

Summer Student Special Edition

An Integral Part of the Team

"It's nice to be one of the gang," said summer student Kenneth Ritley. What he meant was he likes being an integral part of an experimental team.

Ritley has spent the past eight weeks in the Lab's Summer Student Program, constructing an ultrahigh vacuum system and an electronic data acquisition system in the Materials Sciences Building, 480.

"We're almost at the data-taking stage," said Ritley. He and four physicists in the Particle-Solid Interactions Group of the Physics Department will be using positrons — antiparticles of electrons — to study crystal surfaces.

"Many important things happen at crystal surfaces," said Ritley. "In solid state technology it's critical to know what goes on there."

The positrons, emitted by the decay of radioactive sodium in a sample chamber, will be electrostatically accelerated and magnetically focused to collide with the target — a crystal surface. "The particle interactions will tell



Kenneth Ritley

us about the crystal structure at the surface," Ritley said.

Ritley, 22, received his bachelor's degree from Sonoma State University, California, last spring and will begin graduate work in physics at the University of Massachusetts-Amherst, in September.

51 Participate in 37th Year Of Summer Student Program

In 1952, when the first students participated in the BNL Summer Student Program, only 100 elements were known to exist, Watson and Crick were a year away from proposing the double helix and the existence of the quark would not be proposed for another 11 years.

Thirty-seven summers later, the understanding of DNA structure has made possible the technology of genetic engineering and scientists believe there may be as many as six quarks and 114 elements — possibly more. And students still find plenty of fascinating research opportunities at BNL, in chemistry, biology, physics and other fields as well.

The Summer Student Program is the Laboratory's longest running formal summer program for students. "It has been around longer than I've been at the Lab," said Donald Metz, who heads the Office of Educational Programs, which administers the program. Metz came to BNL in 1954, two years after the program began.

This summer, the Summer Student Program is giving 51 college juniors and seniors the opportunity to collaborate with BNL scientists and staff for ten weeks. BNL is also hosting eight Summer Interns — college freshmen who participated in the High School Science Honors Program, sponsored by the Department of Energy (DOE), in 1987.

"Historically, it has proven to be a very beneficial program to the students," said Metz, of the Summer Student Program.

A study conducted last year by DOE found that a vast number of summer students have gone on to receive advanced degrees. "We can't claim credit for that," said Metz, "but it is a fact."

So this summer's students will take more than memories of one too many late-night trips to Pathmark. They'll leave BNL with practical research experience, new ideas and new knowledge of how science is done.

The Brightest Meet the Brightest

Fifty-two of the nation's brightest high school students spent the week experimenting with the world's brightest source of ultraviolet and x-ray radiation — BNL's National Synchrotron Light Source (NSLS).

BNL is one of six national laboratories hosting high school honor students for two weeks this summer, in the fourth annual Honors Research Program sponsored by the Department of Energy. In addition to one student from each state, the District of Columbia and Puerto Rico, the BNL program welcomed one student each from Canada, France, Italy, Japan, Mexico and West Germany.

The Bulletin caught up with the five students in the Zeta Group — one of ten experimental teams — this week at the Light Source.

From his perch, beam line U4 IR, high above the vacuum ultraviolet ring, Physicist Gwyn Williams led the group in an experiment to determine the transmission of polystyrene in the

infrared region of the electromagnetic spectrum.

At the NSLS, Lonnie Berman, Dean Chapman, Carol Hirschmugl and Nancy Lazarz set up and conducted experiments with the honors students as well.

Laura Grego seemed as impressed with the setting as the science, asking Williams, "How did you get this neat place up here?" Grego, who is interested in science writing, will attend the University of Michigan in the fall.

"It's a lot more serious than I thought it would be," said Thomas DeForest. "But it's fun." DeForest plans on studying engineering at Bismarck State University in North Dakota.

Students are required to turn in written laboratory reports of the experiments. Besides doing research at the NSLS, they take tours of BNL laboratories and attend lectures.

The students will be at BNL through August 8.



Summer students Grace Manchise and Todd Leigh counting outgoing traffic on Rochester Street.

They Don't Play in Traffic

These two summer students aren't playing in traffic — they're working at counting cars.

Todd Leigh and Grace Manchise are studying traffic flow at BNL — to assess the need for new perimeter roads and traffic control. Under the Lab's Summer Student Program, they are working in the Facilities Planning Group in the Plant Engineering Division.

Using a device called an MR Traffic Counter, they are recording the number of incoming and outgoing vehicles during peak traffic periods — the beginning and end of the workday.

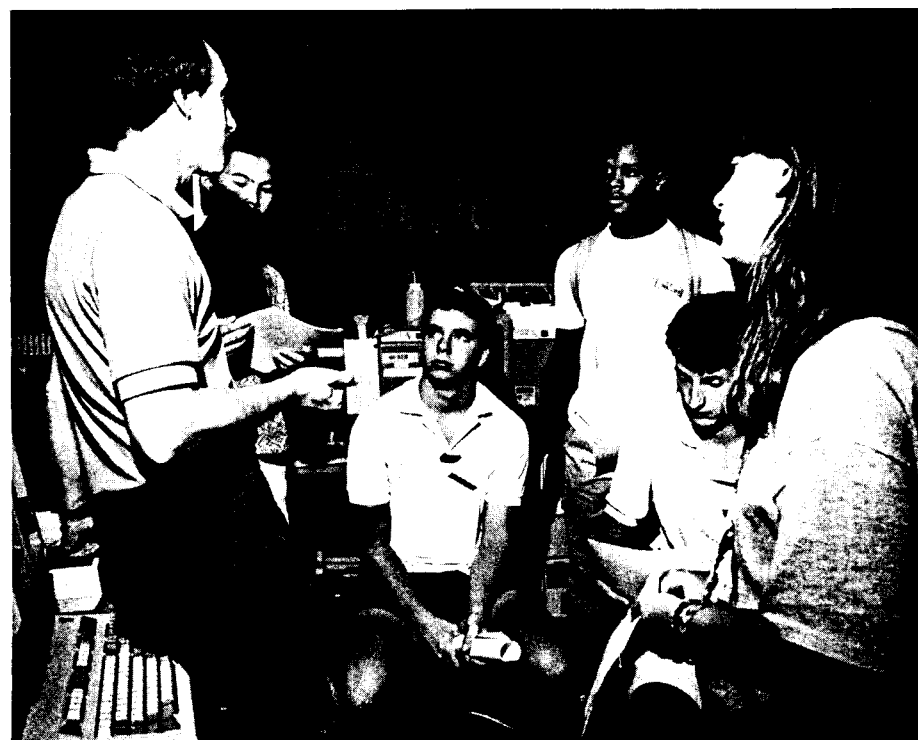
The record? About 2,739 vehicles passed through the Main Gate on Wednesday, July 13 between 8 and 9 a.m. "That's a record I think will stand," said Leigh.

In addition to the traffic study, Manchise and Leigh are working on a utilities study and a space management program for BNL buildings.

Manchise, a senior at Cornell University in Ithaca, New York, is studying industrial engineering. This fall, Leigh will begin the fourth year of a five-year physics and mechanical engineering program, run jointly by Hamilton College, Clinton, New York, and Washington University in St. Louis.

Both are from Suffolk County. Leigh lives in Amityville, while Manchise's home is Mastic Beach.

Their job perks include working outdoors and having a DOE car at their disposal on site. "The other summer students are envious," said Manchise. "They want to know, 'How'd they get a company car?'"



Physicist Gwyn Williams and the Zeta Group experimenting at the National Synchrotron Light Source (NSLS). From left, Williams, NSLS; David Yu, Ohio; Thomas DeForest, North Dakota; Dorian Archer, Virginia; Alessandro Remotti, Italy; and Laura Grego, Michigan.

The stories for this Summer Student Special Edition were written by Alexandra Biesada and the photographs were taken by Roger Stoutenburgh.

Summer Student Special Edition

BNL's Youngest Summer Scientists

Fourteen-year-old Oronde Smith is a smiling, compact ninth grader from Jamaica, Queens. He participated in the July term of the Summer Apprenticeship Research Program for Minorities, administered by BNL's Affirmative Action Office and funded by the Office of Educational Programs (OEP).

Now in its eighth summer, the Apprenticeship Program is for ninth and tenth grade students who have demonstrated ability or potential in science. Students participate in one of two four-week terms during July or August.

To demonstrate his ability, Smith did biology research at Jamaica High School and has presented a project at the Queens Science Fair on "The Effect of Electric Shocks on The Regeneration Process of Planaria," a type of worm.

He is one of four students from the Gateway Program — an inner-city outreach program to motivate minorities in science. The others are Kareem Petty, Brooklyn; Hildania Custodio, Manhattan; and Shakira Cooper, Staten Island. Along with 30 minority students from Suffolk County, they study a week each of physics, biology and medicine, chemistry and computers, and energy and engineering.

Questions Mean Curiosity

"During the four weeks, we expose them to all areas of science to some degree," said Arthur Pitschi. A teacher in the Patchogue-Medford School District for 27 years, Pitschi has also been teaching in the Apprentice Program since it began. The other instructors are Barbara Riess of Baldwin, and Clayton Hudson of Central Islip, who teach the physics and chemistry weeks, respectively.

Outside of the classroom, the students visit various BNL labs and go on field trips.

"These students are fantastic," said Pitschi. "I feel more wound up at the end of the day than at the beginning.

"The question," added Pitschi, "that's what I look for. A student who asks questions has learned something."

This year, the group is setting up a hydroponic greenhouse behind the Biology Department to grow tomatoes, beans and other fruits and vegetables in nutrient solutions, rather than soil. "Hydroponics pro-



With 15 other student apprentices in the greenhouse are (front, from left) Miguel McInnis and Oronde Smith, (back, second from left) teacher Arthur Pitschi, and (back, second from right) Renée Flack, Affirmative Action Office.

duces more biomass than soil does," said Smith.

One student who has learned something is Smith. He enjoyed the Apprenticeship Program so much, he wants to come back next summer. "I'd like to work with the Scanning Transmission Electron Microscope," said Smith. "It interested me when I saw it on one of the tours."

Another Teenager in the House

Gateway students live with a Lab family during their month at BNL. Smith lived with Pamela Gibbs (Biology) and James Gibbs (Plant Engineering) and their three teenage children. "At first I was hesitant about putting a teenager in a house with other teenagers," said Pamela Gibbs. "But after meeting Oronde and his family we invited him to stay with us. Oronde just fit right in. All my kids liked him."

Smith found life in Suffolk County very different from Jamaica, Queens. "I'm used to walking to the store," he said, "but there are no corner stores around here."

Smith would like to be an astronomer. "If that doesn't work out," he said, "I'll be a medical doctor or a lawyer. My mother says I should be a lawyer because I can talk my way out of anything."

Visited and Stayed

Last July, Lisa Mahood was a tenth grader participating in the Apprenticeship Program that Oronde Smith is in today. This summer, the 17-year-old from Mastic is one of four minority students doing biomedical research here at BNL, funded by a grant from the National Institutes of Health.

Mahood helps out the staff in Ralph Fairchild's cell lab and is trying to grow a line of Chinese hamster ovary cells.

"We visited this lab last year," said Mahood. "I stayed after to talk to Brenda Laster to see if I could work here — and here I am. If I'm successful at keeping these cells alive, I'll get more responsibility."

Mahood wants to attend college. "I'm going in as a premed," she said. "I like pediatrics or maybe surgery."

Looking Back

Another alumnus of the Apprenticeship Program who plans on becoming a physician is Miguel McInnis. After four years away from BNL, he is back in the Summer Student Program, run by the OEP for college students.

McInnis is working with Mow Lin and Eugene Premuzic, in the Department of Applied Science, building a small-scale microbial leaching plant for removing heavy metals from waste.

McInnis visited the new Apprenticeship students and his former teacher Pitschi at the greenhouse last week.

Looking back, McInnis said, "I was really enlightened participating in this program. I'm happy it's continuing. It opens your eyes."

It was the introduction to biology and medical technology that he got in the Apprenticeship Program that interested McInnis in medicine. He is now a junior at Oakwood College, in Alabama.

He plans to attend medical school after college to become a general practitioner. "My goal is to open a clinic in an underdeveloped area. Maybe in Jamaica, West Indies, where I'm from originally," said McInnis.

Pitschi praised Renée Flack, administrator of the Apprenticeship Program, for her dedication. "It's been Renée Flack's initiative, enthusiasm and 'stick-to-it-iveness,'" said Pitschi, "that have made it possible."

Flack is proud of the program and the students. "I am now beginning to see all my babies branch out and come back," she said with a broad smile.



Lisa Mahood (center) with Brenda Laster and Ralph Fairchild.

An Attentive Audience for Summer Science Talks

Coca-Cola, not coffee, is the refreshment preferred by the attendees at the morning lecture series this summer.

That's because they're teenagers — high school students participating in the Lab's new Community Summer Science Program. Also attending the Friday lectures are students in a Southampton College program run by the National Center for Excellence in Education.

Lecturers have included Sheldon Glashow (below, right), who received the

1979 Nobel Prize in Physics, for his contributions toward the formulation of the electroweak theory. Glashow, the Higgins Professor of Physics at Harvard University, spoke to the students about interactions.

Other lecture topics have included high temperature superconductors, the very early universe and future accelerators. Students also are being introduced to science — as performed at BNL — in lectures on science at the National Synchrotron Light Source and the physics of the proposed Relativistic Heavy Ion Collider.



Summer Studies at BNL

In addition to the four programs featured in this edition, BNL offers nine other summer research, education and training programs for various students. Eight are open to high school, college or graduate students — and there is one for high school teachers. For more information about a specific program, call the person listed.

• For High School Students

BOCES II Summer Science Internships for Gifted & Talented High School Students — High school students with an aptitude for science, selected by the Board of Cooperative Educational Services (BOCES) from the 27 school districts in eastern Suffolk County (Region II), spend half days during July working in BNL labs. Donna Dowling, Personnel Division, Ext. 2754.

Youth on Campus — Local minority high school students receive on-the-job training in clerical, secretarial and technical jobs. Frances Ligon, Affirmative Action Office, Ext. 3709, or Donna Dowling, Ext. 2754.

• For College Students

Science & Engineering Opportunities Program — Twelve college freshmen and sophomore minority and women students are apprenticed for the summer to gain first hands-on exposure to science and engineering. Frances Ligon, Ext. 3709.

Southampton College Co-op Internship Program — About a dozen undergraduates from Long Island University's Southampton campus work with BNL researchers for ten weeks. Donald Metz, Office of Educational Programs, Ext. 3054.

MIT Internships — Engineering undergraduates from the Massachusetts Institute of Technology (MIT) work in BNL's Department of Nuclear Energy during the summer after their sophomore through senior years and for six months after graduation, in preparation for graduate school. Jeffrey Taylor, Personnel Division, Ext. 2703.

• For Graduate Students

Thesis Research — Ph.D. students carry out thesis research in BNL departments as members of user groups. Individually arranged.

Health Physics Training Program — This ten-week program is open to a dozen or so students who either have received or are completing their master's degrees in health physics, to give them experience in the workplace. Frank Marotta, Safety & Environmental Protection Division, Ext. 4273.

GEM Program — The Graduate Engineering for Minorities (GEM) program, sponsored by the National Consortium for Graduate Degrees for Minorities in Engineering at Notre Dame University, brings to BNL for two consecutive summers about a half dozen minority engineering graduate students, or college junior and senior engineering majors planning to go on to graduate school. Frances Ligon, Ext. 3709, or Jeffrey Taylor, Ext. 2703.

• For High School Teachers

Summer Research Participation Program — For ten weeks, high school teachers become part of ongoing research projects at BNL. Some teachers participate for three consecutive summers and also conduct research at private corporations. Donald Metz, Ext. 3054.

Runners' Corner

Applications are available in the men's and women's locker rooms for the first Jim Smith 5K Memorial Race, sponsored by the Port Jefferson Road Runners. The race will be run in Port Jefferson, on Saturday, August 20, at 9 a.m. It will start at Port Jefferson High School and finish at the harbor. For more information, call Ed Gill, Ext. 7207 or 473-8716, or Paul Lennon, 473-5136.

Sunday, July 17, 30 BNL'ers and three of their spouses participated in the fifth edition of the Clipper Classic, a 5 kilometer (k) footrace in Bellport, on one of the fastest and prettiest courses on Long Island.

For many of the BNL runners this was either their first or best attempt at 5 k. At the front of this year's race were two past winners and current members of the BNL Roadrunners: Terry Sullivan, first, and Trevor Sears, fourth.

Runner	5k Time	Comments
Terry Sullivan	14:36	1st
Trevor Sears	15:14	4th
Paul Geiger	17:04	PR
Mel Cowgill	17:42	
Jerry Hastings	17:56	
Don Mackenzie	19:09	
Rich Thorp	19:15	PR
Sharon Zuhoski	19:36	PR
Bill Thomlinson	19:47	
Skip Medeiros	20:09	
Chuck Samar	20:10	
Gus Prince	20:14	
Dennis Nordstrom	20:23	
Ricky Backofen	22:20	PR
Kevin Hester	22:25	1st race
Ben Burr	22:30	
Venki Ramakrishnan	22:35	PR
Nick Gmur	22:38	PR
Dave Fridae	24:20	PR
Sue Ellen Gerchman	25:15	PR
Sheryl Carey	25:22	PR
Ed MacDougall	25:24	PR
John Dunn	25:25	
Joan Slavinsky	26:16	PR
Carrie Grimshaw	26:30	PR
Vera Ramakrishnan	26:45	1st race
Steve Gill	28:26	1st race
Donna Cyr	29:00	1st race
Debbie Samar	30:04	1st race
Bonnie Biittner	30:30	PR
Marilyn Mckeown	30:30	PR
Ronnie Evans	31:15	PR
Patti Gill	31:49	1st race

PR indicates personal record

Scholarship Presentation

The 1988 Renate W. Chasman Scholarship for Women will be awarded to Nancy A. Budka of Smithtown, who will be a junior majoring in biology at the State University of New York at Stony Brook this fall.

At the third annual awards ceremony, Budka will be presented with a \$1,000 check and a certificate, on Wednesday, August 10, at 4:30 p.m. in Room B, Berkner Hall. Refreshments will be served, and all are invited to attend.

The \$1,000 Scholarship was established by Brookhaven Women in Science for women who have returned to college for technical or scientific degrees on the undergraduate or graduate level. It honors the memory of the late BNL Physicist Renate Chasman, whose work with the late Ken Green was the basis of the design of the two storage rings at the National Synchrotron Light Source, as well as other synchrotrons around the world.

LINK.bnl

AMD's Computing Newsletter and MIS's Offline Relay have been combined into one newsletter — called LINK.bnl.

The newsletter will be jointly published by the Applied Mathematics Department (AMD) and the Information Services & Support Group of the Management Information Systems Division (MIS). All BNL employees will receive the first issue next week.

In focusing on items and events that best describe the computing environment at BNL, LINK.bnl will: inform computer users about committee decisions, new procedures, and specific application and computer systems updates; and convey information about the strategies, objectives and trends that influence BNL computing. Of most importance, the publication will present a coordinated and unified approach to computing at the Laboratory.

For more information, call Robert Kaszuba, Ext. 7785.

Computer Seminar

The VAX 3200 and 3500 workstations will be the subject of a seminar by Digital Equipment Corporation and Pioneer Standard, on Wednesday, August 10, from 9:30 a.m. to noon, in the Applied Mathematics Department seminar room. For more information, call Paul Kessler, Ext. 4156; to register, call Denise Curcio, 921-8700, Ext. 481.



Week three of the Team Safety program* and the team records are still perfect as of the date of this report.

Word on the field this week is that the bats have never been hotter. Despite the hot weather and the associated problems the heat brings, the pitchers are hanging in there.

Current rumor is that the owner of the pizza parlor won't sell and PE is looking for a deli. There is also a report of Jimmy taking odds on the first strikeout, but no one in Vegas can confirm this. Let all ye nay-sayers take note: *Keep up the safe work!*

* Twenty-six teams are participating in the Lab's Team Safety program. As none have incurred a lost-time injury, all are still in the running to be rewarded for their safe practices with a pizza or deli luncheon.

Scoop of the Week



The scoop for week number five of the Scoop of the Week contest goes to summer student Kenneth Ritley — for reading the Editor's mind.

Every year, the Bulletin publishes the story on summer students. This was unbeknownst

to Ritley when he came up with not only the idea for a summer student story, but the draft of an article as well. Ritley's ideas contributed to one of our stories in this summer student special edition.

Throughout the summer, the Bulletin will be trading hot tips for scoops of cold frozen yogurt. To enter the Scoop of the Week contest, rush your news and feature scoops to the Bulletin, Bldg. 134, or call Ext. 5053. If you scoop the Bulletin's informed sources and a story based on your idea is published, you'll win an official certificate for soft-serve, frozen yogurt, redeemable anytime at the Cafeteria.

The Students Of Summers Past

Over the years, thousands of students have spent summers at BNL. One of those was James Wyche, who first worked in the Instrumentation & Health Physics Division under the supervision of Smith Pearsall in the summer of 1962.



Twenty-six years later, Wyche has become Associate Dean and Associate Professor in the Division of Biology and Medicine at Brown University.

In 1965, Wyche returned to the Lab as a full-time research assistant to Milislav Demerec in the Biology Department. He left BNL in 1966 to work with Demerec at C.W. Post. After Demerec's death, he entered The Johns Hopkins University for graduate work in bacterial genetics, receiving his Ph.D. in 1972.

BNL was a family affair for Wyche, whose father William retired from Plant Engineering in 1984 and mother Fannie retired from the Physics Department in 1981.

Editor's note: To recommend a former summer student to be featured in this column next year, please contact the Bulletin, Ext. 2345.

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

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