BROOKHAVEN BULLETIN
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BROOKHAVEN NATIONAL LABORATORY

Acid Rain: Brookhaven's Story

Since the 1960's, with studies of power plant emissions, Brookhaven Lab has had a strong program to study pollution in the environment. Recent years have seen a focus on acid deposition, commonly called acid rain. The point of this work is to understand how acid rain is formed and to learn what its effect is on the environment. It is not a simple task, and the process can be ponderously slow. But a solid scientific foundation is needed by those, outside of Brookhaven, whose job it is to make political decisions on the acid rain issue. This story is the first of a two-part series taking a look at the whole picture of acid rain research at BNL.

Part I: The Chemistry

Among the 30 or so scientists at BNL who engage in research on acid rain, Leonard Newman's good news/bad news quip is well-known. Newman has said, "The good news is that if you increase emissions, you might not get more environmental effects. The bad news is, if you decrease emissions, you might not get any bang for your buck."

Newman is referring to one of the major question marks in the field: On what scale is the relationship between source and receptor linear or non-linear? In other words, if industrial emissions are reduced, will acid deposition in sensitive receptor areas be proportionally reduced? They may not, says Newman, head of the Environmental Chemistry Division.

The reason the relationship may not be linear takes a little explanation. It is now commonly accepted that power plants and other industries burning fossil fuels emit sulfur and nitrogen oxides. When they get into the atmosphere, the sulfur and nitrogen oxides are transformed into sulfuric and nitric acids, the main culprits in acid rain.

Many scientists believe that a primary path by which sulfur dioxide is transformed is oxidation by hydrogen peroxide in clouds. Oddly enough, when measurements are made of the concentration of hydrogen peroxide in clouds, they frequently show that there is not enough hydrogen peroxide to do the job completely.

So the relationship between source and receptor may well be non-linear with respect to when and where acid deposition occurs. For example, reducing emissions in Ohio may not proportionally reduce deposition in the Adirondacks, depending on how much hydrogen peroxide there is en route.

This question of source/receptor relationship has become so crucial to understanding how acid rain is formed and where it is deposited that, in 1982, when the U.S. Department of Energy asked representatives of the national labs what they thought was the most pressing problem in acid rain research, their reply was unanimous: linearity in the material delivered in precipitation.

That's how PRECP was born. The six-year, $33-million PRocessing of Emissions by Clouds and Precipitation program is funded by the Department of Energy. It will address the processes that may lead to substantial non-linearity in the source/receptor relationship by studying the wet deposition process in rainstorms of many types and sizes. The hope is that a better understanding of these processes will lead to a better idea of the effectiveness of pollution controls, which can have price tags of $2-4 billion a year.

Power plant emissions are one of the main sources of acid rain. Cy Fink, Atmospheric Sciences Division, took this photo on a past field trip.

PRECP officially got under way this fiscal year. Brookhaven, Argonne and Pacific Northwest are the main laboratories involved, and the research is being coordinated by BNL's Paul Michael, head of the Atmospheric Sciences Division.

Michael and Newman have joined forces before, dispatching teams of scientists across much of the eastern U.S. and parts of Canada to sample the chemistry occurring in the atmosphere and to learn about the meteorology that influences the chemistry. They will team up again on PRECP, their biggest venture yet.

"It's an ambitious program," says Michael, "because the chemistry and meteorology are very complicated and there are many scientific unknowns."

Some might ask why it matters to understand the science. Why not just control what goes up, and it won't come down? Indeed that's true, says Michael, but it's not that simple. Giving just one example of the atmosphere's complexity, he notes that carbon dioxide will stay up for thousands of years.

"You have to understand how each part of the system responds so you can decide on the right controls," says Michael. As Newman has remarked, "If it comes down over the ocean, which is naturally acidic, you would not be too concerned about it at all."

PRECP is subdivided into four activities: analysis of previous studies, computer modeling, laboratory studies and field studies. The lab work will be done exclusively by BNL, in Newman's division, and will focus on studies of fundamental reactions involving chemicals of concern and water and ice.

The first field experiment is scheduled for April. Michael says they will be examining how pollutant concentrations vary as a function of position within storms. What happens to undeposited material is of extreme importance; pollution that leaves a storm can be re-emitted near the earth's surface or ejected high up in the atmosphere to a region called the free troposphere. In the free troposphere, pollution becomes part of the global background, instead of being deposited on a local or regional scale. That makes a difference for control strategies, says Michael.

Other experiments are proposed, such as looking at the production of acidic pollutants in areas of high sulfur and nitrogen oxide concentrations in clouds near a power plant plume, or perhaps releasing a pollutant from a mountain top right into a cloud.

Whatever the specifics, most of the field trips will involve cloud sampling. Of all the processes that occur in the atmosphere, cloud chemistry seems to play a dominant role in the formation of acid rain because the oxidation with hydrogen peroxide occurs in clouds.

Newman was one of the first to alert the scientific community to the idea that cloud chemistry is where the action is. The common notion was that all the oxidation was happening by reactions taking place in air and the resulting products dissolving in rain water. But field sampling revealed that there isn't enough acidic material in clear air to account for measured rain composition.

By doing simple box budgeting, which means calculating everything as if it were in a giant box and looking at what is emitted and where it is going, Newman concluded that the important chemistry was taking place in clouds. Not only were clouds the vehicle for acid deposition via rain, sleet and snow, but they were also a factory for converting acidic gases into acidic rainwater.

Newman did that work several years ago. The theory is now widely accepted, and much atmospheric acid rain research focuses on processes in clouds.

In fact, undertaking a major program like PRECP is possible only because of all the work that has gone on before at BNL and other Department of Energy labs. Brookhaven scientists have been doing field and laboratory studies on the environment for two decades.

In Newman's division, two of the more recent studies are almost completed. One on cloud chemistry involved field work in Syracuse, New York, which has no major sources of pollution, yet is on a main route of pollution traveling from Ohio to the Adirondacks and Canada. Another project took researchers to Whiteface Mountain, New York, to sample ambient pollution concentrations in an environmentally sensitive area.

Under Michael's division come other current projects. One study, centered around Philadelphia, Pennsylvania, is looking at the extent to which pollution from a large industrial and population center contributes to acid rain in the nearby region. Related to that work is a project to evaluate computer models that predict deposition on the urban and suburban scale. Another program uses computer data bases to study uncertainties in the amount of pollution being released from various sources. —Mona S. Rowe

Next Week: The Effects.

On the National Scene

Acid rain research at BNL is part of a large, Federally-sponsored effort organized under the National Acid Precipitation Assessment Program. The program's goal is to develop an information base for decision makers in Congress and the Executive Branch who are charged with formulating policies that maximize environmental benefit while minimizing cost.

Brookhaven's Bernard Manowitz, chairman of the Department of Applied Science, serves as chairman of the National Laboratory Consortium, which is part of the Federal assessment program. Members of the consortium are Argonne, Oak Ridge and Pacific Northwest, in addition to Brookhaven. At BNL, all acid rain research falls under Manowitz's department.

Says Manowitz, "The Federal effort recognizes that we have to know something about acid rain in order to know what to do about it." He says there is scientific consensus that man-made emissions of sulfur dioxide and, to a lesser degree, nitrogen oxides have increased acid precipitation over eastern North America.

What are the effects? Some lakes in sensitive regions have been acidified and have experienced fish loss. Recent studies have tended to reduce concern about crop damage, while increasing concern about forests. Corrosion and degradation of building material can be accelerated by increased acidity, and these studies are just beginning.

"There are major scientific unknowns in all these areas," says Manowitz, "and Brookhaven participates in gaining a better understanding of both the relationship between emissions and deposition and the relationship between deposition and effects."

From A to Z — We've Got It!

What begins with abrasives, ends with zinc and contains 50 different types of paper? A specialized dictionary printed for paper buffs? No. It's the master index to the 16 stores catalogues maintained by the inventory management section (IMS) of the Supply & Materiel Division. It tells the reader what catalogue to use to find out more about any of the 50 different types of paper IMS keeps in stock.

From abrasives to zinc, every entry in the stores catalogues goes through Millie Bennett, for whom updating the catalogue collection is a constant. "It's a very time-consuming job," says John Scharpeger, who heads IMS. "It's something that we are constantly changing in order to keep our inventory current and to have the material in stock that scientists and technicians need to do their jobs."

The 16 catalogues that Bennett attends to are devoted to electronics; semiconductors; glassware; laboratory supplies; chemicals; metals; plastics; tools; general items such as gases and household supplies; maintenance; electrical equipment; plumbing, heating and refrigeration; safety; stationery; fasteners (over 1,600 nuts, bolts and screws are listed in this catalogue alone); and the master index.

At the moment, 4,134 catalogues are distributed to 401 people on site. Not everyone gets every catalogue because, Scharpeger says, "It's rather expensive to maintain and print them, so we prefer that people who work together share." Part of that maintenance includes a bulletin IMS publishes monthy for all catalogue holders, listing additions to and deletions from stock.

Now listed in the stores catalogues are more than 13,900 items primarily stocked in two IMS warehouses, Buildings 90 and 91. The amount of stocked items has been reduced somewhat in the past few years, largely as a result of a 1982 cost reduction program in which IMS eliminated items that weren't moving.

Then there are the items that move very well. "The mix is constantly changing as new things come on," says Scharpeger. "All the PC's and word processors that are on site now have added a whole new dimension to the inventory — floppy disks are very hot right at the moment. And of course, we continue to do a big business in the traditional big movers — correction fluid, batteries, pads, pencils."

In deciding what will be stocked, Scharpeger relies on input from the Lab community. For example, a secretary who wants a new type of paper added to the listing in the stationery catalogue would complete a special form — a request for addition to stores. The request would be analyzed by IMS to see if it would be something that a significant part of the Lab community might use. If so, it would be added to stock and to the catalogue; if not, the secretary would be advised to order the item through the Division of Contracts & Procurement (DC&P).

Decisions are also made by committee. The Electronics Stock Committee, for instance, helps IMS determine what items should be stocked and listed in the electronics and semiconductor catalogues. This is particularly important, says Scharpeger, because, "The technology is moving so rapidly it's quite possible that within a short period of time whatever you have will be outdated. It takes a lot of work on the part of IMS and the committee to keep the electronics items up-to-date."

And Scharpeger stresses that they are up-to-date. "If you want it, we probably have it," he says. "Quite often, people go directly to DC&P. When DC&P checks with us, they find that the item is either in inventory or that there's something else in inventory that could be used as a substitute. If people would check the stores catalogues first, we could probably eliminate a lot of extra work."

Alex Reben

Surrounded by some of the 6,500 vendors' catalogues IMS maintains in its catalogue library are (standing, from left) Millie Bennett, who is in charge of updating the 16 stores catalogues maintained by IMS; section head John Scharpeger; (seated, from left) Marilyn Gibbons and Vanette DeJesus, inventory clerks who also help out in the library.

But before going to the stores catalogue, you might want to research an item. Fasteners, microprocessors, connectors — whatever you need, you'll probably find it described in several of the 6,500 manufacturers' catalogues IMS maintains in its catalogue library. "They're primarily for our use in establishing stock items," Scharpeger says, "but they're also open for use by the general laboratory population. They can check out a catalogue and take it back to the workplace, but we would like it back, because often there is some expense involved. Companies today often charge for their catalogues."

You've researched an item in the vendor's catalogue, found it listed in the appropriate stores catalogue, and now your focus shifts to requisitioning the item. Your requisition ends up in the order entry area, supervised by Genevieve Zaharakis, where it is entered into the computer. From that entry, a "pick" ticket is generated in the stockroom, then the material is pulled and delivered to you.

This process is now undergoing some change as departments go online with the IPAP order entry system. Though departmental participation is voluntary, Scharpeger says, "As they see the benefits that can be derived from it, I anticipate them coming on board very quickly." One benefit of joining this part of IPAP is that individuals have computer access to inventory listings. Sitting at their terminals, they can check the status of items — whether they are in stock and how much they cost — then place an order, eliminating the time lag involved in sending a written requisition.

—Anita Cohen

Winner's Circle

Pat Andrisani, Asst. Storeskeeper, Supply & Materiel Division, received a $25 award for suggesting that stop signs be painted on the driveway space between buildings T-89 and T-90. The idea is to encourage drivers to exert more caution when entering Railroad Street from this area and reduce the danger of a serious accident.

Tirre Farmer, Refrigeration & Air Conditioning Engr., Plant Engineering Division, suggested that first-aid instructions for choking victims be posted in all the lunch rooms on site. This safety precaution will make employees aware of the correct procedures to follow in the event of an emergency situation. He received a $25 award.

Arrivals & Departures

Arrivals

Leopold E. Magerovich ..... HEF

Departures

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

Rose M. Dlhopolsky ..... Physics

I.B.E.W. Meeting

Local 2230, I.B.E.W., will hold its regular monthly meeting on Monday, January 28, at 6 p.m. in the Knights of Columbus Hall, Railroad Ave., Patchogue. There will be no afternoon meeting. On the agenda will be regular business, committee reports, president's report and a vote to change meetings from Thursdays to Mondays each month.

Reports Available

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

BNL-51757
Vol. I & II
Gas-Liquid Chemistry of Natural Waters. L. Newman, Editor

BNL-NCS-51771
Charged Particle Nuclear Data Bibliography.
N.E. Holden, S. Ramavataram, C.L. Dunford

NUREG/CR-3811
BNL-NUREG-51773
Alternate Procedures for the Seismic Analysis of Multiply Supported Piping Systems M. Subudhi, P. Bezler, Y.K. Wang, R. Alforque

BNL-51778
NEANDC Specialists Meeting on Yields and Decay Data of Fission Product Nuclides. Held at Brookhaven National Laboratory, Oct. 24-27, 1983. R.E. Chrien, T.W. Burrows, Editors.

BNL-51783
Health Effects of Risk-Assessment Categories. C.F. Kramer, K. Rybicka, A. Knutson, S.C. Morris

NUREG/CR-3850
BNL-NUREG-51788
Debris Bed Quenching Under Bottom Flood Conditions (In-Vessel Degraded Core Cooling Phenomenology). N.K. Tutu, T. Ginsberg, J. Klein, J. Klages, C.E. Schwarz

BNL-51801
RHIC and Quark Matter. Proposal for a Relativistic Heavy Ion Collider at Brookhaven National Laboratory. H. Hahn

BNL-51822
Effects of a Subminiature Radiocollar on Activity of Free-Living White-Footed Mice. B.G. Ormiston

Black History Month Calendar of Events

In celebration of February as Black History Month, the Afro-American Culture Club is sponsoring a series of events that are open to the public. All events will be held at Berkner Hall.

Gospel Extravaganza — Saturday, February 2, 7 p.m.

Featured will be the Young People's Choir from Somerset, New Jersey. Established 18 years ago, the 25-member group performed at Brookhaven in 1983. Joining the Young People's Choir will be several local groups, including the Friendship Baptist Church Mass Choir of Riverhead; the Holy Trinity Mass Choir of Amityville; and Frank Anthone White and the Voices of Truth, a group of seven singers from area churches. The evening's program will include both traditional and contemporary gospel music. Tickets: $6 advance sale, $8 at the door.

Macramé Exhibit — Saturday, February 2, 6-11:30 p.m.

Ella McLean and Virginia Eleazer will be on hand to show a variety of their handmade knotted work. Admission free.

Lecture by Shirley Chisholm — Thursday, February 7, 7 p.m.

Shirley Chisholm was the senior Democratic woman in Congress, the only woman and the only black American to sit on the powerful House Rules Committee, and a leading member of the Congressional Black Caucus. In February 1982, Chisholm announced that she would not seek reelection to Congress. By writing, teaching, lecturing and traveling around the nation, Mrs. Chisholm says she hopes to create a new national state of mind that demands peace, prosperity and equality for all Americans. Admission free.

Venettes Cultural Workshop — Saturday, February 9, 7 p.m.

This workshop was formed 12 years ago with just 12 students. Today, enrollment in the dance program has expanded to more than 300, with schools in Wyandanch and Huntington teaching ballet, jazz, Afro, tap and modern dancing. Tickets for children under 12 are $2 advance sale, or $3 at the door; adults are $4 advance sale, or $5 at the door.

Dinizulu — Saturday, February 23, 8 p.m.

Dinizulu and his African Dancers, Drummers and Singers is a troupe of young Africans who are widely acclaimed for their fine performances of traditional African music and dance. Spending an evening with Dinizulu is like taking a visit to the ancient continent itself. Tickets: $7 advance sale, $8 at the door.

Advance tickets can be purchased from Frances Ligon, Ext. 3709, Bldg. 460. Or you can buy them through the mail by sending a check made out to BERA to the Afro-American Culture Club, P.O. Box 441, Upton, N.Y. 11973. Be sure to indicate the number of tickets per event and include a stamped, self-addressed envelope.

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BERA News

The list of clubs that ran in the Bulletin of December 21, 1984, did not include two clubs recently approved by the BERA Board: the BNL Chess Club and the BNL Swim Club.

BNL Chess Club

Club president Kim Mohanty started the Chess Club last year with a Bulletin ad calling for "CHESS-MATES — People interested in forming a BERA Chess Club." About 23 people responded and, by the end of September, the club had been approved. Now, from six to ten members are likely to show up at any of the meetings, which are held every Tuesday and Thursday at lunchtime in conference room 2-34 of the Physics building, 510.

Chess Club membership runs the gamut, from beginner to experienced, and Mohanty emphasizes that play takes place at all levels. "Anybody who wants to play chess and learn about chess should come and not be intimidated by being a beginner," he says.

In addition to the biweekly play among members, Mohanty says the club is concentrating on getting a tournament going this year. He also thinks, "It would be nice to get into an industrial chess tournament, but that's going to take some time."

If you'd like to play chess and help the club realize its goals, call Kim Mohanty on Ext. 7110.

BNL Swim Club

The Swim Club, which became an official BERA activity earlier this month, already has 33 members who meet at the BNL pool on two Thursdays every month, at 5:15 p.m. According to president Marsha Belford, the club was organized to:

- encourage people to swim regularly and to organize their workouts to get a real cardiovasular effect from swimming.
- encourage competition at whatever level people feel comfortable.
- lobby for pool improvements.

Toward these ends, each meeting is divided into two parts — about 15 minutes of discussion, followed by an hour of swimming. One monthly swim session is devoted to practicing new skills and strokes; the other centers on a group workout. During its meetings, the Swim Club is allotted one-half of the pool, so open swimming can go on at the same time.

The BNL Swim Club will have its first official meeting as a BERA Club on Thursday, January 31, at 5:15 p.m. at the pool. Members and all those who can swim at least one lap without stopping, using the crawl, are invited to participate in a half mile workout, the first in a graduated monthly series. An optional time trial will be held afterwards. For more information, call Marsha Belford, Ext. 3327, or am captain Mark Catan, Ext. 2504.

Bowling

High games were bowled by K. Riker 233, J. Elmore 221, B. Jones 219, G. Meinken 219/201, R. Larsen 213, B. Sick 212, P. Ouvrard 210, L. Jacobson 205, B. Sells 201, J. Ferrante 200.

Alex Reben

Arriving at work last Monday morning, many employees noticed that a small section of trees, just south of Police Headquarters, was laden with ice, in stark contrast to the surrounding forest. The frosty formations shown here were created when the water tower that stands in front of the woods overflowed for a short period of time, due to an instrument malfunction at the water treatment plant. The malfunction was corrected, but this week's frigid temperatures prevented the ice from melting.

Singles Club

There are still some openings for skiers and non-skiers on the Gore Mountain ski trip, February 22 to 24. The bus will leave from BNL at approximately 5:30 pm.

The Singles Club is sponsoring Country & Western dance lessons (not square dancing) on Thursday, January 31, in the North Room of the Brookhaven Center from 7 to 8 pm. All welcome; $5 fee. Any questions, call Doris Terry, Ext. 2228.

Mountain Club

The Mountain Club will lead a hike across the frozen Great South Bay to Fire Island on Saturday, January 26. Meet at the Bellport Dock at 10:30 a.m.; return is expected by 3 p.m. Bring lunch. There might be enough snow on the ice if some want to cross country ski. All are welcome. For further information, call Don David, Ext. 4821, or 286-2267.

Cafeteria Menu

Week Ending February 1

Monday, January 28		
Potato bacon soup	(cup)	.65
	(bowl)	.85
Turkey à la king on rice		2.05
Ham & potato au gratin & 1 veg.		2.05
Hot Deli: BBQ fresh ham	(bread)	2.05
	(roll)	2.25
Tuesday, January 29		
Turkey noodle soup	(cup)	.65
	(bowl)	.85
Fried chicken finger platter		2.10
Seafood Newburg on rice		2.25
Hot Deli: Italian sausage hero		2.20
Wednesday, January 30		
Pepper pot soup	(cup)	.65
	(bowl)	.85
Top round of beef & 1 veg.		2.15
Fettucini carbonara & 1 veg.		2.15
Hot Deli: Monte Cristo		2.15
Thursday, January 31		
Navy bean soup	(cup)	.65
	(bowl)	.85
Veal patty Parmesan & 1 veg.		2.25
or w/spaghetti		2.45
Beef Burgundy on noodles		2.20
Hot Deli: Corned beef	(bread)	2.00
	(roll)	2.20
Friday, February 1		
New England clam chowder	(cup)	.65
	(bowl)	.85
Shrimp & fries		2.25
Braised chicken livers & 1 veg.		2.05
Hot Deli: Knockwurst & kraut	(bread)	2.00
	(roll)	2.20

NYC Train Trips

Long Island Railroad trips to New York City are sponsored by the Hospitality Committee. To take advantage of the group rate, a minimum of 30 people is required. Passengers travel into the city as a group, but individual return-trip tickets are distributed which are good on any train the same day, including the train at midnight.

	Wednesday	Saturday
February	6, 20	23
March	6, 20	9
April	3, 17	6
May	1, 15, 29	4
June	5, 19	8
July	3, 17, 31	20
August	7, 21	24
September	4, 18	21
October	2, 16, 30	19
November	6, 20	9, 30
December	4, 18	7, 14, 28

Wednesday trips: Tickets are $5 each. The train leaves the Patchogue LIRR station at 7:55 a.m.

Saturday trips: Tickets are $6.50 each. The train leaves the Patchogue LIRR station at 8:31 a.m.

Additional information:

Children under five years of age ride free.

Checks must be received no later than 48 hours prior to a trip.

Checks or money orders should be made payable to BNL and mailed through the U.S. mail to Hospitality Committee, P.O. Box 322, Upton, New York 11973. Put your life number, telephone number and date of the trip on your check. Do not send cash. If you are planning to take more than one trip into the city during the month, please send a separate check for each date.

Cancellations must be received no later than 48 hours prior to a trip. If you fail to cancel on time, or if you miss the train, your money will not be refunded.

If you are planning to board at another station, you must indicate this fact when sending in your fare.

Astronomical Society

A regular observation night is scheduled for tonight at the Observatory. Dress warmly. In case of poor viewing conditions, Friday, February 1 will be an alternate date. Anyone interested in participating should call Bob Mills, Ext. 5043, or Rick Jackimowicz, Ext. 3803 for details.

Call for BNL Artwork

The 10th BERA Members' Art Exhibit opens on Monday, March 11 at 4:45 to 7:00 p.m. in Berkner Hall. Following the opening, the exhibit may be seen weekdays only from 11:30 a.m. to 1:30 p.m. until March 22.

All BERA members including employees, immediate family 16 years of age and over, and retired employees are invited to contribute their work to the exhibit. Two categories, pictures and sculpture, will be displayed. Contributions done in watercolor or oils, drawings and graphics will be accepted under the picture category. No crafts may be submitted for this exhibit. The Committee can accept only two works from each contributor. All works must be suitably framed and ready for hanging; otherwise, they will not be accepted.

In order that a printed catalogue can be ready for the opening, the Art Committee requests that you complete two forms for each work you intend to exhibit, and return them to the BERA Sales Office in Berkner Hall no later than February 22. Additional forms may be picked up at the BERA Sales Office. Works should be delivered to Room B, Berkner Hall, on March 8 between 11:00 a.m. and 1:00 p.m. and picked up there between noon and 2 p.m. on March 22. The committee will not be responsible for works left after that time.

Return To BERA Sales Office - Berkner Hall

Name of Artist ..... Phone .....

Title of Art Object .....

Medium .....

Laboratory Contact: .....

Classified Advertisements

Placement Notices

The Laboratory's placement policy is to select the best-qualified candidate for an available position, with consideration given to candidates in the following order of priority: (1) present employees within the department, with preference to those within the immediate work group; (2) present employees within the Laboratory as a whole; and (3) outside applicants. In keeping with the Affirmative Action plan, selection decisions are made without regard to age, race, color, religion, national origin, sex, handicap or veteran status.

Each week, the Personnel Office lists new personnel placement requisitions. The purpose of these listings is, first, to provide open placement information on all non-scientific staff positions; second, to give employees an opportunity to request consideration for themselves through Personnel; and, finally, for general recruiting purposes. Because of the priority preference policy stated above, each listing does not necessarily represent an opportunity for all candidates. As a guide to readers, the listings are grouped according to the anticipated area of recruitment.

Except when operational needs require otherwise, positions will remain open for one week following publication date.

For further information regarding a placement listing, contact the Employment Manager, Ext. 2882.

LABORATORY RECRUITMENT - Opportunities for Laboratory employees.

2175. SECRETARIAL POSITION - Requires AAS degree in secretarial science or equivalent experience. Excellent typing, word processing and communications skills mandatory. Will assist lead secretary in the preparation of patent applications and legal briefs.

OPEN RECRUITMENT - Opportunities for Laboratory employees and outside applicants.

2176. P&GA SPECIALIST - (evening shift 5:00 p.m. to 1:00 a.m.) - Req;uires one to two years' experience operating a shared logic work processing system. Photography and Arts Division. Reposint of Job #2172.

Autos & Auto Supplies

78 CHEVY CREW CAB - cruise control, dual gas tanks, batteries, full gauges, extras, $5,500. 732-0887.

76 MATADOR ENGINE - w/17K orig. mi., 1 yr. old trans. and other spare parts. 289-1665.

73 FORD TORINO WAGON - fair cond., good transp., asking $400. 286-3791 eves.

76 MONARCH - high mileage, good cond. Kay, Ext. 3592 or 744-9475.

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

71 DUSTER - runs well, stereo, $500. Chris, 475-8504.

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

72 DODGE DART - a/t, p/s, p/b, 76K mi., excel. eng., good body, asking $800. 475-5430.

77 PLYMOUTH VAN - 8 passenger maxi, brand new tires, $2,500. 736-3918.

74 PONTIAC GRAND PRIX - p/s, p/b, p/w, p/seats, $400 neg. Chris, Ext. 7782 at 10 a.m.

75 VW BUG - excel. cond., am/fm, snows, ski rack, 2 extra rims, $1,400. Bill, Ext. 2906 or 929-6189.

78 TOYOTA COROLLA LIFTBACK - a/c, high mi., excel. service record, runs and looks great, $1,300. Ext. 3988 or 884-7333.

79 CHEVY MONZA - V6, 4 spd., p/s, p/b, a/c, am/fm stereo, new rubber, good mpg, $2,800. 878-0012.

73 PLYMOUTH STATION WAGON - 85K mi., needs trans., good engine, $200. Bob, Ext. 4615 or 744-3224 after 6 p.m.

74 OPEL MANTA LUXUS - needs trans., 75K mi. on engine, $375. Ext. 2386.

SNOW TIRES - (2) on Chevy rims, 225x15, $30/pr. Walter, Ext. 7144.

81 DATSUN 210 STATION WAGON - 3,900 mi., a/c, stereo tape deck, a/t, luggage roof rack, mint. cond., $5,500. 286-9485.

83 TOYOTA SR5 - 4 x 4, fiberglass cap, off road lights, fog lights, push bar, more, $10,800. George, Ext. 2022 or 475-5336.

83 CUTLASS SUPREME - V6, a/c, p/b, p/s, cruise, mint cond., orig. owner, 28K, $8,500. 751-0182.

SNOW RETREADS - H78-15, new cond., $20/pr. Ext. 4632.

74 MUSTANG - new exhaust, new tires, a/t, some rust, runs well, $600. Diane, 724-2563.

71 CHEVELLE MALIBU - mechanically sound, snow tires, best offer over $600. 724-5131 eves.

76 MONTE CARLO - a/c, p/s, p/b, very good, 350 eng., $2,600. 585-3417.

74 MUSTANG - p/s, p/b, a/t, am radio, extra rims, 4 cyl., excel., $2,300. 585-3417.

26' MOTORIZED WINNIBAGO - full bath, 5 KW generator, built-in vac. sys., mint cond., $12,000. 744-8672.

71 VW BEETLE - rebuilt eng., needs work, good commuting car, $550. Pat, Ext. 4255.

70 DODGE - window fan, 318, a/t, long wheelbase, heavy duty trailer hitch, new trans., $750. Ext. 3536 or 289-7615.

76 FORD VAN - panelled, windowed, $2,000; 78 Ford Fairmont Futura, loaded, $2,200. Ext. 4530 or 261-2719.

75 DART - good transp., 93K mi., $950 neg. 878-1572.

70 CHEVY STATION WAGON - 400 ci., p/b, p/s, a/c, a/t, 130K mi., fair cond., best offer. R. Perry, Ext. 3270.

79 DATSUN 280ZX - GL package, champagne, a/t, new stereo w/tape, $6,800. 928-6752.

TRAILER HITCH - class 2 for mid-size GM cars, $50. Ext. 2799 or 757-1581.

80 HONDA CIVIC 1300 DX - 5 spd., very good cond. Ext. 4752.

80 FORD FAIRMONT - p/s, p/b, a/c, a/t, 6 cyl., runs well, excel. body. 929-4734.

CHEVY 307 WATER PUMP - new, $10; 1/2" r.h. locking lug nuts, new, $8. Paul, Ext. 4156.

74 CHEVY VEGA - 4 cyl., alum. rims, asking $900 or best offer; 70 Ford, straight 6, runs great, $300 or best offer. John, 878-0939 after 6 p.m.

RADIAL TIRE - P205/75R15, $20; Chevy wheel cover, $5. Morris, Ext. 4192.

TIRES - (4) Goodyear, belted b/w, (2) snow, (2) reg., mounted & balanced on Valiant/Dart wheels, almost new, $100. 289-8212.

BUMPERS - front, rear step, bumper guards, stainless mirrors, 15" wheels, stainless wheel covers, fits 1973-1981 Chevy pickup. Ext. 2462.

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

SNOW TIRES - Sears radial, 14", good tread, $30/pair. Ext. 2705 or 286-1062.

TOW BAR - H.D., universal, 5000#, new, $175; frame mount hitch, $50. 269-9510 after 7 p.m.

71 FORD MAVERICK - 4 dr., (4) new tires, runs well, rusty, $500. 286-1097.

72 PLYMOUTH VALIANT - 318, a/t, 2 dr., good transp., $450. Joe, Ext. 5233 or 369-0432 eves.

81 BUICK REGAL - 2 dr., V6, p/b, p/s, a/c, am/fm, spoked wheels, white beauty with 47K mi., $5,950. George, 878-6647 eves. or 878-2038.

81 FORD FAIRMONT - wagon, 6 cyl., a/t, a/c, p/s, p/b, tint r/r, rear defog., inter. wipers, 53K mi., $3,675. Jerry, 821-9296.

79 PLYMOUTH SAPPORO - excel. cond., 44K mi., a/t, a/c, good mi., am/fm cassette, $2,900. Ext. 3077 or 4603.

74 FORD HEAD - 6 cyl., compl. rebuilt, cost $450, sell for $150. Bill Sanchez, Ext. 3848 or 281-6498.

81 DODGE ARIES - wagon, a/t, a/c, p/s, am/fm. Dave, Ext. 4019 or 698-2256.

70 CHEVY IMPALA - $500. 929-4734.

RADIAL TIRES - (4) P175x75R13, very good cond., asking $65 for all. Mike, Ext. 2907.

73 FORD PICKUP - good cond., extra wheels & parts, cap, $1,300. 331-5118, 5-9 p.m.

70 OLDS 88 - p/s, p/b, 4 dr., new trans., $300. Jeanne, Ext. 7742 or 281-7568 eves.

72 FORD - 6 cyl., 250 ci., a/t, 70K mi., $250. John, 584-5216 after 6.

80 FORD FAIRMONT - a/t, a/c, p/s, p/b, runs well, excel. body, 929-4734.

76 AMC GREMLIN - $800. Pete, Ext. 5320.

83 MOPED - Suzuki Shuttle, 50 cc, good cond., $149. Frank, 399-4480.

78 MERCEDES BENZ 300 - diesel, clean, very good cond., asking $9,500. Ext. 7959 or 727-5803.

72 MERCURY COUGAR - A-1 motor, excel. body, new tires, $1,200. 924-3236 after 5 p.m.

STEEL BELTED RADIAL - Kelly Springfield, GR70-14, $10. 821-2515.

Boats & Marine Supplies

19.5 BAYLINER CAPRI - 1983, bow rider, Volvo I/O, w/trailer, like new. 736-3918.

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

MARINE VHF ANTENNA - 8', w/20' coax cable, brand new, $25. Ext. 2799 or 757-1581.

MERCURY ENGINE - 1980, 40 HP, man. controls, rope start, needs work, $150. 878-6032.

Miscellaneous

STORM WINDOWS - (2) 36" x 39" alum., triple track, good cond., $20/ea. Ext. 2350 or 732-9517.

COLECO KOOSAS - $45/ea.; Corona kerosene heater, 20,000 btu, Corona, used 1 mo., $50. Donna, 722-4644.

WEIGHT LIFTING SET - includes bench, long and short bars and 16 weights, $20. Frank, Ext. 3121.

SKI BOOTS - 8-8-1/2, Raichle, never used, list price $90, sell for $39. Ext. 3164.

BEDROOM SET - 7 pieces, solid pine, less than 1 year old; woman's rabbit coat, size 9, very warm; student desk, light pine, needs a little work, price negotiable. 399-4122.

FULL LENGTH MINK COAT - white and fawn, size 8-10, $2,295 value, must sell, $700. Chris, Ext. 7782.

SKI BOOTS - Nordica, never used, size 13M, $40. Klein, Ext. 4018.

FIREWOOD - five cords of oak, not split, you haul, $80/cord. Lou, Ext. 4687.

HAM OPERATORS - HW16 transceiver, V.F.O. antenna tuner, SWR meter, coax switch, $200. Oster, 589-2468.

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

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

ROWING MACHINE - two cylinders, rolling seat, adjustable pull, nearly new, $60. Ext. 4745 or 744-3225.

RETENTION HEAD BURNER - good cond., Stewart Warner Model #HPR-135, $35. Joe, Ext. 4439.

COLOR TV - Sharp 13", excel. cond., only 300 hours, good for monitor/TV, $180. Bob, Ext. 4656.

COUCHES - (2) 8 ft. and 6 ft., gold velour, contemporary, walnut trim, excel. cond., $300. Lydia, Ext. 2380 or 929-8142.

WEYLESS BICYCLE ROLLERS - w/steps and speedometer, $50. Ext. 4112.

CARNEGIE HALL TICKETS - (2) Mozart, Bach, Parquet Section, January 26, $12.50/ea. Mike, Ext. 4414.

VIC-20 COMPUTER - and cassette drive, basic programs and games. Herb, Ext. 3611.

MASONARY BLADE - 6-1/2", new, $3; sliding patio door handles, new, $15. Paul, Ext. 4156.

ZENITH TELEVISION - b/w, 12", excel. cond., $45. Ext. 3228 or 3230 eves.

END TABLES - (2) Traditional, octagonal shape; Danish modern couch; starburst wall clock; Hedstrom stroller, w/winter protector. 751-6418.

COLECOVISION - with joysticks and games. 331-1572.

SINK WITH FAUCET - for bathroom, pink, $20. Morris, Ext. 4192.

MAN'S SWEATER - winter pullover, new, med., $8; towel set, pink and green, $5. Susan, Ext. 4267.

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

COLECOVISION - excel. cond., used only a few times, (2) cartridges, $90. Ellen, Ext. 4486.

EXHAUST HOOD - for kitchen range, excel. cond., 30", variable speed, w/light, $45. Tom, Ext. 4084 or 878-1060.

POT BELLY COAL STOVE - $75. Ripp, Ext. 4672.

REFRIGERATOR/FREEZER - 19 cu. ft., good running cond., $100. Ext. 7505 or 689-8605.

EARTH WOOD/COAL STOVE - w/chimney stack kit, A-1 cond., $375. 588-4703.

DOUBLE HUNG WINDOW - wood, brand new, approx. 3' x 4', $50. Joe, Ext. 5233 or 369-0432 eves.

CATALYTIC HEATER - 5,000 BTU, used a few times, new $60, sell for $40. Ext. 4098.

ELEC. TYPEWRITER - Adler, $100; elec. portable baseboard heater, new, $50; elec. clothes dryer, $35; assorted baby clothes. 289-9724.

MAN'S BIKE - Royce Union, 26", coaster brake type, $30. 821-2515.

DRUMS - (2) 55 gal., used exclusively for kerosene, $11.50/ea. or 2/$20. 924-3236.

Free

RABBITS - adorable, French Lop Ear, desperately need loving home, great pets. Bob, 758-9499.

DOBERMAN - male, 21 mos. old, house broken, owner can't keep dog. Ext. 2503.

Car Pools

PLAINVIEW/BETHPAGE/HICKSVILLE - 8:30-5:00, nonsmoker, drive or ride, on time. Walter, Ext. 4605.

SHOREHAM - join or form car pool. Pete, Ext. 3297 or 821-9547.

Real Estate

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

For Rent

MILLER PLACE - furnished house, 3 bdrms., kit., l/r, d/r, $725/mo. + utilities. 928-5103 eves.

SOUND BEACH - 3 room apt., 1 bdrm., kitchen and dinette, $400, utilities and cable included. 821-1059.

NO. SHIRLEY - large furnished studio apt., w/kit., private entrance, util. incl., 5 min. from Lab & stores, one person only, nonsmoker, no pets, security, $400 pays all. 281-8044.

SHOREHAM - 4 bdrm. Colonial, l/r, d/r, f/r, carpeting, country kit., dishwasher, washer/dryer, garage, March occupancy, $1,250 incl. all. 744-8659.

RIDGE - 5 mi. from Lab, clean, just renovated, 2 bdrm. house, w/w, walk private lake, ice skating, swimming, 2 mos. security, $625 plus. 929-4663.

E. PATCHOGUE - So. of So. Country Rd., 2 bdrms., l/r, eik, bath, private entrance, avail. Feb. 1st, $410/mo. + util. (no pets). Walt, Ext. 2907 or 698-0576.

SO. BLUE POINT - studio apt., $475. Ext. 4846 or 363-6940 after 5 p.m.

FLORIDA - Boynton Beach, Fla., 2 bdrm. condo., 1-1/2 baths, inland waterway, recreation, year lease, $450/mo., option to buy. 286-0795.

MT. SINAI - rustic area, 3 bdrms., eik, l/r, basement, htd porch, $800/mo. 744-8013 eves.

BELLPORT BEACH ESTATE - 2 bdrms., l/r, garage, waterview, next to golf course, beach across the street, furnished, util. not incl., March-June, $650/mo. 289-9724.

For Sale

MASTIC - 2 bdrm. house on one acre, well landscaped, 2 car detached garage, garden-tool house, split rail fencing of corner lot, $65,000. 281-2002

YAPHANK - 2 bdrm. condo., 1-1/2 bath, full bsmt., new w/w carpet, new oil heat/hot water, club house, tennis courts, 2 pools, 2 miles to Lab. Henry, Ext. 4547 or 924-6688.

HAUPPAUGE - 9 rm. hi-ranch, m/d, separate entrance, prime area, low taxes, 80 x 200, many extras, 3 min. from L.I.E., $139,000. 724-4268 after 6 p.m.

ROCKY POINT - adorable starter house, walk to beach, 15 min. to Lab, fenced yard, aluminum siding, w/w carpets, full basement, easy to heat, low taxes. Ext. 2697 or 744-2870.

MILLER PLACE - Colonial, 4 bdrms., formal l/r & d/r, country kit., 4 baths, f/r w/brick fireplace. 331-1718.

NO. CORAM - townhouse, w/w carpeting, washer/dryer, fenced yard, redwood deck, 2-zone heating, 2 bdrms., A-1 cond., basement, $75,000. 331-5118 before 9 p.m.

Wanted

INFANT CAR SEAT - crib and mattress, breast pump, book shelves. Pete, Ext. 7190, 2193 or 369-1844.

RECORDS - 45 rpm and some LPS of the 50's and 60's era; trains, Lionel, any "0" gauge or "027" gauge cars, track and equip. Frank, Ext. 3120.

PAINTER - interior painting, private home. 744-4611 after 7 p.m.

RIM - 78-13 for 1971 Gremlin. Janet, Ext. 2345 or 929-8152.

TRIPOD - for 35 mm camera, in good cond. Ext. 7573.

INFORMATION PLEASE - anyone whose automobile has had a rebuilt engine job. Ext. 7117.

CAMPBELLS SOUP LABELS - for St. Mary's School, East Islip, send to F. Chandler, Bldg. T-89.

GARBAGE DISPOSABLE UNIT - used, for motor. George, 589-0819.

OLD MAGAZINES - for CHPS medical center, you bundle up, I will pick up. Joe, Ext. 3464 or 281-7683.

RADIATOR - for 1967-73 Dodge Dart or similar Chrysler auto. Bill Sanchez, Ext. 3848 or 281-6498.

SNOW TIRES - G-78-14. Bob, Ext. 3575.

Lost & Found

LOST - 1 black leather glove, on 1/14 in the gym area. Pat, Ext. 4628.

FOUND - sterling earring, near cafeteria, produce mate for return. Ext. 4904 or 2924.

Classified Ad Policy

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

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

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

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

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

NAME (Please Print) .....

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

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