

Discovering the Origin Of French Medieval Sculpture

Art historians do not know the exact geographical origin of much of the celebrated Romanesque and Gothic sculpture made in France during the ninth through 15th centuries because of destruction or displacement during the French Revolution and various religious wars. Also, records were lost as these sculptures were passed through the art market and eventually bequeathed to museums.

To determine the origin of approximately 2,000 sculptures in American museums, art historians have relied on traditional methods, such as comparative visual analysis and analysis of carving techniques. Now,

they will have help from Brookhaven's Chemistry Department, when BNL chemist Garman Harbottle and his BNL research collaborator, chemist Lore Holmes, use scientific techniques to verify and expand the art historians' findings.

Thanks to a grant from the Florence J. Gould Foundation, a New York City-based organization that specializes in aiding American and French scholars, the BNL researchers will attempt to find the geographical origins of these sculptures using neutron activation analysis and thin-section petrography.

Charles Little, associate curator of the Metropolitan Museum of Art's Department of Medieval Art, will oversee the two-year project's art-history component and financial administration. Collaborating institutions also include in the U.S.: Bard College, Duke University, Harvard Art Museums, and the International Center for Medieval Art; and in France: the Centre de Recherches sur les Monuments Historiques, the Louvre and the Université de Paris.

Harbottle, Holmes and their French collaborators will attempt to identify the quarry sites for stone used in the sculptures of participating museums, analyze limestone samples from approximately 50 quarries in the Ile-de-France, Normandy and Burgundy, and compare the stone in the sculptures and quarries. The findings will be included in a computer data base on sculptural limestone analyses at BNL.

The greatest number of French sculptures in American collections are attributed to the regions of France where these quarries are located. Finding sources of stone to conserve and restore these sculptures will be an easier task as a result of the new investigation.

"There is a sense of urgency in identifying these sculptures because of the urbanization of central

Chemists Garman Harbottle and Lore Holmes drill a piece of limestone from a French quarry to obtain a sample for neutron activation analysis.

—Photo by Roger Stoutenburgh



Head of a King, from the Metropolitan Museum of Art, is one of the French medieval limestone sculptures undergoing neutron activation analysis at BNL.

— Reprinted courtesy of the Metropolitan Museum of Art.

Inside Info

F. William Studier, Senior Biophysicist in the Biology Department, and Norman Sutin, Chairman of the Chemistry Department, were among the 96 leading scholars, scientists, public figures and artists who were recently honored with election to membership in the American Academy of Arts and Sciences.

Founded in 1780 by John Adams and other leaders of the American Revolution, the Academy is an international honorary society based in Cambridge Massachusetts. Its purpose, as set forth in its original 18th-century charter, is to "cultivate every art and science which may tend to advance the interest, honor, dignity and happiness of a free, independent and virtuous people." For over two centuries, the Academy has been a leading force in American intellectual life, and among its current membership of over 3,000 it counts 148 Nobel laureates and 58 Pulitzer Prize winners.

Effective today, Satoshi Ozaki, head of the RHIC Project, also becomes Acting Chairman of the Accelerator Development Department (ADD), BNL Director Nicholas Samios announced this week.

Former ADD Chairman Eric Forsyth completed his term yesterday, and Samios noted, "Under his leadership, the Laboratory was able to vigorously move forward on its com-

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Planning Cooperative Research



The U.S. Department of Energy's (DOE) enhanced emphasis on waste management and environmental restoration of its facilities has inspired two BNL departments — the Department of Applied Science (DAS) and the Department of Nuclear Energy (DNE) — to explore future cooperative research utilizing existing expertise and capabilities.

While DNE performs extensive waste management research, to date, this research has focused mainly on nuclear waste. DAS's program includes research into the biological remediation of the environment, chemical waste treatment, and risk assessment, but its findings have not been extensively applied to the Lab site.

So, on Tuesday, May 15, about 25 members of those two departments and BNL's Safety & Environmental Protection Division met to discuss BNL's environmental restoration and waste management problems, and to identify possible collaborative research projects that would benefit the site.

Here, one of the workshop organizers, Chemist Peter Colombo, DNE, gives an overview of DOE's programs for waste management and environmental restoration. The other organizers were: Robert Bari, DNE; George Hendrey, DAS; and Richard Sapienza, DAS.

As a result of the day-long presentations and discussions, the participants agreed to make themselves available as consultants to S&EP, and to pursue DOE funding for projects such as waste solidification, risk assessment, and biological remediation.

France," Harbottle said. "Shopping centers and condos are being built over these medieval quarries, which may soon be destroyed or buried."

In addition to suggesting the origin of the sculptures, the researchers will be able to authenticate some of them. Harbottle explained that some sculptors copied famous medieval pieces in French cathedrals like Notre Dame. By comparing the limestone in a questionable sculpture with that of the quarry from which it is supposed to have originated, authenticity can be investigated.

In neutron activation analysis, BNL researchers use the High Flux Beam Reactor or the Brookhaven Medical Research Reactor to irradiate a sample of sculpture or quarry stone with neutrons. When the sample is bombarded with neutrons, 15 to 20 chemical elements become

radioactive. The radioactivity is then measured with gamma-ray counters. Since each element has a characteristic spectrum of gamma rays, the counts are then used to determine the proportion of each element in the stone.

"If a sculptor did a number of pieces using limestone from the same quarry, then there would be a great chemical similarity among the pieces," Harbottle said.

Harbottle added that neutron activation analysis has had medical and industrial applications since the 1940s, but in the 1960s, BNL researchers were the first to use the technique to analyze art objects.

In thin-section petrography, the limestone is viewed under a microscope to determine its origin from fossil remains of animals, proportion of minerals and other factors. Together, neutron activation analysis and thin-section petrography may help reveal sculptural secrets as much as eleven centuries old.

— Diane Greenberg

Talk Next Week On Radar Tower

On Thursday, June 7, Louis Boezi, Deputy Assistant Administrator for Modernization in the National Weather Service (NWS), will speak in Berkner Hall about the Next Generation Radar Tower (NEXRAD) that has been proposed for Long Island.

In recent weeks, representatives of the National Weather Service and the U.S. Department of Energy's Brookhaven Area Office have been meeting to discuss the possibility of constructing the Long Island NEXRAD site at BNL.

Boezi is responsible for the modernization of the NWS, of which the nationwide network of NEXRAD systems is an important component. In his BNL talk, which will begin at 12:15 p.m. to coincide with employees' lunch periods, Boezi will explain the NEXRAD system — its purpose and how it works — and answer questions.

Roger Stoutenburgh

Coming Up

Nobel laureate Roald Hoffmann will present the 20th Pegram Lecture Series on three consecutive evenings — Monday, Tuesday and Wednesday, June 11, 12 and 13. All lectures will begin at 8 p.m. in Berkner Hall.

Under the theme "The Same and Not the Same," the theoretical chemist will explore the essential tensions of chemistry through three talks entitled "The First Question," "The Driven Natives" and "Meanwhile, Back in the Lab."

Inside Info

(cont'd)

mitment to the SSC program, the construction of the Booster Accelerator, and the planning for the Relativistic Heavy Ion Collider. Each of these programs represents important frontiers in science and technology and is crucial to the high energy and nuclear activities at Brookhaven. I want to thank Eric for his personal contributions and dedication in managing these efforts.

"I understand," Samios continued, "that Eric plans to undertake another one of his sailing adventures. This time it will include going around Cape Horn. Our best wishes go with him."

Forsyth stepped down from the chairmanship in order to take a 15-month leave of absence, during which he will sail his 42-foot, cutter-rigged sailboat *Fiona* down to the Caribbean, through the Panama Canal, to Tahiti, around Cape Horn, up the South American coastline, then back to the Caribbean and finally back to its berth in Patchogue.

In the boat he built himself, and with a permanent crew of two, Forsyth leaves tomorrow. If all goes according to schedule, he will round Cape Horn on January 1. "The whole trip is planned to try to take the best advantage of the weather, the seasons and winds," he said. "We hope to gain enough time so we can spend a month in the Cape Horn region, which has spectacular cruising with scenery similar to the Norwegian fjords."

Though Forsyth has frequently cruised the Caribbean and has crossed the Atlantic in *Fiona* twice, he said, "I have never been in the Pacific with a sailboat. Once we get through the Panama Canal it will be all new."

Bon voyage!

Arrivals & Departures

Arrivals

Christine A. Bartling.....Staff Services
DeHuai Chen.....Physics
Sanghoon Lee.....DAS
William Struble.....Cent. Shops
Michael J. Zarcone.....AGS

Departures

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

Kim T. Bothe.....Medical
Lee P. Brett.....Sfgrds. & Sec.
Chester Bubka.....Cent. Shops
Xiaodong Cheng.....Biology
Jack J. Fontana.....DAS
Pierre Grand.....DNE
Rudy Hodor.....DNE
Wolfhard G. Kern.....Physics
I-Jy Lee.....Chemistry
Monica Manning.....S&EP
Thomas Northam.....Plant Eng.
Ilya Shimon.....AGS
John S. Sullivan.....AGS
Klaus Werner.....Physics

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

Congratulations, Graduates!

- Take four bright, ambitious and enthusiastic employees.
- Add a big dose of support from BNL's tuition refund program.
- Mix with some local colleges.
- Give them a few years.
- Yield: four degrees — three undergraduate and one graduate.

For Bonnie Biittner, Renée Flack, Juanita Heyliger-Turner and Joan Sperry, this formula will yield results next week — when they graduate from Dowling College in Oakdale

On Tuesday, June 5, Flack will be receiving her MBA, while on Sunday, June 3, the other three will take home their BBAs — Biittner and Sperry in accounting, and Heyliger-Turner in management.

While working in the Affirmative Action Office in the Director's Office, Flack started on the road to her master's degree in business administration by taking her first course on site, from the New York Institute of Technology (NYIT). Flack herself played a key role in initiating BNL's program of offering college courses on site, which, in addition to NYIT, has also included Suffolk Community College (SCC), St. Joseph's College and Dowling. In fact, Flack earned her associate's degree in business, with distinction, from SCC and her B.S. in human relations from St. Joseph's.

"I was just determined to go all the way through," said Flack. "My goal is to get a Ph.D. in education." And her BNL career is paralleling her educational growth: In the beginning of the year, Flack moved to the Office of Educational Programs, where she is a senior education programs representative.

"All my courses were taken under the tuition refund program," said Flack, "and I encourage all employees to take advantage of it."

All regular full-time and some part-time employees are eligible for the Lab's tuition refund program, which, after prior approval of the course, reimburses graduate students for 100 percent of the total tuition costs upon satisfactory completion. Undergraduates receive 75 percent reimbursement; however, upon receipt of a bachelor's degree, an employee will also be reimbursed for the 25 percent difference for those courses required for the degree and taken within the preceding five years.

Heyliger-Turner is one who will benefit from this aspect of the program. She came to BNL 15 years ago, in an entry-level office position. A few years later, she used the tuition refund program to start at SCC, graduating in 1984 with an associate's degree in business administration.

While continuing at St. Joseph's, Heyliger-Turner spoke to a Dowling counselor in Berkner Hall one day. He told her about Dowling's program offering BNL students one-third off tuition costs. "When you're putting the money up front, that really helps," she said, and so she became a Dowling student in 1986.

While she was moving through college levels, Heyliger-Turner was also moving through job levels, reaching senior executive secretary before moving to the Accelerator Development Department in 1988, where she later became an assistant systems specialist. A few months ago, she became an assistant staff specialist in the Staff Services Division.

A similar rise in positions accompanied Sperry's route to graduation. Now a budget specialist in the Department of Applied Science, Sperry came to BNL in 1976 as a part-time secretary in the Biology Department. In the meantime, she earned her AAS from SCC in 1977, then five years ago, she started going to Dowling at nights. "Going to college has been a definite asset to my work at BNL," she said.

At Dowling College's graduation ceremonies next week, (from left) Joan Sperry, Juanita Heyliger-Turner and Bonnie Biittner will receive their BBAs, and Renée Flack (below will receive her MBA.



— Photos on these pages by Roger Stoutenburgh

Sperry calls the tuition refund program "a wonderful opportunity offered by the Laboratory — an opportunity to take advantage of. Without the program it would have been difficult to continue my education. BNL has helped make a major goal in my life a reality. Many companies do not offer tuition reimbursement nor the strong encouragement to its employees. I have been fortunate to receive both."

Biittner started at BNL as an office services assistant in the Department of Nuclear Energy (DNE) in 1977. Having previously taken some courses at SCC, she became interested in accounting. She received her AAS in accounting, in 1985. Meanwhile, she said, "My career was running parallel to the schoolwork that I was doing," as she moved to DNE's administrative group. Just last month, Biittner moved again — to Biology, as a senior budget specialist.

After graduating from Suffolk, Biittner chose to continue at Dowling because of the one-third tuition reduction. "It turns out that Dowling is a wonderful school," she said, "and I've enjoyed my four years there. This feels like a major life accomplishment, and on top of that, I'm getting

married in September. Finishing school before I got married was a major commitment I made. Still, I'll miss it — so I'm thinking of taking a year off, then going back to Dowling for an MBA."

Biittner won't be alone. Sperry is expecting her first child right now — she's hoping to make it to the graduation ceremony first — so, she said, "I'll probably take a break from school until February 1991. But I'd like to go back for my master's. It may only be one night a week, but I will go back!"

So will Heyliger-Turner, who recalls, "It was hard. It was a test of endurance and perseverance. You just had to keep going, and sometimes you didn't want to. I told myself I'm going to give myself a break, but yesterday I found myself picking up a fall catalog for graduate courses."

Those interested in furthering their education with assistance from BNL's Tuition Refund Program, should fill out a tuition refund request form and forward it to Training & Development, Personnel Division, Bldg. 185. For more information, call Mary White, Ext. 7994.

— Anita Cohen

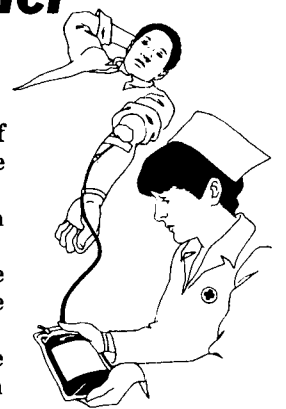
End Spring, Start Summer — By Giving Blood

What marks the end of spring and the beginning of summer? The semiannual BNL Blood Drive on June 19, 20 and 21.

So celebrate the summer solstice by taking time on the longest days of the year to give blood.

Sign up as soon as possible. Two pledge cards are being sent to each employee so that a friend or relative may join the BNL drive as well.

For more information, call Susan Foster, Blood Drive Chair, Ext. 2888, or contact the Blood Drive Captain for your department or division listed below:



Dept.	Bldg.	Captain	Ext.	Dept.	Bldg.	Captain	Ext.
ADD	1005	Pat Giacalone	4628	Fisc.	134A	Jacqueline Torres	2456
	902A	Cynthia Murphy	5459	Inst.	535B	Patrick Gilleeny	2836
	902A	Bill Carapezza	7145	Med.	490	Harry Ulyat	3450
AGS	930	Robert Meier	4629	MIS	459	Joan Barrow	3290
AUI	134A	Elliott Levitt	2495	NLSL	510E	Pat Powers	4828
Bio.	463	Richard Sautkulis	3386		725C	Judy Thompson	2145
Chem.	555A	Nancy Sautkulis	4304	OMC	490	Mickey Sacker	3671
CCD	515	Bridget Ramos	7796	PE	134C	Marilyn Gibbons	2259
CSD	903	Al Campbell	5033		452	Nelson Tyler	2303
	462U	Christine King	2043		326	Ann Grego	3084
	479	Steve Gracia	3498		422	Chris Frosina	3254
DAS	579A	Pat Taylor	2452	Pers.	185	Marsha Kipperman	2871
	126/475	Arlene Waltz	2537	PG&A	197B	Phyllis D'Avanzo	2950
	815	Arleen Lancsarics	4519	Phys.	901A	Sandy Asselta	4550
	480	Corinne Messana	5415		510A	Liz Mogavero	3940
	475	Arlean VanSlyke	2387	Reac.	750	Randi Vogt	4043
	318	Judy Giordano	3051		703	Judy Spira	2255
	318	Sharon Zuhoski	3359		120	Julie Teuber	2513
	426	Maggie Marsch	3275	S&EP	535A	Len Emma	3334
	426	Judy Williams	4538		599	Michael Carroll	2351
DCP	355	D.J. Greco	7643	S&SD	50	Robert Lombardi	2238
DNE	130	Cheryl Conrad	2272		703	Alan Macintyre	4058
	197C	Cal Solem	7899	SMD	211	Mike Guacci	2976
DO	134	Janet Sillas	2345	SSD	179B	Joan Perullo	2549
DOE	464	Claire Appleton	3438	TID	477A	JoAnn Morris	5070

NSLS Recycling Program Starts Today

It's starting today with 50 ten-gallon buckets labeled "Recyclable Metals," being distributed to experimenters at National Synchrotron Light Source (NSLS) beam lines.

In addition, large containers labeled "Recyclable Paper" or "Printer cartridges" will now be found all around the NSLS.

It's the first day of the NSLS Recycling Program — an effort to ensure that reusable materials are not thrown away. Launching the program is the NSLS Recycling Committee, which includes NSLS staff and users Robert Foxworth, Michael Kelly, John Kirkland, William O'Brien, Joseph Peidle, Susan White-DePace and Richard Wood.

Speaking for the committee, O'Brien pointed out that recycling not only saves the Earth's valuable limited resources, as well as energy, money and landfill space, but that by the end of this year, it will be mandatory. By December 31, all private landfills in New York State must be closed, and the Town of Brookhaven requires that large institutions have a recycling program. "Even if some people find recycling an effort," he said, "it's simply a habit we must get into. The sooner we start, the better."

The committee's immediate goal is to collect all metals, paper, cardboard and laser printer cartridges for recycling. So, from now on, all NSLS scrap metals will be pitched into the buckets and sorted later into separate bins for aluminum, steel, copper and brass, and stainless steel. White, colored and glossy paper will be thrown into paper containers, and printer cartridges into other containers. Paper, except for newspaper and carbon copies, will be collected unsorted.

Said O'Brien, "Collecting a 'mixed bag' of paper to sell was a critical decision made by the recycling com-



Members of the NSLS Recycling Committee: (from left): Mike Kelly, Joe Peidle, Bob Foxworth, Johnny Kirkland, Bill O'Brien, Susan White-DePace and Rick Wood.

mittee. Sorted paper, mostly white, sells better. However, we want to recycle the largest possible percentage of our garbage, and some of the lost profit will be offset by the decreased amount of garbage that we have to pay someone to haul away."

Once vendors can be found, glass and plastics are the next items on the list to be recycled. In addition, the committee is looking beyond the collection of recyclable materials, researching energy-saving alternatives in general that could be used at the Lab. They will also investigate items made from recycled and recyclable materials that may be suitable for stock items.

The continuing support of BNL administrative staff Michael Guacci, Supply and Materiel Division, and Roy McWilliams, Plant Engineering

Division, means that the NSLS recycling project will be used as a pilot program for a future, Lab-wide program.

Said Guacci, "The December 31 deadline closing private landfills will leave us facing a significant potential cost for solid-waste disposal that could have serious economic effects. A comprehensive recycling program will reduce waste and minimize effects on programs and jobs.

"The program started by the energetic and concerned people in the Light Source Department is just what we need," he continued. "Their efforts and achievements will help us develop an effective Lab-wide program — and to be successful, we'll need the cooperation and participation of every BNL employee."

— Liz Seubert



On the Menu

At the Cafeteria

Luncheons

Monday, June 4

Soup: Mushroom barley	.75/.95
Entree: Sausage jambalaya	3.10
Entree: Shrimp boat	3.25
Fitness: Peach chicken w/1 veg.	3.10
Carvery: Hot pastrami sandwich	2.85
Grill: Gyro sandwich	3.00
SPICE: Safe boating day	

Tuesday, June 5

Soup: Split pea	.75/.95
Entree: Hawaiian ham steak w/1 veg.	3.10
Fitness: Beef & broccoli over rice	3.10
Carvery: Hot roast beef sandwich	2.85
Grill: Reuben	2.95
SPICE: Create your own taco (each)	1.00

Wednesday, June 6

Soup: Beef noodle	.75/.95
Entree: Pepperoni pizza (slice)	1.25
Entree: Chicken Parmesan w/1 veg.	3.10
Fitness: Vegetable quiche w/1 veg.	3.00
Carvery: Black Forest ham sandwich	2.85
Grill: Gyro sandwich	3.00
SPICE: Pancake bar (each)	1.00

Thursday, June 7

Soup: Cream of broccoli	.75/.95
Entree: Braised pot roast w/gravy & 1 veg.	3.10
Entree: Seafood nuggets w/1 veg.	3.10
Fitness: Pasta primavera	3.00
Carvery: Hot corned beef sandwich	2.85
Grill: Double cheeseburger w/fries	2.95
SPICE: Hero by the inch (inch)	.75

Friday, June 8

Soup: Manhattan clam chowder	.75/.95
Entree: Fish cakes & spaghetti	3.10
Entree: Chef's special	3.10
Fitness: Catch of the day	3.10
Carvery: Hot turkey sandwich	2.85
Grill: Grilled cheese & tuna	2.35
SPICE: Deli special - 15¢ off deli sandwich, fries, medium Coke	

INVITATION

11th annual
Cocktail Party
sponsored by
Brookhaven Women in Science

Thursday, June 14
5:15 to 8 p.m.

hot & cold hors d'oeuvres
cash bar

For reservations,
at \$6.50 per person,
contact Susan Hobbie,
Bldg. 902C, Ext. 7511,
before Monday, June 11.

Summer Program for Children

BERA's summer recreation program for children features swimming and tennis. The program is open to children of all Lab employees.

Swimming Classes

• **Program** - Each child will be scheduled for one lesson each week for a total of eight lessons. American Red Cross certificates will be awarded to children who qualify.

• **Time** - Monday through Friday, 2 to 3:15 p.m.

• **Fee** - \$25 for each child upon registration; plus \$2 daily admission fee or present season ticket.

• **Requirements** - For their safety, each child must be a minimum 42 inches tall.

• **Registration** - Applications may be picked up at the Recreation Office, Personnel Division, from 8:30 a.m. to 5 p.m.; the BERA Sales Office, Berkner Hall, from 9 a.m. to 2 p.m.; or the swimming pool during scheduled hours. Mail or deliver applications with registration fees (checks payable to BERA) to the Recreation Office, Bldg. 185, no later than Friday, June 22.

The program will begin on Monday, July 2, and end on Friday, August 24.

Tennis Program

• **Activity** - Basic tennis instruction.

• **Time** - Monday through Thursday, 3 to 4 p.m.

• **Fee** - Although no fee or registration is required, children will provide their own rackets and balls, and they will be asked to pay a \$2 entrance fee if they wish to play in the end-of-season tournament.

Equipment Demo

On Thursday, June 7, from 10 a.m. to 2 p.m., Crown Controls will have a tabletop display in Berkner Hall. Crown Controls is a division of Hoke, Inc. On display will be: Hoke — instrument valves of several types, and sampling cylinders with working pressure up to 5000 psi; Gyrolok — tubing fittings from 1/16" to 1"; Go — pressure regulators including the new semi-approved minimum particle generation; Flexible Hose — stainless steel-braided, teflon-lined hoses; Burkert — solenoid valves; and McDaniel — pressure gauges.

Camera Club

The Camera Club will conduct a clinic on retouching black and white prints on Monday, June 4. Participants should bring photos to retouch, and students from the last darkroom classes should bring their enlargements.

A make-up class for those who could not attend the last darkroom class on enlarging will be held on Tuesday, June 5.

Both classes will be held at the club's darkrooms in the Recreation Building, at 5:30 p.m.

On Wednesday, June 6, at 5:30 p.m., the Camera Club will change the pictures on display at the Cafeteria. Prints to be displayed should be mounted and ready to hang.

One-Day Trip To Atlantic City

BERA will sponsor a one-day trip to Trump Castle, on the Marina in Atlantic City, on Saturday, July 28. The Boardwalk can be reached by jitney, which costs about \$1 each way and leaves every half hour. The initial cost of the trip will be \$20, but the hotel/casino will give a \$12.50 coin return and a deferred bus-return voucher.

The bus will leave the Brookhaven Center promptly at 9 a.m. and return at approximately 11 p.m. Tickets are on sale now at the BERA Sales Office in Berkner Hall, weekdays from 9 a.m. to 2 p.m. For more information, call Louisa Barone, Ext. 3347; Rosalie Piccione, Ext. 3160; or Kay Dellimore, Ext. 2873.

Hospitality News

Each state in the United States has its own unique history and character. Barbara Wolf, a visitor to BNL from Texas, will share some of her state's history as the guest speaker at the next Hospitality Committee get-together on Tuesday, June 5, at 9:30 a.m., at the Brookhaven Center.

Wolf explored a very special aspect of Texas history through her involvement in a project undertaken to help celebrate the state's 150-year anniversary in 1986. After her talk, to add even more Texas flavor, Wolf will teach some Texas-style dancing.

Come join the fun in the North Room of the Brookhaven Center. Spouses of Lab employees and visitors are welcome. Bring the children; babysitting will be provided free of charge. Coffee, tea and danish will be served.

Editorial Positions At Physical Review

The American Physical Society (APS) has positions available on the editorial staff; two openings in *Physical Review B*; one to work primarily for *Physical Review D* and other journals as needed. Duties can cover all aspects of journal publication from the review process through production.

For *Physical Review B*, a Ph.D. in science and/or editorial experience are desirable; M.S. in physics or a related science essential. For *Physical Review D*, a Ph.D. is required.

APS will train someone with an interest in journal publication willing to make the commitment necessary to develop editorial skills. APS is looking for broad interest in physics, excellent communication skills, and familiarity with the working scientist's expectation for a scientific publication.

APS is an equal opportunity employer and offers a competitive salary and an outstanding benefits package. For immediate consideration, send a cover letter and resume, including current salary and requirements to: Joseph Ignacio, Personnel Manager, American Physical Society, 1 Research Road, Box 1000, Ridge, NY 11961.

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

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

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.

The vacancies listed below have been exempted by the Director's Office from the current freeze on open requisitions.

OPEN RECRUITMENT - Opportunities for Laboratory employees and outside applicants.

4239. ENGINEERING POSITION - Requires BSEE and minimum of two years' experience in microprocessor system design. Strong hardware design and microprocessor software development skills, as well as familiarity with A/D and D/A interfacing required. Experience with multi-tasking, real-time operating systems and networking a plus. Alternating Gradient Synchrotron Department.

4240. CENTRAL SHOPS CLERK - (part-time) Under supervision, will perform various clerical duties including typing and word processing. Relevant background including experience with computers is required. Central Shops Division.

Motor Vehicles & Supplies

88 NISSAN SENTRA - 2-dr., gray, 4-spd., am/fm cass., new tires, good cond., \$3,500. Ext. 5475 or 369-4099 after 6 p.m.

88 HYUNDAI EXCEL GL - h/b, 3-dr., white, 4-spd., am/fm cass., excel. cond., \$3,500. Debbie, Ext. 2876.

87 JAYCO MOTOR HOME - 25', awning, generator, sleeps 6, ac, Ford 460, cruise, very clean, asking \$28,000. Bob, Ext. 4904 or 929-4753 eves.

87 KAWASAKI 550 JET SKI - w/trailer, less than 30 hrs. used, mint cond., \$2,500 neg. 395-1554.

86 YAMAHA VENTURE ROYALE - 24k mi., extras, ask \$4,100. Jim, 447-1381 after 5 p.m.

85 CIERA BROUGHAM - 49k mi., 4-dr., ac, stereo, cruise, p/l, p/seats, p/w, excel. cond. Roseann, Ext. 3142 or 447-2110.

85 TOYOTA TERCEL - h/b, 5-spd., ac, 2-dr., 47k mi., excel. cond., \$2,800. 874-3927.

84 TOYOTA VAN - 56.7k mi., a/t, ac, am/fm radio, good cond., \$6,400 neg. Al, 924-0693 or 924-1071.

84 NISSAN PICKUP - twin cab, w/cap, a/t, ac, good cond., very dependable, \$3,000. Susan, Ext. 2888 or 286-0422.

82 FORD MUSTANG GT - red, black int., T-top, 4-spd., orig. owner, \$3,200. Ray, 878-1947.

82 HONDA INTERSTATE MOTORCYCLE - 1100cc, fairing, bags, loaded, 21k mi., \$1,850. Joan, Ext. 3304 or 265-4811.

82 PONTIAC TRANSAM - 58k mi., loaded, mint cond. in & out, asking \$4,000. Don, 423-5098.

82 HONDA ACCORD - h/b, blue, am/fm, 5-spd., 109k mi., runs well, body excel. cond., trans. changed at 75k mi., \$1,500. Larry, Ext. 4295.

82 CAMARO INDY PACE - 49k mi., excel. cond., \$4,300. Ed, Ext. 2697 or 924-7423.

82 SUNLINE TRAVEL TRAILER - 15', fully self-contained, sleeps 4-6, excel. cond. Ext. 3309 or 878-6074 eves.

81 HONDA ACCORD - 5-spd., am/fm cass., sunroof, new clutch, gear box, radiator, tires & more, excel. cond., \$1,700. Ext. 2265 or 698-2756.

81 CADILLAC SEDAN DEVILLE - leather, all options, excel. cond. \$3,650. 744-7280 eves.

81 FAIRMONT WAGON - 4-cyl., 4-spd., 130k mi., fair/good outside, excel. inside, runs well, dependable, \$600. John, Ext. 7671.

81 CAMARO 228 - gray/black, 302, 4-spd., ac, 88k mi., needs some parts & repairs, \$4,000. John, Ext. 4666.

80 DATSUN - 5-spd., am/fm cass., 94k mi., runs well, asking \$400. Dong, Ext. 5510 or 3134.

80 BUICK LESABRE - 6-cyl., 4-dr., ac, am/fm stereo, new engine, clean, reliable, \$1,750. 732-1389 after 6 p.m.

80 MERCEDES 240D - excel. cond., \$10,000. Ext. 2303 or 732-3902 after 6 p.m.

80 BONNEVILLE - diesel, mech. special, trans. slipping, 107k mi., 6 pass., a/t, ac, leather seats, etc., make offer. Frances, Ext. 4382.

80 FORD FAIRMONT - 2-dr., a/t, 6-cyl., clean body, good tires, \$750. Sue, Ext. 7235 or 395-3529.

79 JEEP WAGONEER - 4-dr., 85k mi., a/t, ac, p/b, p/s, orig. owner, reliable, inspected, trailer hitch, extras, \$2,195. Ext. 2260 or 286-1214 after 5 p.m.

SUZUKI RM 60 MOTORCYCLE - great fun, great cond., \$400. 878-1178.

Boats & Marine Supplies

28' CAPE DORY SAILBOAT - 1975, incl. cradle, Volvo diesel, fully equipped, great shape, \$23,500. Roger, Ext. 2382.

25' MORGAN SAILBOAT - k/cb, new sails & ob., extras, ready to go. \$5,750. Steve, Ext. 4008.

24' C&C MIRAGE - immac., 6 sails, spinnaker, many extras, new 8-h.p., rigged aft, cradle, must see, \$8,500/offers. Damian, 744-5079.

22' RHODES - 1974, furling 150 Genoa, pop-top, 1986 Evinrude, 8 h.p., \$3,500 neg. Ext. 3969 or 878-6580.

22 TYLERCRAFT SLOOP - c/b, 6-h.p. Evinrude, 2 suits of sails, furling jib, sleeps 4, \$2,500 neg. Sue, Ext. 7235 or 395-3529.

19' MARQUIS - 1974, large open deck, full canvas, galv. trailer; '84 115-h.p. Johnson, w/low mi., excel cond., make offer. John, 331-3724.

19' O'DAY MARINER - 1966, c/b, 6-h.p., boom tent, new sails, fully equipped, excel. cond., \$2,800. Dave, Ext. 2109 or 472-9199.

18 1/2' FIBERFORM RUNABOUT - 1978, 120-h.p. O.M.C. i/o, low hrs., new manifold, more, DF, fully equipped, incl. trailer, \$3,850. 567-1358.

18' GLASSPORT BOWRIDER - 1983, w/90-h.p. Evinrude, trailer, mooring cover, approx. 110 hrs., ask. \$2,800. Chris, Ext. 2022 or 395-6112.

18' SOL-CAT CATAMARAN - trailer, beach wheels, extras, \$1,750. Steve, Ext. 4008.

OUTBOARD MOTOR - electric, Minn Kota, 28 lb. thrust, 5-spd., \$100. Ext. 7235.

SUNFISH - gently used, new sails, trailer, \$850. Marie, 589-3020.

MERCURY LOWER UNIT - 65-h.p. to 115-h.p., \$250; new prop, \$75. \$300 both. Steve, 722-4821.

OUTBOARD - 7.5-h.p., air-cooled, Sears, 25 yrs. but stored, runs well, \$90 or will trade for 3-h.p. John, Ext. 7671.

Furnishings & Appliances

RUG - 14'x11', cocoa color, w/padding, good cond., \$65. Paul, Ext. 4309.

BEDROOM SET - full-size bed w/head & foot board, 2 night tables, 2 triple dressers w/mirrors. Ext. 3288 or 281-0360 after 6 p.m.

DRESSER - 8-drawer, mahogany, excel. cond., \$100. 286-2265 after 7 p.m.

SECTIONAL SOFA - 3-piece, Kroehler, turquoise, always covered, excel. cond., \$300 firm. 744-2805.

DINING ROOM TABLE - rosewood, Danish, 4 chairs, 2 leaves, excel. cond., orig. \$3,000+, asking \$950. Bob, Ext. 3782.

MATTRESS SET - queen, used 6 months, \$100. 874-3873.

KITCHEN TABLE - wood veneer, \$16; antique solid wood chest of drawers, \$85. Ext. 3705 or 689-1877.

AIR CONDITIONER - 5,000 Btu, Kenmore, 110 Vac, excel. cond., \$95. Ext. 7727 or 929-4631.

BEDROOM SET - 7-piece, full size, fair cond., \$150. Noreen, 878-6921.

ANTIQUE CHAIR - wedgewood blue, stenciled, \$75; upright fan, \$20; beach chair, \$10; wicker chair, \$10. 744-2203.

BABY'S CAR SEAT - bicycles, desks, chairs, lamps, living room set. Ext. 3702 or 751-1042 eves.

LIVING ROOM SET - brown velvet, asking \$600 neg. Ext. 3702 or 751-1042 after 6 p.m.

BIG SCREEN TV - 4', Panasonic, mint cond., \$450. Dina, 736-6631.

HIGH RISER - v.g. cond., \$150. 475-0831.

WALL LAMPS - 2, brass, matching, \$25. Ext. 4106 or 474-5939.

Tools, House & Garden

ROCK SALT - for water conditioners, 300 lbs., in 50 lb. bags, \$50. Pete, Ext. 7955 or 929-3847.

POOL EQUIPMENT - s/s ladder, 1 h.p. pump, earth filter, vacuum, hose, head & pole, earth brush, etc. Ext. 4727.

CYLINDER - Microtone, in case, \$40; spur huger, wood bits, 1/4-1", 13 total, Russel Jennings, \$25; 5" optical flat, in case. Peter, 475-0831.

BLOCK & TACKLE - w/wooden blocks, very old, in working cond., \$15. Ext. 7727 or 929-4631.

WATER FILTER - & cartridge, for home water system, \$25. Tony, Ext. 4605.

Sports, Hobbies & Pets

GIRL'S BICYCLE - 20", v.g. cond. 751-4539.

FISH TANK - 55 gallon, w/all accessories including filter, like new, asking \$175. 878-0516.

RABBIT HUTCH - new, sturdy, \$40. Sue, Ext. 7235.

PIANO - upright, fruit wood, excel. cond., \$850. 286-0259.

CAMERA - Nikon F, 35 mm, SLR w/f1.4 50mm Nikkor lens, \$75. Ext. 7727 or 929-4631.

MOTORCYCLE HELMET - Bell, used twice. Ext. 3309.

WATER SKIS - \$20; man's bowling ball, \$20; white wrought iron patio table, \$6; Hess gasoline truck, \$20. Kathy, 744-2203.

CAMERA - Olympus Infinity, 35mm, new, \$90. Jim, Ext. 4584.

MOUNTAIN BIKE - Panasonic, 4500, 20" frame, Shimano Deore components, \$250. 473-3151.

WIDE ANGLE LENS - Nikon, 24m.F2.8, \$40; Honeywell flash gun, #880, w/battery holder, brackets, filters, \$35. 929-4326.

BIKE - 16", boy's, Huffy, w/speedometer, needs new tires, best offer. 981-5696 after 4 p.m.

DOLLHOUSE KIT - Beacon Hill from Greenleaf, all pieces are punched out & labeled, light kit & book, \$150. 589-6803.

Audio, Video & Computer

TELEVISION - 19", color, G.E., remote control, excel. cond., \$150. Billy, 289-7902.

STEREO SPEAKERS - \$45; black piano bench, \$25; stadium coat, woman's, size 8, unworn, \$20; port. typewriter, Smith Corona, \$120. Ext. 3699.

STEREO - Panasonic, tuner, double cass., turntable, amplifier, speakers, \$180/all. 399-4399.

NINTENDO - Wrestlingmania, Strider, Astynax, Bayou Billy, Dodgeball, others, sell or trade. Scott, Ext. 4986.

PLOTTER - HP, multicolor, brand-new, \$850. Ext. 7699.

CAR STEREO - Panasonic, \$50. Ext. 5320.

GUITAR - Aria Pro II, Cardinal series, w/amp & case, best offer. Jim, 751-2713.

VIOLINS - 1/2-3/4 sizes, \$50-\$60; classical guitar, \$60. Ext. 3702 or 751-1042 after 7 p.m.

Miscellaneous

GOWN - formal, rose, orig. \$180, sell for \$100; matching crinoline, \$35, size 6-8; matching shoes, 8 1/2, \$30; weights, \$40. 929-4446.

STROLLER - Cosmos, w/carriage feature, good cond., \$30. Ext. 4985 or 331-8459.

RUG SHAMPOOER - Sears, \$10; spark plug butterfly collector item, \$35; wrought iron antique wine decanter, \$35. Kathy, 744-2203.

Free

FREEZER - upright, G.E. 624-3103 eves.

SWIMMING POOL ITEMS - you pick up. Fleming, Ext. 4106 or 474-5939.

Yard & Garage Sales

BELLPORT - June 2 & 3, moving, clothing, household items, furniture, lamps, etc., 3 Brookside Ave.

Lost & Found

LOST - set of keys, in Bldg. 911. Jim, Ext. 3084.

Car Pools

PLAINVIEW - Exit 43, LIE, 4th driver needed. Elliott, Ext. 2495.

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

BELLPORT BEACH ESTATES - 2-bdrm. house, furn., l/r w/tp, eik, all appl., cable, screened, heated porch, detached gar., beach rights, poss. opt. to buy, \$795/mo. + util. 653-6580.

BELLPORT VILLAGE - 1-bdrm. apt., upstairs, kitchen-l/r combo, full bath, w/w carpeting, \$675/mo. all. + 1 mo. sec., single, nonsmoker, no pets. Jim, 758-0393 after 6 p.m.

BROOKHAVEN HAMLET - 3-bdrm. house, fenced yard, quiet neighborhood, avail. May, \$875/mo. Drue, Ext. 2290 or 281-3479.

CALVERTON - 2-bdrm. townhouse, 1 1/2 baths, w/w, appl., patio, deck, \$750. 878-0874 after 5 p.m.

CENTER MORICHES - 1 bdrm./1 bath in 2-bdrm./2 bath country club apt., to share w/professional male, 15 min. from Lab, \$400/mo., neg. 874-3437.

CORAM - Strathmore East, 4-bdrm. ranch, 2 baths, 5 appl., patio, fenced yard, 17 min. from Lab., \$925/mo. + util., Ext. 3791 or 928-7154 after 7 p.m.

EASTHAMPTON - 4-bdrm. Cape Cod, completely furn., 2 baths, w/d, dw, deck, short walk to beaches, 2 weeks open July/Aug. 722-3865.

MASTIC BEACH - 2-bdrm. cottage, screened porch, fenced yard, nice neighborhood, \$700/mo. + util. 360-3803 eves.

NORTH SHIRLEY - 1-bdrm. bsmt. apt., l/r, kit., w/w, furn., priv. ent., 1 person, nonsmoker, no pets, 5 min. from Lab, \$500/mo. pays all. 281-8044.

NORTH SHIRLEY - small house close to Lab, fully furn., perfect for single or couple, reasonable. 399-3659 or 212-213-5993.

OAKDALE - 2 bdrm., l/r, kitchen, full bath, w/w, priv. ent., no pets, \$750/mo. + util. & 1 mo. sec., avail. June 1. 736-0651.

PORT JEFFERSON - bright, 1-bdrm. apt., large kit. w/deck, l/r, hardwood floors, gar., walk to Village, trains. Steve, Ext. 5567, or Vinnie, 473-7474.

SHIRLEY - 1-bdrm. apt., l/r, eik, full bath, appl., ideal for mature working person, \$575/mo. incl. util. 281-1840.

For Sale

BELLPORT VILLAGE - secluded, charming house located in excel. neighborhood, steps to golf/tennis, 2 1/2 acre, lots of French doors, windows & decks, \$268,000. Susan, Ext. 2888 or 286-0422.

BROOKHAVEN HAMLET - 4-bdrm. Cape, 2 baths, l/r, d/r, eik, 2-car gar., deck, patio, shed, backyard adjacent wildlife preserve, close to bay, \$239,000, neg. or rent. Ext. 7108 or 286-0271.

CENTER MORICHES - 2-bdrm. starter home, 100'x100' lot, dead-end road, deck, \$110,000. Ray, 878-1947.

EAST PATCHOGUE - 3 bdrm., 1 bath, l/r, eik, appl., full bsmt., ag pool, deck, excel. location, low taxes, \$122,000, neg. 654-5609.

HOLTSVILLE - 1-bdrm. house, eik, vinyl siding, detached 1 1/2 car gar., one acre, full bsmt. apt. Violet, 475-8219.

JAMESPORT - 3/4 acre on cul-de-sac, walk to sound, terms avail, price neg. Kathy, Ext. 5312 or 929-8467.

MASTIC BEACH - 3-bdrm. ranch, alum. siding, detached gar. & Florida rm. w/tp, 80'x100', low taxes, city water, walk to bay, rent while in contract, \$89,000. Sue, 395-3529, leave message.

MASTIC - 2-bdrm. cottage, 100'x100', town water, low taxes, fenced, 10 min. to Lab, near everything, \$95,000. 281-7844 eves.

MIDDLE ISLAND - Coventry Manor, 3-bdrm. townhouse, 2 baths, kit., l/r, d/r, laundry rm., cac, 5 appl., patio, pool, tennis, carpet, ask. \$102,000. Rosalie, Ext. 3160 or 289-5704 after 5 p.m.

MIDDLE ISLAND - Fairview, 1-2 bdrm. condo, 1 1/2 baths, upper unit, ac, balcony, pool, tennis, five min. to Lab, mint cond., extras, ask. \$107,000. 345-5365 eves.

MIDDLE ISLAND - 1-bdrm. condo, 2 baths, all appl., cac, pond view, low taxes/common charges, \$89,500. Ext. 2746 or 345-5476.

RIDGE - 2-bdrm. duplex, 1 1/2 baths, eik, cac, w/w, all appl., 5 min. to Lab, \$79,900. Erik, Ext. 2437 or 924-2898.

RIDGE/SCENIC HILLS - 4-bdrm. Colonial, eik, d/r, l/r, w/w, gar., deck, 1/2 acre, min. to Lab, \$148,000. 924-7520.

RIDGE - 3-bdrm. townhouse, 1 1/2 baths, cac, w/w, all appl., upstairs newly carpeted, encl. redwood patio, storage room, low monthly main., 5 min. to Lab, price reduced to \$93,000. Mary, 924-4328.

SELDEN - Evergreen Street, "handyman special", 2 bdrm., 1/4 acre, corner house, 1 car gar., price neg. 724-7758.

SHOREHAM - N. of 25A, 3-bdrm. ranch, 2 baths, d/r, l/r, eik, fam. rm., 1-car gar., open plan, good light, patio, \$179,000 neg. Ext. 7108.

WADING RIVER - 5-bdrm. multi-level contemp., wooded acre, skylights, cathedral ceilings, sunroom decks, pool, gourmet kitchen, jacuzzi, fp, 3-rr rental apt., red. to \$196,000. 283-0155.

MASTHOPE, PA - 1/2 acre property in Pocono community, suitable for building, lake and ski slope on site, + many extras, below developer's price, \$21,000 neg. Pete, Ext. 4819.

Wanted

PARTNER - for 30' sailboat in Mt. Sinai Harbor. Ext. 7699 or 821-1435.

DAY-CARE PERSON - in our home for 2 children, 7 & 10, early a.m. to mid-afternoon. Paul, Ext. 3308.

CORVAIR REAR END - 1961-1963, standard shift. 744-3289.

LIGHT BOX - for drawing, 18"x24" to 24"x36". John, Ext. 7671.

PICNIC TABLE - for backyard. Lisa, 736-4611.

Services

Services are listed in the first Bulletin of every month as a courtesy to BNL employees. They are neither screened nor recommended by the Bulletin. Services forms are available in the Bulletin lobby, Bldg. 134.

BABY-SITTER - responsible, reliable 12-yr.-old w/exp., Wading River area. Stacy Durnan, 929-5945.

PARTY TENTS FOR RENT - we set up & take down. Fred Kuehl, 588-2268.

YARD & LAWN MAINTENANCE - town water hook-ups, inside & out, free est., back-hoe service, low rates, Wading River area. 929-8876.

ROTOTILLING - small to med. size gardens. Paul, free estimates 924-8143.

CUSTOM WINDOW TREATMENT - Dominique Dionno's Designs, curtains, blinds and shades, low prices, professional fit. 722-5740.

PAINTING - interior, exterior, power washing, shingle