11}C. It allows us to do before and after studies on the same day and use the subject as his or her own control." In a similar fashion, Dr. Bittman is using ^{11}C-deoxyglucose in motor studies at BNL, to pinpoint the parts of the brain activated when a subject performs a simple voluntary task.

Besides providing data for this research, Wolf's participation in his own experiment provided him with a patient's view of PETT VI. "It's always worthwhile for a researcher who helps develop a new research modality to experience what the problems are and what the subject feels during the course of the experiment," he said.

Lecture Reminder

Garman Harbottle, Chemistry Department, will talk about the minicarbon 14 dating technique in a Brookhaven Lecture on Wednesday, March 16. His lecture, "The Frobisher Voyages, and the Turin Shroud," will be presented at 4:30 p.m. in Berkner Hall. Coffee reception is at 4 p.m. A buffet supper will be served at 6:30 p.m. at the Brookhaven Center. Call Ext. 3541 for reservations.

Doug Humphrey

Assistant Director Jerome Hudis (left) was one of the Lab officials greeting L.I. Congressman William Carney (right) and Congressman John Myers (R-Ind) just after they had alighted from a helicopter bringing them to Brookhaven for a tour and briefing, March 4. Myers, ranking minority member of the Energy & Water Development Subcommittee, House Appropriations Committee, accompanied Carney on a visit to his home district.

Doug Humphrey

You may have noticed a yellow banner flying below the U. S. flag on the flagpole. The banner is to commemorate Suffolk County's 300th birthday this year, and to show that BNL will be participating in the celebration. A special program is being planned in June as part of the regular summer Sunday tours, to pay tribute to the County. Raising the tercentennial flag are patrol officers Jeffrey Taylor (left) and Robert Murphy.

Inside Info

As reported in the Bulletin last month, Alexandra Kroeger was one of the 40 winners of the annual Westinghouse Science Talent Search with an experiment she did on actin molecules in BNL's Biology Department. This week, she made the top ten in the finals, placing seventh and winning a $5,000 scholarship. She was a student intern with Marshall Elzinga, and is the daughter of Peter Kroeger, DNE.

Reports Available

The following reports are now available to the Laboratory staff and to affiliates of the DOE, AUI and NRC. Others may purchase the reports from the National Technical Information Service, U.S. Dept. of Commerce, 5285 Port Royal Rd., Springfield, VA 22161. Staff members should call Ext. 5068.

BNL-51463
Harnessing the Sun for Development. D.J. Jhirad, V. Mubayi, J. Weingart

BNL-51470
Segregation Practices in the Management of Low-Level Radioactive Wastes. D.E. Clark, P. Colombo

NUREG-CR-2516
BNL-NUREG-51499
Vol. 1 #4
Characterization of TMI-Type Wastes and Solid Products. Quarterly Progress Report Oct.-Dec. 1981. K.J. Swyler, et al

BNL-51521
A Survey of Agents and Techniques Applicable to the Solidification of Low-Level Radioactive Waste. M. Fuhrmann, et al

BNL-51522
Water Resource Development and Energy Growth in the Northeast. E. Kaplan, et al

BNL-51526
Economic Analysis of Tax Credit Incentives for Business Investment in Energy Conservation and Production. S.P.A. Brown, G. Anandalingam

BNL-51554
A Research Strategy to Permit Greater Utilization of Domestic Fossil Energy Resources. T.E. O'Hare

BNL-51557
Assessment of Microbial Processes on Gas Production at Radioactive Low-Level Waste Disposal Sites. A.J. Weiss, et al

BNL-51562
Anode Depolarizers in Electrolytic Hydrogen Production. M. Beller

BNL-51563
A Reference Material System for Estimating Health and Environmental Risks of Selected Material Cycles and Energy Systems. M.A. Crowther, P.D. Moskowitz

Degree-Days

Meteorologists in the Atmospheric Sciences Division, DEE, will be supplying the Bulletin with degree-day numbers, as a service to the many employees who wish to keep track of the energy performance of their houses through the heating season.

The number of degree-days is an index of the amount of fuel consumed to maintain a certain room comfort as outside air temperatures drop below a certain level. To a large extent, if you know the number of degree-days in a given month or year, you can factor out the effect that weather has on changes in fuel consumption during that period. Then you can make meaningful comparisons of fuel usage, for example, year-to-year, before and after adding insulation, or among similar houses in different locations.

The Plant Engineering Division makes these same kinds of calculations, using degree-days supplied by the BNL meteorologists. Reports on energy consumption at the Lab, including degree-day factors, are sent to the Department of Energy every quarter. In-house analyses of energy-saving modifications made to buildings around site use degree-days to see how much energy is actually being saved.

Here is how degree-days are calculated. 65°F is the base temperature. The maximum and minimum temperatures for a given day are added and then divided by 2 to approximate the mean daily temperature. If the mean temperature is less than 65°F, then that number is subtracted from 65, which yields the number of heating degree-days for that day.

The base of 65°F is used because conventional houses of many years ago required no heat to maintain a comfortable temperature when the outside temperature was 65°F or higher. (Houses built today may have an actual base temperature below 65°F because of better insulation, lower thermostat settings, etc.) As the outside temperature drops, more heat is required to maintain a comfortable temperature in the home. Each degree that the mean daily temperature is below 65° is counted as one degree-day.

Degree-days are a good indication of heating fuel consumption because they reflect the fact that heat loss from a building is proportional to the temperature difference between inside and outside. There is a linear relation between heating degree-days and your fuel consumption. In other words, your fuel consumption goes up as the degree-days get larger. Thus, a day on which there were 30 degree-days would require about twice as much fuel for heating as one on which there were only 15 degree-days.

Here is an example of how to use degree-days in calculating your heating fuel consumption. Assume that in 1980 a home used 1100 gallons of fuel oil, and there were 6305 degree-days. In 1981, part way through the heating season, the owner added insulation to the attic. In 1982, the house used 900 gallons of oil, an apparent 200-gallon saving, but the winter was less severe — only 6046 degree-days. How much did the insulation save?

$$1100 \text{ gallons} \times \frac{6046 \text{ degree-days}}{6305 \text{ degree-days}} = 1055 \text{ gallons}$$

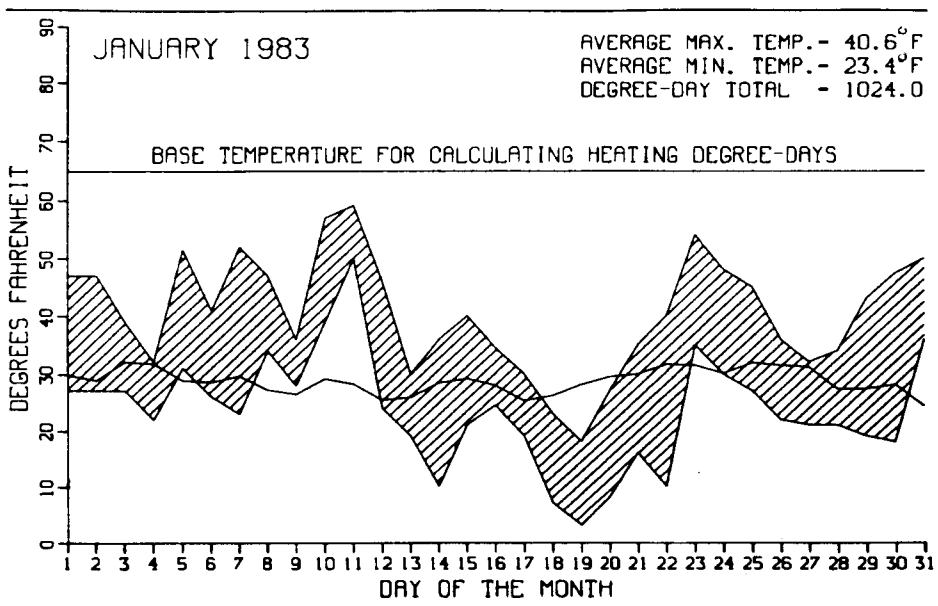
$$1100 \text{ gallons} - 1055 \text{ gallons} = 45 \text{ gallons}$$

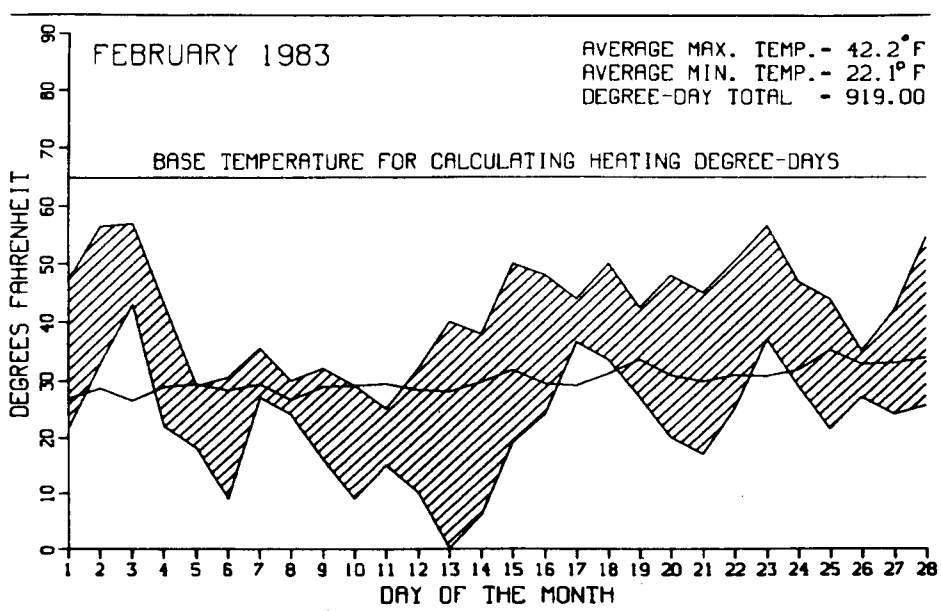
$$200 \text{ gallons (apparent saving)} - 45 \text{ gallons} = 155 \text{ gallons}$$

Thus, 45 gallons of the apparent saving is due to warmer weather. One hundred fifty-five gallons is the actual saving due to the added insulation.

The charts show the daily high and low temperatures for the months of January and February. The solid line represents the daily average temperature computed from 1949-1977 data. Also given are the average maximum temperature, the average minimum temperature and the degree-day total for the month.

Below the charts is a table of monthly degree-day totals for 1981 and 1982. A table of monthly totals for 1949 through 1980 was printed in the Bulletin on February 27, 1981. A copy can be obtained from the Bulletin office.





	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1981	1409	906	897	485	235	28	0	10	101	483	638	994
1982	1323	950	902	601	206	102	13	26	147	410	562	799

AUI Reviews College Aid

AUI has recently examined the practice of colleges in reducing financial aid packages to students, after outside awards, such as the AUI Trustee Scholarships, are made.

The colleges surveyed were those commonly attended by AUI Trustee Scholarship winners. Officers responsible for financial aid policy were asked to share their policies and to give ad hoc consideration to minimizing the impact of aid reduction on winners of the AUI scholarships. College aid is of two kinds: college scholarship (grant), and self-help (loans, or college jobs). It is to the student's advantage if the self-help portion of a financial aid package is affected by an outside award, rather than the college scholarship portion.

AUI has tabulated the policies of some thirty colleges that responded to the survey. The report can be obtained from the Office of Scientific Personnel, Ext. 3338. Correspondence from individual colleges is also available upon request. This information is being given out now in the event it may affect college choices by entering and transferring students.

Arrivals & Departures

Arrivals

Per Bak ..... Physics
Louis Cannizzo ..... Accelerator
Martin E. Klein ..... Plant Eng.

Departures

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

Ruth A. Gonzalez ..... Biology
Philip F. Schirico ..... Applied Math
Gary R. Tabasko ..... Accelerator

PETT VI (Cont'd)

root causes are. Then you can start developing methods for coping with the disorders."

Some of the disorders being investigated with PETT VI are schizophrenia, depression, senile dementia, aphasia, and brain tumors. Another aspect of the research involves investigations of neuroreceptor ligands. Present projects complement work begun with PETT III, work that Wolf hopes ultimately will be useful in diagnosing these diseases and helping researchers to design new modalities of treatment. Research is done in collaboration with the medical schools of New York University, SUNY Stony Brook and the University of Pennsylvania.

Much of the work that takes place involves gathering information about how the brain functions. "Right now we're trying to understand everything that this technique can tell us," said Wolf. "The next step is to see whether or not we can develop it as a diagnostic tool."

PETT VI is located in a small five-room building on Cornell Avenue — just down the street from the new cyclotron, which came on stream at about the same time as PETT VI. PETT III is in the Medical building where it is used for such studies as investigations on tumor metabolism in the liver and other organs.

With the exception of the frame, PETT VI was constructed by employees in BNL's Chemistry Department and Instrumentation Division. For keeping the project on course, Wolf credits Carol Redvanly, who "held everything together." Dave Christman, with Jerome Russell and Jean Logan, did the computer programming. Richard Lambrecht was in charge of hardware acquisition, while Dave Potter and Van Pfeiffer handled the electronics. During that process, Potter made improvements to the instrument's electronics, so that PETT VI turned out somewhat different from the original design. "It's a truly unique machine," said Wolf.

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Tiptoe Through The Tulips
8:30 TONIGHT
At the BERA Spring Fling

...In the Blossom Ballroom —
Charlie Zein and the Newports!
...In the Daisy Disco —
Mr. "T" (Eddie Taylor)!
...In the Forsythia Follies —
The Rosebud Revue,
Starring the Pussywillow Players!

Only $3 a Person!
Food and Drink at Reasonable Prices!
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Your Last Chance to Dance!

Austrian composer Franz Schubert wrote two works for octets — one for woodwinds and one for winds and strings. The later piece, Octet in F, will be performed on Thursday, March 17, by the Music Project, a group of young musicians specializing in performing chamber music. Rounding out the program will be Carl Nielsen's Quintet-Serenata in Vano and Robin Holloway's Serenade in C, Op. 41. The concert will begin at 8:30 p.m. in Berkner Hall. Tickets can be purchased at the door. General admission is $7; students and senior citizens, $4; and those under 18, $3.

Voting Reminder

The BERA Board election is scheduled to take place next week at the following times and locations:

Mon.	3/14	Cafeteria	11:30- 1:00
Tues.	3/15	"	" "
Wed.	3/16	"	" "
Thurs.	3/17	"	11:30-12:30
"	"	Bank	1:00- 2:30
Fri.	3/18	Bank	10:00- 2:30

Equipment Demo

A working demonstration of a new microprocessor controlled residual gas analyzer "DATAQUAD" will be given by Spectramass Inc. on Monday, March 14, from 10:30 a.m. to 2 p.m. in the lobby of Berkner Hall.

Nutrition Group

A meeting of the newly formed Nutrition Study Group, sponsored by BERA, will be held at noon on Tuesday, March 15 in Room D, Berkner Hall. Anyone interested is invited to attend.

Group plans include discussions, guest speakers and buying vitamins at discount prices. For more information, call Fred Usack, Ext. 4798.

Family Camping

March 25, 26, 27 starts our campouts at the Lab. It's time to take the rigs and tents out of mothballs for another camping season. Any employee is welcome at the campground located next to the ball field. For more information concerning the club call Bob Tallon, at 473-3987, or Ext. 4547.

WIS-PSI Meeting

Patricia A. Roos, Assistant Professor, Department of Sociology at SUNY, Stony Brook, will be the guest speaker at a combined meeting of Women in Science and the Professional Secretaries International. Dr. Roos will speak on "Institutional Factors Contributing to Occupational Sex Segregation," Thursday, March 17, in Room B, Berkner Hall.

Roos received her Ph.D. in sociology from the University of California. Her dissertation "Occupational Segregation in Industrial Society: A Twelve-Nation Comparison of Gender and Marital Differences in Occupational Attainment," represents an intersection of two of her interests — crosscultural research in stratification and women's labor force experience. She has also published articles on male-female earnings.

Patricia Roos also worked for three years at the National Academy of Sciences as a staff member to two Academy committees. She coauthored an evaluation of the Dictionary of Occupational Titles, and participated in a report to the Equal Employment Opportunity Commission exploring the comparable worth controversy.

A buffet dinner will be served at 5 p.m., with the lecture following immediately. The cost of the dinner is $7.50. Make reservations by sending a check, payable to Brookhaven WIS, to Ellen Gannon, Bldg. 801, Ext. 4513 before March 16.

MICOM Meeting

The next meeting of the MICOM Users' Group will be Wednesday, March 16 at 3 p.m., in conference room 2-160, Bldg. 510A, (Physics). Eileen Riehl (MICOM representative) will explain the Greek-Math program and tips on shortcuts. For further details, call Ellen Citrolo, Ext. 4486, or Nancy White, Ext. 3793.

Motorcycle Club

A meeting will be held on Monday, March 14, at 5:15 p.m. in the Recreation Bldg. Rides and events for the 1983 season will be discussed. Everyone welcome.

Volleyball

Results as of 3/7/83

Mixed League

A Division	
Dinkers	3- 0
Mixed Ups	2- 1
Nuts and Bolts	2- 1
Teddybares	2- 1
Nuclear Wastrels	1- 2
EPO's	0- 3
B Division	
Semi Tough	17- 4
Phoubars	14- 4
TNT	14- 7
Up Fagrabs	13- 8
Nuke Yorkers	13- 8
Chungas Revenge	7-11
Screwballs	4-11
Puff and Stuff	4-11
Quirks	4-17
KMA	6-15

Open League

The final results of the 3rd Quarter are:

Phoenix	19- 1
Raiders	15- 5
FRE8D	10-10
Random Errors	8-12
Brewmasters	4-16
Half Lifes	4-16

Bowling

White League

High games were bowled by S. Gushue 235, J. Ferrante 227/217/622 scratch, J. Griffin 224, K. Asselta 212/215, D. Adams 205, F. Brown 193, S. Long 183, K. Vogel 184, M. Stoeckel 175. No Cigar is in first followed by the Old Timers.

Red/Green League

C. Bohnenblusch had games of 236/224 for a 622 scratch, W. Kristiansen 243, J. Petro 235, J. Muller 220, R. Larsen 207, A. Dick 207, A. Lorentsen 203.

Purple League

The Good Times had a 758 scratch game, 2215 scratch/2566 gross series. E. Meier had games of 255/187/233/645 scratch, D. Hall 202/211, A. Pinelli 200, L. Barberich 212.

Pink League

High games were bowled by K. McNally 201, M. Larsen 200, R. Rosati 173, M-G Meier 188.

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L.I. Industrial Tournament

Representing BNL and high games bowled were J. Morris 237, E. Sperry IV 211, R. Larsen 206, C. Bohnenblusch 203, R. Wiseman. BNL is in seventh position after the first night of bowling.

Gardening Classes

To help home gardeners, the Cooperative Extension Association and Suffolk County Community College (SCCC) are joining together to offer gardening courses at SCCC campuses this month.

The gardening courses will cover a wide range of subjects, including vegetables, indoor plants, lawn, trees and shrubs, herbs and fruit. They are available on a first come, first served basis to anyone with an interest in home gardening. Courses are free of charge. They will be held in Selden on Saturday, March 12, from 9:15 a.m. - 12:05 p.m., and in Riverhead on Sunday, March 20, from 1-4 p.m.

Pre-registration is required. For more information about the course offerings, or to register, contact Caroline T. Kiang, Cooperative Extension, 727-7850.

Cafeteria Menu

For Week Ending March 18, 1983

Monday, March 14		
Cream of tomato soup	(cup)	.65
	(bowl)	.75
Roast loin of pork & sweet potatos		1.95
Cheese omelet & 1 veg.		1.80
Hot Deli — Grilled Reuben		1.90
Tuesday, March 15		
Old fashioned bean soup	(cup)	.65
	(bowl)	.75
Savory baked chicken quarter & 1 veg.		1.95
Chinese pepper steak on white rice		1.95
Hot Deli — Baked ham	(bread)	1.85
	(roll)	1.95
Wednesday, March 16		
Minestrone soup	(cup)	.65
	(bowl)	.75
Baked meat loaf & 1 veg.		1.85
Sauerbraten & potato pancake		2.00
Hot Deli — Swiss & sour cream chicken pattie	(bread)	1.85
	(roll)	1.95
Thursday, March 17		
Split pea soup	(cup)	.65
	(bowl)	.75
Corned beef & cabbage w/boiled potato		2.15
Beef stew over egg noodles		1.95
Hot Deli — BBQ fresh ham	(bread)	1.85
	(roll)	1.95
Friday, March 18		
Fish chowder	(cup)	.65
	(bowl)	.75
Fish & chips		1.85
Ham & potato au gratin & 1 veg.		1.85
Hot Deli — Knockwurst & sauerkraut	(bread)	1.85
	(roll)	1.95

HMO Enrollment Open To March 31

The Laboratory is offering eligible employees the annual option of enrolling in the Blue Cross/Blue Shield Community Health Plan of Suffolk Inc., as an alternative to coverage under the AUI Group Medical Insurance Plan. The deadline for enrollment in the Blue Cross/Blue Shield Plan is March 31, with coverage becoming effective April 1.

The BC/BS Community Health Plan of Suffolk is a New York State certified Health Maintenance Organization (HMO) Plan, which serves residents of the five western townships of Suffolk County and the eastern part of Nassau County. The facility is affiliated with eight hospitals. The local hospitals are St. John's Episcopal in Smithtown, Smithtown General Hospital; and, for more specialized services, Stony Brook University Hospital.

The BC/BS HMO provides continuity of care under the direction of an internist (or pediatrician, for children), who is in effect the member's private physician. In addition to primary care physicians, specialists in such areas as gynecology, opthalmology, urology, dermatology and neurology, as well as registered nurses and supporting health care personnel, are on staff.

The BC/BS HMO facility is equipped to take x-rays and laboratory tests, and to provide immunizations, allergy treatments, eye examinations, well-baby care and physical examinations. Care is available 24 hours a day, seven days a week.

Based on the current rates paid by the Laboratory for the AUI Medical Insurance Plan, there will be no charge for employees who enroll in the HMO Plan at this time.

The Laboratory will pay the full premium cost for employees and their dependents covered by the BC/BS HMO Plan for the new enrollment period, April 1, 1983 through March 31, 1984.

Employees who are interested in the BC/BS HMO Plan are encouraged to visit the facility at 3001 Express Drive North, Hauppauge (intersection of LIE, Ext 57 and Veterans Memorial Highway). The Open House date for BNL employees has been scheduled for Saturday, March 19 at 10 a.m.

Employees wishing to enroll or terminate their membership in the BC/BS HMO Plan can obtain the appropriate forms at Personnel Services, Bldg. 185, Ext. 2877.

Creditor: one who has a better memory than a debtor.

Dancing: the art of pulling your feet away faster than your partner can step on them.

Classified Advertisements

Autos & Auto Supplies

VW HOOD & TRUNK - also Dodge Colt doors & 4 spd. trans., and parts for Dodge Colt; 1974 Dodge Colt wagon, needs eng. work, $750. 732-3338.

CAR AMPLIFIER/EQUALIZER - Pioneer AD-50, 50 watts total power, excel. cond., best offer. 744-8063.

76 GRAN PRIX - good cond., full power, Datsun parts, 1978 eng., 1976 trans., 1976 radiator, 1976 bumpers, all B-210, great cond. Ext. 3644 or 929-8143.

SHOP MANUALS - 1961 Pontiac shop & body manuals, Triumph TR-2 and TR-3 service shop manual, $5/ea. Tom, Ext. 4084 or 878-1060.

HONDA MOTORCYCLE - 90cc, good cond., low mi., ignition needs work, $200 or best offer. Roger, Ext. 3518 or 878-4864.

73 CHEVY SPORT VAN 30 - p/b, auto., windows, am/fm, rugs, extras, $1,925. Vinny, Ext. 4285 or 281-8928.

76 CHRYSLER CORDOBA - p/s, p/b, a/c, stereo, Landau roof, 6-way power seats, $2,500. Bill, Ext. 4752.

77 CHEVETTE - very good cond., new clutch, brakes, custom int., $2,000. 288-5699.

80 HONDA HAWK - sport model, CB400T, excel. cond., low mi., extras, $995. 286-8814 after 5:30 p.m.

78 HONDA - 550, new tires, chain and many access., very clean. 878-4506.

78 PINTO WAGON - 4 spd. s/shift, dark brown, $3,200; 1974 Mustang II, 4 spd., s/shift, lt. blue, $1,500. 878-4286 after 4 p.m.

81 PONTIAC T-1000 - 4 cyl., white/blue pin stripe, a/c, 4 spd., w/w rad., 15,000 mi., still under warr., tint windows, asking $4,500, neg. 588-1464.

VEGA - 3 spd., trans. and Vega parts, reasonable. 924-8740.

81 MERCURY CAPRI - 33,000 mi., 4 cyl., a/t, sunroof, am/fm 8-track, black/red int., radials, excel. mpg, $5,500 neg. Ken, Ext. 2350 or 732-7944.

76 FIAT - 131S, 5 spd., a/c, am/fm, 2 dr., 26 mpg, asking $1,300. Ext. 2521 or 928-8379.

82 MAZDA SPORT PICKUP - a/c, cap, radials, am/fm, 5 spd., 29 mpg, $7,695. Janet, 929-4439.
CAP - for 6 ft. bed, w/many extras, $450. 472-1875 after 5:30.

69 OLDS CUSTOM DELTA 88 - a/c, p/s, p/b, 67,000 mi., runs beautifully, well maint., $1,000. Corliss, Ext. 4438 or 472-1585.

BUICK ENGINE - GS 400, 4 bbl., good buy, make offer; 1969 Chevy 396 hi perf. engine, completely rebuilt, must see. 924-6895.

81 CAPRI WAGON - 9 seater, fully loaded, 27,000 mi., excel. cond., $7,500. 653-9170.

79 HONDA TWIN STAR - excel. cond., perfect first bike, $700. Larry, Ext. 7979 or 261-5030.

76 HONDA CIVIC - CVCC, 4 spd., 32+ mpg, am radio, excel. commuter car, $1,850. Ext. 2198 or 744-4662.

79 HONDA MOTORCYLE - CM400T, 2,000 mi., garaged, must sell, $1,000. Ext. 7125.

77 SHASTA TRAVEL TRAILER - 20.5', sleeps 6, rear bath w/full-size tub, new awning, antenna, spare tire, new upholstery, shades, asking $5,000. 981-9584 eves.

68 BUICK - Special wagon, 350 V-8, auto, it runs, $250. Lloyd, Ext. 3381.

75 TRIUMPH - TR6, good cond., $2,700. Ext. 5053 or 472-1735 after 6 p.m.

76 FORD BRONCO - 4 WD, 18,000 orig. mi., V-8 302, 3 spd., excel., $4,000 firm. Ext. 7130 or 929-8323.

81 CHEVETTE - diesel, 8,000 mi., p/s, p/b, a/t, GM warranty, under $5,000. Gary, Ext. 4113 or 928-0107.

73 MERCURY MARQUIS - wagon, V-8, rebuilt trans., air shocks, H.D. cooling, IV hitch, 120K, runs good, $600. John, Ext. 3675 or 924-3528.

74 MONTE CARLO - am/fm casette stereo, new paint, good cond., $1,900. Sharon, Ext. 7008 or 722-8019.

76 AMC PACER - auto., a/c, p/b, p/s, average mileage, good cond., $1,600. Robert, Ext. 4768 or 3030.

70 PONTIAC LEMANS - 71 motor, completely rebuilt, 400 cam, B&M shift kit, 35,000 mi., stereo, headers, runs mint, needs paint. Ext. 3174 or 473-7071.

70 PONTIAC FIREBIRD - 400, auto., many new parts, new valve job, new trans., good cond. 286-1882.

72 MERCURY - MX Brougham, 351, Cleveland eng., excel. running cond, new tires, $750. 286-0505 after 5:30 p.m.

77 CHYSLER NEWPORT - good cond., best offer. Rich, Ext. 4363 or 924-7238 eves.

68 VW KARMEN GHIA - runs great, looks terrible, $175; '68 VW engine, not running, 1500cc, $40. Dan, Ext. 5038.
TRAILER - 1 ton utility, 6' wide x 7' long, $650 or best offer. Bob, Ext. 2957 or 878-4556.

77 FORD GRANADA - 2 dr., 6 cyl., a/c, p/s, p/b, new tires & brakes, exhaust system suspension, $2,500. Ext. 4391 or 3031.

71 COUGAR - excel., 351, a/t, p/s, a/c, snows, dk. green, $1,595. Ext. 5141 or 567-3923 after 6 p.m.

79 MAZDA - 626, 2D/SC, excel. cond., 5 spd., met. blue, rust-proof, 30-35 mpg, $4,750. Larry, Ext. 4107 or 472-0721.

73 AMC GREMLIN - 3 spd., good cond., sunroof, $500. 654-2452.

Boats & Marine Supplies

73 HERESHOFF CAT BOAT - 18', fully equip., 1976 outboard, excel. cond. 286-1024.

82 HIGHLANDER GALV. TRAILER - 1975 Sears 12' V-bottom alum. boat, 6 HP Merc. motor, anchor, oars, $650 firm. 281-1840.

76 LIBERTY - 20' Bayliner, 130 Volvo I/O, cabin, trailer, extras. John, 541-4792.

14' DURATECH ALUMINUM BOAT - 18 HP, Evinrude, 3 gas tanks, trailer, extras, very good cond., $750 firm. Bill S., Ext. 3848 or 585-2693.

14' RUNABOUT - MFG, 25 HP, Evinrude, $600. Ron, Ext. 7989 or 289-1003.

ZINCS - shaft collars, rudder buttons, outdrive zincs, Merc. OMC, etc. Ext. 4664.

24' SAILBOAT - selfrighting positive flotation keel type, wood sloop w/trailer, $2,500. Jerry, Ext. 2934 or 744-2816.

Miscellaneous

ANTIQUE VISE - excel. cond., also old wood planes. Tony Russo, 732-3338.

SNOWMOBILE - Ski-D00, 340 TNT, 4 yrs. old, excel. cond., $1,000. 744-0471.

BEDROOM SET - white provincial, twin bed, double dresser, nightstand, $150; maple rocker, $25, excel. 286-1097.

TYPEWRITER - 1982 Smith Corona, 2200 Caronamatic, elite type, portable, asking, $350. Ext. 3644 or 929-8143.

BACKPACK - 24"x15"x8" bag on 14-1/2"x34" magnesium alloy frame, $30. Ray, Ext. 7509 or 924-0569.

CASSETTE RECORDER/TV MONITOR - Sinclair, 2x81, 16K RAM, $125. Ext. 3840.

FIREWOOD - 3/4 cord, $45, you-pick-up. 744-9832.

TICKETS - (2), N.Y. Philharmonic, March 29, mid-orchetra, Janacek "From the House of the Dead," $20/ea. Mike, Ext. 4414.

MINK STOLE - natural, pastel, excel. cond., $300. 289-0413.

8-TRACK PLAYER - Panasonic; portable b&w TV. Ext. 2950.

FLOPPY DISK DRIVES - CDC model 96 TPI, brand new, $150. 289-5704 after 5.

CANOPY BED FRAME - white, good cond., $50, Ext. 2964.

SILVERWARE - child's silver plated, 6 piece, $25; sterling silver set of 8, $1,250. 475-0144 after 6 p.m.

CAR SEAT - crib; play pen; sofa; dining table and other household items. 924-6139 after 5 p.m.

LOVESEATS - (2), loose pillow back, custom made, excel. cond., $115/ea. 473-8637 after 6.

LEVI'S JEANS - brand new, 30W/36L, $12. Betty, Ext. 3566.

SOFA BED - sturdy construction, good cond., $35. Ext. 2529.

BICYCLE - Peugeot PX-10 531, Reynolds tubing, make offer; fly fishing equip., rods, reels, etc.; gear reducer, 6:1, heavy duty cast iron housing, ball bearings, 3/4 shaft, 1 in. shaft, make offer. 924-6895.

SINGER SEWING MACHINE - $75; step stool, $20; bookcase/headboard, $25; quartz heater, $30; new toaster oven, $45; 2 table lamps, $25/ea.; elec. knife, $20. 744-6874.

G.E. FREEZER - 19 cu. ft., excel. cond., 8 yrs. old, $100. Ext. 2611 or 751-4098.

DENIM JACKET - w/picture of Jim Morrison painted on back. Rose, 774-5069.

SANYO STEREO SYSTEM - receiver, turntable, 8-track player, excel. cond., $100. Rick, Ext. 2907.

WOMAN'S BICYCLE - 10 spd., Atala Corsa, used about ten times, $75. Anita, Ext. 2346.

CHROME TOWING MIRRORS - fender mount, $10. John, Ext. 3675 or 924-3528.

LIVING ROOM SET - sofa, 2 chairs, ottoman, $250; dinette set w/4 chairs, $75; executive office chair, $65, all excel. cond. Ext. 2752.

G.E. WASHING MACHINE - good cond., $35. AT9-1755.

HISTORICAL BOOK - take a stroll through old E. Moriches with historical book prepared to celebrate upcoming Suffolk Co. tercentenary, donation $ to E. Moriches School. Jim, Ext. 4030 or 878-2484.

5TH WHEEL TRAILER - 77 Kountry Aire, 35', loaded, like new. 589-6151 after 6 p.m.

SOFABED - clean, $20; portable typewriter, good cond., $20; china closet, glass in door only, wood, late 30's, $65. 878-6637.

GRAY FOX - mounted in natural pose on log, $125 firm; Yamaha FG 331 guitar, 6 steel string w/case, excel. cond., $85. Bob, Ext. 3354.

SPACE HEATER - Sears natural gas, 75,000 BTU, 2 blowers, excel. cond., $175. Hugh, Ext. 4669 or 924-3522 after 6 p.m.

BOY'S ICE SKATES - Canadian Flyer, size 5, black figure, good cond., $8. 289-1754.

STEEL DESK - Century, $250; Kenwood receiver, $125; Kent classical guitar, $60; kerosene heater, RK100S, $75; men's bike, $60. 924-4250.

DINING ROOM TABLE - walnut color, Danish, extendable, extra board, 57x40, $50 firm. Cesar, Ext. 4077.

MAPLE SYRUP - from my family's VT farm, $22 gal., $12 half gal., $7 qt. P. Wanderer, Ext. 7687.

HOME COMPUTER - Atari 400, Basic, Spanish, Pac-Man, Centipede, 410 cassette recorder, $250. Ext. 7608.

G.E. REF/FREEZER - 18.8 cu. ft., no-frost, side-by-side, white w/ice maker, you pick up, $350. 744-9832.

MOVING - furniture, appliances, lawn sweeper, pool table, many other items. Ext. 7727 or 929-4631.

MAGAZINES - Life Library of Photography, complete, $35. Irv Meyer, 929-4326.

ELECTRIC CHAIN SAW - $40; Tensor desk lamp, $30; desk top phone, $20; ladies bike, $150; crock watcher, $25; assorted house plants. 924-4250.

HOT WATER HEATER - 30 gal., propane gas, $15. Ron, Ext. 7989 or 289-1003.

RADIAL ARM SAW - Sears 10", 1 yr. old w/3 blades, $300. Bob, Ext. 2957 or 878-4556.

19" COLOR TV - Philco, $95, stereo cassette, am/fm/SW1,2, $110; boy's bike, 24", 3 spd., $55, girl's bike, $10. Ext. 4391 or 3031.

OPERA TICKETS - (2), April 1st, Parsifal, 7 p.m., $32.50 ea. 928-0281 eves.

POWER AMP - MacIntosh 2300; Crown DC300, DBX1100 boombox; DBX-3BX expanded rack mount; Tapco mixer, more. 588-0567.

FIREWOOD - full cords, 4'x4'x8', $115 delivered. 467-8976.

GUITAR - Martin, D-35, approx. 10 yrs. old, excel. tone and cond., hard shell case, best offer. Fred Usack, Ext. 4798.

G.E. REFRIGERATOR - 17 cu. ft., $250; G.E. elec. dryer, heavy duty, good cond., $150. 878-8008 after 3:00 p.m.

19" COLOR TV - Sharp, 3 yrs. old, $80. Ext. 3029 or 3883.

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 Sale

RIDGE - one acre building plot, fully wooded, established residential area, min. from Lab, $13,900, w/short term mort. 924-3236.

E. PATCHOGUE - Cape Cod on 1/3 acre, 3 bdrms., full basement, garage, walk to bay and marina, low taxes, $60,000, no brokers. 289-7858 after 6 p.m.

BAYPORT - small authentic colonial, move in cond., includes all major appl., drapes, fixtures & some carpeting, 2-car garage, convenient to schools, shopping, lows 100's. 472-2633.

STONY BROOK - 4 bdrm. Colonial, 2-1/2 baths, 2 car garage, f/p, 10 min. to SUNY, excel. neighborhood, 3 Village schools, $89,900. 689-9633.

For Rent

STONY BROOK - 4 bdrm. colonial, 2-car garage, 2-1/2 bath, 3-Village school district, mint cond., avail. 4/1/83. Ext. 2611 or 751-4098 after 5 p.m.

CORAM - large room in clean spacious home, pvt. ent., fireplace, female pref., working or serious student, refs. req., $60/wk. 736-5393 eves.

STONY BROOK - 6 rm. house, porch, f/p, water view. 928-8522 after 6:00 p.m.

LAKE RONKONKOMA - 2 bdrm. house, minutes to SUNY, Smithaven, 20 min. to Lab, $400 mo. JU8-1889.

NORTH PATCHOGUE - studio apt., singles only, no pets, furnished, cable hook up, w/w carpet, 15 min. to Lab. Carol, 289-3917 after 6 p.m.

LAKE PANAMOKA (RIDGE) - 2 bdrm., eik, d/r, l/r, f/p, attached garage, 4 mo. lease, may be extended. Ext. 4572/163 or 265-0163 after 5:30 p.m.

STONY BROOK - 2-3 bdrm., l/r, d/r, eik, full basement, f/p, walk to Stony Brook. 751-2835 after 6 p.m.

Car Pools

BABYLON/WEST ISLIP - one or two drivers needed for 4-person car pool. Ext. 2500.

RONKONKOMA - driver to join 3 person pool, LIE exits 59, 60 & 61. Victor, Ext. 2395.

Lost & Found

AMPEREX P.M. TUBES - (10), delivered to Bldg. 510 on 1/26/83, property of Brown Univ. Notify E. Bailey, Ext. 3712, Bldg. 510.

Free

COLOR TV - 25" Sylvania, needs work. Ext. 2395.

UPRIGHT PIANO - old, but in fair cond., yours for the moving. Ext. 4092.

Wanted

INFANT'S OUTDOOR SWING - Little Tykes toddler pool, covered sandbox, Baby Tenda float for pool. Ken, Ext. 4421 or 744-0722.

ANY UNION MEMBERS - (2230), interested in playing softball. Peter Eterno, Ext. 4167 between 12-12:30.

RABBIT - male, red satin, must be young and breedable. 924-8522 after 6.

SUMMER RENTAL - 2-3 bdrm. house, furn., close to beach, June-Aug., guest scientist and family. Ext. 7114.

BABYSITTER - part time, on weekdays, in our house or yours. Ext. 3181 eves.

HOUSE TO RENT - Bellport Village or Brookhaven Hamlet. Ext. 5055 or 286-0919.

TIRES - E78-14 reg. or snow. Ext. 2500.

HOUSEMATE - share house, 4 bdrm., 3 baths, 20 min. to Lab, washer/dryer, dishwasher, sundeck, $164/mo. & 1/3 util. Ext. 2521 or 928-8379.

SINGLES - to form new BERA club. Why not join us tonight at the Spring Fling? We will have a table there. I will be at the Cafeteria today selling tickets. For more info. call Millie, Ext. 2979.

MALE TEDDY BEAR HAMSTER - to mate with my female, must be apricot color and 1-2 yrs. old. Donna, 744-8063 days.

TO RENT - 1-2 bdrm. house or apt., young couple, April or May 1st. Joan, Ext. 2922 or 924-5816.

NEW MEMBERS - for existing babysitting pool in Shoreham-Wading River area. Pat, 929-6758.

MUSHROOM ANCHOR - Min., 150 lbs. for mooring a 22' boat. Tim, 588-0154 eves.

RIM - 12", four holes, 100MM bolt circle, 1980 Honda Civic CVCC. Ext. 2050.

TO RENT - house or apt., starting April 1 for about 5 months, North Shore preferred. Ext. 7727 or 929-4631.

PLAYPEN - will pay $15 for playpen in good cond. Henry, Ext. 2668.

SAILBOAT - fiberglass, 22' to 26'. Ken, Ext. 7959 or 581-1169.

EXPERIENCED BABYSITTER - for young infant, on-site or transportation to my house. 928-1831.

Services

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

LICENSED ELECTRICIAN - reas. rates., no job too small, spec. in service changes, alum. wire & pigtailing, residential & commercial. 744-0722.

ELECTROLYSIS - permanent removal of unwanted hair, physician trained, latest method, licensed, free consultation. 331-4768.

CARPETS INSTALLED - repaired, quick dependable service, free estimates. Jim, 821-0187 after 5 p.m.

WORD PROCESSING - learn in 10 easy lessons, hands on instruction, sample lesson, 1 on 1 instructor. Janie, 698-2710.

HOUSE PAINTER - interior/exterior, profess., insured, BNL refs. Bob, 289-7657 after 6 p.m.

WATCH REPAIR - small high quality clocks, auto clocks. George Hrabak, Ext. 3536.

GENERAL CONTRACTOR - carpenter, extensions, dormers, garage conversions, basements, decks, kitchens, licensed. Jim, 698-2501.

PLUMBING AND HEATING - Lab discount. John, 654-8189.

POTTERY CLASSES - learn the technique of the potter's wheel, day & evening classes, individual or group lessons, Lab discount. Chris, 744-7585 days or 821-1962 eves.

ASPHALT PAVING & SEALING - Bob, 475-4382.

PAINTING - interior, exterior, panelling, wallpaper, free estimates, references. John, 924-5012.

EASTER BUNNY CHOCOLATES - beat the rush, order now, home made, samples. Ken, Ext. 5042 or Carol, 289-3917 after 6:00 p.m.

CHILD CARE - North Patchogue, for working parents, fenced backyard. Carol, 289-3917.

CHOCOLATES - homemade, milk, dark, or white, Easter orders now being taken. Barbara, 399-4929.

HOUSECLEANER - seeking work in South Shore area, experienced, thorough & reliable. Andrea, 286-1489.

TAXES - prepared by tax consultant, your home or mine, reasonable. John, Ext. 3571 or 732-2472.

TOURS - Washington, D.C., 4/15-4/17, transportation, all touring, 2 breakfasts, gratuities, baggage handling & taxes included, $159. Joe, Ext. 7765 or 399-1868.

PROFESSIONAL PAINTING - reasonable rates. Tom or John, 878-4599.

SEWING ALTERATIONS - reasonable rates. Sharon, 878-4599.

AUTO MECHANIC - reasonable, your place or mine. Joe, 744-3509.

EXTERMINATING - licensed men, guaranteed in writing, over 15 yrs. experience, free estimates, Lab discount. 281-5445.

TRUCK FOR HIRE - no job too small, Lab discount. 281-5445.

WATERPROOFING - all work guaranteed in writing, over 15 yrs. experience, free estimates, Lab discount. 281-5445.

HOUSE INSPECTIONS - by a licensed professional engineer. John, 473-8338 after 6 p.m.

EXERCISE CLASSES - Monday & Wednesday, day or evening, special rates 6 or more. 475-8097.

VW PARTS - full line of orig. equip. replacement parts & accessories at wholesale prices, complete machine shop service for VW. Augie, Ext. 2419 or 325-0594 eves.

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
☐ Services
☐ 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).

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