BROOKHAVEN BULLETIN
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BROOKHAVEN NATIONAL LABORATORY

Special Summer Student Issue

Many of the more than 170 students and teachers who worked at BNL this summer gathered recently outside Berkner Hall. They came from high schools, colleges and universities, and from more than 15 states and several foreign countries. They worked in 20 BNL departments and divisions, as part of seven formal programs and many informal arrangements. Diverse as they were, they shared a desire to learn — about science, technology and themselves. This special issue of the Bulletin highlights some of the people and educational programs that made this summer a great experience for so many. As they return home over the next several weeks, the Bulletin wishes all of BNL's summer students the best in their studies, their careers and their lives. — Photo by Roger Stoutenburgh

Unexpected Tritium Levels At Sewage Treatment Plant & South of Medical Reactor

Two unusual findings of tritium at BNL — neither of which pose any threat to people on or off site or to the environment — were made public this week.

In a press release this past Wednesday afternoon, BNL announced that unexpected levels of tritium were recently measured in the discharge from the Lab's sewage treatment plant. The tritium concentration in the sewage effluent peaked last week, between Thursday and Friday, July 24 & 25, at a high of about 67,000 picocuries per liter (pCi/l), well above the normal range for the effluent, which is about 1,000 to 3,000 pCi/L.

BNL also confirmed that low levels of tritium — about 11,000 pCi/L, or about half the Environmental Protection Agency's drinking water standard — had been found in groundwater just south of the Brookhaven Medical Research Reactor. This finding came as the result of the sitewide review of BNL facilities that the Laboratory undertook beginning in April. The first part of the report from this review — including details of this discovery of tritium — will be released next week, and its findings will be discussed in next Friday's Brookhaven Bulletin.

BNL has notified Suffolk County, New York State and

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John Wagoner Returning To Richland Post

Today is John Wagoner's last day at BNL as the U.S. Department of Energy's (DOE) Brookhaven Group Executive Manager. Dean Helms, Deputy Executive Manager, will assume Wagoner's responsibilities beginning next week. Upon his departure, Wagoner shares the following message with all BNL employees.

It is with mixed emotions that I leave Brookhaven to return to my regular post as Manager of DOE's Richland Operations Office. I depart knowing we've come a long way since Secretary Federico Peña's May 1 visit and the commitment to rebuild trust and to make environment, safety and health a priority at Brookhaven National Laboratory. So many of us have met, personally and in small groups, and I have been impressed by your motivation to make improvements for the future well-being of the Laboratory. The process of rebuilding is under way.

Working with such talented and professional employees at Brookhaven has been enlightening and enriching. You've demonstrated your commitment to change; you have become more sensitive to the concerns of the community. I'm confident these changes will become a permanent part of the Brookhaven culture with selection of a new management contractor. Environmental responsibility and world-class scientific research can, indeed, go hand-in-hand.

John D. Wagoner
Brookhaven Group Executive Manager

Here Today, But What About Tomorrow?

Funding Cuts Hurt Student Programs; Money May Be Partially Restored in 1998

In the midst of a turbulent year at BNL, summer student programs quietly shrank — victims of two consecutive years of budget cuts to U.S. Department of Energy (DOE) educational programs.

While more than 170 high school students, undergraduates and teachers participated in seven student programs this summer, the numbers are a far cry from just two years ago, when BNL teemed with student life during the summer.

In 1995 alone, about 350 people participated in nine different programs, said Karl Swyler, Manager of BNL's Office of Educational Programs (OEP). The programs differed in target audience, but all helped train future scientists, engineers and educators. Summer student funding could have been reduced even more if it hadn't been for financial help from Associated Universities, Inc.

"Without them, we'd really be hurting," Swyler said. "We'd have minimal undergraduate programs and that would be that."

DOE Funding Cut

Funding for summer student programs at

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Pacific Pair Pioneers Radiation Protection Program

In 1985, when Ken Kedi was 14 years old, his entire community of more than 300 people evacuated their homes in the Rongelap Atoll, a small, palm-dotted, white-sand coral island surrounding a lagoon of turquoise water, 2,100 miles southwest of Hawaii.

They left in fear of radiation — radiation lingering from atomic bomb tests of the 1940s and 1950s, when the U.S. exploded 66 bombs in the Marshall Islands. When the biggest bomb of all, a 15-megaton hydrogen-bomb named "Bravo," was detonated in 1954 on Bikini Atoll, another Marshall Islands atoll only 200 miles away, shifting winds sent fallout over Rongelap.

Residents were evacuated three days after the explosion, but returned three years later and lived there for decades. Even though U.S. scientists said it was safe, the people were still afraid, and they moved to another atoll, called Kwajalein, that was much farther away from Bikini.

Now, twelve years later, Kedi and another Marshallese student, Paul Lalita, are spending the summer at BNL, part of a pioneering effort by BNL's Department of Advanced Technology (DAT)

(continued on page 2)

Roger Stoutenburgh

Ken Kedi (front, left) and Paul Lalita (front, right) of the Marshall Islands, with Group Leader Ed Kaplan (left) and Research Engineer Casper Sun of BNL's Department of Advanced Technology.

BNL Budget Unresolved

With the end of the fiscal year just two months away, it's still too soon to tell how BNL's budget will resolve for fiscal year 1998.

BNL receives most of its funding from DOE, which is largely funded through the federal Energy & Water Development appropriations bill. While the Senate on July 16 approved a bill that is very close to the proposal that President Bill Clinton had submitted last February, BNL has not been able to review fully the contents of the U.S. House of Representatives' version of the bill, which was approved on July 25.

Once both versions of the bill pass, the House and Senate must confer to reconcile their differences before sending their final bill on to Clinton for his approval. If the reconciled bill stays near to Clinton's proposal, overall, the Laboratory could receive a small increase in funding.

If this is so, employees may wonder, why were there media reports last week about upcoming reductions in force at the Reactor Division?

"Employment at the Lab depends upon its budget and, over the past several years, the Lab has had to downsize because of cuts in specific areas," said Interim BNL Director Peter Bond, who recalled that such reductions have happened even in the current fiscal year. Whenever they have

(continued on page 4)

Over the Dunes and Through the Woods, Students Explore Long Island Ecology

Frank Meadows is pollinating endangered orchids, in an effort to increase germination rates. Frank Walker is trying to control reeds that are crowding out native salt marsh plants. Lauren Hall is studying why only some pitch pines twist toward the sun.

All three are high-school students, and they have come to BNL to learn about science by doing it — out in the field.

Six students from all over Long Island recently completed the three-week New York State Summer Institute for Science and Mathematics, an environmental studies course run by BNL and Suffolk Community College (SCC) and taught by SCC faculty members Rosa Gambier and John Black.

"The program was developed to teach how to do science," Gambier says. "We are using ecology and field work as a tool."

Gambier, a botanist and molecular geneticist, founded the course last year, using a $70,000 grant from the New York State Education Department to bring students to BNL from all over the state. The grant was obtained with the help of New York State Senator Ken LaValle, said Thomas Breeden, Head of the Physical Sciences Department at SCC.

"He's been very supportive of the community college in general and this program in particular," Breeden added.

Despite LaValle's efforts, the state grant was not renewed this year, so the program had only $11,000 to spend and was able to include only Long Island students who could commute to BNL.

The Summer Institute is part of a larger six-week program, called the Community Summer Science Program, that brought 38 Long Island high-school students to BNL this summer.

The six environmental students rejoined the larger class July 28 for last three weeks of the program, when they will attend lectures given by volunteer BNL scientists in the morning, and test environmental samples for radioactivity with Jan Naidu of the Safety & Environmental Protection Division in the afternoon.

If the first half of the course is any indication, the students will love the field work.

"It's much more fun going to the dunes than going to a classroom," says Hall, 16, who will start her senior year at Southold High School in the fall.

(Front, kneeling) Elizabeth Ng, of William Floyd High School, and Ecologist Jan Naidu, of BNL's Safety & Environmental Protection (SEP) Division, record data from a vegetation survey conducted in the forest inside BNL's Relativistic Heavy Ion Collider ring, as (back, from left) Marc Spencer, Frank Walker, Lauren Hall, Jennifer Black and Frank Meadows look on. Naidu, Amy Caplan and Black, a teaching assistant in the course, helped the students analyze tree age and soil composition. The six-week-long class, which is co-taught by Naidu, botanists Rosa Gambier and Reynold Welch of Suffolk Community College, and coastal ecologist John Black (not shown), uses field work to teach students Long Island's geological and botanical history.

Hall, 16, plans to develop her pitch pines project into a year-long study, where she will use DNA and protein analysis to identify genetic differences between trees that twist and those that do not. She plans to enter the project in the Long Island Science Congress, a science contest for local high school students, and her interests include environmental policy and law. "I'm into controversial things," she says.

Meadows, 16, also plans to continue his project after the course is completed. He is trying to increase the rate of germination of two endangered orchid species and two types of endangered, insect-eating sundews, all of which live in a freshwater bog near Montauk point.

"It's an attempt to preserve the seed supply of a local endangered population," says Black, the course co-instructor, a coastal ecologist who recently retired from SCC after teaching there 28 years.

Meadows wants to study at Cornell University and major in botany. The course has encouraged him, and he plans to apply for a grant from the American Orchid Society to continue his project. "I learned a lot about plants on Long Island and plants in general," he says.

Walker, a senior at West Islip High School, is trying to devise methods to control phragmites, reeds that crowd out other plants in disrupted ecosystems and reduce the diversity of plant species. He is considering different ways to control the plant, including harvesting it or poisoning it.

Walker and the other students appreciate the contrasting styles of the two co-instructors, with the rough-edged Black the more controversial of the two.

"He's not the typical environmental studies professor," Walker says. "you don't expect [someone] his age to climb 35-foot dunes. He's up there, way ahead of us."

As the students' instructor, Black takes his work seriously but never too seriously.

"That helps me learn, too," Walker adds. "I learn a lot from him when he's joking around."

Gambier and Black both hope that they can find the funding to continue the course next year. Says Gambier: "I do believe that it's a great program and everybody learns a lot. I believe that there should be more field courses like this." — Dan Ferber

Make the Most of Your Internship!'

Howard Adams (right), Director of the GEM National Institute on Mentoring, urges BNL mentors and summer interns to make the most of their internships, during a seminar on June 4. About 50 people attended the seminar, which was part of a day-long workshop, "Mentorship Training in the Workplace," designed to help interns settle quickly into the workplace and become productive workers. During the workshop, mentors learned the philosophy, goals and skills necessary for successful mentoring of culturally and ethnically diverse students, while protégés learned how to develop good relationships with their mentors, anticipate and solve problems, and be proactive and professional. The workshop, organized by Jeffrey Taylor, Senior Diversity Coordinator in BNL's Diversity Office, was sponsored by that office and supported by the Laboratory's Training Office. ***— photos on pages 2 & 3 by Roger Stoutenburgh***

Marshall Islands (cont'd.)

to teach Marshallese people the principles of health physics and train them to operate the special equipment that tests people for radiation exposure.

"This is the first time that this has ever happened in the entire history of DOE involvement with the Marshall Islands," says Ed Kaplan, leader of the Internal Dose Assessment group at DAT.

Kaplan and former BNL Deputy Director Marty Blume convinced AUI and DOE to provide special funds for the pilot program. The U.S. Department of Energy (DOE) has sent BNL medical and radiological teams to the Marshall Islands since the 1950s, but the work was always done by Americans.

Scientific Interpreters

The new effort is very important to the Marshallese people because it will help them understand what is and isn't dangerous, says Kedi, who has helped conduct a nationwide Marshall Islands thyroid study since 1993.

"Our people don't know what radiation is," he says. "If you ask our people about radiation they will refer to it as poison."

Kedi and Lalita both hope to communicate the facts about radiation to people in their country, which has been independent from the U.S. since 1986 and is known formally as the Republic of the Marshall Islands.

"Many of my people don't speak English, and they might have some questions they're holding back," says Lalita, 32, who is a medical microbiologist in the capital city of Majuro. "We might be able to teach them some of what we're learning."

Kedi and Lalita attend health physics lectures each morning given by Casper Sun, a research engineer at DAT. In the afternoons, Jim Clinton, a DAT chemistry associate, teaches them to operate the Whole Body Counter, a specially-designed instrument that can detect the gamma rays emitted by minute quantities of cesium-137 inside a person.

They are also learning how BNL staff members detect tiny amounts of plutonium-239 from urine samples, using the fission track technique. Both cesium-137 and plutonium-239 were created by atomic bomb blasts and are not normally found in nature.

Presidents and Ambassadors

The government of the Marshall Islands and DOE are watching this program closely.

In June, Kedi, Lalita, Sun and some friends attended a party at the New Rochelle, New York, home of the country's ambassador to the United Nations (U.N.), Lawrence Edwards. There they met the Marshallese President, Imata Kabua, who was in New York for a special session of the U.N. General Assembly on the world environment.

"The President told Sun, 'I want you to do the best you can with these guys — give them all you've got — so that when they come back they can help the people of the Marshall Islands,' " Kedi says.

Kedi and Lalita each plans to do his part. Both men will spend two weeks in August in Enewetak, testing people for radiation exposure using the whole-body counting method. The work is part of a regularly scheduled mission to that atoll conducted by the BNL Radiological Program.

"I want to help them understand the truth," Lalita says.

Kedi is learning as much health physics as he can this summer, but he wants to become a lawyer and, eventually, more.

"I think I have a strong background in leadership, and I have the dream of being a leader of my people within the Marshall Islands," he says.

With an understanding of both radiation science and the law, Kedi thinks he will be in a strong position to help his people, including his dislocated home community.

"My people felt for many years . . . that they've been mistreated by outsiders," Kedi says. "Should there be something that I need to address for my people, then I'll do it."

— Dan Ferber

BNL's No Ordinary Classroom for New York City Teachers

From the blackboard jungles of New York City to the pine forests of BNL, three teachers made the journey this summer to gain some practical, hands-on experience doing science.

The three are part of the BNL-New York University (NYU) Teacher Research Associate program, which BNL started in 1979 to give science and math teachers the chance to work with Lab scientists. The teachers earn academic credits for BNL work, which they apply toward NYU master's degrees in math- or science-education.

The teachers in the 1997 BNL-NYU Teacher Research Associate Program are: (from left) Glennis Joseph, Rudolph Anthony and Tashon Haywood.

Better Than Textbooks

All three say the experience has been valuable.

"It gives me, first of all, experience in science . . . different from textbook learning," says Tashon Haywood, who teaches mathematics to sixth- through eighth-graders at Middle School 390 in the Crown Heights section of Brooklyn.

Haywood is working this summer with Toshi Sugama, in the Department of Applied Science (DAS), devising new ways to protect aluminum from corrosion by coating it with corn starch. The corn starch itself needs protection from fungal degradation, and she is adding different metal oxides to the starch in an effort to identify the best antifungal agent.

"I'm identifying with the learning process that my students are going through," Haywood says. "It's given me a new [way] to look at teaching."

Role Models in Science

Chemist Glennis Joseph is working with Mow Lin in DAS, identifying bacterial strains that successfully leach arsenic and mercury from coal and contaminated soils.

A native of Trinidad, Joseph is the only science teacher at P.S. 3 in the Bronx, where she helps teach the basics of science to children in grades K-8. Many of the children are from low-income families, she says, and they often don't appreciate the importance of science.

"Too often minority kids don't see examples of minorities doing science," Joseph says. "They need to learn that science is part of their world also."

Learning Math With Computers

Rudolph Anthony, who teaches mathematics at Junior High School (JHS) 113 in downtown Brooklyn, is working with Research Engineer Casper Sun and high-school student Adam Goldberg in the Department of Advanced Technology to redesign the world-wide-web home page for BNL's ALARA Center, an on-site program that oversees the safety of BNL radiation workers.

Anthony has learned a variety of computer languages this summer, such as FTP, HTML and Java. When he returns to JHS 113 this fall, his school will be newly equipped with computers, and he plans to use them right away.

"The first thing I want to do is try to build a home page for my school," he says.

Anthony has also been mulling over ways to use computers to teach his students math. He sees them as tools to show students that a predilection toward mathematics won't force them to work alone.

"Working with partners can really show students that the trend in mathematics is toward working in groups," he said.

While the three teachers have learned a great deal, they may be the last NYU students in this program to come to BNL, due to funding cuts. Where once up to 30 teachers per year participated, now only enough money remains for three.

But at least for this year, the three teachers from New York City have experienced firsthand the everyday trials and triumphs of doing science, and they will try to parlay their lab success to turn inner-city children on to math and science.

"My individuality within the [lab] group is beginning to shine," Joseph says, "and I want to take that back into my classroom. I want the children to feel that they are part of it and I want them to shine." — Dan Ferber

Unique Society Enlivens Brookhaven Summer

The Bulletin is pleased to present this guest column, written by some of the most creative of this summer's students. They have continued what are probably long traditions among BNL summer students, and they have undoubtedly started some new ones.

— Guest Ed.

This summer, three visionary students, dissatisfied with the lack of social interaction among BNL students, formed the Brookhaven Art Lovers Society. It was a bold move to bring together students with interests in art, music, athletics and general revelry.

The group consisted primarily of students who lived on site at BNL. Geographically, the members came from the four corners of the world, representing at least five continents and twelve states. Countries included Brazil, Canada, China, France, Germany, Great Britain, Greece, Haiti, India, Ireland, the Marshall Islands, Mongolia, New Zealand, Russia and Spain.

Society members communicated freely. Along with the usual barrage of tired jokes, members planned evening and weekend activities, and found answers to technical questions. The education and experiences of the members were so varied that any question would receive an answer, which occasionally made sense.

Experts in unlikely fields abounded: Terry Stratoudakis, an electrical engineer, dazzled us with his knowledge of Greek chemistry, while Kathleen Gallagher, a materials scientist, disseminated rare knowledge of gelatinous quasi-liquid structures.

Athletics were a big part of the daylight and after-hours activities of the Society members. Basketball, soccer, ultimate Frisbee, softball and boat racing were among the favorites.

Other activities included travel to exotic destinations (like Rocky Point, Port Jefferson and the Brookhaven Multiplex), listening to bagpipes and modern Greek poetry, barbecuing and, quite often, whiling away the night debating the merits of the Florentine school over the Venetian, or arguing over which is the best American lager for under six bucks a half-rack.

We had some great experiences this summer. Some were so great, in fact, that by the next morning they had been transformed to, at best, hazy memories. In the next few weeks, we will go our separate ways. But none of us will ever completely forget the hot, wet nights of the summer of '97 at BNL.

— Kathleen Gallagher, Alexander Jeffers and Terry Stratoudakis

Kathleen Gallagher, Alexander Jeffers and Terry Stratoudakis are seniors at, respectively, Carnegie Mellon University, Pomona College and Polytechnic University.

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A game of soccer breaks out spontaneously one summer evening.

Students of Note

If music be the food of love — a hypothesis proposed in William Shakespeare's *Twelfth Night* — then love among BNL's 1997 crop of summer students must be savoring a gourmet season. However, not all of this year's musicians go as far as Katie Gallagher (above), who skips lunch to play her bagpipes down at the ballfields. There, she often practices with fellow piper John Keane (seated), BNL's longtime user of the ballfield circuit. From him, the materials science and engineering major learns Irish tunes to take back to the Carnegie Mellon University Pipes and Drums Band and leaves in return stirring Scottish pieces, which Keane is adding to his repertoire. At the high point of these cultural exchanges, the two sets of bagpipes skirl in a lion-hearted duet — because both pipers know *Scotland the Brave.* Other students who provide the *pièces de résistance* in the music feast of this summer include classical guitarist Matt Avitable, from the University of Richmond; cellist Carla Pietrangelo from Loyola College, Baltimore; pianist Luke Wang from Harvard University; guitarist Matt Lippis of the University of Idaho; Liz Papish, from Cornell University, a clarinet player; violinist Sandy Maday from Oberlin College; and Michelle Wong, from the University of Notre Dame, whose instrument is the trumpet. Also, rivaling chefs who make birds' nest soup or spun sugar baskets, Christine Aidala of Yale University is an expert at fashioning the double vibrating reeds she needs for her bassoon, one of the several instruments she plays.

— Liz Seubert

Variety — The Spice of Lab Life

Roger Stoutenburgh

Danielle McFadden (left) and Kim Pellechi (center) conduct a cell-survival assay while Martinique Johnson (right) counts bacterial colonies, in Brenda Laster's laboratory in the Medical Department.

The melting pot of the year award goes, once again, to . . . Brenda Laster's lab in the Medical Department.

Start with Kim Pellechi and Danielle McFadden, now in their second summer in the lab. Pellechi, a recent graduate of Gallaudet University, joined the group last year as part of the BNL-Gallaudet University program, which provides scientific opportunities for deaf and hearing-impaired students.

McFadden, who studies American Sign Language at Suffolk Community College, came to BNL last year to interpret for Pellechi, who is deaf. But when she heard about the experiments that Pellechi would do, she joined right in at the lab bench.

Add to the mix Martinique Johnson and Lanniece Freeman, both seniors at Lincoln University in Pennsylvania and recipients of nuclear energy training fellowships from DOE's Oak Ridge Institute of Science and Education. Johnson, a native of Detroit, plans to pursue a career in pediatric neurosurgery, and Freeman, from New Jersey, plans to study nuclear medicine and pursue an M.D.-Ph.D dual degree.

Throw in a couple of Israeli researchers, and a visiting grad student from Puerto Rico, and you have one diverse, yet cohesive, group, who together pursue better radiation therapies for people with cancer.

The women credit Laster for keeping the lab a fun place to work. Already this summer, they've had a pizza party and two bagel parties — and a fourth of July barbecue at Laster's Plainview home.

"She's a very caring person and devoted to what she does," Freeman says. "I think she's great."

— Dan Ferber

Math /Science /Technical Teaching: The Elementary Story

BNL's Office of Educational Programs (OEP) has for many years welcomed elementary school teachers to the Lab in cooperative projects to help devise innovative ways to teach science, math and technology.

Now, the New York State Education Department has launched a five-year project to reform the way these subjects are taught in elementary schools. Known as MSTe, for Integrating Mathematics, Science and Technology in the Elementary School," the $7.2 million project is funded by $4 million from the National Science Foundation and $3.2 million from project partners BNL, Hofstra University, the State University of New York at Stony Brook, the New York State Education Department (NYSED), the Boards of Cooperative Educational Services, 20 New York school districts, and materials developers.

OEP Manager Karl Swyler organized the BNL-hosted kickoff day, July 7, of a four-week workshop focusing on MSTe standards and leadership development. The 20 teacher teams from 15 school districts on Long Island, four from New York City and three from Orange County, divided their time during the workshop between BNL, Hofstra and Stony Brook. Later, each team will conduct similar workshops for teachers in their own districts, eventually reaching more than 1,200 New York State teachers, including 800 from Long Island.

Roger Stoutenburgh

New York State Education Department Commissioner Richard Mills (center, front), gave the keynote address to the program administrators, representatives of partnership institutions and teachers at the MSTe workshop last month.

– Liz Seubert

Tritium (cont'd.)

federal regulators of both instances. BNL and the U.S. Department of Energy are aggressively searching for the cause of both of these events.

Onetime Occurrence

Tritium, a radioactive isotope of hydrogen, is produced as a by-product in a variety of research projects at the Laboratory. It is routinely released in low concentrations to the BNL sanitary system, and sanitary waste is ultimately routed to the sewage treatment plant. The high levels that passed through the plant last week are not normal.

As part of daily sampling of the effluent from the sewage treatment plant, the sample taken on Friday, July 25, was analyzed over last weekend, and samples collected over the weekend were analyzed this past Monday, when reanalysis of the Friday sample was also done to verify initial results. Based on the data so far, the release was a onetime occurrence, and the tritium concentrations in the sewage entering the plant had returned to normal levels as of Tuesday.

On average, every month, the sewage treatment plant effluent contains tritium at concentration of about 2,000 pCi/l. BNL sets a monthly administrative discharge goal for the plant at 10,000 pCi/l. Including the most recent high values, the average tritium concentration for the month of July is about 5,000 pCi/l.

The sewage treatment plant discharges an average of 2 to 3 curies of tritium per year. The recent release contained approximately 0.2 curie. A typical self-illuminated exit sign contains about 25 curies of tritium.

BNL's sewage treatment plant discharges on site to the Peconic River. Over the past decade, because of drought conditions on Long Island, the river bed upstream of the plant outfall has been generally dry. BNL's discharge, which is roughly one million gallons a day, creates a small stream, which usually goes dry before reaching the Laboratory's border.

Education Funding (cont'd.)

BNL and its partner institutions was down more than 60 percent since 1995, from about $1 million to $340,000, Swyler said, a direct result of congressionally mandated reductions in the DOE's budget for university and science education programs. From a high of $70 million spent nationwide during the 1995 fiscal year (FY), the budget was cut to $20 million in 1996 and to zero this year.

That many of the programs continued at all was, in part, due to an intentional loophole in the DOE funding bill that allowed money from other DOE programs to be used to pay for undergraduate students. Also, because of the shortage of funds, individual BNL departments significantly increased their cost-sharing contributions between 1995 and 1997. This year, cost-sharing accounted for more than half of the Summer Student Program budget, Swyler explained.

In addition, the National Science Foundation, AUI, and New York State contributed, respectively, about $80,000, $50,000 and $10,000.

Programs Shrink

Not many educational programs survived unscathed, and some were completely eliminated in the past two years, Swyler said.

OEP's undergraduates programs escaped serious harm, but fewer students were funded — about 50 students this year compared to about 80 in 1995. The biggest remaining programs for undergraduates were DOE's Summer Student program, which funded 33 college and university students, and the Community College Honors Program (CCHP), which provided 12 underrepresented minority students a chance to work in BNL labs because the community colleges themselves picked up part of the tab.

Some programs for high-schoolers did not fare as well because DOE's budget for pre-college education programs was eliminated in 1996.

The High School Community Summer Science Program (CSSP), which offers students a morning lecture series on BNL science and afternoon lab internships, was still able to accept 38 students, about the same as last year. The Minority High School Student Apprentice Program, which teaches ninth- and tenth-graders physics, chemistry, biology and environmental science, could take only 30, half as many as last year.

Hardest-hit of all were outreach programs for minority high schoolers, and research participation programs for math and science teachers: Two DOE-funded programs that offered lab and field work experience to underrepresented minority students were eliminated; the BNL-New York University Teacher Research Associate Program, which allows teachers a chance to work in BNL Labs, was cut, and the DOE Teacher Research Associate Program was eliminated.

One bright spot, however, was the kickoff of the MSTe program, a $7.2 million effort funded by the New York State Education Department. The MSTe has already begun training 20 teams of elementary school teachers from 15 school districts in math, science and technology education, including 60 teachers from Long Island. The kickoff event was held July 7 at BNL, and state Education Department Commissioner Richard Mills gave the keynote address (see story above).

More Money in 1998?

Negotiations are under way between Congress and DOE that may restore some of the education funding, though the outcome is still uncertain.

The U.S. Senate recently passed an appropriations bill that restored $10 million for DOE's science and education programs, but the U.S. House version of the appropriations bill, passed July 25, restored no money. The $20 million science-education program cut last year represented 0.1 percent of DOE's overall budget of $16.42 billion, and 0.6 percent of what DOE spent on defense programs in 1996.

The Senate and House bills will be reconciled in a conference committee in September, and DOE is optimistic the funding will be restored.

"We feel fairly confident," said Samuel Rodriguez, Chairman of DOE's Education Council. In part because of bipartisan support from Congressman Michael Forbes, Senator Alfonse D'Amato and Senator Daniel Moynihan, he said, "There's a complete understanding and awareness that the education programs that DOE funds are important to the community around Brookhaven and the nation."

Meanwhile, at OEP, Swyler and his staff do what they can to keep science education strong at BNL. Despite the funding shortage, Swyler has full confidence in the value of DOE's educational programs.

"I think DOE's role is to add a dimension to the educational infrastructure, to show people what science really is," Swyler said. "We've been doing education for over 50 years. It's like eating or breathing to us — it's something that we do."

— Dan Ferber

Dan Ferber's summer internship at the Brookhaven Bulletin was supported by DOE as part of the Summer Student Program. He is the guest editor of this issue of the Bulletin.

Lab's Budget (cont'd.)

been necessary, the affected area has taken every possible alternative measure, including seeking volunteers, before proceeding with involuntary layoffs.

Ordinarily, then, the Reactor Division's call early last week for volunteers for layoff would not have attracted media attention. But, because there has been such a strong media focus on the HFBR for the last seven months, Bond noted, "almost any event there seems newsworthy. We hope that in the final analysis, the Congressional appropriation will be increased so that the excellent staff at the Laboratory will be maintained."

As more budget information is available, employees will be notified through the Brookhaven Bulletin.

— Anita Cohen

See Supplement for more stories and classified ads.

AUI Scholarship Alumni — A Diversity of Brainpower

Architects, attorneys, bankers . . . doctors, engineers, graphic designers . . . pianists, scientists, translators . . . the alumni of Associated Universities, Inc.'s (AUI) long-standing scholarship program seemingly do it all.

Since 1965, the AUI Trustees have awarded 491 four-year scholarships to children whose parents were employed by AUI, BNL or the National Radio Astronomy Observatory, also managed by AUI.

The winners were honored at a recognition luncheon on July 25 at Berkner Hall. The event, to which parents were also invited, was coordinated as part of BNL's 50th Anniversary celebrations by Renée Flack of the Office of Educational Programs. Flack presented honorees with a historical booklet she had compiled that included their year of award, colleges and universities attended, photographs and career activities.

Joe Rubino

At the luncheon, Renée Flack (center), Office of Educational Programs and coordinator for 50th Anniversary activities, talks with 1985 AUI scholarship winner Scott Kramer and his parents, Caroline Kramer (right), Safety & Environmental Protection Division, and Martin Kramer, Physics Department.

BNL's Office of Scientific Personnel (OSP) has always administered the scholarship program, while the Educational Testing Service/Sponsored Scholarship Programs Office in Princeton has selected the annual winners based on criteria established by AUI. At the luncheon, OSP Manager Gail Williams brought an interesting statistic to light: Of the 491 awardees, 50 percent were female, although AUI's criteria were not engineered to achieve such a result.

Among the women scholars, 1989 winner Nora Castro has graduated from Cooper Union and now is getting her master's degree in electrical engineering from Virginia Polytechnic Institute and State University, and 1993 winner Rebecca Siddons has just graduated from Princeton University with a degree in English, creative writing and women's studies. She plans to teach high school English for a year in Astoria, Queens.

In one case, male winners were doubly represented by one parent, Cheryl Conrad, Department of Advanced Technology, whose twin sons were 1988 scholarship winners. Both studied mathematics, but Brian Conrad earned his undergraduate degree at Harvard University and his Ph.D. at Princeton, while Keith reversed the process, starting at Princeton and getting his Ph.D. at Harvard.

Scott Kramer, a 1985 winner, graduated in physics from Columbia University, then began developing educational software, including programs to help high school students prepare for SAT examinations.

An AUI scholar well-known to BNL is Kurt Thorn, winner of the Westinghouse Science Talent Search in 1992, for research done at the Lab. Not present at the luncheon, Thorn was most recently on site on June 2, when he gave a Biology Department seminar on the structure of a type of plant protein, while visiting from the University of California, San Francisco, where he is a first year graduate student in biophysics.

At the luncheon, AUI Vice President Leland Willis spoke of AUI's role in education and pride in its scholars.

Gerald Tape, former AUI President, was unable to attend, but commented via telephone early this week on the diversity of the approximately 70 colleges and universities attended by the scholars, which, he felt, showed the far reach of BNL's potential sphere of influence.

In addition to congratulating all AUI scholars in their endeavors, Tape singled out those who, by pioneering new areas in which to use a science background, "had picked out a future independent of the past."

Also, Tape said, "Winning an AUI scholarship brings a certain distinction to the scholar that will always be of value, but the advantages extend both ways — the enterprise and originality brought to so many fields by AUI scholarship winners reflect with equally lasting credit on AUI itself."

— Liz Seubert

Coming Up

Isabella Karle, 1995 recipient of the National Medal of Science, and Jerome Karle, 1985 Nobel laureate in Chemistry, will present a joint Office of Educational Programs (OEP) seminar on Friday, August 8, at 10:30 a.m., in the Hamilton Seminar Room, Chemistry Department, Bldg. 555. All are invited.

Both of the Karles, who are the parents of Louise Hanson, of OEP and the Department of Applied Science, are chemists in the Laboratory for the Structure of Matter at the U.S. Naval Research Laboratory .

Jerome Karle will talk about "The Role of Basic Research in Science and Technology"; Isabella Karle will discuss "Toxic Frogs and Poisonous Mushrooms," referring to her research on the structure of toxins and antitoxins.

Isabella Karle will also deliver a Biology Department seminar on "Peptide Folding — Old and New Folds," on Thursday, August 7, at 3:45 p.m., in the Biology seminar room, Bldg. 463.

BNL High-Schoolers Win National Awards

Erica Sanders and Daniel Durand were among 20 high school students selected in May to the *USA Today* 1997 All-USA Academic First Team, and both did their award-winning work at BNL.

Sanders, a Riverhead High School graduate who plans to major in math and physics at Harvard University, worked in Howard Gordon's Physics Department lab for two years, where she developed a mathematical model that showed that alternatives to film mammography may effectively detect breast cancer. She was one of two of the academic all-stars who were featured on "CBS This Morning" in May; she was shown at home, at school and in the lab at BNL.

Erica Sanders

Daniel Durand

Durand, a Shoreham-Wading River High School graduate who plans to major in chemistry at Wake Forest University, worked with Mow Lin and Jeffrey Yablon in Eugene Premuzic's Department of Applied Science lab.

He applied for a patent for a process he developed there, which uses a chemical secreted by the fungus *Aspergillus niger* to tightly bind uranium from soil, and he was one of only 40 nationwide finalists in the Westinghouse Science Talent Search.

— Dan Ferber

– photos above by Roger Stoutenburgh

Yip, Yip, Upton! Celebrate Upton's 50th Anniversary Today!

Today, exactly 50 years since the U.S. Postal Service opened the Upton Post Office on the BNL site in Bldg. 179 on August 1, 1947, all are invited to celebrate Upton's 50th anniversary at the Upton Post Office: Get your mail hand-canceled with a special postmark based on the Lab's 50th-anniversary logo, which was designed by BNL graphic artist Theresa Esposito of the Information Services Division. Free BNL postcards will be available, courtesy of the Public Affairs Office, and also on sale will be original 1955 Atoms for Peace 3-cent stamps, designed by another BNL graphic artist, the late George Cox.

At high noon in the lobby of Berkner Hall, Bernard Manowitz of the Department of Applied Science will be introduced as Mayor of Upton for the day. Manowitz, the only BNL employee to celebrate 50 years of service at the Lab during BNL's 50th anniversary year, will receive the mail as Mayor of Upton from Upton Postmaster Jeannine Fornsel; representatives of the Long Island District of the United States Postal Service will present a commemorative plaque, and the Upton Postmaster will receive BNL 50th-anniversary mugs, courtesy of Associated Universities, Inc.

Also, coffee and cake for 150 will be served, so come early!

To Your Health:

Healthline Lecture: TB Danger

Tuberculosis (TB), once a dread disease with little hope of a cure, started declining steadily some 40 years ago. But recently, TB cases have been increasing in the United States.

To present vital facts about TB's transmission, testing and treatment, Laura Sbarra, Deputy Manager of BNL's Occupational Medicine Clinic will give the next Healthline lecture, "About Tuberculosis." Sponsored by the Health Promotion Program (HPP) of the Occupational Medicine Clinic, the talk will be given on Wednesday, August 6, from noon to 1 p.m. in Berkner Hall, with questions after the presentation. All are welcome, and the lecture will be available on audiotape afterwards in the Research Library, Bldg. 477.

Sbarra, an M.D. who has worked at BNL's Clinic since 1972, is board-certified in preventive medicine and public health,with a speciality in occupational medicine.

To register for this lecture, return the completed bottom portion of the Healthline flyer recently sent to all employees to Health Promotion Specialist Mary Wood, Bldg. 490. For more information about HPP and its Healthline lecture series, call Ext. 5923.

Nutrition Analysis

HPP is now offering employees free computerized nutritional analysis. The software used by the HPP analyzes an individual's diet and exercise habits to generate a report on fat, carbohydrate, protein, cholesterol, fiber, and vitamin and mineral intakes.

The program then compares the individual's intakes with their daily requirements based on age, weight, sex, activity level, etc. HPP evaluates the analysis to make recommendations for weight management, nutritional improvements and exercise programs. If interested, call Mary Wood, Ext. 5923, to make an appointment.

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

Technical Seminar

APEX Microtechnology Corporation will host a technical seminar on Monday, August 4, in the Snyder Seminar Room of the Alternating Gradient Synchrotron, Bldg. 911, from 9 a.m. to noon. Topics that will be covered are: power op amp circuit design, amplifier protection, safe operating area, stability and compensation, applications, APEX power products and dc/dc converters. To register, call Dave Danielson, 543-3240.

OCAW Offers Training

The on-site Oil, Chemical & Atomic Workers Union (OCAW), under a grant from the National Institute of Environmental Health Sciences, will offer a free, 40-hour, hazardous-waste training course for up to 20 BNL and U.S. Department of Energy employees, August 11-15. For more information, call Lou Evers or Steve Coleman, Ext. 4417.

Classified Ad deadline is noon Friday for publication Friday of the next week.

Service Awards

The following employees celebrated service anniversaries during July:

40 Years

George Dioguardo.....Admin. Supp.

35 Years

Stephen W. Feldberg.....App. Science
Robert J. Liegel.....Physics

30 Years

Robert J. McGonigle.....CCD
George W. Murdock.....AGS
John Skalyo.....Adv. Technology

25 Years

Robert A. Bari.....Adv. Technology
Theresa A. Clark.....Plant Eng.
James H. Clinton.....Adv. Technology
John J. Dunn.....Biology
Douglas W. Gillette.....App. Science
Krsto Prelec.....AGS
Merle J. Pringle.....Plant Eng.
Peter Soo.....Adv. Technology

20 Years

Deidre J. Brown.....Cent. Shops
Catherine L. Green.....Info. Services
Robert K. Kiss..... .....Reactor
Paul D. Moskowitz.....Adv. Technology
Arlene M. Rementer.....Physics
Jon N. Sandberg.....AGS
Betsy M. Sutherland.....Biology
John C. Sutherland.....Biology

10 Years

Timothy R. Devine.....Safety & Env. Prot.
Jacquelyn M. Klemm.....Plant Eng.
Noreen E. Michelsen.....Budget Off.
Amalia L. Ruggiero.....Medical
Christopher N. Ryon.....Director's Off.
Raymond Savino... .....RHIC
Carl M. Schultheiss.....RHIC
Stephen E. Warhol.....Physics

BNL Bikers — Tour L.I., Help Good Causes

Discovering Long Island by bike is great exercise and great fun, especially if you go with a group. It's even better when, by joining in, you contribute to some great causes.

This year, BERA is sending a team to ride with the second annual Discover Long Island Bike Tour, which is scheduled to start from Nassau Veterans Coliseum, Uniondale, at 8 a.m. on Saturday, September 21, and end 25 miles later at Hofstra University. There, after the event, a band, food, refreshments, a karate exhibition and much glory await the triumphant athletes who finish the course.

Less experienced bikers need not feel pressured. Water, facilities and healthy refreshments will be available along the way. The entire ride will be monitored so that anyone needing help or a ride will be transported back to base.

Some bikers with young families might consider riding to the first stop, resting, then riding back to the Coliseum.

Registration is $20 per adult and $10 per child, and tour proceeds will benefit the U.S. Organization for Disabled Athletes, Disabled Children's Relief Fund, the New York State Games for the Physically Challenged, and the Friends of Nassau County Recreation and Parks. No sponsor sheets are used and no other money is collected.

If ten or more riders from BNL, including children, are registered by August 15, the bike tour organizers will provide each participant with a T-shirt with BNL/BERA on the back.

To join BERA's BNL Bike Team, pick up an application at the BERA Sales Office in Berkner Hall, 9 a.m-1:30 p.m., weekdays. For more information, call Augie Hoffman, Ext. 3884; Andrea Dehler, Ext. 3347; or M. Kay Dellimore, Ext. 2873.

Corrections

In the Brookhaven Bulletin of July 25, 1997:

• The headline in the box on page one should have read "RFP Issued Friday; Proposals Due 8/28" (not 9/28).

• The page two story "Engineering Village Information on Line" should have referred to the Research Library of the Information Services Division (not the Technical Information Division).

BNL in the News

Did you — or your neighbors — miss touring the Lab on the June 29 Open House Community Day organized by the Museum Programs of the Public Affairs Office? If you subscribe to TCI Cable of Brookhaven, you can view the highlights on screen.

To see the "Tour of the BNL," which shows Lab facilities with biologists, chemists, medical researchers and physicists explaining their work, catch the one-hour show on TCI's Channel 6 at the following times:

Date		Time
Fri.,	8/1	1 p.m., 3:30 p.m., 8 p.m.
Sat.,	8/2	12:30 p.m.
Mon.,	8/4	3:30 p.m.
Tue.,	8/5	11:30 p.m., 8:30 p.m.
Wed.,	8/6	9 a.m., 4 p.m.
Thu.,	8/7	11 a.m., 8:30 p.m.
Fri.,	8/8	1 p.m., 3:30 p.m., 8 p.m.
Sat.,	8/9	12:30 p.m.

Arrivals & Departures

Arrivals

none

Departures

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

Christopher D. Cleary.....Cent. Shops
Simon W. North.....Chemistry

Softball

Results reported as of July 25

League E1		League M1	
Phoubars	11-2	Stingrays	7-1
Magnuts	10-3	Gour-Mets	7-2
Blue Jays	7-6	Happy Hour	6-2
System	5-8	Hit 'n Run	2-6
Cleen Sweep	4-9	OER Wellheads	2-6
Hammerheads	2-11	Good Timers	1-8
League E2		**League M2**	
Scram	10-1	Varmints	6-1
CCD	8-3	Skeleton Crew	4-2
Contaminators	6-3	Mixed Nuts	2-4
Phytinphytos	7-4	What's on 2nd	2-4
Gas House Gorillas	5-6	No Names	2-5
Hy Tech	4-6	**League E3**	
Lights Out	4-7	Sultans of Swat	7-3
Phase Out	4-7	Sure Fire	7-3
Feds	3-7	Bombers	4-6
Mesocyclones	2-9	Medical	2-8

Classified Advertisements

Placement Notices

The Laboratory's placement policy is to select the best-qualified candidate for an available position. Candidates are considered 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, disability or veteran status.

Each week, the Human Resources Division lists new placement notices, first, so employees may request consideration for themselves, and, second, for 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; call the JOBLINE, Ext. 7744 (344-7744), for a complete list of all job openings; use a TDD system to access job information by calling (516) 344-6018; or access current job openings on the World Wide Web at http://www.bnl.gov/JOBS/jobs.html.

LABORATORY RECRUITMENT - Opportunities for Laboratory employees.

MK 4121. ADMINISTRATIVE/SECRETARIAL POSITION - Requires an AAS or equivalent, experience in an administrative capacity, excellent communication and word-processing skills, proven organizational abilities and familiarity with Laboratory administrative procedures. Will be responsible for providing all administrative/secretarial support functions for the Management Systems Improvement Program (MSIP) Office. These would include, but would not be limited to, word processing, filing, telephone support, travel planning and reimbursement, and coordination of meetings and conferences. Director's Office.

OPEN RECRUITMENT - Opportunities for Laboratory employees and outside candidates

MK 2424. LICENSING ASSOCIATE POSITION - Requires an MS in chemistry, environmental science, materials science or related field, several years' experience in intellectual-property licensing, and excellent analytical, market research and negotiating skills. Will be responsible for conducting market evaluations of invention disclosures, developing business analyses for potential technology commercialization projects with industry, identifying potential licensees for intellectual properties available for licensing, and negotiating intellectual-property license agreements with industry. Office of Technology Transfer.

DD 4054. ELECTRICIAN POSITIONS - (temporary, reposting) Under minimum supervision and in accordance with the national electrical codes or as otherwise directed, lays out, constructs, installs, maintains, repairs and operates electrical systems, equipment, controls and related devices. May be required to perform similar duties on other-than-maintenance-division equipment and facilities. Plant Engineering Division.

PC Training

The following computer training classes are scheduled for August:

Date	Class
8/13 & 15 (2-day class)	ACCESS, beginner
8/14	Word, beginner
8/22	PowerPoint, beginner
8/26	Word, intermediate
8/27	PowerPoint, intermediate
(to be set)	HTML, introduction

To register for a class, see your department or division training coordinator, call Pam Mansfield, Ext. 7286, or e-mail pam1@bnl.gov.