BROOKHAVEN BULLETIN
Vol. 41 - No. 27 July 10, 1987
BROOKHAVEN NATIONAL LABORATORY

# A Gold Label for Electron Microscopy

For Biophysicist James Hainfeld, Biology Department, what glitters more than gold is a cluster of 11 gold atoms attached to the active part of an antibody.

Like a goldsmith, Hainfeld has crafted a work of art in gold — but one that has scientific value. By coupling an undecagold ($Au_{11}$) complex and an antigen-binding antibody fragment (Fab'), he has synthesized the smallest antibody label available for use under the electron microscope.

"This marker is five to ten times smaller than the size of antibody labels in current use," states Hainfeld. The new Fab'-$Au_{11}$ label could become the new gold standard of electron microscope labels. It gives structural biologists a golden opportunity to see submolecular sites on proteins, nucleic acids or other molecules at a resolution of about five namometers, five to ten times higher than possible before with other antibody labels.

This golden marker has already been used as a label for actin, fibrinogen, haptoglobin and other proteins, which were viewed under BNL's Scanning Transmission Electron Microscope (STEM).

Antibodies are proteins that exist naturally in the blood and are produced in response to infection by foreign substances, called antigens. To eliminate the source of infection, antibodies bind to antigens. Because specific antibodies go to specific sites on proteins, they can be used to label those sites for viewing under the electron microscope — if the antibody label can be made to glitter, as it were, like gold.

Gold and other heavy atoms show up under STEM as bright spots. Heavy atoms were first seen under an electron microscope in 1970. However, in trying to use a single heavy atom to label an electron microscope specimen, two problems were encountered.

First, a very high dose of electrons is required for single heavy atoms to be seen, thus partially destroying the biological specimen labeled by the heavy atoms. And second, the microscope's electron beam has enough energy to break bonds, thereby freeing the individual heavy atoms from the sites they are supposed to mark.

So the solution was to use more than one heavy atom bound within an organic molecule. Within the last three years, a derivative of the undecagold complex that is soluble in water, as are most biological structures, and that has only one reactive site that reacts with cleaved antibodies was synthesized. The undecagold derivative, another researcher's golden nugget, became Hainfeld's gold mine.

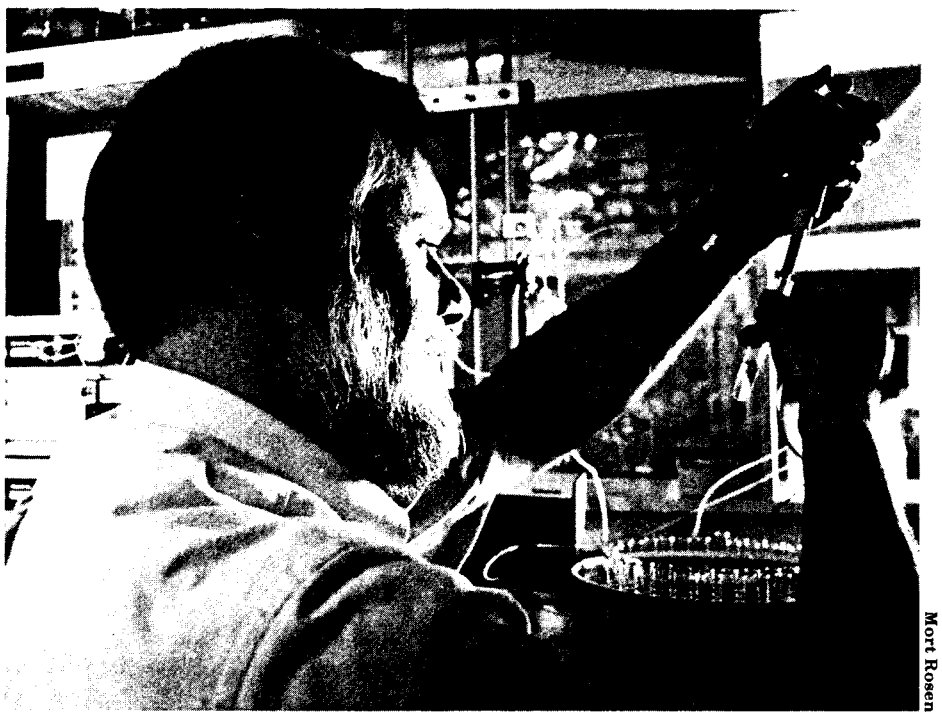
"About five years ago, I had the idea to label antibodies with heavy atoms," says Hainfeld. "but when the undecagold complex was synthesized, I then thought, 'Why not use it to make the smallest antibody label — using only the active part of an antibody?' "

So first, Hainfeld cleaved antibodies to obtain the active part, the portion that binds to specific antigens at one end and would combine with the undecagold complex at the other. Then, to make the Fab'-$Au_{11}$ label, he reacted the bullion-containing complex with this antigen-binding antibody fragment, which is about one-third the size of a complete antibody.

As the precious metal complex binds at the opposite end of the antibody to which an antigen would bind, the gold does not interfere with the fragment's reactivity, an important consideration. Because it is smaller than conventional antibody labels, it can mark sites previously obscured by the larger labels, which is another advantage.

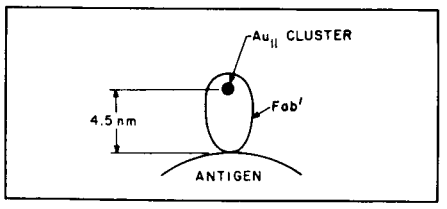
In developing the procedure for attaching the $Au_{11}$ complex to the Fab' fragment, Hainfeld used an antigen-binding fragment from a specific rabbit antibody. However, from further

(Continued on page 2)

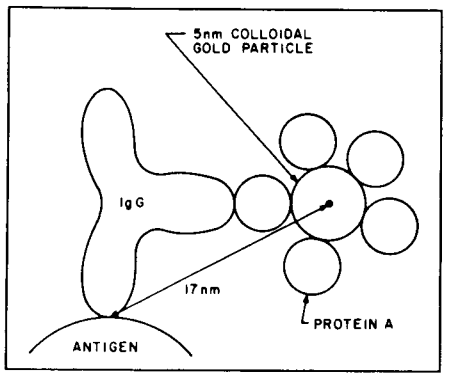


Mort Rosen

**James Hainfeld in his Biology Department laboratory, withdrawing a purified sample of his new, antibody fragment-undecagold complex label for electron microscopy.**




**A comparison in size between a conventional, whole antibody label (below) and James Hainfeld's new, antibody-fragment label. Having an overall dimension of five nanometers, the new label is about one-fifth the size of antibody labels currently in use.**




## Volunteers Needed

# *Can Calcium Supplements Prevent Osteoporosis?*

Millions of milligrams of calcium supplements costing an estimated $200 million will be swallowed by American women this year in hopes of preventing osteoporosis. The calcium craze began in 1984 when a National Institutes of Health panel on osteoporosis recommended that all Americans consume at least 1,000 milligrams of calcium a day, postmenopausal women at least 1,500. However, no one yet knows whether calcium supplements will prevent osteoporosis, the disease which results when the loss of bone mass that accompanies aging is accelerated.

To find out, Research Collaborator John Aloia, Medical Department, who is Chairman of the Department of Medicine at Winthrop-University Hospital, Mineola, was awarded a nearly $900,000 grant over five years by the U.S. Department of Health & Human Services. The study will use the newly upgraded Whole Body Counter in BNL's Medical Department, and Research Collaborator Ashok Vaswani will coordinate the research to be performed at the Lab and Winthrop-University Hospital.

The researchers need to recruit several hundred white women who are six-months to three-years postmenopausal to volunteer for the four-year, "Prevention of Postmenopausal Bone Loss (Osteoporosis)" study.

While osteoporosis is rare in women of other races, it affects one out of four white, postmenopausal women. The disease causes the abnormal loss of bone mass resulting in 1.3 million fractures of the hip, wrist, spine, pelvis and ribs each year. One in five women with hip fractures, or 40,000 total, die of complications, making osteoporosis a leading cause of death among older women in the U.S. The medical costs of osteoporosis total $6 billion a year.

Although it is known that estrogen replacement therapy is at present the most effective treatment for preventing bone loss, it has significant potential risks. Hence the interest in finding out whether or not calcium supplements alone will stop women from getting the disease.

"The major loss of bone calcium in women occurs when they are six-months to three-years postmenopausal," explains Vaswani. "As these women are no longer producing estrogen, we will be able to see the effect of calcium supplements alone in slowing down the rate of calcium loss from the bones. We can then compare it to the effect of estrogen replacement and calcium combined."

Volunteers will be divided among three treatment groups: one that will take only calcium supplements, another taking both calcium and estrogen replacement, and a control group, which will receive a placebo.

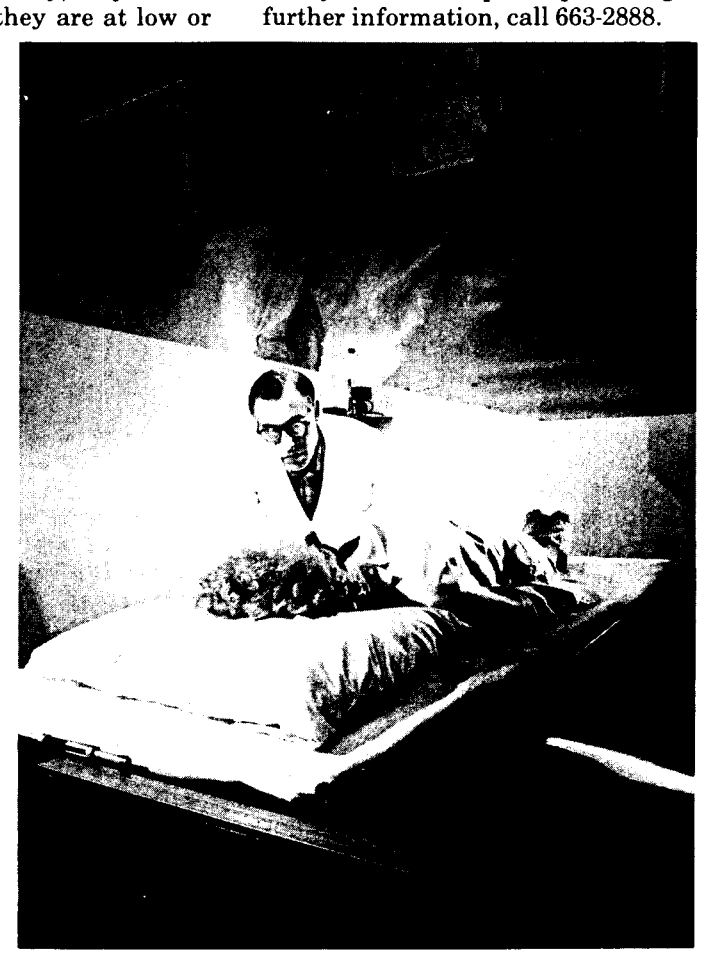
After volunteers have consented to participate in this study, they will be screened to see if they are at low or high risk for osteoporosis, by having the bone calcium in their wrists measured through a non-invasive test, single photon absorptiometry.

Before starting any drug therapy, each woman will have a complete physical examination, including whole-body counting to non-invasively determine her total body calcium. Associate Scientist Joseph Kehayias is responsible for the whole-body counting performed for this study.

While taking medication, the women will be asked to return to the Lab once a year for a whole-body count and twice a year to Winthrop-University Hospital for additional checkups, tests and drug supplies. All tests and drugs required by this study are free to its participants.

If you wish to participate or get further information, call 663-2888.

Photo by Mort Rosen



**Max Schmaeler, who operates BNL's recently upgraded Whole Body Counter, assists Jean Matkovich, Medical Department, who is assuming the role of an osteoporosis patient having her total body calcium measured.**

# Employees' Resistance to Assistance: Cultural Attitudes May Be at the Root

Drinking that affects job performance is an international and cross-cultural problem. It is also a problem that people from different nations, as well as Americans, can bring to their jobs at the Lab. Unfortunately, employees are often reluctant to seek assistance because of cultural disapproval of psychological treatment.

As Manager of the Employee Assistance Program (EAP), psychologist Jannifer Hill confidentially counsels employees with problems, including alcohol abuse. "I am here to help employees with issues that negatively affect their lives and their work," explains Hill.

Hill offers short-term counseling for those in a crisis and refers those with chronic problems, such as alcoholism, for appropriate and acceptable treatment. After referring employees, she is usually not involved in their therapy, but employees may feel free to discuss their progress with her.

However, as Hill acknowledges, "Cultural attitudes towards the use of alcohol and the use of psychological services often prevent those who could benefit from using the Employee Assistance Program."

Different attitudes of various nationalities and ethnic groups towards alcohol and towards using psychological assistance to overcome its abuse were topics Hill heard more about at the "Third International Symposium on Industrial Alcoholism," in Frankfurt, West Germany, at the end of May.

Says Hill, "Because of the cultural acceptance of alcohol use, European workers get a double message: They are told by their employers not to drink if it is going to affect job performance, yet they are served alcohol in company cafeterias." At BNL, alcohol may not be consumed on site during working hours, unless permission has been granted by the Directorate.

As Hill learned, Europeans in general are more leery of institutional involvement in their personal lives, so they tend not to take advantage of corporate employee assistance programs. In addition, European programs are often not run by independent, psychological counselors, but by personnel or labor union representatives. "Therefore, employees seeking help do not have confidence that their cases will be kept confidential or that they will be counseled by neutral third parties who won't have conflicts of interest in handling their cases," Hill says.

Mort Rosen

**Psychologist Jannifer Hill (standing) reviews some paperwork from her recent trip to West Germany, to attend the "Third International Symposium on Industrial Alcoholism," with Linda Wasson, Senior Secretary for the Employee Assistance Program.**

When employees voluntarily seek help from Hill, she does not report her contact with them to Personnel, their supervisors or anyone else at the Lab. "All phone calls and visits by employees are kept confidential," states Hill.

In addition, in seeking referrals for employees who wish continuing counseling, she must have their written consent before she can discuss their cases with private practitioners. As appropriate, Hill refers employees to psychiatrists, psychologists, psychiatric social workers, hospitals, outpatient clinics and self-help support groups for such problems as alcoholism, domestic violence and divorce, as well as to rehabilitation programs for drug and alcohol abuse.

"In Europe, rehabilitation programs are longer and full-time," says Hill. "So when an employee returns to work, he has usually lost his former position and his colleagues may ostracize him for his lost time. Therefore, rehabilitation is often regarded as punishment, rather than assistance."

Hill points out that if BNL employees enroll in rehabilitation programs, they may never have to leave work to receive treatment, or if they do, accumulated sick time may be used. Explains Hill, "The idea is to help employees overcome their alcohol or other problems so they can become more productive, not to punish them."

Some Americans also regard rehabilitation as punishment, and many believe that only "crazy" people need therapy. "Therapy helps you better understand who you are and how the circumstances of your life caused you to be who you are," explains Hill. "With better understanding, you are able to make decisions about your life more easily and live more freely."

Continues Hill, "Therapy, unlike religion, does not teach morals and ethics, but it can help you decide where you stand on whatever issues you wish to decide. A therapist tries to be objective, not judgmental, in order to help you understand your feelings, thoughts and actions and their consequences. The goal of therapy is to help you change what you don't like about yourself.

"Though some ethnic groups believe their members should solve their problems themselves, this is not always possible. Because people's problems transcend individual and cultural differences, it isn't essential to have a therapist of the same ethnic group," adds Hill.

BNL's Employee Assistance Program has been operating since 1981. All regular, full-time employees and eligible part-time employees of BNL, AUI and the Brookhaven Area Office of the Department of Energy may use this service. To make an appointment with Hill, call Ext. 4567.

— Marsha Belford

## AA Meetings

Alcoholics Anonymous (AA) meetings are being held at the Lab every Tuesday at 5:30 p.m. All employees, others with current BNL identification cards and their spouses are invited to participate. To find out the location of the meetings, call the Employee Assistance Program, Ext. 2733. As participation in AA is confidential, you will not be asked to identify yourself when making the inquiry.

## In Memoriam

**Theodore J. Krieger**, a physicist who has been associated with BNL since 1960, died on Saturday, July 4, at the age of 68.

He first came to the Lab in June 1960, for a three-month stay as a Visiting Physicist in the Nuclear Engineering Department, which later evolved into the Department of Nuclear Energy (DNE). He returned in October 1961, to join the staff as an Associate Physicist, and was named Physicist in July 1963. Though Krieger retired in August 1982, he continued his association with DNE as a Guest Scientist until his death.

Krieger was co-author of the 1957 paper, "Slow Neutron Scattering by Molecules," which has proven important in the understanding of thermal reactors. Nuclear-plant safety and the application of statistics to nuclear theory were other areas in which he worked.

He was a resident of Port Jefferson and is survived by two daughters, Judith Levin of San Francisco, California, and Madelon Hotz of Moonachie, New Jersey.

**A photo by Mort Rosen has once more graced the cover of a scientific publication, this time the 24 April 1987 issue of *Science* (copyright 1987 by the American Association for the Advancement of Science). The cover photo accompanied a report within, by James Hainfeld, on "A Small Gold-Conjugated Antibody Label: Improved Resolution for Electron Microscopy." The picture, much more striking in color as it is on the *Science* cover, is of a pseudocolored electron micrograph showing Fab' antibody fragments linked to 11-gold atom clusters (outer, light spots) and attached to a protein complex called ferritin (center). The image analysis was performed by Assistant Biophysicist Paul Furcinitti, Biology Department.**

## Gold Label

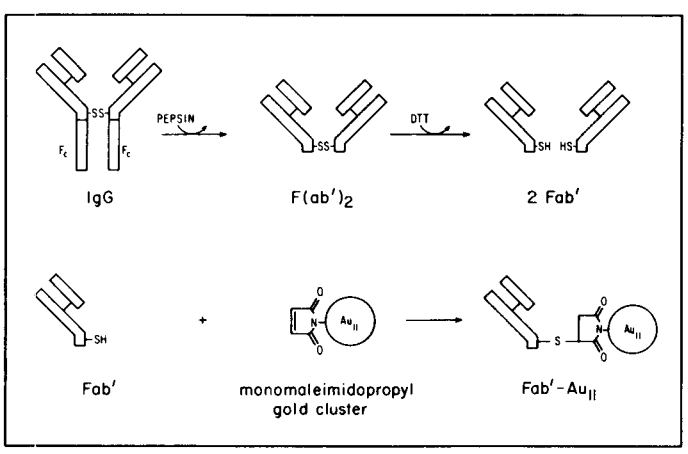
(Cont'd)

tests of the procedure, using other rabbit and mouse monoclonal antibodies, Hainfeld concludes that the labeling procedure should be applicable to many antibodies, including those of humans.

"Because of its small size, this label will permit the probing of smaller structures and the viewing of structures on a smaller scale," concludes Hainfeld.

By labeling human antibody fragments with radioactive gold, Hainfeld envisions that the Fab'-$Au_{11}$ marker could be useful for locating, imaging and destroying malignant cells and tumors. He, in collaboration with researchers in the Medical Department, is currently investigating these possibilities.

— Marsha Belford




**The reaction scheme for labeling the antigen-binding antibody fragment (Fab') with undecagold ($Au_{11}$). An antibody (IgG) was broken down with pepsin to yield two Fab' fragments joined by a disulfide bond (SS). Another chemical (DTT) was then used to break the disulfide bond, resulting in two free Fab' fragments. A fragment was then reacted with $Au_{11}$ to form the Fab'-$Au_{11}$ label.**

**Did you know?** Compton House, the men's residence on Woods Road, was named for the U.S. physicist Arthur H. Compton. After sharing the Nobel Prize for Physics with Charles Wilson in 1927, Compton went on to direct the metallurgical laboratory at the University of Chicago, which developed the first self-sustaining atomic chain reaction.

# BNL's Fabulous Forty

BNL's "Fabulous Forty" years never would have begun without a suitable site for the new Laboratory. In 1946, when planning for the Lab began, 17 sites in the Northeast were considered. As different criteria were applied to the contenders, they were whittled down to two possiblilities: Fort Hancock in New Jersey and Camp Upton on Long Island.

An engineering study of both sites strongly favored Camp Upton, so, exactly 41 years ago, on July 10, 1946, the Board of Trustees of Associated Universities, Inc., officially voted to request that the federal government make the Camp Upton site available for the establishment of a new laboratory.

But before it became BNL, Camp Upton had a noble history all its own. In September 1917, a few months after the U.S. entered World War I, the first draftees began arriving at the new training camp, barely one-third finished and named after Civil War Major General Emery Upton. The Camp Upton trainees eventually became the core of the renowned 77th Infantry Division.

One of the 77th's most famous recruits was Irving Berlin, who remained stateside to write the camp show "Yip, Yip Yaphank." Produced in August 1918 at the Century Theatre in New York City, the show had an all-male cast and featured the hit song, "Oh, How I Hate to Get up in the Morning."

When the war was over, in 1920, the soldiers went home, but the buildings and equipment remained — until August 15, 1921, when most of the 1,660 buildings, utilities and improvements were sold at a public auction.

For the next 20 years the site was relatively quiet. During the Depression, it became Upton National Forest, and the Civilian Conservation Corps planted white pine and fruit trees here.

Camp Upton was resurrected during World War II, as an induction center and rehabilitation hospital.

**Sgt. Irving Berlin (center) and two fellow performers in "Yip Yip Yaphank," the play he wrote while at Camp Upton.**

Though the barracks of the WWII Camp Upton were recruited as the basis of BNL, they soon were either removed or renovated in favor of facilities more appropriate to a laboratory for basic research. In general, few traces of Camp Upton from either war now remain on site — except at BNL's Exhibit Center.

The Camp Upton Historical Collection, which opened at the Exibit Center in July 1981, is largely the legacy of Louis Harson, former BNL Principal Architect who died in 1986. Much of the WWI memorabilia in the collection that Harson amassed in his unoffical role as Camp Upton historian came from Marion L. Pond.

Now 90 years old and Deputy National Americanism Chairman for the U.S. Veterans of World War I, Pond first came to Camp Upton when he was discharged from the Army on July 19, 1919. Since then, Pond, who now lives in Hampton Bays, has continued to be involved in many veteran-related activities.

A newspaper article recounting Pond's military service and subsequent activities came to the attention of President Ronald Reagan and, last January, Pond received a letter from the President, who thanked him "... for the good you've done and continue to do for your countrymen ... It's not quite every day anymore that I can address someone as my senior, so I'd like to offer special congratulations to you for showing everyone just how much a 90-year-old patriot can accomplish."

Pond counts his role in the establishment of the Camp Upton Historical Collection as one of the most important of those accomplishments.

**Marion Pond (center) holds the letter he received from President Ronald Reagan. With him are two other World War I veterans: Carl Vail (left) and John Bucci, both of whom trained at Camp Upton.**

## Summer Tours Feature BNL's Fabulous Forty And Camp Upton, to Boot!

Want to see the Camp Upton Historical Collection? Maybe you're interested in getting a good, overall grasp of the Lab's research — past, present and future. Or perhaps you've been waiting all year to get an inside look at the energy-efficient, prefabricated Danish House.

Whichever aspects of BNL interest you, you're sure to learn more about them on one of the free guided tours of the Lab that will be given from 10 a.m. to 3 p.m. every Sunday, from July 12 through August 30.

The many facets of the Sunday Tour Program have appeal for visitors of all ages and interests. In addition to optional tours of the Danish House, BNL's Sunday guests can view "Quest!" — an audiovisual presentation that tells the story of Brookhaven. They can also take a guided walking tour of the Exhibit Center, a three-story science museum located in Bldg. 701, which originally housed the Brookhaven Graphite Research Reactor, the world's first nuclear reactor built for peacetime research. The reactor was decommissioned in 1968, but its "atomic pile" is still in place and, since 1977, it has served as a dramatic backdrop for the Exhibit Center's lively displays.

The complete Sunday tour program takes about 2½ hours. For more information, call the Tour Program Office, Ext. 4049.

## Softball

**Week of June 22**

**League I**
Blue Jays 22 - Sudden Impact 4
Cool 'n Gang 14 - Six Pax 7
Phoubars 8 - Bandits 7
Magnuts 10 - SMF 5

**League II**
Scram 9 - Medical 6
AMD 18 - Lights Out 6
Phase II 8 - Scrambled Legs 6
Cutting Edge 17 - Dirty Sox 12

**League III**
Foul-Ups 18 - Septembers 12
Source 7 - Kidz-R-Us 5

**League IV**
Underalls 11 - Turkeys 8
Sandboxers 11 - No Feedback 8

**Rainout Games from June 4**

**League III**
Farm Team 13 - Source 6
Snakebites 13 - Foul-Ups 1

**League IV**
Hit 'n Run 11 - Mudville Sluggers 10
Sandboxers 15 - Who Cares 8

**Games of June 30**

**League I**
Six Pax 13 - Ravens 7
Cool 'n Gang 8 - Sudden Impact 4

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

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# Advancing Technology In Oil Heat Systems

The most recent advances in research and development of advanced oil heating systems were presented and discussed at the 1987 Oil Heat Technology Conference and Workshop held at the Lab on June 22 to 23. Sponsored by the Department of Energy (DOE), BNL and the Petroleum Marketers Association of America (PMAA), the workshop was attended by one hundred and twenty fuel oil marketers, equipment manufacturers and researchers from across the United States and Europe.

Among the systems on exhibit was the prototype of the Babington Air Atomizer Burner, one of several such devices developed at Brookhaven by the Department of Applied Science's Combustion Equipment Technology Group, led by Roger McDonald. This burner saves energy by replacing the normal flow of oil with an extremely fine spray, making possible a very low firing rate, which uses only from 0.2 to 0.6 gallons of oil per hour. Standing behind the burner are (from left) McDonald, who was responsible for the conference; John Millhone, DOE; Robert Lynch, Empire State Petroleum Association; Richard Cahoon, PMAA; and Daniel Lim, DOE.

Mort Rosen

## Thanks, Blood Donors

Warm thanks go to all the BNLers who came to give blood during the June Blood Drive. The final count was 551 pints of blood collected. Susan Foster, who ran the Blood Drive, also sends a special thank-you to the Blood Drive Captains, whose tireless efforts helped the Lab to pass the goal of 650 people who offered to donate their blood.

## Arrivals & Departures

**Arrivals**

**Robin Appel** ..... AGS
**Michael G. Blewitt** ..... Biology
**Iris C. Caceres** ..... S&SD
**Donna M. Cange** ..... App. Math
**Pepin T. Carolan** ..... AGS
**James W. Davenport** ..... Biology
**Juan C. Gallardo** ..... NSLS
**Bart J. Giuliano III** ..... Plant Eng.
**Robert L. Harrington** ..... Cent. Shops
**Carol J. Hirschmugl** ..... NSLS
**Michael J. Kijowski** ..... Plant Eng.
**Stephen A. Klaeren** ..... Chemistry
**David C. Lyon** ..... Cent. Shops
**Richard N. Raciniello** ..... S&EP
**Raymond Savino** ..... Cent. Shops
**Richard L. Wall** ..... Cent. Shops

**Departures**

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

**Donna M. Albertus** ..... DNE
**Irma Carl** ..... Dir. Off.
**James L. Desmond** ..... Dir. Off.
**David H. Dowell** ..... Physics
**Richard M. Fine** ..... Biology
**Richard D. Loew** ..... NSLS
**Mario A.J. Mariscotti** ..... Physics
**Florence F. Mignano** ..... Plant Eng.
**Robert E. Mignerey** ..... Physics
**Patricia A. Morris** ..... Biology
**Krzysztof Morstin** ..... S&EP
**David P. Osterman** ..... Physics
**Edmund F. Wojcicki Jr.** ..... S&SD

# CREF Values

| | | | |
|---|---|---|---|
| January | $33.54 | February | $34.99 |
| March | $36.02 | April | $36.02 |

**May $36.03**

# Note to Diners

The Cafeteria will be closed on Saturday, July 11. On that day, snack bar service will be available from 9 a.m. to 2 p.m. at the Brookhaven Center.

# Cafeteria Menu
## Week of July 13

**Monday, July 13**

| | | |
|---|---|---|
| Chicken noodle soup | (cup) | .75 |
| | (bowl) | .95 |
| Beef noodle casserole | | 2.75 |
| Baked, herbed chicken w/1 veg. | | 2.85 |
| Baked, herbed, skinless chicken w/1 veg. (lite-weight) | | 2.85 |
| Hot deli: French bread pizza | | 2.65 |

**Tuesday, July 14**

| | | |
|---|---|---|
| U.S. Senate bean soup | (cup) | .75 |
| | (bowl) | .95 |
| Scalloped ham & potatoes w/1 veg. | | 2.85 |
| Baked ziti w/garlic bread | | 2.85 |
| Chicken salad Oriental (lite-weight, on the ice table) | | 2.25 |
| Hot deli: Sloppy Joe | | 2.65 |

**Wednesday, July 15**

| | | |
|---|---|---|
| Cream of asparagus soup | (cup) | 1.25 |
| | (bowl) | 1.50 |
| Roast pork loin w/apples & prunes | | 2.85 |
| Cheddar & broccoli quiche w/1 veg. (lite-weight) | | 2.85 |
| Hot deli: Turkey garden club | | 2.75 |

**Thursday, July 16**

| | | |
|---|---|---|
| Purée of split pea soup | (cup) | .75 |
| | (bowl) | .95 |
| Lasagna w/garlic bread | | 2.85 |
| Shrimp & broccoli stir-fry over rice | | 2.95 |
| Pasta primavera salad plate (lite-weight) | | 2.25 |
| Hot deli: Pastrami | (bread) | 2.55 |
| | (roll) | 2.65 |
| | (hero) | 2.75 |

**Friday, July 17**

| | | |
|---|---|---|
| New England chowder | (cup) | .75 |
| | (bowl) | .95 |
| Roast turkey & dressing w/1 veg. | | 2.95 |
| Broiled fish (catch-of-the-day) w/1 veg. (lite-weight) | | 2.95 |
| Hot deli: Roast beef | (bread) | 2.55 |
| | (roll) | 2.65 |
| | (hero) | 2.75 |

# Reports Available

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

**NUREG/CR-2907**
**BNL-NUREG-51581**
**Vol. 4**
Contact: J. Tichler, Ext. 3801
Radioactive Materials Released from Nuclear Power Plants. Annual Report 1983. J. Tichler, et al.

**BNL-51932**
Contact: C. Cadwell, Ext. 7442
Conceptual Design of the Relativistic Heavy Ion Collider — RHIC. H. Hahn, Ed.

**NUREG/CR-4564**
**BNL-NUREG-51971**
Contact: A. Fort, Ext. 2114
Operating Experience and Aging-Seismic Assessment of Battery Chargers and Inverters. W.E. Gunther, et al.

**BNL-51972**
Contact: A. VanSlyke, Ext. 7993
Toward a Risk Assessment of the Spent Fuel and High-Level Nuclear Waste Disposal System. Risk Assessment Requirements, Literature Review, Methods Evaluation — an Interim Report. L.D. Hamilton, et al.

**NUREG/CR-4629**
**BNL-NUREG-51998**
Contact: T. Skelaney, Ext. 2484
Independent Verification of Radionuclide Calculations for Selected Accident Scenarios.
Part 1: Independent Calculations. E. Cazzoli, et al.
Part 2: Review of the Battelle Columbus Laboratories' STCP Calculations for Four Reference Plants.
M. Divadeenam, et al.

**BNL-52001**
Contact: B. Ivero, Ext. 2208
District Heating and Cooling Technology Selection and Characterization. Final Report. P.D. Metz, et al.

**NUREG/CR-4643**
**BNL-NUREG-52003**
Contact D. Miesell, Ext. 4962
Evaluation of Core Damage Sequences Initiated by Loss of Reactor Coolant Pump Seal Cooling. S. Mitra, et al.

**BNL-51994**
Contact: A. Rementer, Ext. 3604
Workshop on Neutron Capture Therapy. Held at BNL Jan. 22-23, 1986. Ed: R.G. Fairchild & V.P. Bond.

**BNL-51999**
Contact: B. Ivero, Ext. 2208
District Heating and Cooling Market Potential and Penetration Methodology. Final Report. P.D. Metz, et al.

**NUREG/CR-4688**
**BNL-NUREG-52008**
**Vol. 1**
Contact: T. Skelaney, Ext. 2484
Quantification and Uncertainty Analysis of Source Terms for Severe Accidents in Light Water Reactors (QUASAR). Part I: Methodology and Program Plan. M. Khatib-Rahbar, et al.

**BNL-52010**
Contact: N. Davies, Ext. 2921
Long-Term Proliferation and Safeguards Issues in Future Technologies. B. Keisch, et al.

**BNL-52018**
Contact: S. Zuhoski, Ext. 3359
1985 Oil Heat Technology Conference and Workshop Summary of Proceedings. Held at BNL Sept. 23-24, 1985. J.E. Batey, et al.

**NUREG/CR-2331**
**BNL-NUREG-51454**
**Vol. 6 #1**
Contact: J. Wilson, Ext. 2922
Safety Research Programs Sponsored by Office of Nuclear Regulatory Research. Quarterly Progress Report Jan. 1 - Mar. 31, 1986. A.J. Weiss.

**BNL-52005**
Contact: D. Tooker, Ext. 2103
Workshop on Compact Storage Ring Technology: Applications to Lithography. Held at BNL Mar. 4-5, 1986. M.L. Knotek et al.

**BNL-52006**
Contact: A. Blake, Ext. 5382
Proceedings of Workshop on Superconducting Magnets and Cryogenics. Held at BNL May 12-16, 1986. P.F. Dahl.

**NUREG/CR-4630**
**BNL-NUREG-52012**
Contact: L. Hanlon, Ext. 7517
Analysis of Counter-Current Adiabatic Flow Limitation Phenomenon in Vertical Pipes. N.K. Popov et al.

**NUREG/CR-4709**
**BNL-NUREG-52014**
Contact: N. Yerry, Ext. 2335
Release of Organic Chelating Agents from Solidified Decontamination Wastes. Topical Report. P.L. Piciulo et al.

**NUREG/CR-2231**
**BNL-NUREG-51454**
**Vol. 6, #2**
Contact: A.J. Weiss, Ext. 4473
Safety Research Programs Sponsored by Office of Nuclear Regulatory Research. Quarterly Progress Report April 1-June 30, 1986. A.J. Weiss, et al.

**BNL-51968**
Contact: F. Donnelly, Ext. 4835
Forced-Air Thermal Distribution Systems in Small Buildings: R&D Planning Studies in Zoning and System Losses. J.W. Andrews, et al.

**NUREG/CR-4730**
**BNL-NUREG-52019**
Contact: A. Constantini, Ext. 2274
Evaluation of Potential Mixed Wastes Containing Lead, Chromium, Used Oil or Organic Liquids. B. Siskind, et al.

**BNL-NCS-52028**
Contact: A. Lopez, Ext. 2902
Compilation of Requests for Nuclear Data. P.F. Rose, et al.

**NUREG/CP-0084**
**BNL-NUREG-52004**
Contact: C. Conrad, Ext. 2272
Proceedings of the Workshop on a Containment Performance Design Objective. Held at Harpers Ferry, West Virginia, May 12-13, 1986.

**BNL-52049**
Contact: S. Zuhoski, Ext. 3359
Hydrogen Degradation of Pipeline Steels. Final Report. J.H. Holbrook, et al.

**BNL-51701**
Contact: R. Palmore, Ext. 2064
User's Guide for MARKAL (BNL/KFA Version 2.0). A Multi-Period, Linear-Programming Model for Energy Systems Analysis. L.G. Fishbone, et al.

# 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.

2626. PROGRAMMING POSITION - Requires BSCS and a minimum of two years' programming experience. Thorough knowledge of FORTRAN-77 and some assembly language experience required. Experience with VAX/VMS, VME, real-time systems, Motorola 68000 assembly language and/or "C" preferred. Will be involved in upgrading a data acquisition system for experiment at the AGS. Physics Department.

2627. TECHNICAL POSITION - Requires an AAS in electro-mechanical technology or equivalent. Must have extensive knowledge of helium mass-spectrometer leak-checking techniques. Experience in mechanical and electronic maintenance of leak detectors is essential. Must be capable of independent operations. Accelerator Development Department.

2628. CONTRACTS POSITION - Requires bachelor's degree in business or equivalent and significant experience in all phases of procurement with an emphasis on contract preparation and administration. Will be responsible for drafting RFP's, developing contract modifications, evaluating proposals and analyzing cost and man-hour estimates. (Reposting of Job 2556) Contracts and Procurement Division.

2629. SCIENTIFIC ASSOCIATE POSITION - Requires a BS in biology, chemistry, biochemistry or related field. Will be responsible for data collection and analysis of synchrotron radiation-induced x-ray fluorescence data and routine biochemical and enzymes assays. Experience with computing, spread sheets and biochemical assays required. Knowledge of FORTRAN desirable. Department of Applied Science.

## Autos & Auto Supplies

81 TOYOTA SR-5 HATCHBACK - 75k mi., manual, two snows on rims, good cond., $3,000. 722-4489 eves.

70-72 DUSTER DEMON DOORS - $20/each; 70-76 windshield, $20; 65 Ford Mustang, 6 cyl., 200 cu. in. short block, needs rebuilding, $50. 727-3608.

78 DODGE OMNI - 4 dr., 4 spd., stereo/cass/radio, many new parts, good mpg, $500. Tom, 473-8739 after 6 p.m.

78 AMC - 4 dr., 6 cyl., auto, very good cond., can be seen at Chemistry bldg., $900. 727-3608.

84 HONDA ACCORD LX - hatchback, fully loaded, 55k mi., must sell, $6,500. Denise, Ext. 3630 or 783-1371 eves. and wknds.

79 FIAT SPIDER CONVERTIBLE - 50k mi., body & engine excel. cond., $2,750. Torsten, Ext. 3817 or 878-1210.

71 PLYMOUTH DUSTER - reliable, new tires/battery & exhaust, asking $300. 654-0407 eves.

78 CHEVY MONZA - sunroof, am/fm stereo cass., p/s, rebuilt a/t, new tires, muffler, more, $695. Kris, Ext. 2215 or 3220.

75 PLYMOUTH CHARGER - excel. cond. in & out, $550 or best offer. 924-0960.

80 CITATION - 4 dr., p/s, p/b, new tires, radiator, good cond. in & out, asking $1,200. Tom, 475-0084.

BRIDGESTONE TIRES - 2, RE-71 (P215-60VR-14), unidirectional, used, good cond., sell to highest bid. Bob D., Ext. 2136.

84 DODGE DAYTONA TURBO - a/c, p/w, auto, low mi., excel. cond., $7,000 neg. 689-1582 or 588-6417.

85 RENAULT ENCORE - 4 spd., mint, must sell, $3,000. Wendy, 289-7424.

85 MAZDA 626LX - fully equipped, a/t, alloy wheels, lifetime rustproofing, $8,000. 286-9389.

FULL LINER - and brush guard from 82 Toyota truck. Pete, 475-0831.

86 MAZDA PICKUP - 18k mi., mint cond., clean, asking $6,300. Anne, 878-0031.

77 OLDS OMEGA - hatchback, brown, 6 cyl. 589-6803 after 6 p.m.

72 FORD 150 ECONOLINE VAN - conversion, sleeps 4, water & electric hookups, gas stove, $2,700. Rolf, Ext. 4213 or 744-9020.

74 DODGE DART - blue, for parts, $25. Ext. 3423.

77 BMW 530i - 4 spd., 4 dr., sunroof, leather seats, $4,000. 821-0686.

74 VOLVO 142 - beautiful, 4 spd., rebuilt engine, trans., great cond., very dependable, asking $2,500. 286-1875.

DELCO CARBURETOR - Rochester dual jet 210, from 1979 8 cyl. Chevy Monte Carlo, $20. Victor, Ext. 2395.

72 PINTO - runs well, best offer, Sharon, 727-0661 after 4:00 p.m.

87 RALLY SPORT CAMARO - am/fm cass., a/c, p/s, p/b, V6 cyl., fuel inj. overdrive, auto, 654-4225 after 5 p.m.

74 SILVERTON - 33', sleeps 6, fwc, twin, 318's, low hrs., much more. 878-0842.

85 DODGE OMNI - 2.2, 5 spd., am/fm, p/s, p/b, 33k mi., unlimited warranty, excel. cond., $3,700. Ext. 3872.

TIRES - (2) LR78-15, whitewall, $20 ea. Tony, Ext. 2050.

72 TAG-A-LONG CAMPER - 15', sleeps 6, kitchen, bath w/shower, self contained, gas, electric, $1,200. Donna, 758-9473.

75 DODGE VAN - excel cond., excel. engine, must see, asking $2,500. Ext. 3457 or 698-5701.

83 MAXIMA - 5 spd., excel. cond., $5,000. 728-1640 eves.

DIRT BIKES - 84 Honda XR350, asking $1,500; 84 Suzuki RM250, $1,100, both excel., extras. 878-6074.

78 TOYOTA CELICA LIFTBACK - 54k mi., good tires, stereo, 5 spd., good on gas, $2,000. 475-5934 after 5 p.m.

81 AMC EAGLE - 4x4 wagon, good in/out, new tires, 68k mi., good running cond., needs clutch, $2,400 neg. 821-3086 or 744-5069.

74 CAMARO - needs engine, rest of car good. 472-0706.

73 PONTIAC - a/t, p/s, p/b, 2 dr., am/fm cass., $395. Fred, Ext. 3259 or 473-8622.

82 COACHMAN TRAVEL TRAILER - 17.5 ft., used 4 times, sleeps 6, rear bath, tow car opt. 298-4155.

83 YAMAHA VIRAGO 750 - black, mint cond., garaged, asking $2,000 neg. Charles, Ext. 7749.

FORD TRUCK TIRES - 10.5 Lt/15, mounted on 15x7", 5 lug, white sport rims. Ext. 2075 or 473-4937 ater 6 p.m.

76 CAMARO - dependable, high mi., body rust, asking $350. 728-0844 days or 878-0516 after 5:30 p.m.

81 MERCURY CAPRI - 3 dr., 5 spd., sunroof, excel. cond., $2,200. Ext. 4100.

73 AMC - old, faithful, needs TLC, $300. A.G. Haltz, 286-8605.

67 CHRYSLER CONVERTIBLE - 383 V8, a/t, p/s, p/b, p/w, new top. Tony, 698-9274.

79 HONDA CIVIC - 2 dr. hatchback, am/fm cass., 80k mi., must sell, $800 neg. Ext. 3890.

79 HONDA ACCORD - hatchback, 5 spd., am/fm, new tires, exhaust, $1,000. Tony, Ext. 2023 325-1855 after 5 p.m.

67 YAMAHA MOTORCYCLE - 180cc, excel. cond., new battery, oil injection, $350. Dan, Ext. 4987 or 6 98-7322.

SNOW TIRES - Goodyear, F78, used one winter, on rims, $50/pr. Ext. 4960.

MICHELIN TIRES - 4, 215x15X, top line, radials good, $100. Ext. 3392.

82 SUZUKI 650 - dark red, shaft driven, 6k mi., very good cond. 744-7761.

84 GMC PICKUP - 4wd, V6 eng., 4 spd., low mi., 4" lift, excel. cond., $6,950 neg.; 77 Pinto, runs, needs some work, $300. 281-2257.

84 CHEVETTE - 42k mi., good cond., must sell, asking $3,000 neg. Tom, Ext. 5010.

TRAVEL TRAILER - 24', sleeps 6, fully self-cont., stereo, new refrig., excel. cond., powered by battery/propane/electric, $3,950. 744-5069.

ROLL BAR - for mini truck or jeep, $50. 588-2477.

75 DODGE DART - 2 dr. sedan, yellow, 96k mi., runs well, $500. Ext. 2181 or 3076 after 5 p.m.

73 VW SUPER BEETLE - perfect cond., best offer, Ext. 3152 or 924-2568 after 7 p.m.

73 FORD RANCHERO SQUIRE - 302, p/s, p/b, 56k mi., mint cond., orig. owner, $4,000. 589-7910.

80 VW RABBIT - 5 dr., fuel inj., a/c, excel. cond., $1,500. Kale, Ext. 4960.

76 GRANADA - 4 dr., rebuilt 302, 3 spd., auto, extras, good cond., asking $800. Mike, Ext. 3464 or 737-1458.

73 MERCEDES BENZ 280 - 4 dr., white, dark green interior, $4,300. Ext. 4099 or 689-9214.

75 FORD TRUCK XLT - ½ ton, radio, 6 cyl., std., p/b, p/s, $1,500. Cardamon Sanchez, Ext. 3848 or 281-5988 after 6 :30 p.m.

86 MONTE CARLO SS - T-top, fully loaded, low mi. 736-7352 or 475-0532.

68 VW BEETLE - runs well, must sell, needs muffler, $75. Frank, Ext. 2022 or 399-4480.

86 BUICK REGAL LIMITED - V8, fully loaded, many extras, low mi., mint cond. Carol, Ext. 7215 or 472-3332 after 6 p.m.

76 BUICK LESABRE - mech. excel., good dependable work car, $800. Joe Bush, Ext. 4638 or Beeper #572.

87 CAMARO IROC - black, T-top, TPI eng., loaded, $16,500. 399-0828.

82 YAMAHA 550-SECA - café fairing, helmets, kryptonite lock w/carrier, tools, 5,700 mi., orig. owner, $750. 929-4358.

**For more classified ads, see Supplement.**

# S U P P L E M E N T

Brookhaven Bulletin
Vol. 41 - No. 27

July 10, 1987

## Classified Advertisements

75 DODGE DART - 2 dr., sedan, yellow, 96k mi., runs well, $500. Ext. 2181 or 3076 eves.

TIRE - w/rim, 195R15, good for spare, $10. Ext. 2181.

85 HONDA V-35 MAGNA - low mi., mint cond., asking $1,800 neg. Keith, Ext. 4241 or 477-2184.

86 HONDA ACCORD LX - burgundy, 4 dr., loaded, 14k mi., auto., mint cond. Angela, Ext. 2456.

77 MUSTANG - 58k mi., standard, new cluch, brakes, w/p timing belt, $1,700 neg. 758-5592 after 6 p.m.

78 HONDA CIVIC - 88k mi., runs, or for parts, new brakes, exhaust & carburetor, $120. Ext. 7183.

RIMS - 13", $5 ea. Susan, Ext. 4267.

70 VW BUS CAMPER POP-TOP - rebuilt engine, 35k mi., new clutch, $850. Ted Erickson, Ext. 2243.

73 STARCRAFT TRUCK CAMPER - 11½', sleeps 4, refrig., stove/oven, bath, roomy, $1,995. Ext. 4672 or 929-4753.

77 ASPEN - yellow, 4 dr. sedan, 80k mi., auto, new exhaust, orig. owner, $800. Ext. 3375 or 751-6139.

POP-UP TRAILER - Travel Mate, 66, sleeps 6, good cond., extras, asking $600. 472-1409.

84 CHEVY PICKUP - ¾ ton, heavy-duty trans. & suspension, am/fm radio, a/c, hi-top cap, 30k mi., $8,900. Ext. 4904 or 929-4753.

SUZUKI 425L - 3,600 mi., garaged, orig. owner, sissy bar, bags, mint, asking $800 or best offer. John, Ext. 3536.

77 TOYOTA CORONA WAGON - 5 speed, p/s, reliable, good body, clean interior, 25 mpg, $895. Dave, 588-2916.

86 BUICK REGAL LIMITED - V8, low mi., fully loaded, many extras, mint cont. Carol, Ext. 7215 or 472-3332 after 6 p.m.

86 NISSAN KING CAB - 22k, mint, 4x4, run lights, Alpine stereo, OVHD, console, must sell, asking $10,000., Fred, Ext. 7947 or 588-2268 or 737-8471.

71 CHEVY CAMARO - p/s, p/b, new tires & rims, 307 engine. Jim, Ext. 4606 or 654-5049 after 6 p.m.

82 HONDA ACCORD - a/c, radio, low mi. Gordon, Ext. 4095.

84 RENAULT ENCORE - hatchback, 4 spd., a/c, am/fm cass., 35 mpg, very good cond. 473-7460.

### Boats & Marine Supplies

22' SEARAY - 1974, hardtop, new canvas, trailer, extras, excel. cond., $8,000 firm. 369-2838 after 4:30 p.m.

26' BAYLINER - 1985, 10' beam, 260 Volvo I/O, sleeps 6, h/c shower, galley, dual battery, more, $29,900 neg. 281-6984 days, 395-4169 eves.

14' STARCRAFT - alum., good cond. $400. Ext. 4312.

20' GLASTRON CVX - 225 Merc., excel. cond., very fast, w/trailer, $8,900. Clif, Ext. 3536 or 472-2193.

AMF SUNFISH - 1983, excel. cond., w/dolly, $825. 581-1509 after 6 p.m.

SUNFISH SAILBOAT - good cond., $500. 286-8869 after 5:30 p.m.

18½' COBRA - 1985, 1600 Force engine, 85 h.p., 15 hrs. on eng., w/trailer, $8,500. Ext. 3739.

28' PEARSON - w/2-225 Chry. eng., glass, sleeps 4, auto. anchor-tabs, loaded, shore power, stand-up head, in water. Jim, 765-3041.

PILOT SEAT - folding, wall mount w/single leg, brand-new, $25. Bill, 822-5144 eves.

20' GLASTRON - 1966, fiberglass, good cond., teleflex steering, full canvas, needs motor, $550. 298-8805.

19' COBIA BOW-RIDER - 1976, 120 h.p., I/O OMC, Shoreline trailer, full canvas, $5,500. Ext. 4672 or 929-4753.

22' U.S. YACHT - 1983, excel. cond., many extras, in water, $12,000 neg. 331-2298 eves.

21' SUNRUNNER - 1984, 140 Merc. cruiser, cuddy, full canvas, power winch, 84 E-Z trailer, excel. cond. Frank, 399-6729.

HOBIE CAT TURBO 14 - 1984, trailer, $2,000; Klepper double kayak, $500; 14' Bluejay sailboat, trailer, 2 h.p. motor, $600. Ext. 7657 or 924-2933.

21' GARVEY CLAM BOAT - 85 h.p. Johnson, all equipment included, must sell, $800. Jim, Ext. 4606 or 654-5049.

### Miscellaneous

CABINET - mahogany, bar/server, 26"x37"x15", $80. 744-6874.

WET SUITS - (2), men's small; Samsonite luggage, 4-piece, light blue, hardside, 26", 20" shoulder tote, beauty case, $100. 422-1846.

IBM TYPEWRITER - wide carriage, w/cover & Greek typits, good cond., $150. Susan, Ext. 4267.

STAINLESS SINK - 21"x24", w/faucet & ring, $40; double hung windows, w/storms, $5/each; Thermopane double hung, $90. Victor, Ext. 2395.

PENTAX PROGRAM PLUS - clean, body only, used a little, $85. Ext. 3418.

EXERCISE BIKE - tricycle for 12-18 mo. baby, baby toys, Bontempi organ, typewriter. Chris, 732-5047.

NORD PHOTO PROCESSOR - roll paper, dry-to-dry. John, Ext. 5152 or 281-2471.

BIKE - Schwinn Predator, excel. cond., $110. 581-7656.

BICYCLE HELMET - size 7½, good cond. Heather, Ext. 7793/4286.

ROTARY MOWER - Briggs & Stratton, 3 h.p., good cond., 21" cut w/bag, $60. Dan, Ext. 4987 or 698-7322.

TILLER/SNOW BLOWER - 8 h.p. Gordon, Ext. 4095.

PIANO - large upright, good cond., $100. 286-3847.

MODEM - direct connect, fits all color & TRS-80 computers, all accessories, brand-new, $45. 928-5065.

PIANO - maple, spinet, beautiful, $850. 821-0250.

DINING ROOM HUTCH - Danish, $125. 744-5069.

FREEZER - upright, w/lock & key, hinged right, good cond., asking $100. Mike, Ext. 3464 or 737-1458.

BEDROOM SET - king, walnut. 751-2713.

WOOD STOVE - free-standing, air-tight, w/screen, 5-pipe, 2 wood carriers & accessories, $250. 758-5592.

MOVING SALE - furniture, much more, Bellport. 286-9051.

BICYCLE - boy's 20", bar available, $15. Ext. 4192 or 751-7787.

MOTORCYCLE TRAILER - Hi-Point, 14", fiberglass, completely enclosed, rear ramp, side door, excel. cond., $2,000. Ext. 4672 or 929-4753.

COLONIAL DINING ROOM - table, chairs, hutch, desk, server; Hitchcock bedroom set, excel. Ext. 7657 or 924-2933.

POOL - Harrows, 12'x3' w/filter, ladder & accessories, very good cond., 2 years old, originally $250., sell for $100. 281-4541.

SHAMPOO/POLISHER - Hoover, brand-new, model F9143, $50. Ext. 4727.

SOFA - Haitian cotton, asking $125; round dinette set, (4) chairs, brown, good cond., asking $35. Linda, Ext. 7745 or 878-2844.

WATERBED FRAME - queen, w/heater, headboard & side rails, must sell. Denise, Ext. 3630 or 738-1371.

WESTINGHOUSE FREEZER - $100; Sears Guardsman tires, 18/70R14, $15. each. Ext. 3152.

REMOTE CONTROL AIRPLANE - 1 hour flying time, w/4-channel radio, $400; 10" table saw, like new, $200. 928-0687.

POOL LADDER - for above ground 4' pool, used one season, excel. $45. 924-3756.

SOUND PROJECTOR - 16mm, complete, $25. Ext. 7593.

KITCHEN DINETTE - octagonal, formica top w/cast iron base, (4) chairs, $65. 929-4529.

WALL MIRROR - unframed, 48"x60"; 6-drawer dresser, $20; triple beam balance, capacity 2,610 grams; bathroom fan. 475-1254.

ROWING MACHINE - Precor model 612; General Electric cooktop, push button, 4 burners, $50. Sandy, Ext. 3369 or 286-1022.

MASTER BEDROOM SET - Craftmatic beds, headboard, woman's dresser, 3 mirrors, hutch, end tables, $1,500. 225-0541.

SCUBA GEAR - BDC, regulator & guages, weight belt, good cond. 698-0152.

PEKINGESE PUPS - adorable, male and female. 654-1731.

APPLE II+ COMPUTER - 64K, 2 drives, monitor, fan, serial, parallel, u/l case, software, 80 col., asking $450. Alan, Ext. 2928 or 821-1389.

DINING ROOM SET - Colonial, table, 6 chairs, large hutch, make offer; bedroom set, white provincial, 6 pieces. Ext. 2456 or 475-8473.

FURNITURE - king-size oak headboard, love seat, matching chair, recliner, single mattress & box spring. Annamarie, Ext. 2352 or 473-9016.

SINGLE LEVER EQUALIZER HITCH - Reese, $50. Ext. 4846 or 363-6940 after 5 p.m.

MOVING SALE - maple dining table, 4 chairs, full bed, 2 twin beds, dresser w/mirror. 744-1750.

BASSETT FURNITURE - hutch, cherry wood, $250; solid pine 72"x36" table, $100. 924-0960.

DRIP EDGE - white aluminum, half price, $1.25 per length. Ext. 5400 or 874-3447.

ROSS 20" BICYCLE - excel. cond., $30. Ext. 4094 or 751-6575 eves.

FURNACE CONTROL RELAYS - 2 dp, 1sp, Aquastat, good cond., price neg; Snapper lawnmower, 3.5 h.p., rebuilt motor, $50. or best offer. Ext. 4166.

DELTA WOOD LATHE - 4', no motor, best offer. 924-6787.

AIR CONDITIONER - Sears, 21,500 Btu, good cond., $50. Ext. 7732.

LIGHT FIXTURE RECESS - 2 mini, 1 regular, $15 ea. Bill, Ext. 2047.

AIR CONDITIONER - 3 Westinghouse sleeve units, (1) 15,000 Btu, 220 Vac, (2) 6,000 Btu, 115 Vac, $175. 821-6499.

PRINTING LETTERPRESS - 10"x15" C.P., hand feed, wood type, $250. 261-1153.

HEADBOARDS - (2) twin-size, maple, $15 ea. Tony, Ext. 2050.

SEWING MACHINE - domestic model, runs well, $75; student desk, 40½"x16", $30. 277-4091.

MATTRESS/BOXSPRING - Simmons, king-size, brand-new. Barb, 744-0960.

MICROWAVE - Panasonic Dimen-4, MOD NE9970, 16"x15"x10" w/T-table, cookbook, 1 yr. old, $225. Vincent, Ext. 3772 or 281-5578.

BICYCLE HELMET - Bell, small, worn once, $22. Ext. 2733.

OAK MICRO CART - w/storage cabinet & Tappan microwave, moving, must sell, asking $50. 325-0708.

WASHER & DRYER - apt. size, w/rack, 100 V, portable washer, $450. Tom, Ext. 5350.

AIR CONDITIONER - G.E. Carry Cool, 5000 Btu, used 1 mo., $150. Ext. 4293 or 567-9362 eves.

PC SOFTWARE - microsoft FORTRAN v.4, $200; C v.3, $150; QuickBASIC v.3, $40. Alan, Ext. 2928 or 821-1389.

AIR CONDITIONER - G.E. portable, window unit, hardly used, $100. Ext. 3701.

COLOR CAMERA - for portable recorders, excel. cond., $400. Paul, 727-4859.

SONY CAMCORDER - 8 mm, 6 to 1 zoom, auto. focus, records/plays on any TV, all accessories, like new, $800. Paul, 727-4859.

SOLAR POOL COVER - 16'x32', like new, paid $250, sell $50. Ext. 7971.

GOLF CLUBS - basic set, custom-made, good for teenager, $80 neg. Wong, Ext. 2111.

COLOR TV - 19" Sharp, hvf/uvf, 1 yr. old, asking $120. Ext. 2229 or 282-3220 after 5 p.m.

OAK DINING TABLE - 45" round, burled tiger eye, $425. Ext. 3699 or 286-2493.

TOPSOIL - delivered, 5 yds. minimum, $15 per yd. 924-7746 or 924-9427 after 7 p.m.

HUMIDIFIER — $15; 2 car seat covers, white, $15; 2 tennis rackets, $10; woman's coat, imitation fur, white, $5; coiling lamp, $10, must sell. Ext. 3015.

### Free

STORM WINDOWS - & screens, aluminum, (3) sets, 32"x24". Ext. 2906.

WATER TANK - 100 gallon, glass lined, used in private well. Rolf, Ext. 4213.

### Car Pools

PATCHOGUE - van pool, seat open, leave name and number. Ext. 4669.

### Yard Sale

MILLER PLACE - 3 Magnolia Lane, North Country Road to Honey Lane, furniture and lots more. Annamarie, 473-9016.

### 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

MASTIC BEACH - 4 bdrm. house, f/p, fam. rm., 1½ baths, 3 appliances, walk to water, avail. Aug. 87-June 88, $800 + util. 878-4865.

YAPHANK - large house to share, f/p, eik, 13 acres, all included, $250/mo. George, Ext. 4584 or 924-1308/Vera, 924-9128.

SOUTH BELLPORT - furnished room, private bath, garage, microwave, refrig., short walk to Fire Island Ferry, quiet, non-smoker, $380/mo., 8 months minimum. 286-1479.

MIDDLE ISLAND - Artist Lake condo, 1 bdrm., l/r, kit., full bath, a/c, new w/w, dishwasher, redecorated, pool, heat inc., 5 min to Lab., avail. mid-August, $650. Ext. 3144 or 698-5046 eves.

MILLER PLACE - 2 bdrms., f/p, furnished, quiet, walk to beach, immed. occupancy, $975+. 473-3349.

RIDGE - 4 bdrm. Colonial, 2½ baths, 5 appliances, 8 rooms, eik, 3 miles from Lab, $950/mo + util. Wendy, Ext. 3867/4585 or 924-2865 eves.

PORT JEFFERSON VILLAGE - unfurnished 2 bdrm., washer/dryer, garage, walk to harbor, avail. Sept., $925 + util. Ext. 4094 or 751-6575 eves.

HILTON HEAD, SC - 2 bdrm. condo, sleeps 6, beach, pool, tennis, golf, many extras, some summer openings; taking fall rentals, $400/wk. 585-9149.

CATSKILLS CHALET - 3 bdrms., sleeping loft, fully furn., near Hunter Mt., music festivals, golfing, fishing, hiking, will rent by day, week, or month. Judy or Kay, Ext. 3595 or Bea, Ext. 3642.

HILTON HEAD, SC - 3 bdrm. condo, l/r, d/r, wet bar, full kit., 8 appliances, 2 baths, adjacent palmetto, Dunes golf course, ocean beach, tennis, 3 pools. 929-8912.

### For Sale

RIVERHEAD - 12'x55' mobile home, 2 bdrm., 1½ bath, l/r, eik, new shed, dbl. drive, corner lot in adult/55 park on Peconic River. Jeff, Ext. 2907 or 727-5915 after 6 p.m.

MIDDLE ISLAND - immaculate 3 bdrm. Colonial, eik, huge den, formal d/r, a/c, 2-car garage, pool, sprinklers, fenced, $149,900. 924-4323.

HILTON HEAD, SC - 3 bdrm. condo, l/r, d/r, full kit., 8 appli., 2 baths, golf course, ocean beach, 6 tennis cts., 3 pools, asking $89,000 assumable mtg. also for rent at reas. rates. 929-8912.

ROCKY POINT - 4 bdrm. ranch, large kit., fenced yard, priv. beach, gas heat, f/p, cent. a/c, excel. area, $149,900. Ext. 3123 or 821-1039.

BROOKLYN - near Kings Plaza, 2 family brick, 4½ & 4½, bsmt., porches, back yard, $245,000. Ext. 4118 or 928-5714.

OAKBORO, NC - 3 bdrm. modular home, 1½ baths, l/r, d/r, kit., front porch, enclosed rear porch, cac, fully furnished w/appliances, 3½ acres, $50,000. Sheila, Ext. 3325 or 369-2404 after 6 p.m.

SHOREHAM - 3 bdrm. ranch on prof. landscaped ⅓ acre, very nice neighborhood, l/r, d/r, eik, 20'x12' f/r, w/bay window, a/g pool, deck and more, reduced to $130,000. 821-2716.

DELAWARE COUNTY, NY - 5.38 acres in town of Davenport, 2 bldg. sites w/over 250' on private road, good size stream, year-round, elec. within 500'. Ext. 4007 or 281-4871 after 6 p.m.

POCONOS - 3 bdrm. chalet, l/r, d/r, family rm., w/woodburning stove, kit., w/w, garage, paved roads, pools, lake, clubhouse, tennis, guarded entrances, more, sacrifice for $115,000. 286-4652.

PORT JEFFERSON VILLAGE - Harbor Hills, 3+ bdrm. ranch, l/r, d/r, eik, 2 baths, den, 2 f/p, bsmt., 2-car gar., deck, winter waterview, gas heat & hw, 6 appl., city water, ⅓ acre. Ext. 4356 or 928-3371.

SETAUKET PARK - 3 bdrm. contemp. Colonial, l/r, d/r, eik, 2½ baths, large den, 2-car garage, sky light, sprinkler, gas heat, 2 zone, solar hot water, fence, ½+ acre, $179,000. 242-9539.

SHOREHAM VILLAGE - Circle Drive, 1800 sq. ft., 3 bdrm. ranch, 2-car garage, 1 acre, partially wooded, solar hot water, low taxes, appt. only. 744-6287 eves & wknds.

### Wanted

CHILDREN'S SWING SET - good cond., reasonable. Sharon, 727-0661 eves.

HOST FAMILIES - for Japanese exchange students, Aug. 4-Aug. 26. Ext. 5202 or 744-3190 for more information.

LOVING HOME - for kittens, tri-colored, semi-long haired, grey/white tiger. Lois, Ext. 2959 or 751-0023.

MODELS - for high fashion advertisement, must sign release, male & female. Ripp, Ext. 4672.

OLD LAWN MOWERS - complete, gas-type only, will pay $5-$10. Dan, Ext. 4987 or 698-7322.

WINDUP SWING - w/crib for infant & stroller for two children. Gene, Ext. 5632.

DRUMMERS - to play for pleasure, African, Carribean, South American rhythms. Lexy Mountjoy, Ext. 4574.

SOMEONE - to dismantle, move and reinstall a 24' above-ground pool. Grace, Ext. 4464 or 286-8374.

PERSON - to do yard work, must be 14-18, have own tools, be local. 286-1479.

HOMES - for assorted adult cats, w/shots. 744-2821 or 928-9537 leave message.

### 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. 924-9637.

HOUSE CLEANING - mature male, will clean throughly, fee set according to duties. 924-7696 after 7 p.m.

KAYAK LESSONS - sea kayak and river running, equipment provided, $60/5 hours. Tim, 281-7873 or Ext. 3496 eves.

BRICKWORK - patios, walks, swimming, pools, Belgian block, landscape ties, repairs, 20 yrs. experience. Tony, 698-9274.

LAND CLEARING - using excel. rake on JD 450 track loader, $55/hour with operator. Tom, Ext. 4084 or 878-1060.

FIRESWEEP CHIMNEY SWEEPS - fireplaces, wood, coal & oil flues, stainless steel caps & pipe, Lab discount. 821-9690.

SUSPENDED CEILINGS - spackling studios, dens, bedrooms, free estimates, Suffolk only, quality work. John, 281-3342.

MAGICIAN - balloon sculpture, professional magician, will make child's party special, Lab discount, ask for brochure. 395-3963.

D-BASE PROGRAMMING - experienced programmer, reasonable rates. Scott Kramer, Ext. 3170/2673.

### Classified Ad Policy

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

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

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

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

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

NAME (Please Print) .....

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

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