BROOKHAVEN BULLETIN

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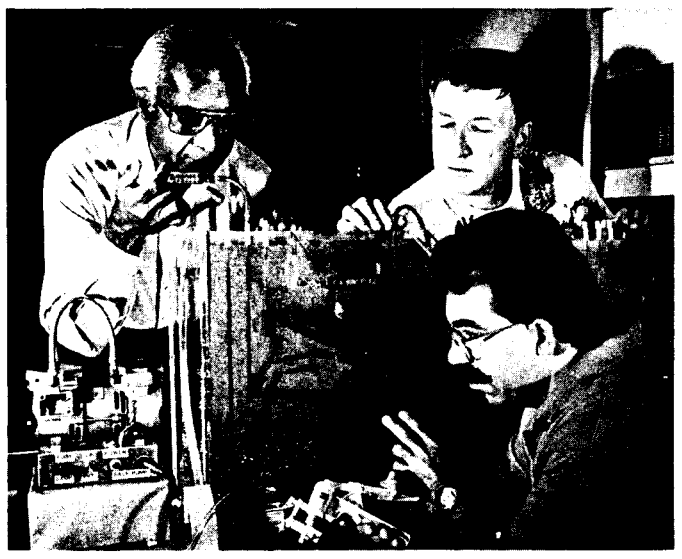
BROOKHAVEN NATIONAL LABORATORY

Summer Student Special Edition —

Summer Programs Ripple Through Lives

These students and teachers represent only a portion of the over 350 participants working in 17 BNL departments through Brookhaven's summer educational programs this year. They came from schools and universities all over the United States, and some from other countries. Many will find, as others have, that their experiences at BNL will have a ripple effect — impacting not only their lives, but also those of people they will work with and teach in the future. This edition of the Brookhaven Bulletin spotlights how educational programs at BNL have affected the lives of past participants, and how current programs are linked to the futures of participants, the Laboratory and the community. Most of BNL's educational programs and opportunities are managed by the Office of Educational Programs (OEP), and there are many more that could not be covered in this edition. However, full information about all of the programs is contained in the publication BNL 52216, *Educational Programs at Brookhaven National Laboratory*, available through OEP in the Science Education Center, Bldg. 438.

TRAC Teacher Helps Uncover Groundwater's Secrets



A window into the earth: Janakiram Naidu (left), Frank Stepnoski (top right) and Andrew Leonard demonstrate their groundwater model. The dark line Leonard is pointing to is dyed water moving linearly through the sand from the injection well (left) toward a well being pumped (right).

— Photos in this issue by Roger Stoutenburgh

How do we protect our groundwater? It's a hard question to answer because we cannot see how water acts underground and do not know exactly how pollution or pumping it from the ground affects the system. We couldn't visualize it, that is, until now.

Andrew Leonard, a teacher in the U.S. Department of Energy's Teacher Research Associate (TRAC) Program at BNL this summer, with the help of BNL staff members, has built a simple model that actually allows them to see how water moves through the ground.

What they have found is very surprising — water moves through the ground in a linear fashion, said Janakiram Naidu, an ecologist in the Environmental Monitoring Group of the Safety and Environmental Protection (SEP) Division who is Leonard's advisor.

"We now realize that the ground itself is saturated with water, and that the water is in pores in between the grains of sand," Naidu said. "It moves in a linear pattern underground and can go long distances. That's why you can get contamination of a well from a source, such as a landfill, that is many miles away." (continued on page 4)

Teachers in the National Teacher Enhancement Program launch a balloon carrying a temperature measuring device to study how temperature changes with altitude. The experiment also required that they calculate height and distance traveled by the balloon, and the wind's direction and speed. The launch was a success, down to release of the temperature measuring device and its platform from the balloon, which landed safely thanks to a parachute device constructed by the teachers.

Sambamurti Lecture

Spinning Protons, Siberian Snakes

Thomas Roser, a physicist in the Alternating Gradient Synchrotron (AGS) Department, will deliver the third annual Sambamurti Memorial Lecture on August 9.

The lecture, titled "Spinning Protons and Siberian Snakes," will be held at 11 a.m. in the seminar room of the Physics Department, Bldg. 510. (Note location change from the previously announced Science Education Center Auditorium.) (continued on page 2)

It's a Small BNL World

Sonya Brown (left), a student in the BNL Summer Student Program, was running in the Advil Mini-Marathon, a 10 K women's race on June 4, when, during the last two miles, she noticed other women walking to the finish line.

"Come on! Come on! Let's go! Run, run, run! You only have 400 more meters to go!" she encouraged them — and one woman in particular.

That woman started to run with her, and they cheered each other on. Finally, the woman caught her second wind and pulled ahead of Brown. Both received medals for finishing the race.

One month later, Brown and Jennifer Adams (right), a teacher in the U.S. Department of Energy's Teacher Research Associate (TRAC) program, were both working in Brenda Laster's laboratory in the Medical Department and made an important discovery:

Out of about 7000 women in that race, Adams was the woman that Brown had encouraged to keep running. — Georgia Moore

New Approach To Science Education

Twenty-five Long Island elementary and middle school teachers were the first to take part in BNL's Summer Teacher Enhancement Program, a new program aimed at training teachers to treat their classes as research groups.

The program ran from June 28 to July 18, and the teachers are now developing ways to impart the highly technical knowledge they acquired to their young students. Everyone in- (continued on page 4)

Sambamurti Memorial Lecture

(continued from page 1)

The Sambamurti Memorial Lecture was established in memory of Aditya Sambamurti, a BNL assistant physicist who died of cancer in March of 1992 at the age of 31.

Each year a BNL Physics Department committee chooses an outstanding young physics researcher working in areas of Sambamurti's interest to give a lecture to students and staff working at the Laboratory.

Roser obtained his Ph.D. in physics in 1984 from ETH, the federal institute of technology in Zurich, Switzerland. He then took a postdoctoral position at the University of Michigan, where he was later an assistant professor from 1990 to 1991. He joined the AGS Department at BNL in 1991, where he has worked on polarized proton beams and targets.

He will talk about accelerating polarized beams at the AGS, focusing on the recently successful tests of Siberian snakes in that facility.

Thomas Roser (foreground), BNL, and Haixin Huang, Indiana University, examine a partial snake in the Alternating Gradient Synchrotron tunnel.

Polarized beams contain protons all spinning in the same direction. The problem with using them for experiments in the AGS is that they become depolarized when they are kicked off their vertical axis by an accumulation of horizontal magnetic fields.

That's where Siberian snakes come in. They are large magnets that keep the protons polarized. Researchers from BNL including Roser and others from Indiana University and Argonne National Laboratory have been testing Siberian snakes installed in the AGS since April of this year.

Roser will also discuss plans to extend acceleration of polarized beams to BNL's Relativistic Heavy Ion Collider (RHIC) by including four Siberian snakes in its design. —Georgia Moore

Note to Employees:

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

Journey From Somalia's Strife To BNL Life

Coming to study in a country whose language is wildly different from your own is a daunting enough idea for most students. But Medical Department summer student Shakeeb Hamud faced even greater challenges when he came to the U.S. from Somalia four years ago to attend college.

In 1988, his country's civil war destroyed his house and deferred his dream of studying in America. He fled the northern area where he grew up, then left his family in the capital, Mogadishu, when his father secured the necessary papers for him to come to the States.

Even after making it safely to America, Hamud's hearing impairment made it necessary to learn two new languages: English and its sign language equivalent. Until coming to the U.S. at age 22, Hamud had only lip-read in the Somali tongue — his country's deaf community has no sign language.

Shakeeb Hamud, a summer student from Somalia via Gallaudet University, examines cell cultures in a Medical Department lab.

Despite all this, he has already completed two years at Gallaudet University, the only American university for the hearing impaired. And this summer, he has held an internship in the Medical Department laboratory of Brenda Laster, helping with research on cancer drugs and radiation.

Two other Gallaudet students, Kevin Harrer and Aly Lo, are also at BNL, working with Michael Torres in the Computing & Communications Division on network statistical analysis.

Hamud says his BNL experience, has changed his goals. "Before I came to the Laboratory, I wanted to major in physics or chemistry," he said through interpreter and Biology Department teacher collaborator Teresa Huckleberry. "But when I came here and saw the Lab and the different kinds of research, I began thinking of changing to biochemistry or even biology. My goal is first to get more degrees, then go back to help others at home."

The Somalia to which he will some day return has much yet to do in recovering from violent civil struggle and widespread famine. Hamud hopes to help by founding an organization to assist the hearing impaired, who currently have no such support system.

Before returning, he intends to work toward a doctoral degree, perhaps at the State University of New York at Stony Brook with Laster as his adviser.

"I've gotten a lot of wonderful experience here," Hamud said, adding that living on site and interacting with hearing American students has also been valuable: "I've really enjoyed it!"

— Kara Villamil

Students Help RHIC, Boost Engineering Skills

Helping out at the Relativistic Heavy Ion Collider (RHIC) Project this summer are Kyalo Ntheketha (on ladder) and Charlene Duncan, two of five students whose summer research appointments at BNL are funded by the U.S. Department of Energy's Community College Honors Program. In this program, undergraduates enrolled at several community colleges in New York and Massachusetts gain on-the-job experience in various areas of science, mathematics or science writing, depending on their interests.

Here Duncan and Ntheketha put a connector on one of the large electrical cables that will be used to power a load in a temporary test set-up in Bldg. 820. Supervised during their ten-week assignment by Robert Lambiase, Head of RHIC's Magnet Electrical Section, the two students have also inventoried electrical materials for RHIC's magnets and taken torque measurements of bolts on cable-tray supports that wind through most of RHIC's 3.8-kilometer tunnel.

Next month, Duncan will start her second year at North Shore Community College in Lynn, Massachusetts, and her future plans are to enroll at Rensselaer Polytechnic Institute to earn her bachelor's degree in industrial engineering. She says her work at the Lab this summer showed her how the engineering principles she learned in school are applied. "Now I understand why we study mechanics and circuit theory," she said. "I've also learned a lot by asking questions. The people here are so willing to share their knowledge."

Ntheketha, who will be a second-year student at Monroe Community College in Rochester, New York, plans to earn a Ph.D. in engineering. On his experience at BNL, he commented, "I liked seeing how engineers and technicians work together on various engineering projects. I also learned about cryogenics and how to apply calculus and trigonometry to engineering problems." — Diane Greenberg

The Endless Summer

Most summer students come to BNL intending to get practical experience in their field, then return to school. But for some students, such as Timothy Murray, a summer internship becomes the gateway to a full-time career opportunity.

As a computer enthusiast from North Babylon who was a member of a state-champion high school computer skills team, Murray had long intended to become a professional programmer.

"Computers are one thing I can do with no problem," he says with the confidence of someone who hopes to pursue a doctorate in artificial intelligence.

Last summer, he applied for an internship through the Office of Equal Opportunity's Science and Engineering Opportunities Program for Minorities and Women, administered by Frances Ligon. After being accepted, he was assigned to the Management Information Systems (MIS) Division and began writing small programs in languages such as Speedware and C under his adviser, Senior MIS Programmer/Analyst Gregory Mack.

But, when the summer was over, Murray's interest in continuing his work at BNL was not. Through the help of Renée Flack and the Office of Educational Program's cooperative work-study program with Suffolk Community College (SCC) in Selden, he was able to continue working while taking classes at SCC.

Then, in June of this year, Murray found that he was in the right place at the right time with the right skills — a full-time programming term appointment opened up in MIS, and he was hired as a data services assistant.

Timothy Murray

Since then, he has taken on such tasks as maintaining and modifying the travel and accounts-payable computer system, and helping to develop an accounts-inquiry system for the Relativistic Heavy Ion Collider Project.

All the while, he is taking classes at SCC, learning new programming techniques and languages both on the job and off, and aiming for higher academic degrees.

MIS staff members have helped him with the transition from student to employee, Murray said. "I pretty much like to know how to do things on my own, but when I don't know something, I ask the people here," he said. "I'm still learning from them." — Kara Villamil

Not This Time: Putting mussels into fish cages to protect their project from raccoons are (from left) Kate Murnane, Lawrence Lettieri, Marcia Bero and Karen Swyler.

'Raccoons Ate My Research'

You've heard of the classic excuse, "The dog ate my homework." Well here's a new one: "I don't have results because raccoons ate my research."

That's what happened last summer to a research team, including two summer students, in the Safety and Environmental Protection (SEP) Division. Raccoons ate the freshwater mussels they had put in the Peconic River on site as pollution indicators.

This year, there will be no excuses unless the raccoons organize a commando mission into the fish cages that now enclose the mussels and which are submerged within an enclosed water canal leading from BNL's sewage treatment plant into the river.

"It was very frustrating," said Karen Swyler, one of the students who returned this year to work on the project again. "We had to do something about this."

Swyler, who is in BNL's Community Summer Science Program, will be a freshman this fall at Alfred University in New York. She is also the daughter of Karl Swyler, Manager of BNL's Office of Educational Programs.

The SEP team also includes Janakiram Naidu, an ecologist heading the project, and staff members Marcia Bero, also a master's student from the State University of New York at Stony Brook; Richard Lagattolla; Anette Meier; and Lawrence Lettieri. Joining them this summer is Kate Murnane, a Shoreham High School rising senior who volunteered to help with the project because she is interested in science as a career.

The Peconic river receives one million gallons a day of treated water from BNL's sewage treatment plant during weekdays, according to Naidu. The research team is using mussels for its research because they are sedentary and continuously filter the water for food and oxygen. As Naidu said, "They see the water in one spot."

"The treated water meets required standards," Naidu added, "but the Lab has gone one step ahead — we are looking to see if living organisms are impacted by being in water that comes from the Lab."

The SEP team is monitoring water quality with daily checks of pH, chlorine content, conductivity, temperature and dissolved oxygen. They are also checking the water and the mussels for radioactivity.

The mussels project is one of the ecological studies this team is conducting for BNL's ongoing Site Environmental Report. They are also monitoring radioactivity levels of fish, other wildlife and vegetation around the site.

— Georgia Moore

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Semester at BNL Leads To Lifetime in Medicine

When college junior Nanette Alvarado came from Puerto Rico to BNL's Medical Department in 1988 for a semester of research, she had no idea that this work would inspire her to go to medical school, with the goal of becoming a radiologist.

Alvarado was a participant in the Science and Engineering Research Semester (SERS) for Undergraduate Students. The SERS program enhances ties between universities and national laboratories, by allowing university students to work with scientists in national laboratories in long-range research projects, using advanced facilities and equipment.

When Alvarado arrived at BNL from the Inter-American University in San German, Puerto Rico, her English was halting, the tasks demanded of her were exacting, difficult and unfamiliar, and she was far away from home for the first time. But Brenda Laster, a researcher in BNL's Medical Department who was Alvarado's mentor, said the young student's will to succeed was extremely strong.

In fact, early on in the semester, when Alvarado asked Laster for advice on a career, she was confident enough in Alvarado's ability and drive to reply, "Be a medical doctor."

The idea seemed preposterous to Alvarado at the time, but after a semester and two subsequent periods at BNL, she began to believe that she could do it, according to Laster.

"The educational programs at BNL expose students to research and let them know just where they might be headed," Laster said. "Learning techniques and skills opens up the mind to a lot more science. Students who have gone back to their schools after working at BNL have told me that their approach to science is very different, that science is very concrete for them."

Alvarado had worked in both the neutron capture therapy and the photon-activation therapy programs in BNL, two promising experimental projects exploring the use of chemicals and radiation to treat brain tumors. These experiments inspired Alvarado so much that she decided she wanted to be a radiologist.

She enrolled in medical school, and, to pay for tuition, joined the U.S. Army.

BNL's Brenda Laster (right) presents a medical diploma to former BNL student Nanette Alvarado upon her graduation from the University of Medicine of Ponce, Puerto Rico.

She will pay back her debt to the Army after her medical residency by contributing five years of service.

While in medical school, she kept in touch with Laster, even sending Laster a course catalog and asking which courses she should take.

Last September, Alvarado returned to BNL for one month to fulfill a research elective requirement. During that project, she gathered the first evidence that a new drug, an indium-labeled porphyrin, is able to penetrate a rat brain tumor, Laster said.

Alvarado became not only the first medical school graduate in her family, but also the first college graduate. On May 21, Alvarado ascended the stage of the University of Medicine of Ponce, Puerto Rico, to accept her Doctor of Medicine degree. And there to present it to her, at her request and with the concurrence of the University, was BNL's Brenda Laster.

"It was so exciting because she had worked so hard to do this," Laster said. "I was so proud."

Alvarado is now working as an intern for Damas Hospital in Ponce, Puerto Rico, and is looking for a radiation-related residency for the summer of '95.

— Diane Greenberg

Summer Program Alumnus Spotlight: Nicholas Samios, Class of '52

Nicholas Samios' first step — although he didn't know it at the time — towards becoming Director of Brookhaven National Laboratory was to participate in BNL's first Summer Student Program while he was a senior at Columbia University in 1952. During that summer, he worked at the Cosmotron and helped refurbish the Van de Graaff generator.

"The summer program had a positive effect on me, in the sense that I saw and did real science, so later on, when I went into the field, I did so with my eyes open," Samios said. "I had no illusions of pristine white coats and test tubes. I knew that science sometimes required long hours, drudgery and hard work, but my experience at Brookhaven was positive reinforcement."

His first contact with the Lab grew into 20 years of award-winning research and 12 years so far as Lab Director. And now he is giving back to the Lab what it gave to him.

"The excitement for us as summer students was that we worked in the lab and sat in on seminars and lectures," Samios said. "We got the full flavor of what science was about, and that's what we're trying to do with our summer students now."

The Summer Student Program is the largest and oldest of BNL's student programs. This year, 62 students from 50 colleges and universities are working in 14 departments and divisions.

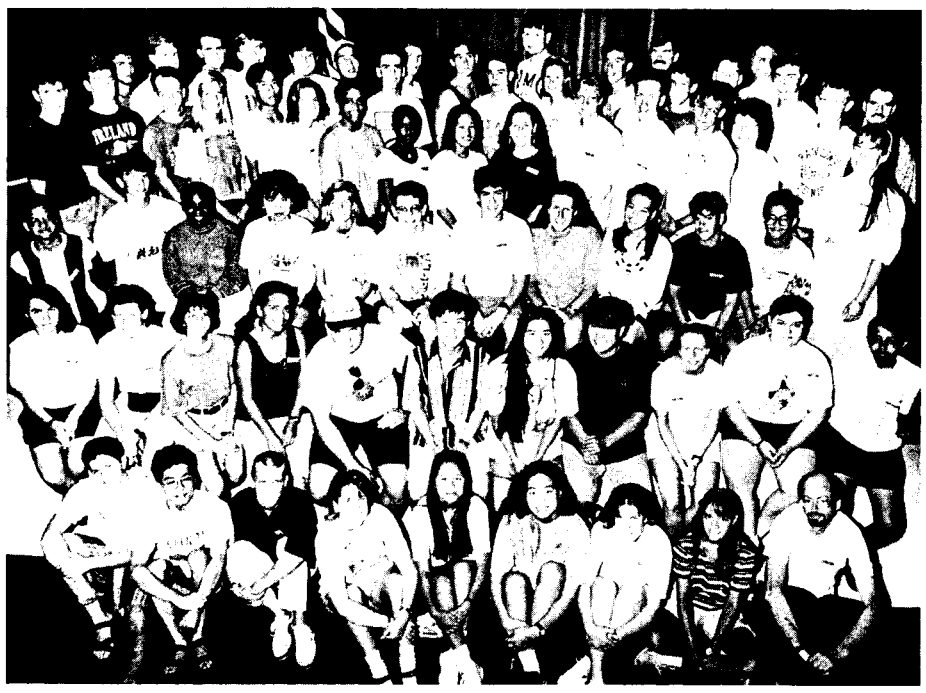
Samios' career path to success has included the following:

- Participated in BNL Summer Student Program, 1952.
- Gathered data at BNL for dissertation on associated production of strange particles, 1957.
- Earned Ph.D. in Physics, Columbia University, 1957.
- Was Instructor, Physics Department, Columbia University, 1957.
- Joined BNL Physics Department, 1959.
- Led Bubble Chamber Group in discovery of the Omega-minus particle, 1964.
- Served as Group leader, Nuclear Interactions Group, 1965.
- Became Chairman, Physics Department, 1975.
- Led Bubble Chamber Group in discovery of charmed baryon, 1975.
- Received the E.O. Lawrence Memorial Award from the U.S. Department of Energy and the New York Academy of Sciences Award in Physical and Mathematical Sciences, 1980.
- Became Deputy Director for High Energy and Nuclear Physics, 1981.
- Named Acting Director, January 1982.
- Confirmed as Director, May 1982.
- As Laboratory Director, has overseen expansion of the National Synchrotron Light Source, the establishment of the Center for Accelerator Physics and construction of the Relativistic Heavy Ion Collider.
- Received Associated Universities, Inc., Distinguished Scientist Award, 1992.
- Shared American Physical Society's 1993 W.K.H. Panofsky Prize for outstanding achievements in experimental particle physics. — Georgia Moore

Guide the *Insider's Guide*

The definitive guidebook for BNL visitors, *An Insider's Guide to Student / Visitor Life at BNL,* is open to suggestions. If you spent part of the summer at a hot spot not mentioned in the guide, or found yourself wishing the book had told you more about any aspect of visitor life — or if you never got a copy of the guide , call Kara Villamil — Public Affairs Office, Ext. 5658, or e-mail to karav@bnlcl6.bnl.gov.

Students Say 'Science' With a Smile



Yesterday marked the end of two intense weeks at the National Synchrotron Light Source (NSLS) for the students who were involved in the ninth annual High School Honors Research Program, which is sponsored by the U.S. Department of Energy. The 59 students— who hailed from the 50 states, the District of Columbia, Puerto Rico and seven other countries — had been selected based on their academic achievement to perform research in various disciplines at NSLS beam lines, in hopes of interesting them in pursuing careers in science or engineering. The students were apprenticed to researchers from BNL's Chemistry and Department of Applied Science, as well as NSLS staff.

'Fiscal Twins' Are Double Blessing to Fiscal Division

Tamika and Tonya Langhorn are quiet young women, but they don't go unnoticed around the Lab. They are identical twins both working for the summer in the Fiscal Division as part of the Science and Engineering Opportunities Program for Minorities and Women.

"I think the program is good because we get experience in our field," said Tamika, speaking for herself and her sister.

The "fiscal twins" are from Riverhead and are the daughters of Albert Langhorn, a material handler in BNL's Supply & Materiel Division.

They are both college students working toward accounting degrees and are spending the summer at BNL gaining experience in that field. They have completed one year of study at Suffolk Community College, but will transfer to Morgan State University in Baltimore, Maryland, this fall to finish their degrees.

"These are two of the most conscientious students with whom I have worked — well groomed, well mannered and polite," said April Donegain, the Administrative Assistant in Fiscal. "Most of all, they are excellent workers. I explain something to them once, and they grasp it without my having to guide them through the whole project. Their pride is projected through their work — the outcome is always excellent. These young women will succeed."

The twins are helping the Fiscal staff with their daily work, including preparation of financial statements, accounts-receivable reports and billing notices, bank reconciliations and data entry.

"They have really been a great help," said John Tighe, Fiscal's Accounting Manager. "We would be pleased if they could come back next year."

You're not seeing quadruplets, just two sides of the twins Tonya (top) and Tamika Langhorn.

The twins often dress alike because they like the same things, they said.

"Sometimes it's a bit confusing because they tend to dress alike, but they wear necklaces with their names on them," Tighe said.

The twins are glad to be working together at BNL and said they hope to work together in the future as accountants for the same company.

— Georgia Moore

Groundwater (cont'd)

So far, by tracking water colored with food dyes through a "slice" of earth in the upright, Plexiglass model, they have gathered information on direction of water flow, the time it takes to move through different materials and the effects of pumping water from the system.

"The dyes can represent a pollutant in the system, such as a toxic spill," Leonard said. "With the model, we have found that the danger is that pollutants enter the water table and groundwater and can travel long distances, so we have to be very careful not to pollute the environment."

They also found that pumping water at a well in one part of the system can result in changing the course of polluted waters directly into that well.

A science teacher at Udall Middle School in West Islip, Leonard began working with Naidu last summer to build the modeling apparatus. Frank Stepnoski, a technical associate in SEP, helped build the model, which is attached to a water pumping system and contains ports for water input and upright pipes to model wells. It measures 0.91 meters long, 45.72 centimeters (cm) high and 3.81 cm deep.

This summer, Leonard and Naidu have been testing and improving a model of the earth found beneath BNL and much of Long Island. The top layers of the system are composed of sand of different grain sizes, the next is clay and the bottom layer is gravel.

"We are finding out a tremendous amount of information by modeling this system," Leonard said. "We're very excited about this model because it does different things every time we run it — just as every rain event, every toxic spill acts differently."

They have demonstrated how a natural, or artesian well, can be formed. Water has great difficulty traveling through clay, so, if it hits a clay layer and has nowhere else to go, the pressure causes it to rise to the surface, either feeding existing lakes or streams or forming an artesian well.

"This model will not only be used as a research and diagnostic tool here at Brookhaven, but also in the classroom in a variety of subject areas — earth and environmental sciences, coastal zone management courses and in teaching kids about a career in science," Leonard said. He will be using the model in his 7th, 8th and 10th grade science classes this year.

"Showing students this type of thing makes them very interested in science," he said. "It makes a big difference."

The project and its results will be included in BNL's 1994 Site Environmental Report. Leonard has pursued this project with the support of Karl Swyler, Manager of BNL's Office of Educational Programs, and Bob Casey, Head of SEP, and hopes to come back next year to continue the work.

— Georgia Moore

New Approach (cont'd)

volved, from the participants to the instructors and organizers, is eager to see how far the ripples of this program will travel in the lives of students whom the participants will teach for years to come.

"This is our office's first real effort to interact with elementary school teachers at BNL," said Karl Swyler, Manager of BNL's Office of Educational Programs. "I hope the program will do two things: Empower people to take an open-ended, problem-solving approach to teaching science, and stimulate more of an interaction between elementary and middle school teachers, so they know what each other is doing and reinforce what each other teaches."

The 25 teachers who came to BNL were among several hundred participating in the program at eight U.S. Department of Energy (DOE) facilities and laboratories across the U.S.

BNL's program was part of a national effort sponsored by the National Science Foundation in cooperation with DOE, and it drew on the talents of Laboratory staff, local teachers and outside educators as instructors.

"Guaranteed my students will greatly benefit from my experience and the new science knowledge I acquired here at BNL," wrote Barbara Gentile, a 6th grade teacher at Westhampton Beach Middle School, in the journal all of the teachers were asked to keep of their experiences. "My enthusiasm will certainly propel and excite my students in September and from there on in."

The teachers attended lectures and seminars in physical science and then visited BNL labs to study applications of the lecture material. They were then asked to apply this knowledge through lab exercises and development and use of hardware.

Among other subjects, they learned about rain gauges, light-pipe detector optics, greenhouse gases and global temperature, electromagnetism and accelerator magnets, and radar. They took part in a start-up of the Brookhaven Medical Research Reactor and successfully prepared and launched a balloon to perform an airborne measurement mission.

Under Peter Takacs, a physicist in the Instrumentation Division, they polished mirrors for the National Synchrotron Light Source to help overcome optical problems caused by rough surfaces. Takacs will use the data they collected on smoothness versus time polished to test models that predict mirror surface quality, and he will include the data in a journal article he plans to write on the subject.

Their biggest challenge, however, was to develop ways to bring this highly technical knowledge back to their classrooms. Using what they learned at BNL, they wrote "follow-on" proposals describing science and technology activities in which they can take a research or engineering team approach to learning with their students. The approach requires students to brainstorm and work together as a research team to solve technical problems.

"It's a process approach to asking a question," said Roy Zukowski, a teacher from East Moriches School. "I think it's really going to help me a lot. There are new things I want to try with my students."

Anne Molter, another participant from East Moriches School who teaches 6th grade science and language arts, said, "It's hands-on experiments that really make students understand how light, sound, heat and electricity work. They appreciate this approach a lot more."

Because the goal of the program is to reach students, the teachers will be assisted by funding awards for follow-on proposals approved by BNL and school districts. Also, three 1-day workshops will be held at BNL during the school year to provide feedback for program development to share ideas.

"The purpose of the follow-on awards and workshops is to take the experiments to the classroom and then share what was tried, what worked and what didn't," Swyler said. "This program has a chance to be very significant because many kids will be touched."

Added Swyler, "We want teaching science to be less like a prescription and more like an adventure — that's what the program is about."

— Georgia Moore

Scoop of the Week

Three Scoops are awarded this week — to Renée Flack, Brenda Laster and Jan Naidu — who gave Bulletin summer intern Georgia Moore leads for some of the stories published in this Summer Student Special Edition, for which Moore served as managing editor.

During the summer, if the Bulletin publishes a story based on your idea, then you may win a Scoop of the Week: an official certificate, to redeem at the Cafeteria for a free frozen dessert of your choice, compliments of Service America Corporation.

So next summer, if you wish your students to be featured in this edition of the Bulletin, just inform us. To enter the contest, this year or next, contact the Brookhaven Bulletin, Bldg. 134, or call Ext. 5053.

See separate Supplement for more notices and Classified Ads.

BWIS Invites All to Two Events

Students, summer visitors and all BNL employees are invited to the following events being sponsored next week by Brookhaven Women in Science (BWIS):

• "Injuries Are Not Accidents: A Scientific Approach to Injury Prevention," a presentation by Caroline Kramer, Tuesday, August 9, at noon, in Room A, Berkner Hall.

A researcher in BNL's Injury Prevention & Analysis Group, Kramer will explain that, in the U.S., injuries are the leading cause of death for people between the ages of one and 34, and the fourth leading cause of death for all ages. They are also the factor most responsible for lost-person years of productivity for people ages 18-64. Direct and indirect costs related to injury-producing events are estimated at over $200 billion annually.

Kramer will also present insights into how to "immunize" against injuries, discuss the impacts of injuries in the workplace, and offer scientific methodologies for assessing injury incidence and outcome.

A registered nurse who holds a B.S. in health-care administration and community health and an M.S. in health sciences, Kramer has authored and coauthored scientific papers and reports dealing with cause-specific trauma. Her recent work on the adequacy of data sets used for trauma surveillance received a national award. She is an adjunct instructor in the School of Public Health at the State University of New York (SUNY) at Albany.

Bring your lunch; coffee and tea will be served.

• Renate W. Chasman Scholarship Presentation, Wednesday, August 10, 4 p.m., Room B, Berkner Hall.

Since 1986, BWIS has presented this scholarship to a Long Island woman who has returned to her education after an interruption, to pursue a career in the natural sciences, engineering or mathematics. The scholarship honors the memory of noted BNL nuclear physicist and accelerator theorist Renate Chasman.

This year, BWIS increased the one-time scholarship from $1,000 to $2,000, and found two worthy recipients: Marjaneh Issapour, Hicksville, who is studying materials science engineering at SUNY at Stony Brook, and Lillian Vulin, Babylon, who is pursuing electrical engineering at Polytechnic University.

Tea, coffee and light refreshments will be served.

Cashier's Hours:

Effective Friday, August 19, the hours at the Cashier's Office in Bldg. 134 will change: It will no longer open at 7:30 a.m. on Fridays. Instead, the new hours, Mondays through Fridays, will be:

8:45 to 9:15 a.m.
10 a.m. to 1 p.m.
2 p.m. to 3 p.m.
3:15 to 4:45 p.m.

Arrivals & Departures

Arrivals

Louise E. Fleck ..... Chemistry
Anand Kandasamy .... Instrumentation
Wilford Stevenson ..... Adv. Tech.

Departures

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

Paul L. Bernard ..... Saf. & Env. Prot.
Pepin T. Carolan ..... AGS
Robert A. Christianson ..... Plant Eng.
Anne M. Flood ..... RHIC
Charles W. Flood Jr. . Saf. & Env. Prot.
Louise A. Heusinkveld ..... Tech. Info
Sateesh R. Mane ..... AGS
Doreen A. Piccinone ..... Fiscal
Lee C. Rogers ..... Instrumentation
Ignacio Romero ..... Plant Eng.
Dimitris E. Stassinopoulos .... Physics
Robert Von Hollen ..... Budget
Zhongwei Zhao ..... Chemistry
Xiaonan Zheng ..... Chemistry

Cafeteria Menu

Monday, August 8	
Soup: Beef barley	90/1.20
A la Carte: Kielbasa w/potato salad	3.85
Fitness: Vegetarian lasagna	3.50
Deli: Pastrami	3.20
Grill: Philly cheesesteak	3.30
Tuesday, August 9	
Soup: Chicken noodle	90/1.20
A la Carte: Sausage & pepper calzone	3.50
Fitness: Macaroni & cheese	3.65
Deli: Virginia ham	3.20
Grill: Denver omelet	3.30
Wednesday, August 10	
Soup: Sausage & pasta minestrone	90/1.20
A la Carte: BBQ spareribs	4.25
Fitness: Spinach & feta quiche	3.65
Deli: Roast beef	3.20
Grill: Meatball hero	3.30
Thursday, August 11	
Soup: Senate bean	.90/1.20
A la Carte: Bonnie's chicken	3.85
Fitness: Pork chops	3.85
Deli: Corned beef	3.20
Grill: Ham & cheese	3.30
Friday, August 12	
Soup: New England clam chowder	90/1.20
Display Cooking: Chicken Caesar	4.65
Fitness: Pasta primavera	3.65
Deli: Roast turkey	3.20
Grill: Tuna melt	3.30

Hardware, Software Featured at Expo

The Personal Computer Resource Center (PCRC) is sponsoring a software and hardware Expo on Thursday, August 11, from 9 a.m. to 4 p.m. in Berkner Hall. All BNL computer users are invited to see the latest equipment and programs. In addition to product demonstrations, there will be raffles, prizes and giveaways.

Among the hardware vendors scheduled, Falcon Microsystems will feature Apple and Silicon Graphics products; IBM will display its product lines; and SUN Microsystems will exhibit its workstations.

The software featured will include: Autodesk's AutoCAD, Borland International's dBase v5.0 for DOS and Windows, Claris Corporation's Macintosh products, Lotus Development Corporation's Lotus v4.0 for DOS and v5.0 for Windows, Software Publishing's Harvard Graphics v3.0 for Windows, Symantec's PC and Mac utilities, and WordPerfect Corporation's WordPerfect v6.0a.

For more information, contact Expo coordinator Donna-Ree Rodriguez, Ext. 7261.

Linux LUG Meeting

During the next meeting of the BNL Linux Local Users Group (LUG), Tim Sailer of the Safety and Environmental Protection Division will demonstrate how to install Linux on a PC.

This brown-bag seminar will help those interested in Linux get started and make them aware of the resources available on site. It will be held on Wednesday, August 10, from noon to 1 p.m. in the CCD seminar room, Bldg. 515. Bring a list of your components so hardware questions can be answered.

The Linux LUG usually meets informally every Wednesday at noon in the conference room, Bldg. 129. For more information, check the news group BNL.users.linux, or e-mail to linux@bnl.gov. To receive meeting and other announcements, e-mail to listproc@sun10.sep.bnl.gov and send one line: subscribe linux user@email.address.

The Brookhaven Bulletin is printed on paper containing at least 50 percent recycled materials, with 10 percent post-consumer waste.

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

ANSYS Training

If there is enough demand, an advanced ANSYS training course may be offered in October on site by the Computing & Communications Division. Subjects to be covered include heat transfer, dynamics and fluid flow. Each participant will be charged a fee. For more information, call Bob McGonigle, Ext. 3299, or e-mail magoo@bnl.gov.

Classified Advertisements

Placement Notices

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

Each week, the Personnel Division lists new placement notices. The purpose of these listings is, first, to give employees an opportunity to request consideration for themselves through Personnel, and second, for general recruiting under open recruitment. Because of the priority policy stated above, each listing does not necessarily represent an opportunity for all people.

Except when operational needs require otherwise, positions will be open for one week after publication.

For more information, contact the Employment Manager, Ext. 2882, or call the JOBLINE, Ext. 7744 (282-7744), for a complete listing of all openings.

LABORATORY RECRUITMENT - Opportunities for Laboratory employees.

MK 108. TELEPHONE OPERATOR - (substitute) Will function on an on-call basis to assist in placing calls and other related telephone duties. Computing and Communications Division.

OPEN RECRUITMENT - Opportunities for Laboratory employees and outside candidates.

DD 0793. SYSTEMS SPECIALIST POSITION - Requires a BS or equivalent and experience in computer security, analyzing and writing specifications, coding and installing custom software. Will administer the Laboratory's classified and unclassified computer-security programs. Will be responsible for all administrative duties, training and the coordination of the Laboratory's Operations Security program. Proficiency in programming languages, database management systems, operating systems hardware and networking also required, as is the ability to obtain and maintain a security clearance. Safeguards and Security Division.

Miscellaneous

TICKETS - 2, Bonnie Raitt, Jones Beach, 8/18, $42 ea. Rick, Ext. 3932 or 472-9789 after 6 p.m.

Yard & Garage Sales

BROOKHAVEN HAMLET - 8/6, 8:30 a.m., tools, housewares, furniture, microwave, weights & bench, bargains, 11 Marydale La. off Beaver Dam Rd.

ST. JAMES - 8/5-6, barn contents, tools, tractors, bikes, boats, guitars, trains, militaria, antiques, 189M River Road.

Lost & Found

FOUND - collection of old photographs. Ext. 2873.

Car Pools

LIE EXIT 36 - need 4th for carpool. John, Ext. 5181.

PLAINVIEW - LIE exit 43, 4th driver needed. Elliott, Ext. 2495 or Barbara, Ext. 5175.

Wanted

APT. MATE - female, Lake Pt. Village, Rt. 25, own bdrm., share kit., l/r, bath, $325/mc. + ½ elec., avail. 9/1. Hong, Ext. 3370 or 924-9435.

BASEBALL CARD SETS - Topps 1970s; boat, 12' aluminum, for 3 people. (718) 721-4271 weekdays or 821-6698 wknds.

CARS & TRUCKS - reasonable. Bill, 467-1343.

BOAT TRAILER - 14'-16', decent cond. Ed, Ext. 5529.

CHILD CARE - for 2-yr.-old girl, Mon.-Fri., 8:30 a.m.-5:30 p.m., my/your home. Cathy, Ext. 2774 or 924-3476 eves.

CHILD CARE - 2 children, 1 & 2 yrs. old, 20 hrs./wk., Stony Brook area, in your home. Andrew, Ext. 5431.

COMMODORE 64 SOFTWARE - for children, donate to Amityville School Dist. Karen, Ext. 4262.

DISK DRIVE - high-density, I.D.E. M.F.M. type, 40 MB or larger, reasonable. Bill, Ext. 281-6498.

FEMALE - share new house, walk to beach, 12 min. to Lab, priv. bdrm., bath, ent. 395-0584 eves.

HOUSE/APT. TO RENT - 2 bdrm., w/d, Blue Pt., Bayport, Oakdale, Smithtown area, for 2 resp. prof., refs., no smoking/pets, immed. Sue, Ext. 4931.

OUTBOARD MOTOR - 7.5-9.9 h.p., long-shaft, good cond. Chris, Ext. 2022 or 395-6112.

PORTABLE DISK PLAYER - Walkman. Dave, 751-1474.

PRESCHOOLERS - Upton Nursery School is still accepting applications for fall classes, 3&4 yr. olds, M,Tu,Th, 8:30-11:30 a.m. Sue Ellen, 929-3732.

ROOMMATE - to share large, 2-bdrm. ground-level apt., new kit., d/r, l/r, deck, 1 block from LIE and Ronkonkoma RR. Tino, Ext. 3007.

THIRD FEMALE - to share 3-bdrm. house in Huntington, $355/mo. +. 547-5917.

WATER WINGS - or life jacket for 2-yr.old. Janet, Ext. 2345 or 929-3910.

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.*

ARCHITECTUAL DRAFTING SERVICES - for new homes, alterations, bldg. management. Rich, 929-8514.

AUTOMATIC LAWN SPRINKLERS - free est., prof. layouts, repairs, alterations and additions, prompt, courteous service. Lou, 928-7042.

CATERING - no affair too small, homemade specialities, call for menu, Lab discount, free delivery, stands & sternos incl. Dave, 696-1927.

CERAMIC - tile installation, kitchens, foyers, baths, all tile & marble, repairs, reasonable. Patrick, 289-7807.

CHILD CARE - many years of experience, Lab refs., reasonable, my Holtsville home, 15 min. from Lab. Joan, 472-3254.

CHILD CARE - licensed, loving mother, impeccable refs. from BNL employees. Robin, 345-0298.

CHIMNEY CAPS & SWEEPING - fireplaces, wood, coal & oil flues, stainless steel caps, custom made for pre-fab, lifetime warranty. Mike, 821-5526.

CHOCOLATE - party favors, bridal and baby showers, weddings, birthdays, etc. Cathryn, 821-7327.

COMPUTERS -repairs & upgrades. Steve, 698-5260.

DECORATIVE PAINTING - specializing in all decorative techniques, faux marble, faux woodgrain, murals, sky ceilings and gold leafing. Bryan, 653-9319.

DJ/MC - party & dance music from 40s-90s, all occasions, music & entertainment personalized for your affair, BNL refs. Lou, 698-8210.

ELDERLY CARE - on weekends in their home, I give TLC and stay overnight, a break for the family, reasonable. Susan, 286-4225, eves.

ELECTRICIAN - outlets, switches, lighting, service upgrades, repairs & additional circuits installed. Steve, 758-7002.

FINANCIAL EVALUATION - of retirement plans & insurance programs, tax savings. Rich, 744-4816.

GRAPHICS - imprinted sportwear, T-shirts, caps, stationary, resumes, business cards, novelties and promotions, art work incl. Tom, 434-9345..

HOME IMPROVEMENT - carpentry, dry wall, spackling, painting, plumbing, ceramic tile, storage sheds, free est., Lab disc. Don, 744-2921.

HOME IMPROVEMENTS - extensions, dormers, decks, kitchens, baths, siding, lic. & insured, refs., free est. Chris, 286-2780 or 286-1348.

HOUSECLEANING - reliable, honest, hardworking, reasonable, refs. Terry, 475-8516.

KAYAK LESSONS - touring, river playboats, $85/5 hrs., equip. supplied, intro to kayaking, $30/2 hrs. Ernie, 281-7873.

LAND CLEARING - trees, stumps, brush removed, topsoil graded and raked w/450- loader, $70/hr. Tom Muller, 878-1060.

LAWN MAINTENANCE/LANDSCAPE - prof., reliable, neat work, design & maintain landscape. Andrew, 698-3908.

LAWN MOWER - and lawn tractor repairs, fast, reliable, have trailer, will travel. Dan, 698-7322.

LETTERING/AIRBRUSHING/STRIPING - trucks, vans, cars, bikes, helmets, jackets, shirts, storefronts, window splashes, boats, jet skis, signs. 549-9113.

MAILBOXES - post or house styles, custom-made, heavy-gauge steel or wood, free catalog, many styles, Lab discount. Mike, 821-5526.

NUTRITIONAL COUNSELING - body-fat analysis, weight training, martial arts. Jim, 546-2947

PAINTING - int./ext., Sheetrock, tape, spackle, power wash, wallpaper, stain, insured, refs. James, 399-4912.

PAINTING - int./ext., stain, power wash, reasonable. Scott, 325-0706.

PARTY TENTS - we set up & take down, call for sizes & combinations. 588-2268.

PIANO INSTRUCTION - beginners of any age, cert. teacher, 20 years exp., Stony Brook. Joan, 751-7023.

PICK-UP TRUCK & DRIVER - for hire, small-medium jobs, reasonable, experienced, local only. 821-4407.

SCUBA LESSONS - NAUI-certified instructor, classes now forming, private or group. Rex, 929-3235.

SHEETROCKING & SPACKLING - free est. Kevin, 567-6621.

SKIN CARE & MAKE-UP CONSULTANT - facials, skin-type and color analysis, nail care, 10% Lab disc., free first-time facial. Barbara Jean, 929-3235.

TRAINING - PC applications, word processing, spreadsheets, databases, graphics, desktop publishing. Gina, 929-3649.

VIDEOGRAPHER - capture those precious moments on video, will tape weddings, parties, all occasions. Larry, 281-7240.

WELDING - repairs, window & door guards, custom railings, gates, resid. or comm. work, immed. service. Tony. 281-2513.

WINDOW CLEANING - all work squeaky clean, reliable refs. 928-3189.

YARD WORK - odd jobs, 2 resp. teenagers, have own transportation, reasonable. Mike/Doug, 929-5676.

In Appreciation

Thank you to all our wonderful friends at BNL for celebrating with us at our farewell party. We shall cherish the memories of BNL and remember you all fondly. Adieu! — Anne & Charley Flood

Ads left out of this issue due to lack of space need not be resubmitted to appear in the next issue.