BROOKHAVEN BULLETIN
Vol. 43 - No. 5 February 3, 1989
BROOKHAVEN NATIONAL LABORATORY

Greenhouse Effect, Brazilian Smog — Study in Rio Fuels Speculation

Brazil is the world's greatest producer of sugar cane — but the bulk of the sugar doesn't sweeten cups of coffee. Over 60 percent of the yearly crop is refined into ethanol and used to fuel automobiles, replacing millions of dollars of energy imports.

Now, after thirteen years of government encouragement of this use of alternate fuel, the question arises: Is ethanol a culprit in smog formation and the escalation of the so-called greenhouse effect?

This question, and others pertaining to it, were provoked by a September 1988 *Environmental Science & Technology* article. It summarized an atmospheric chemistry study in Rio de Janeiro, where ethanol and ethanol-containing fuels were found to produce potentially hazardous pollutants. These include gases that are believed to contribute to the greenhouse effect, in which solar heat is trapped in the atmosphere and increases global temperatures.

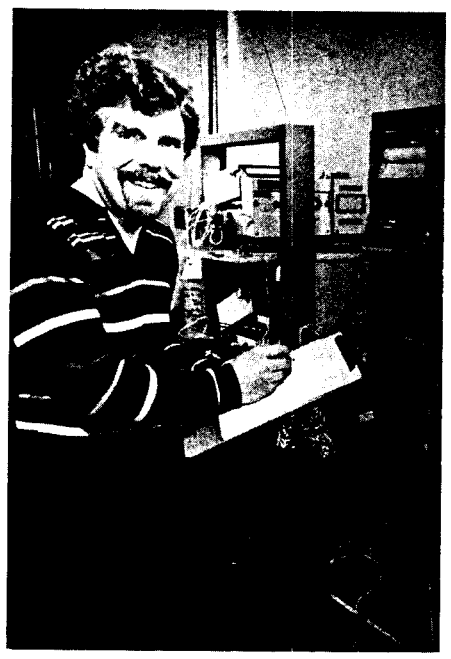
But to take these results as a "red flag" warning on the use of ethanol or other gasohol fuels is premature, said Roger Tanner, lead author of the article. Tanner, an environmental chemist in the Environmental Chemistry Division of BNL's Department of Applied Science, conducted the 1985 field study with coauthors Antonio Miguel and Jailson de Andrade, from the Pontifical Catholic University of Rio de Janeiro; and Jeffrey Gaffney, then of BNL, and Gerald Streit of Los Alamos National Laboratory (see Brookhaven Bulletin, October 11, 1985).

Said Tanner, "This study was preliminary. More extensive measurements are needed before a full interpretation of the data can be made."

Environmental Concerns

The research project in Rio was supported by the Brazilian National Research Council, which is concerned about sources of gaseous and particulate pollution in Brazilian cities. Due to industrial development and the government's inaction since the 1950's, Brazilian pollution had been allowed to increase unchecked.

Photos on this page by Roger Stoutenburgh.



Roger Tanner checks out instruments he plans to take on the proposed air characterization study project in Brazil. He is in the DAS laboratory of his Environmental Chemistry Division colleague James Roberts, with whom Tanner collaborated on the design of the instruments used in the Brazilian studies. The finely tuned equipment was developed to measure parts per billion levels of PAN and nitrogen oxides.

The resulting study has been of considerable interest to many in other countries, including the U.S., where alcohol-based fuels are also being tried out as an alternative to gasoline, to reduce carbon-monoxide emissions.

When Ethanol Fuel Burns

The researchers found three main points of interest.

First, in aerosol carbon samples from Rio de Janeiro, the ratio of stable isotopes of carbon-13 and carbon-12 due to contributions from sugar cane-derived ethanol fuels was only marginally greater than would be the case if only fossil fuels and woody plants were being burned. So, it appears that fossil fuels — particularly as used in diesel vehicles — are still the principal source of aerosol carbon.

Second, the levels of acetaldehyde, released when ethanol fuel burns, were elevated to 50 parts per billion (ppb) at an urban site. Acetaldehyde, in the presence of nitrogen oxides and sunlight — and Rio gets the sun — produces a toxic gas called peroxyacetyl nitrate, or PAN. In quite modest levels of 10-100 ppb, PAN can kill vegetation and cause eye irritation in human beings.

Third, the amount of PAN found was a significant component of smog in Rio and, if computer-model extrapolations are correct, might form dangerous levels in the urban plume as well as contribute to the greenhouse effect.

Repercussions Abroad

The situation in Brazil does not necessarily apply to other countries.

Explained Tanner, "Because of different economic priorities in Brazil, the high-efficiency catalytic converters that control most vehicular emissions in the U.S. are not required. In this country, apart from the start-up period before the catalyst is warm enough to be effective, alcohol fuel emissions of aldehydes — including acetaldehyde — into the atmosphere are probably no higher than for gasoline fuel."

Tanner warned, however, that these fuels may produce some other species that can contribute to increased atmospheric oxidants and should be investigated.

Also, Tanner felt that, although potentially harmful PAN concentrations were measured at up to five ppb at an urban site in Rio de Janeiro, this was still comparatively low and could be controlled. On a bad day in Los Angeles, up to 30 ppb of PAN is not unusual, he said.

Tanner's greatest concern, especially in view of world interest in the research project, is to make clear that his group's results are still preliminary.

"Mainly due to funding constraints, we could study only one urban area," he said. "Also, we lacked measurements of certain key species, such as some nitrogen compounds and ozone."

The missing data will soon be available. In July, Tanner hopes to return to Brazil, invited by the University of Sao Paulo and funded by the Brazilian government, to participate in the 1989 Sao Paulo Air Characterization Study.

Extending the Research

In this extension of the original pollutant research in Rio, scientists from Brazil, Germany and the U.S. will measure a larger group of gases and aerosols in the Sao Paulo area. Tanner, equipped with the BNL-developed instruments necessary for the task, will measure aerosol carbon, PAN and related organic nitrates, nitric acid, total nitrogen oxides and, possibly, hydrogen peroxide.

"There are two main issues that these additional data can address," said Tanner. "First, by studying components of smog in this area and how they are formed, we may find out enough to confirm the validity of smog models in predicting secondary products under altered emission patterns.

"The second issue is, are people being exposed to a hazardous level of emissions from ethanol fuels, and do these emissions contribute to dangerously high levels of secondary products such as PAN?" continued Tanner. "If so, then this is a matter of concern for the environmental protection agencies in Brazil, and may be relevant in considering alcohol-fuel usage in the U.S. as well." — Liz Seubert

Coming Up

Peter Takacs, a physicist in the Instrumentation Division, will give the 250th Brookhaven Lecture on Wednesday, February 15. His talk on "Metrology of X-Ray Optics: Journey to Incredible Precision" will begin at 4 p.m. in Berkner Hall.

Sparring With the Sea

In this photo, retiree Cy Fink (left) is not climbing out of a time capsule — though both he and the Air/Sea-Interaction (A/S-I) buoy encapsulating him have come out of BNL's scientific past to serve the present research needs of Charles Flagg (right), a scientist in the Department of Applied Science.

After the spar-type buoy was retired in 1980, the top section of the A/S-I was put on display at BNL's Exhibit Center — until last September. At that time, the top was moved to Bldg. 820, where it was reunited with the buoy's three other sections.

Fink had retired from the Lab in 1986 as a senior technical associate, after 28 years in the Department of Applied Science — during which time he was one of three who designed and fabricated the buoy. So, last October, Flagg called Fink out of retirement to refurbish the buoy for Flagg's upcoming collaboration with the Office of Naval Research.

To be held offshore of Wallops Island, Virginia, from fall 1990 to spring 1991, the Navy's Surface-Wave Dynamics Experiment (SWADE) will study how waves develop over the continental shelf under changing wind conditions during winter storms.

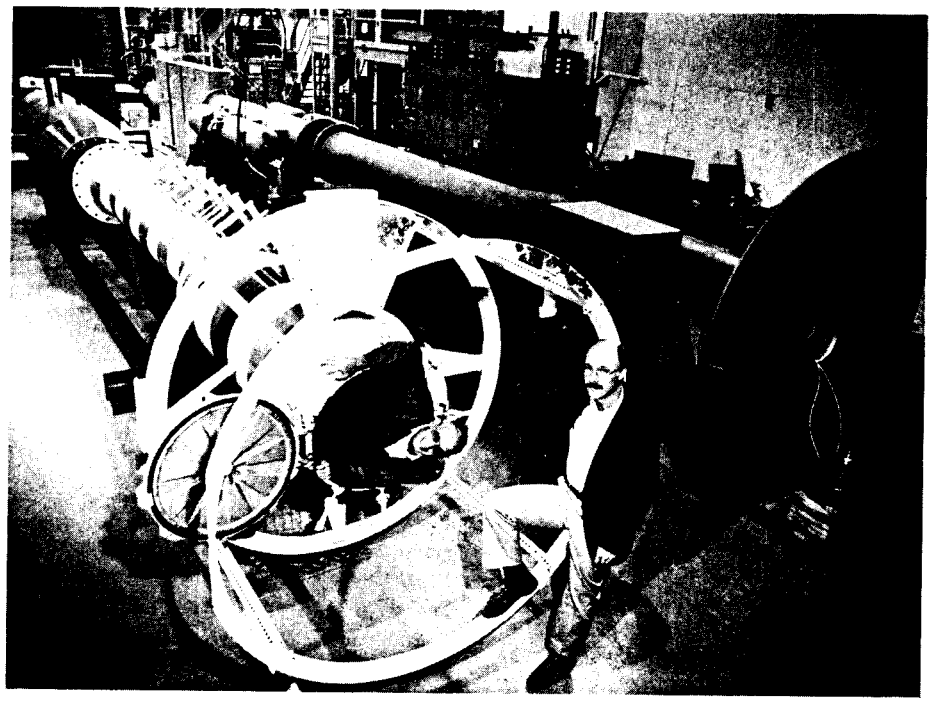
As an oceanographer, Flagg is interested in the near-surface layers of water at the edge of the continental shelf — where there is a sudden transition in water characteristics from those of the shelf to those of of the western Atlantic.

"The SWADE team and I have a symbiotic relationship — I have the buoy they need to do their surface-wave experiments, and they will have the air-sea interaction parameters I will need to perform my water-column analysis," explains Flagg.

Seventy-five feet long, not including an extra 40-feet of meteorological tower, BNL's A/S-I is the largest spar-type research buoy on the east coast. Built in 1978 to study air-sea interactions, it was deployed for six months in the Atlantic south of Long Island in 30 meters of water and then retired.

In air, A/S-I weighs 17,000 pounds. After taking on water as ballast, it displaces 22,000 pounds of water and flips upright into its working position. Having a small cross section in the water, BNL's spar sits in a relatively stationary position as the sea rises and falls about it.

A/S-I has four sections: In the picture, Fink positioned himself in the orange-and-white striped top section that will house SWADE's electronic instrumentation, which should be installed and tested by this fall. It will include a data-acquisition system able to record 50 channels of data, to store about 500 megabytes and to transmit a small sampling ashore via satellite. Power to run the system will come from six solar panels to be mounted on the buoy.



Standing between the second and third sections is Plumber Frank Ferraro (background), who installed the ballasting system in the third section, which uses compressed air to control the valves used to force the water ballast out of the buoy and float it horizontally again for retrieval. The bottom section, behind Flagg, has a large damper plate to reduce the buoy's motion in rough water.

— Marsha Belford

24-Hour Shopping at the NSLS Stockroom

At 11 p.m. on a Saturday night, what is a lonely beam-line user in want of a widget for his experiment at the National Synchrotron Light Source (NSLS) to do?

Head for the new 24-hour NSLS stockroom, the latest of six satellite stockrooms at BNL. Staffed during the weekday, 8:30 a.m.-5 p.m., by Storeskeepers Skip Fenner and Thomas Reisig, the new NSLS stockroom is monitored electronically at night — thus keeping it open for business at any hour of the day or night, any day of the week.

Located on the east side of Bldg. 725, near beam line X-20 and adjacent to the roll-up door, the new satellite stockroom opened January 3. Designed by Project Engineer Christopher Jung, Plant Engineering, it is the same size as the old NSLS stockroom — 1,200 feet — but it has a bigger inventory — the 2,000 items most requested by NSLS beam-line users.

Motion-activated sensors and a new computer system allow NSLS beam-line users 24-hour access to the stockroom, while enabling the storeskeepers to account for stock purchases and to control inventory.

The development of this accountability and control system was overseen by NSLS Department Administrator Manager William Foyt, NSLS Deputy Department Administrator Manager Frank Terrano and James Desmond, NSLS Assistant Staff Specialist.

So, any night of the week, all a beam-line user in search of an in-stock widget needs to have to gain access to this satellite stockroom is an NSLS badge.

A bar-code reader notes whose badge opened the stockroom door, and a motion-activated camera records who went in. Before leaving, the experimenter scans the bar code of the selected widget, and the computer attached to the scanner bills the researcher's account and adjusts the stockroom's widget inventory.

— Marsha Belford

Roger Stoutenburgh

In the new NSLS stockroom: (from left) Frank Terrano, William Foyt, Skip Fenner and Thomas Reisig.

Discount Airfare For Senior Citizens

Many airlines offer discounts to travelers age 62 and older. When making reservations through the BNL Travel Office, please advise office personnel if you are eligible for this discount.

Hospitality News

Kyllikki Valkealahti, a native of Finland, will be the guest speaker at the next Hospitality Committee get-together on Tuesday, February 7, at 9:30 a.m., in the Brookhaven Center. She will discuss the many styles of laces and the history of bobbin laces, and demonstrate some techniques used in making lace.

Spouses of Lab employees and guests are welcome to join us for this presentation. Please come and bring the children. Babysitting will be provided free of charge. Coffee, tea and danish will be served, and juice and cookies will be provided for the children.

Call for Applications For BWIS Scholarship

Brookhaven Women in Science (BWIS) is now accepting applications for the Renate W. Chasman Scholarship for Women. The scholarship was established in 1986 to encourage Long Island women whose educations were interrupted to continue their formal studies in the sciences, engineering or mathematics. It honors the memory of Renate W. Chasman, a noted physicist and accelerator theorist at BNL, who died in 1977.

The scholarship winner will receive a one-time award of $1,000, to be presented in August. Candidates must be U.S. citizens or resident aliens who live in Nassau or Suffolk County. They must be currently enrolled in or have applied to a degree-oriented program at an accredited institution. Their program of study for 1989-90 must be at the junior or senior undergraduate level or first-year graduate level, to be pursued on a half-time or greater basis.

The award will be made directly to the recipient, who will be expected to complete at least two consecutive school terms in good academic standing. An independent scholarship selection committee, made up of three representatives from Long Island industry and colleges, will choose the winner.

The application deadline is June 1. For forms and further information, call Ext. 3336, or write to: Chasman Scholarship Fund, P.O. Box 183, Upton, NY 11973.

Notaries on Site

Sometimes you need to get a document notarized but are not sure where to find a notary on site. Look no more. A poll of the various offices has brought to light a fair number of notaries public, and one may be just around the corner from you. If you know of any notary who has been missed, please call the Bulletin office, Ext. 2345.

Applied Science	
Patricia Fox	179A
Ellen Fredrickson	179A
Betty Pergan	179A
Joan Slavinsky	179A
Associated Universities, Inc.	
Frank Federmann	134A
Computing & Communications	
Muriel Kolomick	515
Director's Office	
Michael Goldman	460
Carole Joyce	460
Carole Kerr	460
Ruth Ann Lutz	460
Donald Robbins	460
DOE Brookhaven Area Office	
Timothy Drawbridge	464
Marvin Laster	464
Joan Shands	464
Management Information Systems	
Katherine Boggi	459
National Synchrotron Light Source	
Jeannette Thiede	725B
Nuclear Energy	
Geraldine Callister	197C
Lois Marascia	197C
Personnel	
Donna Dowling	185
Renee Flack	185A
Kay Dellimore	185
Photography & Graphic Arts	
Dolores Janes	197B
Physics	
Sandra Sanchez	510A
Robin Scarola	510A
Melvine Turner	510A
Safety & Environmental Protection	
Susan Carlsen	129A

Arrivals & Departures

Arrivals

John Bullard ..... Plant Eng.
Richard G. Eggert ..... Con. & Proc.
Lawrence W. Kunzig ..... Staff Serv.
James La Mountain ..... DNE
John E. Meade ..... Cent. Shops
Gregory J. Ogeka ..... Dir. Off.
John M. Quigley ..... Plant Eng.
Mohammed G. Sabek ..... DNE
Smita Madhav Sathe ..... NSLS
John H. Sondericker III ..... Physics

Departures

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

David R. Christman ..... Chemistry
Marie A. DeCrombrugghe .... Biology
Donald W. Huszagh ..... DAS
Joseph P. Kenneally ..... Con. & Proc.
Larisa Rudenko ..... Biology
Elizabeth K. Shaw ..... Biology
Yung-Nien Sun ..... Asst. Scientist
Arthur J. Viescas ..... Physics
Jeffery J. Vitkun ..... Accel. Dev.
Clas-Otto J. Wene ..... DAS
Coles J. Williams ..... Plant Eng.

Inside Info

Ernest Warburton, a senior physicist in the Physics Department, has been chosen as an enshrinee in the Hall of Honor of the Fairborn City Schools, Fairborn, Ohio. A 1946 graduate of Fairborn's Bath High School, Warburton is one of seven inductees for 1989. Fairborn City Schools is "hoping to make this annual honor the most prestigious honor awarded in our community. As the list of enshrinees grows, it is our hope that an increasing impact is made on our current student body." The induction ceremony will be held at Fairborn in April.

Note to Employees:
Attendance at lectures, meetings and other special programs held during normal working hours is subject to supervisory concurrence.

On Site

Underground Pipe Installation

Installation of underground piping for the Central Chilled Water Facility will continue in the area of Pennsylvania Street and Cornell Avenue next week.

Work in this area will require the closing of Cornell Avenue between Center and Pennsylvania Streets. Brookhaven Avenue and Pennsylvania Street will be reopened before the closing of Cornell.

Motorists who normally use Cornell Avenue are asked to use Bell and Brookhaven Avenues when possible to reduce the traffic around Center and Pennsylvania Streets. Depending upon the weather, Cornell will be reopened within one to two weeks.

Play It Safe

At present, there is a great deal of construction on site, including trenching, excavation, asbestos removal and building renovation. The Safety and Environmental Protection Division reminds everyone of the potential hazards involved in these operations.

The barriers and signs at these sites are intended to protect us all. So, for your own safety, observe all signs, refrain from entering construction sites and comply with any traffic detours.

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

Going to Travel? Learn the Language

If you are planning to travel in a country where you are not familiar with the language, you may want to register for one of the foreign language minicourses being offered by the State University of New York at Stony Brook.

The two-week series includes courses in Chinese, French, German, Italian, Japanese, Korean, Russian and Spanish taught by native speakers, who will also introduce the country's culture and customs.

The next series will be held at the Stony Brook campus from 6:30-9 p.m., on the following Tuesday and Thursday evenings: February 28, March 2, 7 and 9. An optional fifth session will be held on Friday, March 17, at a restaurant featuring the food of the country.

The class fee is $75 per person with an additional charge for the dinner. A second series of classes will be held in May.

For more information, call Stony Brook's School of Continuing Education, 632-7070.

team safety

The last two weeks of January have brought hard times to the Team Safety Program.

Supply & Material, which had an unblemished record since the start of the progam in July 1988, had two lost-time back injuries: The Central Receiving Team will be in the locker room until April 14, and the Distribution Team will be there until March 29.

The Plant Engineering (PE) Custodial A Team also had a lost-time back injury, which sent them back to the showers until April 19. And PE's Steam Plant Team was laid low by a knee injury, which will keep them sidelined until April 20.

Holy cow! Four lost-time injuries in January! Let's hope that's it for the year.

Still, there was a positive side to January. The Safety & Environmental Protection Division's Fire Group Team became first-time winners on January 24. They joined the program in November and went right through to their goal date without a lost-time injury. The Central Shops Division's Heavy Shop Team became double winners on January 16.

Word in the field is that the Fire Group Team serves gourmet food. The Commissioner will report next week on their claim.

Keep up the safe work.

Volunteers Needed

Males over 18 years old are needed as participants in state-of-the-art medical research involving medical imaging of the brain using either of two techniques: positron emission tomography, commonly called PET, or single photon emission computer tomography, called SPECT. Volunteers will receive a small remuneration. For more information, call Ext. 3672.

C&CD Changes Parity Standard

In response to requests from users, the Computing & Communications Division (C&CD) has begun to phase-in a new standard parity setting in the Ethernet terminal servers and for accessing the IBM 3090. Change of the BNL standard from seven bit even to eight bit, no parity, began on February 1.

For accessing the IBM 3090, the old standard parity of seven bit even can be reached on PACX class 71. PACX class 22 is set up for eight-bit, no parity access to the IBM 3090.

Users can obtain information on setting up terminals and emulator software for eight-bit usage by typing PAR on the cluster and in the file PARITY SETTINGS on the 3090.

The standard parity setting change was requested by on-site computer users, as well as those who reach BNL via the X.25 backbone. In the long run, the change should be advantageous to BNL users, as it is consistent with usage outside the Lab.

BERA Bus Trip To Atlantic City

BERA plans to return to Atlantic City on Saturday, March 25, with a trip to Trump Castle. The trip will leave the Brookhaven Center at 9 a.m., returning approximately 11 p.m.

The trip will cost $22.50 per person, but Trump Castle will return $17.50 in coins and gives you a $5 deferred voucher — so the trip will actually cost nothing. Because these trips continue to be popular, BERA has scheduled a future trip to the same casino, so the deferred voucher can be redeemed there soon.

Sign up begins today. Paid reservations will be taken on a first-come, first-served basis at the BERA Sales Office in Berkner Hall, from 9 a.m. to 2 p.m., Monday to Friday. No refunds will be made unless someone else wishes to purchase the ticket. A waiting list will be kept. For more information, call Louisa Barone, Ext. 3347, Rosalie Piccione, Ext. 3160, or M. Kay Dellimore, Ext. 2873.

Bowling

Red/Green League

R. Mulderig bowled a 226, J. Morris 224/203/200. 627 scratch series, L. Jacobson 219, A. Warkentien 214, J. Roesler 207, H. Arnesen 206, J. Mayeski 203.

White League

Joyce Pinelli had a 221, Joe Sheehan 206, Irene Sperry 187.

Purple League

Caryl MacDougall rolled a 196, Marsha Kipperman 193/190, Jeannette Thiede 180, Frank Dusek converted the 2/7/10 split.

BROOKHAVEN BULLETIN

Published weekly
by the Public Affairs Office
for the employees of
BROOKHAVEN NATIONAL LABORATORY

ANITA COHEN, Editor
MARSHA BELFORD, Assistant Editor
LIZ SEUBERT, Reporter

35 Brookhaven Ave., Upton, N.Y. 11973
(516)282-2345

Black History Month Events Coming Up: Gospel; Talk on Apartheid; Prose and Poetry

This week, the Afro-American Culture Club will sponsor three events in celebration of Black History month.

Gospel Extravaganza

A few tickets are still available for tomorrow night's Gospel Extravaganza, featuring the Second Baptist Church Mass Choir from Rahway, New Jersey; the East End Community Choir from eastern Long Island; the Youth Choir of Faith Baptist Church from Coram, New York; and, as a soloist, Frances Ligon of BNL's Affirmative Action Office.

Michelle Cummings, Ext. 2077; April Donegain, Ext. 2459; George Grigg, Ext. 5185; Frances Ligon, Ext. 3709; and Rosa Palmore, Ext. 2882, are selling advance tickets: $8 for adults, $5 for children; for the limited number of remaining tickets, door prices are $10 for adults, $7 for children. The show starts at 7 p.m. in Berkner Hall.

South Africa and Apartheid

Randall Robinson

Randall Robinson has been called "a charismatic speaker with the power of conviction." He will bring that conviction to BNL on Monday, February 6, to deliver a lecture on "South Africa and Apartheid: Let's Talk About Justice."

Robinson, the Executive Director of Trans-Africa, a black-American lobby for Africa and the Caribbean, has become the U.S.'s most visible spokesman against South Africa's policy of apartheid. Robinson advocates human rights for all South Africans and works to achieve a more progressive U.S. foreign policy toward the nations of Africa and the Caribbean.

Robinson was graduated from Harvard Law School and became active in the Southern African Relief Fund. After working in Tanzania as a Ford Foundation Fellow, he practiced public interest law in Boston for several years. In 1975, he moved to Washington, working as an aide to representatives of the Democratic party.

Robinson has had articles published in *The New York Times, The Boston Globe, The Washington Post, Ebony, Black Scholar* and *Essence*. His awards and honors include the Martin Luther King Jr. Distinguished Service Award, the Johnson Publishing Person of the Week, the Omega Psi Phi Fraternity Citizen of the Year Award, an honorary doctorate from Columbia College in Chicago, the Martin Luther King Jr. Humanitarian Award and the Congressional Black Caucus Humanitarian Award.

Robinson's talk begins at 7 p.m., on February 6, in Berkner Hall. Admission is free.

One-Man Show — A Kind of Magic

Saturday, February 11, is the day that John S. Patterson will magically combine acting, song, dance and mime to turn poetry into theater, leading the audience on a thoughtful and exhilarating journey through the American struggle for democracy, as portrayed in three generations of prose and poetry by Afro-Americans.

Entitled "When the Colored Band Goes Marchin'," Patterson's one-man show demonstrates the power and eloquence of the work of Paul Laurence Dunbar and Frederick Douglass in the 19th century, continuing into the 20th century with such others as Langston Hughes, the "Harlem Renaissance" group, James Baldwin and Martin Luther King Jr.

John S. Patterson

As a child in the 1940's, Patterson began performing on local radio shows in Syracuse, New York, where he grew up. After earning college degrees in French and theater, he taught French in the U.S. and Ghana, then taught acting and directed student productions at Livingston College of Rutgers University. During this time, he also worked as theater critic for *The Villager* and other small New York City publications.

The current one-man show follows Patterson's successful "The Dream Keeper Speaks: The World of Langston Hughes," a presentation seen by over 10,000 people across the U.S. In 1986, Patterson established The Oral Archives Project to foster stage presentation of black literature derived from the oral tradition. He has created other shows, such as "Hoodoo Revelations: A Conjure of Black Prose and Poetry," and is also active in politics.

The show starts at 7 p.m., Saturday, February 11, at Berkner Hall. Admission is free.

Swimmers, Take Your Mark . . .

GO! to the second BNL swim meet to be held at the Lab pool since 1947. Come set a 33.3-yard pool personal best, or even an age-group or BNL pool record in any of the seven scheduled events:

#	Event
1	100-yard freestyle
2	100-yard backstroke
3	100-yard breaststroke
4	200-yard backstroke
5	four-lap individual medley
6	200-yard freestyle
7	two laps open: your choice of freestyle, butterfly, backstroke or breaststroke

On Saturday, February 11, the BNL Swim Club's swimming competition will be open to all adult BERA swimmers. Entries will be accepted on the deck during warm-up.

Warm-up will begin at 11 a.m., and the meet will get under way at 11:30 a.m. With events every 10-15 minutes, the competition should be over by 1 p.m.

At the pool, look for the list of women's and men's age-group and pool records set at the last Swim Club meet, in January 1987 — and get ready to set one of your own. For more information, contact meet director Wlodek Guryn, Ext. 3878, or Swim Club President Paul Michael, Ext. 2264.

Basketball

Week of January 23

First Game

Runaways	64	Knicks	58
B. Doty	16	G. Thompson	17
G. Shepherd	13	F. Thompson	15
J. Desmond	12	L. Walcott	15
S. Gilbert	9	T. McGill	11
R. Moran	9		
P. Johnson	3		
R. Mease	2		

Three-point shots: Desmond, Moran, Thompson (3), Walcott (4)

Second Game

Longshots	66	Celtics	49
T. Mayo	19	M. Colon	15
R. Berscak	17	P. Browne	9
F. Malone	11	C. Edwards	9
G. Mack	4	D. Hogard	8
A. Ratti	4	J. Gaeta	6
J. Wells	4	N. Schowski	2
J. Winger	4		
S. Alonzo	3		

Three-point shots: Berscak, Browne

Third Game

Penetrators	55	Light Source	48
G. Dunmore	12	P. Ratzke	10
R. Tonklin	12	K. D'Amico	8
T. Abbott	10	M. Lawrence	8
R. Domenech	7	M. Fulkersen	7
R. Jackson	7	J. Garrison	6
F. Ligon	7	L. Jackson	5
		R. Church	2
		J. Flannagan	2

Three-point shots: Domenech, Garrison (2), Jackson

Standings — As of February 2

	W-L
Longshots	4-0
Runaways	4-0
Knicks	2-2
Celtics	1-3
Penetrators	1-3
Light Source	0-4

Volleyball

Standings — Week of January 23

League I		League II	
Upfagrabs	31-5	Fossils	29-7
Dinkers	26-10	Set-Ups	27-9
Xrayted	23-13	Krush	24-12
Cannonballs	19-17	Nuts & Bolts	24-12
Phoubars	6-30	Ziegfield Vollies	12-24
Netminders	3-33	Slammers	11-25
		Upton-Ups	9-27
		Chunga's Revenge	8-28

League III		Open League	
Frazzled	36-3	Dig Your Lips	28-8
MISfits	25-14	Phoenix	28-8
High Volley'em	24-15	Meriem's Team	27-6
Sourcerers	21-18	Tom's Mutants	21-15
Printouts	20-19	Magnum	20-13
Spikes	15-24	Vollies	15-21
Good Timers	8-31	Rowdy Radicals	9-27
Renegades	7-32	Phi Chu	8-25
		Constables	0-33

Tennis Party

The BERA Tennis Committee is sponsoring a Tennis Party on Saturday, March 4, and invites Lab players and their guests to participate. It will be held at the Miller Place Racquet Club, from 8 to 11 p.m. The cost of $18 per person includes snacks, wine and beer, and balls. Attendance is limited to 36 players; advance registration required. Sign-up at the BERA Sales Office in Berkner Hall begins on February 8. For more information, call Steve Shapiro, Ext. 3822, or Carol Roberts, Ext. 3315.

In Stormy Weather:
Dial 282-INFO

HMO Reps on Site

Representatives of the five Health Maintenance Organizations (HMO) whose services are being offered to active BNL employees as additional health care options will be at Berkner Hall on Wednesday, February 8, 15 and 22, between 11 a.m. and 1:30 p.m., to answer employees' questions about their plans.

Employees are reminded that the deadline for HMO enrollment is February 27, with coverage effective March 1 (not May 1 as indicated in last week's Bulletin). Those wishing to enroll in one of the optional HMO plans must contact Personnel Services, Bldg. 185, Ext. 2877, to obtain the necessary forms.

Cafeteria Menu

Week of February 4

Monday, February 6

Soup: French onion	(cup)	.75
	(bowl)	.95
Spaghetti w/meat sauce & garlic bread		3.10
Spaghetti w/white clam sauce & garlic bread		3.10
Lite-line: Omelet Florentine & veg.		3.00
Hot deli: Monte Cristo sandwich		2.85

Tuesday, February 7

Soup: Beef barley	(cup)	.75
	(bowl)	.95
Turkey w/stuffing & veg.		3.10
Beef macaroni w/cheese & veg.		3.10
Lite-line: Turkey breast & veg.		3.00
Hot deli: Pastrami		2.85

Wednesday, February 8

Soup: Minestrone	(cup)	.75
	(bowl)	.95
London broil w/mushroom gravy & veg.		3.10
Chicken & pasta primavera & veg.		3.10
Lite-line: London broil au jus & veg.		3.10
Hot deli: Ham		2.85

Thursday, February 9

Soup: Turkey noodle	(cup)	.75
	(bowl)	.95
BBQ chicken & veg.		3.10
Beef short rib & veg.		3.10
Lite-line: Broiled chicken & veg.		3.00
Hot deli: Fish & cheese on roll		2.85

Friday, February 10

Soup: Lentil	(cup)	.75
	(bowl)	.95
Baked stuffed fish & veg.		3.10
Beef turnovers & veg.		3.10
Lite-line: Broiled fish & veg.		3.10
Hot deli: Sausage & pepper on roll		2.85

Breakfast Specials

Monday:	French toast & bacon	1.00
Tuesday:	Scrambled eggs & bacon	1.15
Wednesday:	Pancakes & sausage patty	1.10
Thursday:	Western omelet & toast	1.45
Friday:	Egg & bacon on roll	1.10

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.

OPEN RECRUITMENT - Opportunities for Laboratory employees and outside applicants.

3075. SAFETY TRAINING POSITION - Requires a bachelor's degree in a relevant field (advanced degree desirable) and extensive pertinent training experience. Will be responsible for the development and coordination of the Laboratory's safety training programs and activities, and will have supervisory duties for a small support group. Will work with all departments and divisions to identify, develop and implement industrial safety, industrial hygiene and health physics training programs for entire Laboratory population. The ability to obtain and maintain a security clearance is highly desirable. Safety and Environmental Protection Division.

3076. ASSISTANT BUYER POSITION - Requires an AAS in an appropriate field or equivalent experience. Will be responsible for the economical and efficient procurement of various tangible commodities with low monetary value. Coordinates the complete procurement function from requisition to delivery, in accordance with standard Contracts and Procurement operating procedures. (Reposting of Job #3039) Contracts and Procurement Division.

Motor Vehicles & Supplies

87 CAMARO - p/s, p/b, a/c, am/fm cass., red, mint cond., asking $8,500 firm. John, Ext. 3277 or 588-9363.

86 HONDA CIVIC SI - h/b, 5-spd., 50k mi., sunroof, am/fm cass., new tires, muffler, clean in & out, $6,500. Chris, Ext. 2022.

86 RENAULT ENCORE - sporty, 17k mi., 4-spd., stripes, sunroof, am/fm cass., 4 speaker, mint cond., $3,750. 689-7259.

86 VW JETTA GL - gray, a/t, a/c, p/b, p/s, cruise con., portable stereo, 45k mi., excel. cond. Yung, 874-2838.

85 SUZUKI QUADRUNNER - 125 mi., many extras, perfect cond. 878-6074 eves.

85 BUICK REGAL - 37k mi., p/s, p/b, p/w, a/c, velour interior, like new, $6,200. 744-9802.

84 CHEVY PICKUP S10 - 6-cyl., a/t, p/s, p/b, custom canvas, excel. cond., $5,195. Ext. 7686 or 878-0897.

83 CAMARO - red, black int., am/fm, a/c, p/s, p/b, 31k mi., orig. owner, mint cond., $8,000. Audrey, 333-5015.

82 BUICK CENTURY LIMITED - 4-dr., V-6, a/t, a/c, all power, new brakes, exhaust, complete front end, $3,100. 269-9510 after 7 p.m.

82 VW RABBIT - 4-dr., 4-spd., am/fm, good cond., runs well, $990. Mark, 281-5060.

81 EL CAMINO - 6-cyl., 3-spd., 74k mi., no rust, good cond., $3,000. Bob, 727-1146.

81 FORD MUSTANG - 4-spd., 4-cyl., new clutch, gauge pkg., 71k mi., good cond., $1,600. 744-9812 after 5 p.m.

80 TOYOTA CELICA GT - 5-spd., a/c, am/fm, white/black, $1,800. Jeff, 325-0225.

80 MONTE CARLO - V-6, 2-dr., a/t, p/s, p/b, a/c, needs work, best offer. Ext. 2498 or 472-9349.

80 PONTIAC SUNBIRD - running cond., needs glass, good for parts, $150. 475-6772.

80 FIESTA - 78k mi., dependable, runs, good body, excel. sound system, $600. Joe, Ext. 5227.

80 HONDA ACCORD - 4-dr., 5-spd., sunroof, 85k mi., new carb., alternator, exhaust, tires, 30 mpg, am/fm, asking $1,750. Ralph, Ext. 5197.

80 OLDS CUTLASS SUPREME - a/t, V-8, p/s, p/b, high mi., $1,500. 874-3796.

80 JEEP J-10 PICKUP - 6-cyl., 4x4, excel. cond., runs well, asking $3,000. 878-0516 after 5 p.m.

79 HONDA CIVIC - h/b, 92k mi., am/fm cass., new tires, starter, brakes, water pump, etc., good cond., make an offer. Ext. 3583 or 3204.

78 JEEP CJ7 - 4wd, a/t, 6-cyl., p/s, p/b, 50k orig. mi., mint cond., $4,995. Ext. 7686 or 878-0897.

78 OLDS OMEGA - V-6, a/t, p/s, p/b, 4-dr. sedan, new brakes & air shocks, am/fm. Walter, Ext. 3457 or 732-1913 after 5 p.m.

78 CHEVY NOVA - 6-cyl., a/t, am/fm cass., reliable, $250. 724-4249.

78 CHEVY MALIBU STATION WAGON - V-8, a/c, p/s, good cond., $450. Ext. 3606 or 751-7675 eves.

78 FORD STATION WAGON - good cond., $650. 878-8069 after 6 p.m.

77 CHEVY MALIBU CLASSIC - 9-pass. wagon, 350 cu. in., a/t, p/b, a/c, class 1 hitch, air shocks, trans. cooler, excel. cond., $900. Harry, Ext. 5248.

77 AUDI FOX - a/c, radials, 85k mi., excel. running cond., $950. Al, Ext. 4442 or 929-8411.

75 FORD MAXI PICKUP - 8' bed w/cap, asking $500 or best offer. Paul, 924-8143.

75 FORD VAN - 300 cu. in., new tires & brakes, inside carpeted, $2,450. Tony, Ext. 4605.

75 DODGE DART - 4-dr., V-8, runs well, 4 new tires, asking $600. 878-2015 after 2 p.m.

75 PONTIAC VENTURA - 2-dr. sedan, 6-cyl., am/fm cass., a/t, orig. owner, $300. Dan, Ext. 4605.

74 DODGE ASPEN - good transportation, runs well, $1,100. 878-6074 eves.

73 EL CAMINO - restored, 350, V-8, 4-bbl carb., a/t, am/fm, cass., air shocks, 6 GTO rims, 2 snows, bed cover, fully undercoated. 643-5402.

71 CADILLAC - 2-dr., all power, new exhaust, body/int. clean, 94k mi., runs well, best offer. Danny, 286-1278.

70 CHEVY MALIBU - V-8, runs well, $400. Vinnie, Ext. 2483 or 473-7906.

66 MUSTANG - 95% orig., new brakes, tires, interior excel., runs well, $2,800. Ext. 2175 or 399-0117.

31 MODEL A FORD - 2-dr. sedan, 100% brand-new cond. throughout, $15,000 neg. 281-7302.

SNOW TIRES - P225/75R15, steel-belted, $25. Duke, Ext. 2957.

STEREO - am/fm 8-track. Ext. 5286.

TIRE - new 721 Firestone, 235/75R15, Eldo rim, $75 neg. Ernie, 588-4987.

ALARM - auto system, brand-new, never used, $100. Keith, 474-3863.

BENCH SEAT - from '84 Chevy pickup, charcoal gray, good cond., best offer. Steve, Ext. 2496.

RADIATOR - from '79 Chevy pickup, 4-core, good cond., $60. Steve, Ext. 2496.

Boats & Marine Supplies

17' SPORTCRAFT BOWRIDER - 1981, deep V, 470 Mercruiser, I/O, full canvas, trailer, life jackets, anchor, $5,000. Rod, 878-1580 after 6 p.m.

17' WINNER - w/85-h.p. Johnson, '86 trailer, runs well, ski package available, asking $2,700. Bill, 924-1039.

SAILING DINGHY - cheap, best offer. 744-6059.

GAS TANKS - outboard, excel. cond., $25 ea. Bob, 689-7963.

Furnishings & Appliances

VACUUM CLEANER - Sears Kenmore, canister, deluxe, w/power attachments, $65. Peter, Ext. 7657.

DRESSER - w/mirror, hardwood, pecan finish, good cond., $99. Scott, Ext. 3369 or 758-7114.

BAR - 10', w/sink, lights, 5 padded bar stools, shelf, good cond., $150. 277-0916.

MOVING SALE - sofa-bed, loveseat, wall unit, desk, bookshelf, dining table set, more. Y.N. Sun, Ext. 7738 or Yung, 874-2838.

TABLE STAND - wrought iron, 4 chairs, kitchen or patio, ivy leaf pattern, needs work, $45; bed frame, steel, rolling, adjustable, $10. Dick, 878-1580.

CHAIRS - 5, old painted oak, $50; large old flat-top painted trunk, $20; coffee table & end table, $25. 878-6637.

TEAK DINING ROOM SET - 7-piece tiled buffet, rolling bar, like new, asking $1,950. Al, Ext. 4442 or 929-8411.

OAK CHAIRS - 5, $15 ea. Ext. 5768.

SHELVING UNIT - oak w/smoked glass, 2 shelves, great TV stand/room divider, etc., 32"hx29½"w, excel. cond., $40. Linda, Ext. 7745.

BAR STOOLS - 10, padded, w/backs, some need minor repair, make offer. 281-7720.

TWIN BEDSPREAD - blue/white, check, 2 prs., 54" matching tie-back curtains, $25 set. Larry Kukacka, Ext. 3065.

BED - twin canopy, $85; yellow braided oval rug, 5'x8½', $45; lamp, $15; child's vanity, dark wood, oval mirror, $35. 286-0259 after 4 p.m.

KITCHEN TABLE - wrought iron, round-top, w/4 chairs, $50. Harry, Ext. 5248.

FREEZER - 19.6 cu. ft., Westinghouse, upright, excel. cond., $400. Rich, Ext. 7519.

Tools, House & Garden

COAL STOVE - Surdiac, Southport model, rated 38k Btu, heats 11k cu. ft., incls. accessories, best offer. Joe, Ext. 5139.

FIREWOOD - seasoned oak, full cord, $130 delivered. 732-2849.

SNOW PLOW - for ride-on lawn mower. JoAnn, Ext. 4120.

FIREPLACE MANTLE - antique, maple finish, 58¾"wx10½"dx50"h, $150. Pat, Ext. 2452.

HUMIDIFIER - belt-type, good cond., best offer. Peter, Ext. 4094 or 751-6575 eves.

RIDING MOWER - Snapper, w/spreader, new blade, needs some work, $150. Ext. 4052 between 12 & 12:30 p.m.

Sports, Hobbies & Pets

HEALTH CLUB MEMBERSHIP - Jack LaLanne lifetime Olympic Gold Membership, beat the price increase, $500. Jack, Ext. 2907 or 928-3545.

LIGHT TABLE - 24"x48", 4-4owt tubes, glass-top, ash sides, angled stand, best offer. Henry, Ext. 5110.

WEIGHTS - plastic, 15-lb., 12.5- and 1-lb. sizes, well over 100 lbs. total, $10 takes all. Danny, 286-1278.

PUPPY - female Golden Retriever, pick of litter, w/papers, 8-wk.-old, $450 neg. 744-6919.

BICYCLE - AMF stationary bicycle, w/flywheel, excel. cond., was $160, asking $80, must see. Joann, 472-6742.

SKIS - Fischer Competition, 140 cm, for person 65-95 lbs., Tyrolia bindings & breaks. George, Ext. 3262.

Audio, Video & Computers

AUDIO TAPES - 8-track, w/2 rotating storage racks, $15. Tony, Ext. 2050.

COMPUTER - new Tandy II color system, will trade for good electric or electronic typewriter. Rich, Ext. 7519.

MONITOR - IBM monochrome, almost new, $50. 473-2473.

TV - 19" Sony, $120; VCR, G.E., 4-head remote, $110; stereo, J.C. Penny, remote, $100; Y.N. Sun, Ext. 7738 or Yung, 874-2838.

SPEAKERS - Dynaphase, 3-way handles, 400 watts, orig. price $750/pr., sell $250/pr. Ext. 2516.

Miscellaneous

SWEATERS - handmade, new, 50% off orig. price, many colors, imported. Ext. 3102.

CAR SEAT - mesh playpen, like new, $25 ea. 744-9802.

VALENTINE FLOWERS - heart vase w/carnations or roses, $20 & up; single rose w/vase, $12, delivered Feb. 14. Cindy, 821-1560.

WALKING SHOES/BOOTS - in one, good leather, imported, used once, like new, orig. price $80, asking $50. Ext. 3102.

TICKETS - 2, BERA concert, good for any performance, $6 ea. 473-7667.

STROLLERS - Gerry double-umbrella w/canopy, $90; Cosmos single-folding carriage, $75. Mark Ext. 5350 or 369-0793.

COAT - wool, brown, luxurious, light beige, fox collar, full length, size 12-14, like new. 584-6729.

SKI JACKET - goose-down, woman's small, red, good cond., $35. Ext. 2733.

ANTIQUES - furniture collectibles, clothing, frames, wool coats, by appointment. 744-2203.

MUSIC SHEETS & BOOKS - old, $1 & $2 ea. 878-6637.

Free

BOAT - 26', 1946 Richardson, needs work, great spring project, you haul away. Bob, 399-5663 after 5:30 p.m.

FORD COURIER PICKUP - 1975, engine A+, body a failure. Rich, Ext. 3386.

CAP - you pick up. Keith, 474-3863.

SLIDING GLASS DOOR - 6', thermopane, 56"x44" aluminum window w/storms & screens. Ext. 7013 or 698-5294.

ALUMINUM STORM/SCREENS - 2, white, 32"x50⅝", can be cut down to 31½"x49". Bob, Ext. 4824/4095, beeper 343 or 744-5098.

Lost & Found

FOUND - pocket-size camera on sidewalk between Berkner Hall and Johns Hopkins St. Ext. 2873.

Car Pool

PATCHOGUE - ride needed to Lab, will pay. Ernesto, Ext. 3869.

Real Estate

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

For Rent

BAYPORT - large, upstairs studio, furn., carpet, priv. ent., single, non-smoker, no pets, ref. req., 1-mo. security, immed. occup., $495/mo. incl. util. 472-1734.

BROOKHAVEN HAMLET - quiet country lane, 2-bdrm., 2-bath, large kitchen, security & util., avail. immed., $900/mo. John Barry, Ext. 7607 or 286-0204.

CENTER MORICHES - spectacular Bay-front ranch, 3-bdrm., l/r, d/r, kitchen, fam. rm., $900 or for sale. 549-5802.

MASTIC BEACH - small 2-bdrm. house, screened porch, large property. 360-3803 after 6 p.m.

SHIRLEY - 1-bdrm. apt., l/r w/fp, eik, full bath, priv. ent., 10 min. to Lab, $650/mo. incls. all. 399-1699 eves.

GILBOA, NY - chalet, sleeps 6, electric & wood stove heat, TV/VCR/stereo, near Hunter, Windam, & Deer Run, 4wd recommended, wk. or mo. rentals only. Ted, 928-1445.

HILTON HEAD, SC - 2-bdrm. condo, sleeps 6, tennis, golf, beach, pool, Jan. & Feb. $300/wk. Guy, Ext. 3147 or 585-9149.

For Sale

CORAM - 9-rm. Colonial, cul-de-sac, 4-bdrm., 2½-bath, fam. rm., f/p, eik, d/r, l/r, mud rm., 2-car gar., in-ground pool & sprinkler, extras, $195,000. Nelson Tyler, Ext. 2303 or 732-3902 after 5 p.m.

EAST SETAUKET - 4-bdrm. ranch, 2-bath, eik, l/r, d/r, finished bsmt., on fenced ⅓ acre, 3V schools, mint cond., $144,900. 473-4338 eves.

MIDDLE ISLAND - 1-bdrm. co-op, $400 maint. incls., heat, taxes, garbage, water, new bath, new kitchen, new carpet, assumable mortgage, asking $64,500. Bill, 924-1039.

NORTH SHIRLEY - 3-bdrm. Cape, 2-bath, just remodled, new vinyl siding, new roof, well, nice area, 117x117+ property, $119,900. Mark, Ext. 4220 or 281-5060.

PORT JEFFERSON STATION - contemp. high ranch, M/D, 5-bdrm., 3 baths, 2 kitchens, gar., vinyl siding, fenced yard, ¼ acre, mint cond., $174,990. 331-1523 eves.

RIDGE - 5-bdrm. Cape, 2-bath, 2-car gar., l/r w/stove & stone work, country kitchen, large priv. yard, porch, deck, ideal M/D, 5 min. to Lab, $147,000. 924-4749.

SETAUKET - 4-bdrm. Colonial, 2½-bath, eik, l/r, d/r, fam. rm., f/p, wood floors, screened porch, finished bsmt., 2-car gar., 0.52 acre, vinyl siding, $274,990. Shiue, Ext. 4395/3372 or 751-8224.

SETAUKET - 3-bdrm. L-ranch, 2-bath, eik, l/r, d/r, rec. rm., wood floors, patio, full bsmt., attic, 2-car gar., ca/c, ⅓ acre, 3V schools, $230,000. Thomas Nolan, Ext. 5265 or 584-8339 after 6 p.m.

SHIRLEY - 2-bdrm. Cape, city water, low taxes, expandable attic, 7 mi. from Lab, S. of Montauk, $96,000. 395-4272.

SHOREHAM - 4-bdrm., 2½-bath Colonial, on fenced ⅓ acre in great neighborhood, 2-car garage, basement, energy efficient, low taxes, SWR schools, 15 min. to Lab, $175,000. Barbara, 744-0960.

PALM COAST, FL - ¼ acre lot, 80'x125', 5 mi. to Atlantic Ocean, 24 mi. N. of Daytona Beach, water drainage & sewage util. in, $1,995 & assume loan or $11,995. Thomas Nolan, Ext. 5265.

HILTON HEAD, SC - 3-bdrm. condo, sleeps 8, 2-bath, washer/dryer, wet bar, 6 tennis courts, 3 pools, whirlpool, golf, ocean view, asking $85,000, will rent. 929-8912.

Wanted

FRIENDS OF L.Z. - please call Ken & Becky, 289-8212.

MICROSCOPE - and/or Apple II computer. Miriam, Ext. 4581, leave message or 718-520-5019.

VCR - any model Beta in good cond., also need wood bookshelves in good cond. Paul, Ext. 7697.

COMPANION/AIDE - part-time, for elderly person. Ann, Ext. 2022.

UMPIRES - softball/baseball, earn $20-$65 per game, certification school Feb. & March. Jack, Ext. 3164.

SUPER 8 PROJECTOR - to borrow or rent. 689-9234.

FILE CABINET - 4-drawer. Sam, Ext. 4023.

STEP LADDER - 12 feet. Ext. 3589.

Services

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

RUG SHAMPOOING - very reasonable, Lab discount. 924-6019, leave message.

PIANO LESSONS - 758-2023.

COMPUTER REPAIR - Commodore computers & disk drives, fast reliable service, reasonable rates, free estimate, Shirley area. Henry, Ext. 5110.

SHEETROCKING & SPACKLING - free estimate. Kevin, 563-9855.

TAX CONSULTANT - income tax returns done by tax consultant, your home or mine, reasonable. John, 732-2472.

BRICKWORK - patios, walks, swim pools, Belgium block, landscape ties, retaining walls, 20 yrs. exp., Lab discount. Tony, 698-9274.

BARTENDING - for all occasions, complete professional service, portable bar & hostesses available, by the hour. Bob, 874-2131.

HOME IMPROVEMENTS - extensions, dormers, garage & bsmt. conversions, roofing, siding, blueprints, plans & permit. John, 475-6981.

INCOME-TAX PREPARER - BNL discount. Bob, 689-7963.

MASSAGE THERAPY - for women only. Ext. 3102.

MATH TUTORING - for Regent exams, NYS certification. 821-0686.