# BOULLETIN Volume 32 - Number 44 / December 1, 1978 BROOKHAVEN NATIONAL LABORATORY

## The Spiderwort System:

## Small Plant Shows Promise In Certain Environmental Research

Brookhaven's "Tradescantia system" - recognized as potentially useful for the measurement of environmental mutagens - has been attracting a lot of attention during the past few months. Nuclear energy opponents in the U.S. and Japan have proposed using the Tradescantia plant, parts of which change color when exposed to a wide variety of mutagens, to monitor radiation levels around nuclear power reactors.

The Tradescantia, or spiderwort, is sensitive to many mutagens, including radiation. The plant is used in a promising Biology Department project in which a change in color of certain cells of the flower measures the effects of air pollutants. But Brookhaven experts caution that there are a number of difficulties involved in its use as a "people's radiation monitor."

The use of Tradescantia for monitoring power plant radiation levels is being promoted by Sadao Ichikawa, a Japanese scientist who was a postdoctoral fellow in BNL's Biology Department during the mid-1960's. Ichikawa has proposed that local citizens plant the spiderwort around commercial reactors, gather the flowers at intervals, and count the cells which have mutated from blue to pink. According to his supporters, increased numbers of mutations could indicate unhealthy levels of radiation.

Tradescantia is indeed likely to show an effect when exposed to fairly low doses of radiation, says Lab Associate Director Victor Bond. But he also warns that there are "a number of experimental difficulties and scientific reasons that virtually preclude its use" in detecting radiation around nuclear reactors.

#### Sensitive To Stresses

For one thing, the *Tradescantia* is sensitive to a wide variety of stresses – both physical and chemical. Its color genes will respond to radiation and to many different kinds of chemicals, as well as to changes in temperature, humidity and light. "If you blink at the plant, it's liable to mutate," says Bond.

This sensitivity makes it essential that any research done with the plant be carried out under carefully controlled conditions. If it were planted near a highway, for instance, and an increased number of mutations were recorded, there would be no way of knowing whether they were due to radiation or to automobile exhaust fumes. When the plant is used for research at BNL, it is grown in specially designed growth chambers which provide controlled temperature, humidity, soil and atmosphere.

"Even with these careful controls," says Bond, "the Tradescantia must be exposed to at least 300 millirem for any reasonable expectation of observing a statistically valid response. Since the time over which the Tradescantia would accumulate these changes is limited to about three weeks, the annual dose at a nuclear plant location would have to be on the order of several thousand millirem – far exceeding the exposures permitted by the NRC guides."

In addition, scientists cannot yet say whether the plant's response to radiation has any implication in human health hazard assessment. "There remain many unknowns about its genetics, which must be understood before it can be considered a reliable monitor of genetic hazards," says Lloyd Schairer of Biology, who worked with the plant for twenty years. Among those unknowns, he says, is whether the chemically or radiation-induced damage to the color genes is indeed permanent and transmitted sexually from one generation to the next.

#### System Is Useful

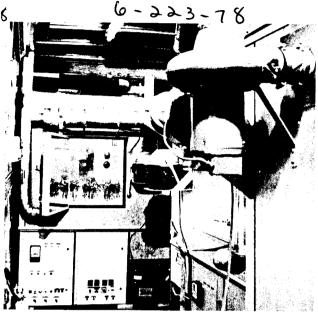
When used properly, however, the Tradescantia system is useful in research on environmental mutagens. The system was developed by the late radiobiologist Arnold Sparrow, who pioneered the use of Trades-



Enlargement of blue flower.



fied 40 times. The lighter areas show the mutated cells.



Interior of mobile monitoring van showing rear exposure chamber (with cuttings) and a control chamber.

cantia clone 02 as the first major tool in somatic cell mutation studies. He and his staff began research with the plant in 1958, concentrating on the effects of radiation on the plant's cells. The system was later applied to research with chemical mutagens.

One of the major advantages of the *Tradescantia* test system is that it combines sensitivity with convenience. Color changes occur frequently in response to low doses of mutagens, and the altered cells are easy for scientists to detect and count.

If immature buds are exposed to various stresses, mutations are likely to occur in the color genes of the buds' actively dividing petal and stamen hair cells. The Tradescantia clones used at BNL are heterozygous for flower color - that is, each cell has one gene for blue flower color and one for pink. Since the blue gene is dominant over the pink gene, normal unaffected plants will have blue flowers. Radiation or chemical mutagens can affect the gene function through a variety of mechanisms, including chromosome breaks or deletions and altered gene structure. Cells produced by an injured cell may express only their recessive pink gene and thus appear pink.

#### Mutations Observed In Flowers

Mutations Observed in Flowers

Mutations are observed in the flowers
opening from one to two weeks after the
young buds were exposed to the mutagen.
The color change of a large mutant sector
can be seen by the naked eye, but a microscope must be used to count the number of
pink cells. Since hundreds of Tradescantia
cells can be seen at a glance through a
light microscope, scientists can get statistics
on cell mutations very rapidly.

The plant's sensitivity and the relative ease of data-gathering has made the *Tradescantia* very useful in establishing an accurate "dose effect curve." This curve, fundamental to radiobiological theories, is plotted in graph form and shows what happens to an organism as a function of the dose of radiation. Dose effect curves for most biological systems require extrapola-

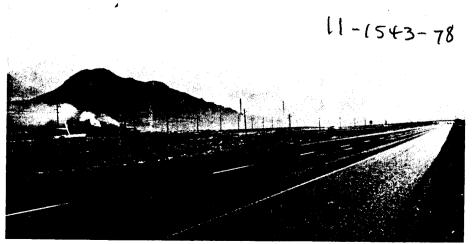
tion at low doses – scientists must infer what the effects of a very low dose of radiation would be by plotting a curve based on the data obtained at higher doses. The *Tradescantia*'s unusual sensitivity, however, results in a much more accurate curve which is based on data actually obtained at low doses.

But the plant is still not sensitive enough, says Bond, to respond to the extremely low levels of radiation which might be found near nuclear power plants. Ichikawa has hypothesized that mutations will occur near power plants because of radionuclide discharge from reactor stacks. He suggests that the *Tradescantia* has the ability to concentrate radioactive iodine-131 in its cells, and that mutations might be due to exposure to the iodine-131 rather than to external radiation. Bond feels, however, that this explanation "makes no sense. There is no known mechanism for plants to concentrate iodine."

## Air Pollution Studies

BNL researchers do feel that the Tradescantia has potential for use in detecting chemical mutagens – particularly those found in air pollution. During the last 2½ years, cuttings of the plant have been exposed to ambient air at locations all over the country, to assess the possible mutagenic effects of common pollutants. The work is funded by the National Institute of Environmental Health Sciences (NIEHS) and DOE.

For the field of studies, Biology Department researchers use a specially outfitted 24-foot trailer which can be pulled by a pickup truck. The trailer contains three environmentally controlled growth chambers, each of which can hold 300 Tradescantia cuttings, plus elaborate air filtering and control equipment. During use, one of the chambers is supplied with filtered air to serve as a control, one is connected to a four-inch glass intake duct which pulls in polluted air from the outside, and one (continued on page 2)



A copper smelting plant, one of the sites monitored by BNL and EPA during field studies using

the Tradescantia test system.

# Tape Honored By AIF And ANS

AUI President Gerald F. Tape has been presented the Henry DeWolf Smyth Nuclear Statesman Award by the Atomic Industrial Forum and the American Nuclear Society. He received the gold medal award at a joint banquet of the two leading nuclear energy organizations on November 15 in Washington, D.C.

Named after Dr. Smyth, a pioneer nuclear scientist, policymaker and diplomat, the Nuclear Statesman Award was established in 1972 by the AIF and the ANS to recognize outstanding service in developing and guiding the uses of atomic energy in constructive channels. Dr. Tape was cited for his "reputation as a tireless worker for the policies and programs that would provide the benefits of atomic energy to all peoples of the world."

Besides his service to Brookhaven as deputy director from 1951 to 1962, and his leadership of AUI in the operation of the Laboratory and NRAO, Dr. Tape has held important national and international posts.

In 1963 he was nominated by President Kennedy to fill an unexpired term as a member of the U.S. Atomic Energy Commission, and was reappointed in 1966 by President Johnson. He resigned in 1969 to return to the presidency of AUI.

In June 1973, President Nixon appointed him as U.S. ambassador to the Interna-



Gerald F. Tape

tional Atomic Energy Agency, a special agency of the United Nations headquartered in Vienna, Austria. He served in this post until 1977, while continuing as president of AUI.

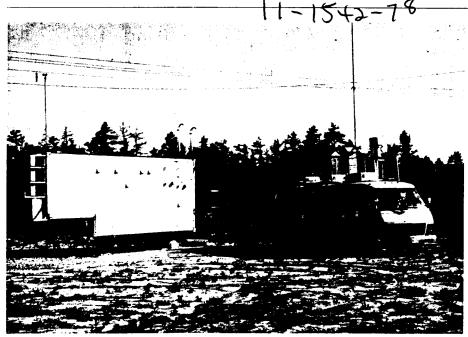
Other recipients of the Nuclear Statesman Award include Dr. Smyth, former Congressman Chet Hollifield and Sigvard Eklund, Director General of the International Atomic Energy Agency.

#### Free Concert

This year, the Music Department of the State University at Stony Brook inaugurated a series of chamber music concerts by three groups of outstanding graduate students in the music program. The three ensembles, a piano trio, a string quartet, and a wind quintet tour the metropolitan New York area and Long Island with their programs.

BERA is pleased to present graduate students, Arthur Greene, piano, Christopher Collins Lee, violin, and Pamela Frame, cello, on Friday, December 8 at 8:30 p.m. in Berkner Hall. The Graduate Student trio has been coached by members of the Beaux Arts Trio.

The program will include a trio in G major by Haydn, the Shostakovich Trio and the B major trio of Johannes Brahms. Admission is free and the public is invited.



BNL's mobile monitoring trailer and EPA's monitoring van on location during a test run.

#### **Spiderwort**

(Cont'd)

serves as a back-up unit in case either of the other two fails.

Much of the trailer's instrumentation and assembly was done by Neal Tempel, who also operates the vehicle, driving it to and from the field sites.

#### Special Hybrid Is Used

The plant used in the trailer is a special hybrid called clone 4430, developed by Marta Nawrocky. Clone 4430 is sensitive to radiation, like all its related species, but is much more sensitive than most to chemical mutagens.

Cuttings of the plant are hand-carried, by car or airplane, to the trailer and are exposed to ambient air pollution at each site. The exposed cuttings and the unexposed control plants are then brought back to the Lab. After the flowers bloom, the number of pink cells is counted, or "scored," by Richard Sautkulis, Eric Klug, Virginia Pond, and Nawrocky. Genetics work for the project is done by Nawrocky and Margaret Thompson.

For its first field trials, beginning in 1976, the Mobile Monitoring Vehicle was taken to Exit 13 of the New Jersey Turnpike, near the foot of the Goethals Bridge in Elizabeth, New Jersey. The cuttings were exposed to ambient air pollution for two weeks at a time, and scoring showed significant increases in mutation events.

Encouraged by the results, the group began a joint project with the EPA in May 1977. The trailer was set up at eight locations throughout the country where levels of air pollution are known to be high; at each site, an EPA monitoring van was also in operation to make physical measurements of the pollution levels. (A ninth site, near the edge of the Grand Canyon, was also included to serve as a control study of the plants' response to non-polluted air.)

## Significant Increases Are Seen

Scoring showed significant increases in the mutation rates for plants exposed at several of the locations, with the largest increases (from 17% to 31% more mutations than the control group) obtained at sites associated with petroleum refining and mixed chemical processing.

Several other industrial locations, and the virtually pollution-free control site at the Grand Canyon, showed no significant difference between control and exposed plants. Schairer notes, however, that negative results at industrial sites are no guarantee that the pollution in these areas is not mutagenic, since wind direction, recent heavy rain, and industrial factory schedules can all temporarily affect the ambient air pollution levels.

The group is "elated" at the detection capabilities of the techniques so far, says Schairer, although he notes that much work remains, especially in the area of identifying and quantifying specific chemical mutagents.

If the *Tradescantia* plants show an increased number of mutations in response to ambient air, "then you know you may have a problem," Schairer says. "But just what that problem may be is more difficult to tell. There's little chance at this point that we can pinpoint a certain compound as being mutagenic. But if we can show that there is some mutagenicity in a particular gaseous atmosphere, that's a big step forward toward showing, at least in relative terms, how hazardous that atmosphere might be."

#### Suited To Pollution Work

The Tradescantia system appears to be well suited to air pollution work for several reasons. For one thing, it measures the actual biological effects of chemical mutagens on living organisms, whereas conventional monitoring systems measure only physical quantities of certain air pollutants.

In addition, conventional systems often ignore the possibility of synergistic interactions between pollutants, which might result in effects that are greater than the simple total of the individual effects. And while conventional air pollution surveillance systems measure the level of specific, identified pollutants, the *Tradescantia* system may reveal the presence of previously undetected pollutants by their effects on the plants.

A key factor making the Tradescantia system currently more useful for air pollution monitoring than for radiation measurement is the relative "state of the art" of dosimetry for the two mutagens, says Bond. Using currently available equipment, radiation can be detected and measured at extremely low doses and dose rates.

"For chemistry," he says, "it's a whole different ball game. It has not received the attention that radiation has, so the dosimetry for chemical pollution is absolutely embryonic. It's now at the point where radiation dosimetry was perhaps a half a century ago."

Bio-indicators such as *Tradescantia* may therefore be valuable tools in the study of air pollution – particularly while improved dosimeters are being developed, says Bond. As a means of measuring low level radiation, however, the plant appears to be far surpassed – in accuracy, speed and reliability – by available conventional instrumentation.

## **Emergency Closings**

The following radio stations will carry notification of BNL delayed openings and emergency closings:

Station	Area	AM	FM
WBAB	Babylon	1440	102.3
WGLI	Babylon	1290	
WLIX	East Islip	540	_
WHLI	Hempstead	1100	98.3
WGSM	Huntington	740	_
WALK	Patchogue	1370	97.5
WBLI	Patchogue	-	106.1
WRIV	Riverhead	1390	_
WRCN	Riverhead	_	103.9
WLNG	Sag Harbor	1600	_
WWRJ	Southampton	_	95.3

## New York Train Trip

The Hospitality Committee is planning a group railroad trip to the city on Wednesday, December 20. Departure will be at 8:28 a.m. from the Patchogue LIRR station. Round-trip fare for adults is \$2.45, children under six years ride free.

Reserve a ticket by sending your fare through the U.S. mail to P.O. Box 322, Upton, New York, no later than Thursday, December 14. Make checks payable to Brookhaven National Laboratory. Your tickets will be given to you at the train station. Refunds will be made only if cancellations are received by Friday, December 15.

## **Energizing Quiz**

The following true-false quiz for the energy conscious contains some facts and tips which you might find useful for saving energy in your own home. Take a moment to see how many of the answers you know "cold" – then, check your answers to those below suggested by the DOE.

- 1. More than: a) 39% b) 16% or c) 25% of all electricity consumed in America is used for lighting.
- 2. Always (OR) never turn three-way bulbs to the lowest lighting level when watching television.
- 3. You can get about the same amount of light from a 50-watt reflector floodlight as from a 100-watt bulb.
- 4. One advantage of using fluorescent lighting is that it will deliver approximately a) 2, b) 4, or c) 5 times more lumens than an incandescent bulb of comparable wattage.
- 5. A recommended way to reduce overall lighting in your home is to replace one incandescent bulb of three in multiple light fixtures with a burned-out bulb.
- Burning several small bulbs in one fixture rather than one large bulb can represent substantial energy savings.
- An aerator in your kitchen sink faucet reduces flow and thereby wastes energy.
- 8. When the pilot light of your gas stove burns blue, it's burning inefficiently and should be adjusted.
- 9. If every dishwasher in the country was operated less by just one load per week almost 15 million kilowatt-hours of electricity could be saved every day. That's the equivalent of saving a) 2,000, b) 9,000, or c) 13,000 barrels of oil daily.

(Taken from "Tips for Energy Savers." Single copies available from: Tips for Energy Savers, Energy Conservation Now, Pueblo, Colorado, 81009.)

(Answers on page 4)

## 1979 Bumper Stickers

Automobile registration forms for 1979 bumper stickers are being distributed to all departments by the Police Group this week. Employees are reminded to include their building number on the lower right hand corner of the form, and return the completed form as soon as possible to Police HQ, Bldg. 050.

## **Stony Brook Events**

Friday, December 1

Opera: "The Marriage of Figaro" (English), 8 p.m., Dec. 1, 2, and 8; 2 p.m., Dec. 9; Main Auditorium, Fine Arts Center. Tickets: \$4 general public. Call 246-5678 for more information.

Saturday, December 2

Concert: Paul Winter (benefit performance for Campus ENACT), 9 p.m., Gym. Call Student Activities Board at 246-7085 for ticket information.

Sunday, December 3

Recital: Harpsichordist Peter Wolf, 5 p.m., Sunwood Estate, Old Field. Admission: \$5.50 general public. Call 246-5678 for more information.

Concert: Stony Brook Gospel Choir, with guest performance by the Mt. Vernon Community Choir, 6 p.m., Stony Brook Union Auditorium. Admission, \$1. For further information, call 246-3867.

Tuesday, December 5

Experimental Theatre: "Such Tunes as Killed the Cow," 8:30 p.m., 114 South Campus B. Donations. Call 246-5678 for further information.

Recital: Pianist Rudolph Serkin, 8 p.m., Main Auditorium, Fine Arts Center. Tickets: \$10, \$8 and \$6. For more information, call 246-5678.

Wednesday, December 6

Speaker: Dr. Lenore Blum, Mills College, San Francisco, 1 p.m., "San Francisco Bay Area Programs for Women in Science," Room 4-125, Math Tower; and at 4 p.m., "Women in Science Network," Behavioral and Social Sciences Building, Second Floor Lobby. Films and refreshments. Part of the "Women in Science Get-Togethers." Call 246-6785 for further information.

Recital: The Rogeri Trio, 8 p.m., Main Auditorium, Fine Arts Center. General public, \$7. Call 246-5678 for more information

## P. Gerald Kruger Dies

Prof. P. Gerald Kruger, one of the pioneers of accelerator development, died in Champaign, Illinois on November 4. He was closely associated with the accelerator program at BNL until 1970 when he suffered a severe stroke. An early advocate of superconducting accelerator magnets, he was the organizer of the magnet development group which eventually grew into the ISABELLE project. Kruger had been on the physics faculty of the University of Illinois since 1931 and built the world's second cyclotron in 1935. One of his first graduate students was the late G. Kenneth Green, long time chairman of BNL's Accelerator Department.

## Safeguards Seminar

A lecture entitled "The Future Role of the International Atomic Agency (IAEA) in Non-Proliferation" will be delivered by A.M. Labowitz, currently with the Office of Ocean, International Environmental and Scientific Affairs, Department of State.

He will speak Monday, December 4 at 3:00 p.m., in the Hamilton Seminar Room, Chemistry.

Mr. Labowitz, who holds degrees in Chemical Engineering and Economics, has been involved with problems relating to atomic energy dating back to the Manhattan Project. He was associated with the Atomic Energy Commission for several years including a seven-year period as Special Assistant on Disarmament to the Commissioners. From 1961 to 1963, Labowitz was attached to the U.S. Mission to the European Community, Brussels. Since 1970, Labowitz has served as Counsellor to the U.S. Mission to the IAEA, Vienna.



Medical Department service awards were presented to William H. Maston (left) - 10 years and Powell Richards - 30 years, by Deputy Chairman Robert B. Aronson.

-photo by Reben

#### **Pool Schedule**

This is a reminder to all employees that the swimming pool will be closed for maintenance from Monday, December 4 through Monday, January 1.

On re-opening day, January 2, the following schedule will be in effect:

Weekdays

11:00 a.m. to 1:30 p.m. Employees Only

5:00 to 9:30 p.m.

Employees/Family Members/Guests\* Weekends

1:00 to 6:00 p.m.

Employees/Family Members/Guests\*

New season tickets for the period January 2 through April 30, will be sold at the pool starting on re-opening day.

Season ticket prices: \$15 Individual

\$25 Family

Daily admissions:

\$1 Employee/Family Member

\$1.50 Guest\*

\*One guest per employee is permitted at the pool. Advance arrangement for additional guests (but not more than five at any one time) may be made at the Recreation Office. Employees will be responsible for the conduct of their guests.

## Correction

The Bulletin notes the following correction in its story of November 17 concerning the dollar value of U.S. Savings Bonds purchased by BNL employees. The 1977 figure should read \$240,000 and the 1978 value is \$360,000.

Published weekly for the employees of

BROOKHAVEN NATIONAL LABORATORY

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## Decorate Page One

For the front page of its December 22 issue, the Bulletin asks BNL amateur photographers to submit black and white prints of holiday or winter scenes. Photos should not be over 81/2" by 11" and must be submitted to the Bulletin office, Building 460, no later than noon, Friday, December 15. Photos need not be current for 1978.

## Advice On Adverts

Page four of the Bulletin has long been reserved for the classified advertisements of BNL employees. This free service is extremely popular and Bulletin ads do bring results. However, there are those who abuse the service by assuming that the ad policy, which appears on every form, applies to someone else.

The classifieds are for the use of active or retired BNL employees, and for those holding some form of guest appointment to the Laboratory. Your second cousin's brother-in-law may not rent his apartment using your life number on his ad, and you may not use your name, number and extension to sell your neighbor's '64 Rambler. The items offered for sale must belong to the person selling them.

Employees are reminded that they may submit only one ad each week. If you have several items in different categories to be advertised, please choose one and submit the others in subsequent weeks.

Normally, ads submitted by noon, Monday, will appear in that Friday's edition. If an ad doesn't appear, it was either completed improperly, or the number of ads exceeded the space available. If employees follow the rules, there is a much greater chance that ads will appear on schedule and not be delayed for several weeks because too many ads are being submitted for non-employees.

## Hospitality Committee

A morning coffee will be held on Monday, December 4, from 9:30 to 11:30 a.m., in the Brookhaven Center.

Please come and bring the children. Babysitting will be provided at no charge. It is suggested that you bring along a toy or two for your children to play with.

## Volleyball

Standings

Mixed League

Division A		
Oceanography	12 - 0	
No Names	10 - 2	
Nuclods	7 - 5	
Family Affair	6 - 6	
Nuts & Bolts	6 - 6	
Diamonds	4 - 8	
Lookin' Good	4 - 8	
Popovers	2 - 10	
Division B		
Leftovers	10 - 2	
Balls & Strikes	9 - 3	
Nads	8 - 4	
Wisa's	5 - 7	
Medical	4 - 8	
LeMuss	0 - 12	
Employees' League	•	
Spikers	9 - 0	
Bumps	8 - 1	
Toga	5 - 4	

2 - 7

Atom Spikers

Cool Tools

Phoenix

#### **Craft Art Fashion Show At Center**



A handmade floor-length vest and sterling and gold wash cuff with a combined value of over \$400 were modelled by Inge Kirk in the afternoon show presented by the Hospitality Committee. Inge is the wife of Harold Kirk, Physics.



Modelling knit hats and a vest at the November 16 "Autumn Get-Together" is Claudia Meyer, wife of Geerd-Jurgen Meyer, Chemistry. Handcrafted "wearable art" from a collection at the Gallery North, Setauket was featured in an unusual and colorful showing,



As these guests at the Hospitality Committee's autumn fashion show prove, colorful attire was not only to be seen on the models. - photos by Reben

## Sing For Christmas

The BNL Christmas Chorus invites singers to join their rehearsals of traditional carols at noon, December 4, 11 and 18 in Berkner Hall. Join us!

## Cafeteria Menu

## Week Ending December 8, 1978

	-	
Moday, December 4		
Tomato vegetable soup	(cup)	.30
•	(bowl)	.40
Vegetarian omelette		1.25
Grilled ham steak & 1 veg.		1.40
Hot Deli – Pastrami	(on bread)	1.15
	(on roll)	1.25
Tuesday, December 5		
Cream of potato leek soup	(cup)	.30
	(bowl)	.40
Vienna loaf and hash browns		1.30
Macaroni and cheese & 1 veg.		1.15
Hot Deli - Corned beef	(on bread)	1.25
	(on roll)	1.35
Wednesday, December 6		
Pepperpot soup w/spaetzles	(cup)	.40
	(bowl)	.50
Tuna noodle casserole		1.25
Southern fried chicken w/corn fritters		1.35
Hot Deli – Veal and peppers h	ero	1.25
Thursday, December 7		
Chicken noodle soup	(cup)	.30
	(bowl)	.40
Marinated pork steak & 1 veg		1.40
Salisbury steak & 1 veg.		1.25
Hot Deli – Smoked turkey		
breast	(on bread)	1.25
	(on roll)	1.35
Friday, December 8	` ,	
Manhattan clam chowder	(cup)	.40
	(bowl)	.50
Fresh broiled filet of cod & 1 v	eg.	1.35
Roast sirloin of beef w/oven		

1.45

1.25

roasted potato

Chili bean hero

## Arrivals & Departures

Arrivals

Accelerator
Instrumentation
Nuclear Energy
Biology
Energy and Env.
Physics
m. Sys. & Data P.

Departures

Tse-Lok Ho	Medical
Calvin Lam	Accelerator
Robert Nathans	Energy & Env.
Joseph J. Vidal	Physics

## Kayaking

The Mountain Club will sponsor a kayaking open house at the Lab pool on Sunday, December 3 from 10:30 a.m. to 1 p.m. Bring a bathing suit and try your hand at manipulating a kayak. Those interested in taking kayaking lessons may sign up on Sunday, or, if unable to attend, may contact Dick Watson on Ext. 3788.

## **Duplicate Bridge**

The first meeting of the Duplicate Bridge club will take place on Thursday, December 7 at 5:30 p.m. at the Brookhaven Center. We already have responses from 24 people. This meeting will evaluate the needs of the people and their interests. Informal game is planned. If you are interested in playing Duplicate Bridge, please contact Bharat Bhatt at Ext. 2966 or Colin Durston at Ext. 2598.

## Bowling

Red League

A great team effort by the Old Timers gave then an 11-0 win over the Trouble Shooters. They shot high series for the year, knocking down 3174 pins. W. Reams led with a 626-692 series including a 235 game. H. Frei had a 246, 583-676 series, and R. Adams a 213 with a 573-621 se-

The Freon Loaders took 8 from the Dyno-Mites. The Designers also won 8 in a match with the Anachems. E. Gill had a 212. The Sparks shut-out This Isa Team 11-0. E. Sperry, Jr. bowled 209.

In a match, plagued by 37 splits, the Sandbaggers managed a 7-4 win over the 76'ers. E. Meier bowled 210, C. Bohnenblusch 201 and J. Connelly 213.

Pink League

Ellie Kristiansen's 189 game and 490 triple gives her a 155 average which is 15 points over last year's average. Also having a good season is Renie Rosati who had a 187 game and 487 triple bringing her average up to 152, 13 points over last year.

High games were bowled by Helen Keeley 197, Marge Stoeckel 195 and Audrey Blake 182.

Purple & White League

The men outdid themselves this week with many 200 games and high series. Dave Penoyar rolled a 222/194 for a 595 series, Ed Sperry 202/216 - 586 series, Ken Asselta 216/201 - 585 series, Bob Jones 214/191 -569 series and Jim Petro 208 - 565 series. Nate Carter 229, Dick Murgatroyd 210, Jim Griffin 206, Geri Riker 170, Carolyn Eterno 167, Kathy Griffin 166 all bowled good games.

The Good Times and The Flounders are tied for first place; the Pen Mac's and Draftecs are right behind.

## Green League

The Sparks, who have been steadily rolling along, finally got dumped as the Pinball Wizards took them for eight from the Old Timers II, with S. Carrier having a 208. The Blue Jays took eight from the Anachems. The Dyno-Mites downed the Designers by taking seven while the Cosmos only took three. Only one turkey was awarded to the men's leagues and it was won by Bob Jones.

## 1979 BNL Holidays

	•	
New Year's Day	Monday	January 1
Washington's Birthday	Monday	February 19
Memorial Day	Monday	May 28
Independence Day	Wednesday	July 4
Labor Day Floating Holiday	Monday Tuesday	September 3 September 4
Veterans' Day	Monday	November 12
Thanksgiving Day Day after Thanksgiving	Thursday Friday	November 22 November 23
Floating Holiday Christmas Eve Christmas Day	Friday Monday Tuesday	December 21 (½ day) December 24 December 25

(As indicated above, the two floating holidays are Tuesday, September 4, a half-day on Friday, December 21, and the morning of Christmas Eve, Monday, December 24. As the afternoon of December 24 is a regular holiday, the ½ day floating holiday was added to give a full day off.)

## Classified Advertisements

#### **Placement Notices**

The Laboratory's placement policy is to select the bestqualified candidate for an available position, with consideration given to candidates in the following order of priority:(1) present employees within the department, with preference to those within the immediate work group; (2) present employees within the Laboratory as a whole; and (3) outside applicants.

Each week, the Personnel Office lists new personnel placement requisitions. The purpose of these listings is, first, to provide open placement information on all nonscientific 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, as indicated below. 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 Personnel Placement Supervisor, Ext. 2882.

LABORATORY RECRUITMENT: Opportunity for present Laboratory employees.

821. RESEARCH SERVICES ASSISTANT - AAS in biological life sciences or equivalent capabilities to assist with the preparation of mèdia and solutions and the performance of extensive autoclaving. Experience in a greenhouse facility and plant research lab is desirable. Biology Department.

822. SECRETARY - To schedule and coordinate patient visits, type patient forms and manage medical records. Excellent typing skills required. Familiarity with medical records and ability to work with people desirable. Medical Department.

823. FIREFIGHTER - Previous firefighting experience and background in emergency medical care required. Safety and Environmental Protection Division.

824. HEAVY EQUIPMENT MECHANIC OPERATOR GROUP LEADER - Plant Engineering Division.

**OPEN RECRUITMENT:** Opportunity for present Laboratory employees and outside applicants.

825. TECHNICIAN - Temporary position (3½ months). To assist with chemical analysis. Minimum of high school chemistry lab is required. Reactor Div.

826. TECHNICIAN - Requires AAS or its equivalent in mechanical or surveying technology and experience in second order surveying and precise leveling. Must be capable of performing surveys with minimum supervision. Experience in optical tooling is desirable. Accelerator Department.

827. COMPUTER SCIENCE ANALYST - Requires BS in a science or its equivalent and background in real time application and diagnostic software for control and data acquisition systems. Experience with microprocessor and minicomputer based process control hardware and systems would be highly desirable. Accelerator Department, ISABELLE Project.

828. ELECTRONICS TECHNICIAN - Requires an AAS in electronics or its equivalent and good background in low level analog and digital circuitry. Should be skilled in the construction and debugging of prototypes. Accelerator Department, ISABELLE Project.

829. ELECTROMECHANICAL TECHNICIAN - Requires an AAS or its equivalent, knowledge of proper use of hand tools and ability to assemble large components carefully. Experience with vacuum leak detectors and cryogenic devices desirable. Occasional shift work. Accelerator Department, ISABELLE Project.

830. MECHANICAL TECHNICIAN - Requires AAS in mechanical technology or its equivalent. Experience in ultrahigh vacuum techniques desirable. Accelerator Department, ISABELLE Project.

831. SENIOR MECHANICAL DESIGNER (three positions) - Requires AAS degree or equivalent and knowledge of welding and machine shop procedures. Experience in machine, pressure vessel, vacuum, cryogenic and/or process piping design would be desirable. Accelerator Department, ISABELLE Project.

832. SENIOR MECHANICAL DRAFTER (three positions) - Requires demonstrated drafting skill and experience in mechanical design, welding and machine shop procedures. Experience in cryogenic and/or process piping would be desirable. Accelerator Department, ISABELLE Project.

833. PATROL OFFICER - AAS in police science/criminal justice or equivalent capabilities. Familiarity with the operation of a security department. Excellent written and oral communications skills required. Must be willing to work shifts. Safety and Environmental Protection Division.

834. TECHNICAL ASSOCIATE - AAS or equivalent with experience in mechanical design, drawing and machining. Knowledge of mechanical tools, metals, plastics and adhesives required. Physics Department.

835. TECHNICAL ASSOCIATE - AAS or equivalent with demonstrated experience in operating, maintaining and repairing mechanical, electrical and vacuum equipment. Department of Energy and Environment.

836. TECHNICIAN - AAS or equivaent in electromechanical technology with demonstrated experience in the operation, maintenance and repair of mechanical, electrical and vacuum equipment. Rotating shifts. Physics Department.

837. STEAMFITTER A - Plant Engineering Division.838. ELECTRICIAN A - Plant Engineering Division.

839. PLUMBER A - Plant Engineering Division.

## Autos & Auto Supplies

67 DODGE DART - 4 dr, 6 cyl, a/t, good tires, snows on rims. D. Grill, Ext. 3119 or 598-1267.

INTAKE MANIFOLD - and 4-barrel rochester carburetor for small block V8 engine, good cond, asking \$25. Annamarie, Ext. 2352.

76 OLDS - Cutlass Supreme Brougham; mint cond, all power, a/c, am/fm stereo, tilt wh, landau roof, sport mirrors & wh, 39,000 mi, \$4,100. Frank LaPlaca, Ext. 2461 or 331-9139 after 6.

77 COUGAR XR7 - light jade w/white top, radial tires, fully equipped. \$5,700. Julie, Ext. 2942 or 929-6460.

76 CHEVY VAN - C-20, std, 8 cyl, bubble windows, roof vent, blue, excel cond. \$4,000 or best offer. Ext.

SNOW TIRES - (2) studded G78-15, mounted, very good cond. Ext. 4749.

TIRES - BR78-13, blackwall, Firestone 721, never used \$30; 2 studded snow tires on 71-73 Pinto rims, \$10 ea; 2 Vega rims, \$5 ea. Frank, Ext. 4581 or 588-3565.

72 CADILLAC - sedan-Deville, fully equipped, vinyl roof, leather int, many extras, low mileage, excel cond, \$2,300. 472-0086.

SNOW TIRES - G78-14 studded, good cond, \$30 pr. Harry, Ext. 3783.

SNOW TIRES - (2) on Ford rims, H78-15, both for \$32; (2) Buick rims with tires, F78-14, both for \$22. R. Skelton, Ext. 2005.

SNOW TIRES - Michelin, new 165 SR15, X steel radials, both for \$100; new Goodyear 165 SR15 G800XS, \$42; Volvo 15" wheels 71-72 vintage, (3); 1972 Volvo shop manual. Ext. 4727.

70 RALLYE 350 - Cutlass S, 25 options includes rocket 350-V8, turbohydromatic trans, p/s, p/b, a/c, 80,200 mi, one owner, \$975 or best offer. 878-8905.

68 COUGAR 302 - 4 spd mags, air shocks, gauges & more, needs minor work. \$800. Chris, Ext. 4612 or 281-7379.

71 YAMAHA - Enduro DTI, 250 cc, street legal, good cond, \$350 or best offer. Norton, 475-5834 or Ext. 2913.

64 VW BUS - good running & clean engine, less than 1 yr old, seats 8. \$600 firm. Bill, Ext. 2292 or 286-0243. 72 OLDS 98 - 4 dr, loaded, clean, 60,000 mi, \$1,350. Pete, 924-8534.

TIRES - (5) Bridgestone Skyway 6.00-12, fits Honda Civic; (1) 155SR12, hardly ever used, \$10 ea. 473-2297 evenings.

TIRES - {1} HR78-14 steel belted radial, \$10; (1) HR78-14 Uniroyal snow, \$20; (1) Philco in-dash am pushbutton radio, \$15. Chris, Ext. 3919 or 929-4310 after 6.

73 YAMAHA 250 - excel cond, 12,000 mi, \$475. 722-4861, Tim.

77 MOTORCYCLE - Honda Trail 90, street equipped, never used, \$450. Ext. 4823 or 585-7861 after 6.

66 BUICK SKYLARK - convertible, p/s, p/b, 120,000 mi, good running cond, good tires, \$200. Roger, Ext. 4766 or 744-2326.

73 BUICK CENTURY - a/t, p/b, p/s, a/c, 4 dr, 55,000 mi, snows, excel cond. \$1,800. Ext. 4531 or 345-3077.

ENGINE - 350 V8, 4 spd factory trans, from Pontiac GTO T37, good cond, Ext. 2518 or 744-8894.

BRAKE DRUMS - set of 4, resurfaced, fits Dodge & Plymouth cars w/14" wheels, \$40 or best offer. Joe, Ext. 2251.

 $74\ \textsc{COMET}$  -  $2\ \textsc{dr}$  , 6 cyl, p/s, a/t, Michelin radials, very economical, excel cond, \$2,250. 283-6338 after 4.

77 CAPRICE CLASSIC - vinyl roof, fully loaded, 27,000 mi, \$5,100. 924-7781 after 6.

69 BUICK SKYLARK - 4 dr sedan, 250 line 6, under 80,000 mi, runs. Best offer. Ext. 4599 or 4597, evenings 487-6859.

68 VW SQUAREBACK - blue, rebuilt engine, runs well, asking \$600. 286-3493 evenings.

73 DODGE - 400 CID engine, HD towing package, hitch, adj airshocks w/compressor & reg, excel cond. \$2,000. Leo, Ext. 4688 or 475-4557 after 5.

68 FORD GALAXY - it still runs, \$150. 281-4729.

77 PACER WAGON - a/t, radials, reclining bucket seats, insulation pkg, roof rack, am/fm, 24,000 mi, \$3, 950. John, Ext. 2070 or 283-0223.

73 CAPRI - 57,000 mi, good cond, 4 new radials, new brakes, am/fm cassette deck, asking \$1,900. 732-1849 7-11 am.

66 DODGE CORONET - 91,000 mi, runs great & dependable, small oil consumption, snow tires, radio, 2 spare tires, emergency brake needs repair. \$170. Ext.

70 FORD - Country Squire station wagon, vinyl top, tilt steering wheel, a/c, stereo, power seats, radial tires, \$900. 924-3588.

69 PLYMOUTH BELVEDERE - 8 cyl, std, 318 engine, clean, \$500. 654-3043.

RIM - (1) 15" Pontiac, \$2; fuel pump for Ford 351 V8, \$2. Frank, Ext. 3898.

72 DATSUN 240Z - silver, a/c, am/fm, very low mileage, excel cond, asking \$2,700. 281-1787 after 6.

TIRES - (4) General bias ply tires, P155/80D13, whitewall, used for 10,000 mi. \$45 for set. 929-8637 after 6. 68 DODGE CORONET - 4 dr, 4 good tires, clean in and out, recent tune up, good running cond, \$450. 288-1151 evenings.

74 FORD PINTO - hatchback, 2.3 liter, 4 cyl, excel run cond, fuel system repaired, \$1,200 firm. Tom, Ext. 3700.

77 YAMAHA - 650, black, Harley rear wheel, 5,000 mi, \$1,550. Vic, 584-6738 after 6.

77 FORD COUNTRY SQUIRE - wagon, 27,000 mi, excel cond, loaded w/options, well maintained, \$4,300.

67 PONTIAC TEMPEST - a/t, p/s, rebuilt engine & carb, new battery, recently inspected, \$300. Ext. 4131 or 751-0517 after 6.

72 PLYMOUTH FURY III - sdn/V8, a/t, p/s, p/b, am/fm radio, snow tires, minor body damage, must sell, \$600. Nakahara, Ext. 2225 or 345-3076.

TIRES - 700x15, tube type, good for trailer. Leo, Ext. 3498.

TIRE CHAINS - wedge bar, reinforced, one pr for F/FR70-14, never used. Richard, Ext. 3534.

SNOW TIRES - Sears Tractionex radials, FR78-14, (2) mounted on Chevelle rims, excel cond, \$50 pr. Richard, Ext. 3534.

WHEELS - (4) Lotus Europa 13", excel cond; (2) Ford 14" for snow & regular tires, \$10/pr. Scott, Ext. 4364 or 878-1777.

69 OLDS - very good cond, new tires, bucket seats, \$350. Gary, Ext. 2491.

ENGINE - Competition 302 sm blk Chevy, muncie trans, will separate eng parts, slicks, mags, all must go. 744-3968.

68 CHEVELLE - wagon, V8, a/t, p/s, \$250. Ext. 4045 or 289-5770 after 6.

70 VW CAMPER - factory, pop up, 8 track tape deck, rebuilt engine, \$1500. Bill, 751-7935.

HIJACKERS - Gabriel air shocks for full size Fords 65-77, 1 mo old, \$30; (2) 14" Ford wheels & tires w/chains mounted, \$10. Joe, Ext. 3273.

SNOW TIRES - 165x14, \$25/pr. Dave, Ext. 7730 or 286-8097.

68 VW - reliable, clean, good tires, \$400. Ext. 4731. 66 CHEVY - 6 cyl, a/t, 4 dr, good tires, w/extra snows on rims, body good, runs well, \$300. Ext. 3952 or 4803. After 6, 325-0389.

68 BUICK V8 - automatic, power steering, runs well, dependable transportation. Steve, Ext. 3100.

RIMS - (2) Chevy 13", \$6; (2) Dodge 15", \$6; (1) Ford 14", \$3. Mike, Ext. 3284.

69 CHEVY NOVA - high mileage but has been and still is dependable transportation. \$400 firm. Lenny, Ext. 4467

74 PEUGEOT - 504, excel cond, new radials, plus 2 studded snows, Blaupunkt am/fm radio, \$2,600. Ext. 2928 or 728-9106.

#### **Boats & Marine Supplies**

 $22^\prime$  CHRIS CRAFT - tournament fisherman, 200 hp, 140 hrs, like new. \$7,500. 589-6210.

SPEEDBOAT - Custom Craft, 15' fiberglass, 40 hp Johnson & trailer, extras. Asking \$900. Paula, Ext. 2253 or 698-8950.

17' LONE STAR - fiberglass boat, 65 hp Mercury engine, 2 tanks, very good cond, trailer needs work. \$1200. Ext. 4417 or 924-3338.

18' SAILBOAT - Sailcraft Explorer, fiberglass, cutty, anchor & rode, main & jib, cbd, outboard, Holsclaw trailer w/hub buddies. \$1800. Steve, Ext. 4480 or 821-0705

37' COLONIAL - F/B Sedan Cruiser, T210 hp Chryslers, FWC, sleeps 6, interior completely redesigned, excel cond. Asking \$13,500. 286-0336 after 6.

1971 CARAL - w/trailer, 100 hp outboard, SS radio, depth finder, water skies, 2 fishing gear. Asking \$2,500. Ruth, Ext. 3431.

## Miscellaneous

BACKPACK - Jansport Cascade II, large, like new, \$45; Sierra designs Eco II litewt backpacking mtn tent, sleeps 2, double ent, cook hole, rain fly, pegs & A frame poles, \$120. Kathi, Ext. 2913.

BUFFET - 5'x36", walnut, excel cond, \$175; china closet, beveled glass doors, walnut, good cond, \$150. Ext. 4532 or 581-9199.

SLIDE COPIER - subminiature to  $2\frac{1}{4}x2\frac{1}{4}$ , adaptable to electronic flash with copy stand, \$50. Tom, Ext. 3535

BICYCLE BASKETS - twin, good for paper route, rear mounting style, \$10. Terry, 281-0360.

PORTA-CRIB - \$20; bedrm set, \$90; dresser, \$20; pool table, \$15; camping cooler, \$10; rocking horse, \$5; bathinette, \$5; games & toys. Palais, 698-0576.

COMPRESSOR - single cylinder w/controls, \$80. GR5-0831.

CAMERA - Kodack Brownie Starmatic with flash & Argus pre-viewer, \$12. GR5-8658 after 6:30.

BEDS - two single, old but serviceable, \$10 ea. 744-

TV - b/w 24" GE, \$90; washing machine, good cond, \$50; clothes dryer, needs heating element, \$40.727-3087.

BIKE - 20" w/new seat, tire, hand grips and fenders, excel buy, \$35. Nick, 475-5543.

PIANO - Hardman Teck & Co, upright w/bench, 20 yrs old, excel cond, \$500. 286-0008.

CHRISTMAS TREES - taking orders now - come pick your own, blue-green spruce, dug & balled or cut on premises. Jim, 286-0024.

SEWING MACHINE - Sears w/case, 7 yrs old, heavy

duty, straight stitch, good cond, \$40. Pat, Ext. 2064 or 734-5226.

AQUARIUM - 20 gal, good cond, w/stand, hood, bot-

tom & back filters, air pump, heater, other accessories best offer. 345-2906 SOFA - 84", 6 cushions, upholstered in green scala-

mandre silk, like new, \$300. 345-2008 or HR3-3777. FREEZER - 600 lb upright, A-1 cond, frost-free, \$200.

STEREO HEADPHONES - Koss ESP9 electrostatic w/transformer, most accurate, detailed headphones avail, \$150 cost, sac \$50 firm. 473-8426 after 7.

WATCHES - Bulova Accutron, Mens regular \$185-200 now \$75; womens regular \$125-140 now \$50-55, new and guaranteed, Bob, Ext. 2060 or 234-2695.

SAW - 10" table saw and stand, \$125. 472-1066.

SLIDE BOXES - 35 mm w/frames, Bell & Howell. 751 - 0757

757.

SKIS - 175 cm Volkyl Tiger, like new, used one season, \$70. Frank, Ext. 3898. WASHING MACHINE - heavy duty, hardly used, re-

cently serviced, asking \$200 or will trade for decent size refrig in good cond. Terry, 281-0360.

CAMPER - 68 Apache pop up, sleeps six, open to 25',

full kitchen & dinette, set up for beach, good cond,

\$900, 924-3588.

DRYER - gas, excel cond, \$100; gas range, \$75; refrigerator, free, old but in working cond. Ext. 3741 or

WOOD - hardwood, oak & maple, split & delivered, \$55 half cord, \$100 cord. Rich, 475-2075.

END TABLES - 2 leather covered in good shape, \$40; Hot Point refrig, \$50; tricycle, \$8. Pat, 878-2702.

KILN - new, for home use w/accessories, \$475; gas range, 30" brown, 4 burners & oven, good cond, \$75. 924-6582.

BIKES - 26", 3 speed, \$20 ea. 286-8256 after 4.

DRYER - apartment size, Sears 110 V. Ron, Ext. 4636 or 281-6630.

SOFA - \$17; hardwood desk, \$15; other items. Ext. 3691.

REFRIGERATOR - Norge 22 cu ft, 1971 side by side, coppertone, frost free, good cond, \$150. Pat, 929-8443.

WINTER SPECIALS - Brass fireplace screen w/andirons, \$15; (2) B-78x13 snows on 4 lug Pinto rims, \$35; A-78x13 tire, \$8; Isotherm 5 tube stack heater, \$75; (2) 15" Ford rims, \$9; (2) H-78x15 snow tires, \$15; tuned exhaust header for Pinto 2000 cc, \$25. Bob, Ext.

REFRIGERATOR - Magnavox 6 cu ft, excel for camper, runs on bottled gas, house current or car battery, like new, \$350. 475-7988.

POOL TABLE - ping pong table, folds in half on wheels, good cond. Alice, 286-9483 after 5:30.

REFRIGERATOR - Sears side by side, ice maker, 21 cu ft, 8 yrs old, \$250. 924-4683 evenings. SOFA - colonial, br & gold print, \$50; Whirlpool

washer, \$20; dryer, \$10. Ext. 4227 or 286-1564. SHALLOTS - for gourmet cooks, \$1 per lb. Claire, Ext.

SHOT GUN - Beretta 12 gauge, magnum, mint cond, \$225. Roy, 286-8624 after 5:30.

FENCE - 100' extra heavy, galvanized chain link fence, 6' high with posts and gate. Sue, Ext. 2913.

GO-CART - 6 hp elec start, many extras, \$250. HR2-1875 after 5:30. VIDEO GAME - Pong, plays the best ping pong, excel cond, \$20; Slide projector, Argus/Airquipt, manual control, very good cond, \$15; slide magazines, \$1 ea.

Hans, Ext. 4581 or 281-5563.

OSPREY AMPHIBIAN - airframe 80% finished, great

bargain at \$1500. 878-0432. BABY CRIB - \$30. Mike, Ext. 2501.

3655 or 281-2002.

BIKE - 27" Ross 10 spd, Gran Eurosport, excel cond, \$75. Ed, Ext. 3840.

GUITAR - Giannini acoustic, Vox elec bass guitars, \$100 ea; National guitar amp, 150 W, 2 channel reverb, \$75; drum set, \$125. Roger, Ext. 4480.

GARAGE DOOR - standard size, best offer. 878-1529 after 7. WASHER - Kenmore, good working cond, \$35; exer-

cise belt machine, \$25; Philco stereo, \$40; 2 dressers, \$15 & 25. Steve, Ext. 4605. CAMERA - 35 mm Kodak Retina IIA, compact folding w/Schneider Xenon F2.0 lens & case, \$90. C. Good-

zeit, Ext. 4711. FUR JACKETS - I. J. Fox, NY, {2} current style, good

cond, light to dark brown. Ext. 2926.

BEDROOM SET - Mediteranean bedroom set, colonial den set, barrel base colonial dining set, Castro convertible sofa. 924-7193.

FURNITURE - double bed, \$35; dining table \$10; study table, \$6. Tim, Ext. 2060 or 345-2512.

SEWING MACHINE - Sears, excel cond, \$35; 5 yrs worth of Stamp magazine 71-76. Ext. 3480.

BATONS - (2) 24", \$4 ea; assorted girls twirling costumes, \$3 ea, size small & med. Ginny, 289-4797.

## answers to energizing quiz

1. b) 16%

 Always turn lighting down, but not off, when watching television. It will reduce glare and save energy.
 True

4. c) 5 5. True

True. Removing one bulb reduces overall lighting and replacing it with one burned-out bulb is a safety measure.
 False

7. False: although the aerator in fact re-

duces flow, you use less hot water and

save the energy that would have been required to heat it.

8. False: a yellowish flame indicates in-

efficiency – blue is desirable. 9. b) 9,000 barrels daily

Please see supplement for ads that do not appear on this page.

## Special Supplement

#### Miscellaneous

4058 or 286-0436.

SEWING MACHINE - Singer straight stitch, good cond, port w/case, \$50. Jerry, 475-5591 before 3.

DOG - pedigree border collie needs home. Harold Abilock, Ext. 2865.

TRAINS - N-gauge and layout, many extras. 473-7797 after 6.

PAINT - 6 gal grey deckpaint & white cement paint, \$2/gal. Dan, Ext. 3145.

BABY CARRIAGE - like new, Scandinavian make, cocoa, can be folded & used as car bed, \$40. Joan, 589-5798.

LEVEL - engineer's, \$55; balloon theodolite, \$150; tripods, \$30 each. Ext. 4058 or 286-0436.

GAS BOTTLE - 100 lb LP gas bottle, best offer. Pete, Ext. 3297 or 821-9547.

TV ANTENNA - Ig dbl room, log periodic, uhf, vhf, .fringe area beam, \$15. Chuck, Ext. 4331 or 4305.

GAS GENERATOR - 11x11 bungalow tent, humidifier & dehumidifier. 363-6341.

BALL HOPPER - holds 60 balls, deluxe model, never used. Ext. 3514.

TYPEWRITER - Remington Electric, office model, carbon tape or ribbon, very good cond, asking \$125. Ext.

REFRIGERATOR - Westinghouse 11 cu ft, old but in good cond, \$20. 732-7134.

BIKE - 16" wheels, 15" frame w/training wheels, for child learning to ride, good condition, \$10. Lew, Ext. 3618 or 281-7547.

STENO MACHINE - w/tripod, reporters model, excel cond, ribbons, ink & cleaning kit included; high speed dictation tapes, \$3 each. Ext. 3620.

GUITAR - 1969 Hagstrom solid body elec 12 string guitar, excel cond w/case & cord, \$150; Kimberly elec 6 string guitar, excel cond, good for beginner, \$75, 475-5789 after 6.

LIVING ROOM SET - 7 piece matching Herculon fabric. 3 cushion couch, 2 cushion couch, armchair/ottoman, hexagon end table, square end table, coffee table. Joe, Ext. 4204, 588-3146.

SKIS - 205 cm Hart Camaro giant slalom w/cober bindings mounted. \$60. George, Ext. 2296.

BEDROOM SET - double bed w/mattress & box spring, 2 nite tables, 2 dressers & mirrors, \$100. George, Ext. 4460.

BED - Eclipse hi-riser, opens to queen size, new cond, \$110. Ext. 7985 or 727-7796.

SNOW PLOW - garden walking tractor, National 4.3 hp, 36" sickle bar, disc harrow, garden plow, cultivator. 584-5919.

BEAGLE - AKC registered, 2 yrs old, male with champion lines from Charleston, S.C., has all shots. \$75, 924-6415.

BASS GUITAR - Univox, great sound, in mint cond, new roto sound strings, \$200. 475-1844 after 6.

FIREPLACE SCREEN - w/andirons, \$10; club chair, excel cond, \$10. Jack, Ext. 2907.

1. The Brookhaven Bulletin's classified section may be used

3. Ads for material acquired for resale in association with

4. Firearms offered for sale or trade may not be brought

only by active and retired Laboratory employees.

2. All items for sale or rent must be the advertiser's

a full or part-time business cannot be accepted

For Sale: Auto & Auto Supplies For Sale: Boats & Marine Supplies

For Sale: Miscellaneous

PRESSURE COOKER/CANNER - Sears, used 4 times, instructions incl. \$35. Joe, Ext. 2251.

WINTER COAT - full length rabbit coat, never worn, size 10, \$50. Pat, Ext. 4591 or 665-9242.

FUR JACKET - custom make genuine natural ranch mink in very good cond, size 10-12, appraisal in writing at \$800, will sell for \$400. Ext. 4721 or 273-5574 after 5:30.

POOL TABLE - wood top, \$65; 1 oak coffee table, (2) oak step tables, \$20. 924-3522 after 5:30.

SASH & FRAMES - (4) alum dbl hung for masonry walls, 37% w x 41 %h, can be adapted to wood frame structure, \$15 each or 4/\$55. Pat, Ext. 4519.

GIFTS - for men-stocking stuffers, can't find the gift for him? I have it, gifts for tots, none over \$5. Doris, Ext. 3488 or 924-7832 after 5.

WOK - Westbend elec, new, \$15. 727-1617.

FREE - 15-20' live Christmas tree to any religious, charitable, fraternal organization or fire dept. Will cut down first week in Dec. 281-8943 or Ext. 3284.

MINI BIKE FRAME - blk & yellow, front & back shocks, excel cond, \$30; helmet, small, blue, excel cond, \$10. Jim, 588-0677.

HI FI SPEAKERS - Bose 501/Series I, freestanding, \$250 pr or best offer. Mark, 345-2862, Room 5.

#### 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

SHOREHAM VILLAGE - Lg Clarendon custom Colonial, 4 br, 2½ baths, den w/fp, eik, formal D/R, 1¼ wooded acre, deck, walk to tennis, beach, country clubs, \$80.000 reduced, 744-1935.

EAST PATCHOGUE - 10 rm Colonial, beautifully landscaped, rock garden, gazebo, 1.4 acres, horse country, 4 br, 30' L/R, fp, formal D/R, laundry rm off kit, 2 garages, full bsmt, low 60's. 475-0168.

SHIRLEY - 3 br ranch, L/R, D/R, den w/fp, W/W, fin bsmt w/bath (poss mother-daughter), ½ acre land-scaped, 5 appl, fenced-in veg garden. \$33,500. Call Ext. 3689 or 281-8016 eves.

ROCKY POINT - 4 br Colonial, pool, fenced yard, carpeting, all appl, wood-burning stove and ½ acre land. \$52,000. 744-0996.

MATTITUCK - secluded 3 bdrm, 2 bath ranch in priv wooded area w/deeded beach rights, w/w carpeting, draperies, appl, fam rm w/fp, low taxes. Ext. 3559 or 298-4592 for appointment.

BELLPORT - 3 bdrm ranch, 3½ yrs old, eik, L/R, 28′ playroom, oil b.b. heat, mudroom w/washer & dryer, 185′ deep property on quiet block. \$35,000. 286-

CALVERTON - 3 bdrm ranch, oil fired heat & water, storms & screens, fin bsmt with bathrm & kitchen, 1 acre property. \$34,000.727-9058.

BOHEMIA - mobile home, 12′x60′, 2 bdrms, w/w carpeting, 4 appl, tool shed, fenced patio, 50x100′ plot, quiet family park, \$15,000. 589-7067 after 5.

5. Ads not carried because of space restrictions will be

6. Ads are run only once and must be resubmitted if they

Check x the heading applying to your ad. Print or type your ad in 20 words or less.

7. Ads should be restricted to 20 words or less and typed or printed on the form provided, and must bear the employees

held for publication in the next issue

are to be repeated.

signature.

## treed, new kit, storage shed. \$25,500. 281-7763. EAST MORICHES - ½ acre, 3 br ranch, 1½ baths, L/R, D/R, kit, full bsmt, hot water heat, att garage, fenced

SHOREHAM - 4 bdrm colonial, w/w carpeting, s.s.,

fenced, many extras, low taxes. \$56,500. 744-2821.

HEAD-OF-THE-HARBOR (St James) - custom farm

ranch, 1 mi from beach, 6 B/R, 5 baths, 3 f.p., 2 +

acres heavily wooded, all appliances. Must sell, price

MASTIC BEACH - 2 br ranch, lg den/dining, paneled

deck, 120x100 corner lot, S/S, full bsmt, low taxes,

negotiable. 584-6058 or 981-1327.

back yard. Call 878-9192 after 5.
EAST PATCHOGUE - must sell, 3½ yr custom built

9 rm wide ranch, prime area, 4/5 bdrms, 2½ baths, hugh eik, D/R, 2 dens, 2 garages, appl, carpeting, beautifully landscaped. 289-0443.

MASTIC BEACH - long line ranch, 2 over-sized br, cabinet lined kitchen, formal D/R, den, full bsmt, baseboard heat, ¼ acre. \$27,995. 281-5498.

PORT JEFF STATION - Lge, beautiful 4 bdrm house, wooded ½ acre, 3 baths, w/w, 1ge fam rm, 2 car garage, fenced, poss. M/D home owner. Ext. 3431.

BROOKHAVEN HAMLET - 3 br ranch, attached garage, Ig, fin bsmt, bar, 2 fp, screened porch, appl, extra insulation on beautifully landscaped .83 acre near bay. (212) 831-6157 after 6.

SHOREHAM - Custom built Colonial, 4 br, L/R, D/R, eik, fp, w/w carpeting, SS, 2 car garage, full bsmt, 1 acre fenced, landscaped. \$56,500. 744-2821.

RIDGE - house on secl wooded acre +, 3 br, 2 baths, country kit, full D/R, L/R, in-ground pool. Principals only, low \$60's, bike to Lab. 924-4905 after 6.

SHOREHAM - Colonial, 4 br, fam rm, fp, 2½ baths, hardwood floors, D/R, eik, full bsmt, 2 car garage, appl, close to school, quiet court. \$57,000. 821-9365.

ROCKY POINT - Contemp ranch, 4 br, 3 baths, eik, D/R, 2 car garage, den w/fp, carpeting, bsmt, air, 3 zone oil heat, winter water view, ½ acre, low taxes. \$60,000, negot. 744-7532.

N. PATCHOGUE - 7 rm, 4 bdrm cape, 1 acre, fp, sun porch, indoor rock garden/waterfall, 2 car garage, pool, walking distance to school & shopping. Mid 50's. 286-1285.

#### For Ren

BROOKHAVEN - Ige studio rm, semi-furn, \$225/mo incl util. Suitable for 1 or 2, quiet location. 286-1264.

MASTIC BEACH - 3/4 bdrm house, 160x100 prop, Ig kitch & L/R, formal D/R, entire inside just painted, shed, patio, porch, walk to store, beach. \$265/mo. Sec. Negot. Terry, 281-0360.

PATCHOGUE VILLAGE - 1 br house, couple preferred, \$225/mo. 286-8713.

MILLER PLACE - Mt. Sinai hbr view, secl, 3 br contemp. Lge L/R, D/R, furn or not, appl, avail Jan, '79. \$375/ mo plus util. 928-6155.

RIDGE - Townhouse, 2 bdrm ranch, central air, w/w carpeting w/4 appl. \$325 mo. 924-6237.

#### Wanted

BABYSITTER - to care for 3 yr old boy, 5 days per week, 8:30 am to 5 pm, (\$7/day), Dec. only. On-site resident preferred. Maly, 345-3098.

HOUSECLEANER - located 5 mins. from Lab, preferably Saturdays. Ext. 3838.

LEROY - pens and templates. Jim Hallock, 878-0222.

SNOW SHOES - boots, snow suits, winter jackets for 4 and 7 yr old children; Elec iron, laundry basket, chopping board. Maggie, Ext. 3089.

ORGAN - reasonably priced for beginner. 653-4195.
UTILITY TRAILER - small, good cond. 281-7844.

HOME - for 2 kittens, 1 grey, tan, 1 black w/white

chest. Free. 744-2821.

ROOMMATE - to share house in Bellport. \$175/mo, incl. util. Ext. 3583 or 286-9775 eyes

incl util. Ext. 3583 or 286-9725 eves. HOME - for shepherd, collie mix. 2 yrs old, altered

male, good w/children, excel watchdog. Must find home. Sue Munro, Ext. 2913.

HOME - for good natured Beagle, tan w/b&w, house broken, good watch dog. Palais, Ext. 2913.

OSCILLOSCOPE - good cond. John, 878-8874 anytime.

SHOP MANUAL - for '73 pick-up Cnevy. Tom, Ext. 2959.

SPARE TIRE - and jack for '70 Vega. Ed, 277-5851 after 7

RANGE/OVEN - Elec, 220 volts. Bill Stars, Ext. 4278.

ROOMMATE - to share 12 rm house w/3 other Lab personnel in Rocky Point. 5 br, fp, nr beach, 15 min from Lab, \$100 plus util. 821-1296 after 6.

METRONOME - drum set for student; portable electronewriter, Bill Ext. 4662 or 298,4089

typewriter. Bill, Ext. 4662 or 298-4089.

CAP - for pick-up truck, 8' bed. R. Skelton, Ext. 2005. BABYSITTER - Jamesport-Aquebogue area for 16 mo old boy, to join play-group, 8:30 am to 4:30 pm, 2-3 days per wk. Top wages for dependable, quality care. Ref. required. Ext. 2948, 3051 or 722-3148.

HOME - for 2 yr old mixed Lab before Christmas. Loves children. Sharon, Ext. 3793 or 878-2591 eves.

SNOW PLOW - for Jeep. Call 286-9177 weekends.

POWDER SCALE - to weigh grains for shot shell reloading. Sheldon, Ext. 2043.

DOOR - half glass, half wood, 36" wide, standard height. Peter, Ext. 2540 or 744-5448.

MUSICAL TAX DEDUCTION - Bellport area group seeking used but sound/repairable musical insts for use in schools. Donation of insts are tax ded. Stewart, 286-9616.

FOLDING BED - reasonable. Marjorie, Ext. 3396.

PORTUGUESE LESSONS - (Brazilian), no teaching experience necessary, will bring textbooks. 281-7560 evenings

ENCYCLOPEDIAS - set of World Book encyclopedias, pool table & ping pong table. Gene, Ext. 2416 or 265-5218.

WHEEL COVER - (4) original Datsun 240-Z wheel covers, perfect cond + any other Z parts. Scott, Ext. 4364 or 878-1777.

HOME - for two kittens, 1 grey & tan and 1 blk w/white chest. Joann, 744-2821.

HOME - for multicolored female kitten. Alina, 281-

CENTURA WARE CHINA - Summer Hill Pattern, any

## pieces. Ext. 3482.

#### Car Pools

RIVERHEAD - 1 or 2 drivers needed to complete existing 3 member car pool. Pat, Ext. 4519.

JAMESPORT-AQUEBOGUE - need car pool to Lab. Willing to do my share of driving. Andy, Ext. 2948 or 3051.

MASSAPEQUA - persons to meet exit 29 or 30 on SS Parkway or Massapequa area. Frank, Ext. 3898.

SOUTHAMPTON - would like to start or join a BNL car pool. Will drive own car for share of driving. John, Ext. 2070.

#### Lost & Found

FOUND - Hewlett Packard data cartridge, found on Johns Hopkins Street. Kathy, Ext. 3290.

#### Services

NURSES AIDE - certified, will work Pt. Jeff, Miller Place, Sound Beach, Rocky Point. 744-3968 after 12 noon.

LIGHT HAULING - trucking, messenger service, moving. Reasonable rates and insured. 727-5912.

TV REPAIR - free estimate on all carry in's. Frank DiCrescio. Ext. 4597 lunchtime or 399-1803 evenings.

NEW & USED TIRES - rims, repairs, mag wheel service, reg, radial, Dunlop-Gillette, free instal, balance avail. Fred Usack, Ext. 4597 lunchtime or 475-4935 eves.

FIREWOOD - upstate hardwood 4'x8'x18" split & delivered locally, \$50; pick up \$45. 399-3965.

PAINTING - professional, ext & int & wallpapering.

BABYSITTER - responsible teenager who enjoys chilren. Bellport/Brookhaven/E. Patchogue area. Jennifer, 286-1022.

TREE REMOVAL - trees safely removed. I keep wood, no fee. Chris, Ext. 4612 or 281-7379 for appointment.

Services			
Ads concerning property for sale or rent cannot be accepted on this form Office of the Brookhaven Bulletin, 40 Brookhaven Avenue.	. Special Real Estate A	Ad forms are available a	at the
	(Nc	ame & Phone No. To Call)	
Employee's Signature	Life No.	Ext	
Send to Brookhoven Bulletin, Building 460, 40 Brookhoven Avenue (Evt. 2345)			

Carpools

Lost & Found

Classified Ad Policy

Deadline is 12 noon Monday for publication Friday of the same week.