

BNL Papers in *Nature* Show Phytoplankton Need Iron to Thrive

Phytoplankton are the lungs — and the lifeline — of the planet. But without a balanced diet that includes iron, these tiny ocean plants can neither exhale the oxygen we humans breathe, nor inhale the carbon dioxide we, our cars and our factories spew out.

So report scientists from the Department of Applied Science's Oceanographic & Atmospheric Science Division (OASD) and their colleagues in two papers in *Nature*: one in today's issue, and one that appeared August 29, 1996.

Both describe results collected on two 1995 research cruises — one near the Galapagos Islands, the other in the subarctic Pacific. The studies' results add to what is known about an important cornerstone of the global ecosystem.

On the Galapagos cruise, described in today's article, a BNL-designed instrument helped prove that underachieving phytoplankton could be revved up to consume more carbon dioxide if they got an iron supplement.

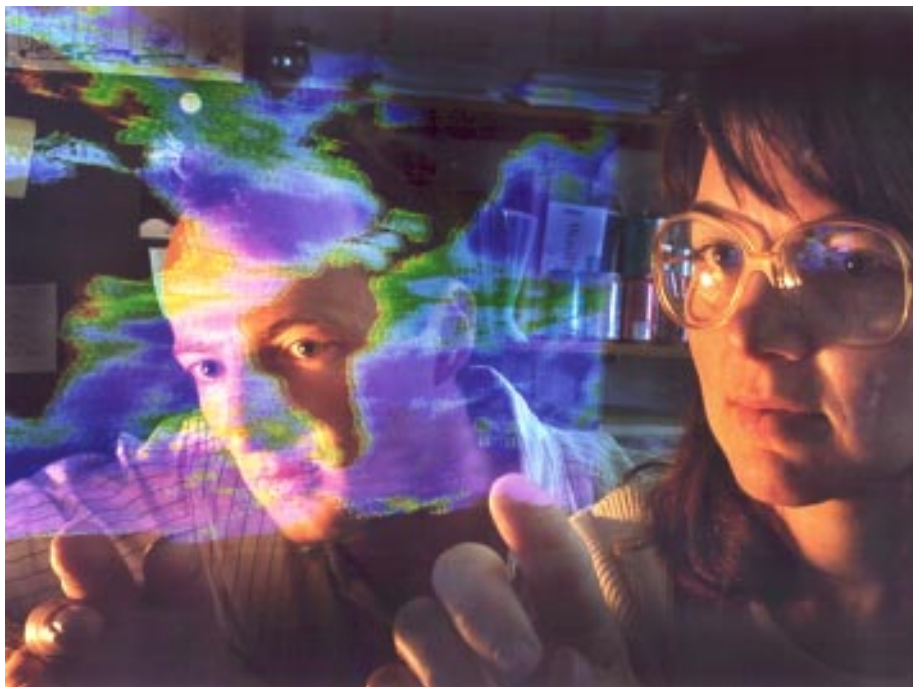
The August article discussed a BNL-developed molecular detection method that showed that subarctic phytoplankton are underproductive because they are stressed for iron.

Both studies answer long-standing questions about phytoplankton. But the scientists adamantly state that fertilizing the ocean with iron would not be a "quick fix" for the potentially climate-changing effects of humankind's carbon dioxide production.

"Too many factors would erase any increase in carbon-dioxide absorption, not to mention the risks of such a huge environmental manipulation," said oceanographer Michael Behrenfeld, OASD.

Phytoplankton are tiny single-celled plants, trillions of which have floated freely on the ocean's surface for nearly 3.5 billion years. Together, they process about 40 percent, or 43 billion tons, of the world's carbon annually, much of it atmospheric carbon dioxide.

When phytoplankton do not get all their necessary nutrients, say the scientists, they cannot absorb as much



Michael Behrenfeld and Julie La Roche, both of the Oceanographic & Atmospheric Sciences Division, Department of Applied Science, review a map indicating the distribution of chlorophyll in the ocean.

carbon dioxide as usual. The two cruises studied areas of ocean where phytoplankton productivity is "limited" by lack of iron, so that they cannot take full advantage of abundant

nutrients such as nitrogen and phosphorous.

Underwater Overachievers

In the Galapagos study, scientists

fertilized an underproductive patch of the South Pacific with iron three times over eight days, while taking measurements to see how phytoplankton activity in the 25-square-mile area changed.

The result was dramatic: Within 32 hours of the first application, an area 6 miles wide and 81 feet deep turned green with phytoplankton. The effect lasted two weeks.

Said Behrenfeld, "Our boat towed BNL's submersible fast-repetition-rate fluorometer instrument, which repeatedly dove down to 200 feet and returned to the surface, taking readings all the while. We could see immediately how the phytoplankton responded to the iron — their photosynthetic efficiency increased tremendously in the first 48 hours."

A second instrument inside the boat showed that the phytoplankton began making much larger "antennae" to capture sunlight, in order to take advantage of the iron-rich diet.

The team calls the effect "bottom-up" control of phytoplankton, to contrast it with the long-held "top-down" control theory that says that tiny animals called zooplankton were eating the phytoplankton as fast as they grew.

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Blume Steps Down as Lab's Deputy Director

Martin Blume, who had served as BNL's Deputy Director for 12 years, stepped down from that post effective October 1, after asking to be relieved of his duties so he could return to the Physics Department to pursue his primary interest in theoretical solid-state physics.

"Marty's service in multiple areas has made an important difference in moving our vital programs forward," said BNL Director Nicholas Samios. "On behalf of the Laboratory, I thank Marty for his many years of dedicated effort and wish him well in his future endeavors."

Samios added that, at this time, the position of Deputy Director will not be filled. Instead, Blume's responsibili-

ties, which have covered a wide range of Laboratory activities, have been divided among several members of the Lab's Directorate (see box, page 2).

One area under Blume's charge was the Department of Advanced Technology (DAT). "Dr. Blume took a strong interest in DAT's management and played an important role in assuring that the Department stewardship maintained an appropriate focus on programs and future prospects," said DAT Chair Robert Bari.

For example, Bari said, "Dr. Blume was active in guiding an integrated approach to BNL's environmental research programs, many of which reside in DAT, and he was involved in establishing a DAT program to foster



Martin Blume

BNL Lecture: Revisiting the Big Bang



Samuel Aronson

How did the universe begin? The most generally accepted cosmological explanation, the Big Bang theory states that the universe began in a state of infinite density and temperature some 20 billion years ago, and it has been expanding and cooling since.

Time and space originated in this dense, hot explosion, and, in the first few microseconds after the Big Bang, the universe was filled with a plasma of quarks and gluons. It cooled and condensed into protons, neutrons and other fundamental particles, and quarks and gluons have been confined by the strong force to the likes of the atomic nucleus ever since.

With the goal of liberating quark-gluon plasma for the first time since the Big Bang, BNL is in the midst of constructing the Relativistic Heavy Ion Collider (RHIC) and four detectors for observing the recreation. To explain the science behind RHIC and its detectors, Senior Physicist Samuel Aronson, Physics Department, will present the 320th BNL Lecture, "Revisiting the Big Bang: RHIC Research Program and Detectors."

Aronson, who is the Project Director of PHENIX, one of the large detectors being built for RHIC, will speak on Wednesday, October 16, at 4 p.m. He will be introduced by Physics Department Chair Peter Bond.

As Aronson will explain, the search for quark-gluon plasma began by colliding heavy ions into targets at BNL's Alternating Gradient Synchrotron and elsewhere around the world. In fact, he will discuss how results from a recent fixed-target experiment at the European particle-physics

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technologies for improving civil infrastructure. He represented the Lab's commitment to the internationally visible program on the Marshall Islands, to that government and to the Department of Energy [DOE]. He also provided skillful leadership in support of DAT's programs on national security and in the stabilization of the National Nuclear Data Center, a resource to both the national and international nuclear science and technology community, which now has, for the first time, the status of a DOE facility."

Overall, said Bari, "Dr. Blume has helped steer and strengthen DAT for the challenges and opportunities that lie ahead. We were indeed fortunate to have had the attention, interest and efforts of this skillful and brilliant manager and scientist."

In the area of environment, safety and health (ES&H), said Sue Davis, Associate Director for Reactor, Safety & Security, "Marty was a real ambassador and champion. He clearly understands the importance of worker safety and protecting the environment in terms of running a first-class research facility. He was very committed

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Look! Up in the Assembly Hall!

In the foreground within the 8 o'clock collision hall of the Relativistic Heavy Ion Collider (RHIC), RHIC Project Head Satoshi Ozaki (front, right) points into the Assembly Hall where construction of the PHENIX detector is ongoing. In the background is the reason the group pictured with Ozaki has assembled: the installation of the steel magnet yokes (the cone-shaped muon magnet to the right and the central magnet to the left) and the steel particle-absorber plates of the muon system of the PHENIX detector. This steel — nearly 2,600 tons of it — was fabricated at the Izhora Steelworks in St. Petersburg, Russia for PHENIX collaborators at the Petersburg Nuclear Physics Institute and the Efremov Institute for Electrophysical Research. After arriving at BNL in early June, the steel was completely installed in Bldg. 1008 this September. Inspecting the installation are some of the Russian engineers involved in the steel's fabrication, along with their BNL hosts: (back, from left) Thomas Ludlam, RHIC Associate Project Head for Detectors & Experiments, BNL; James Yeck, Project Manager of the RHIC Project Management Team, Brookhaven Group, U.S. Department of Energy; Peter Kroon, PHENIX Chief Mechanical Engineer, BNL; Vladimir Kashikhin, lead engineer of the PHENIX steel fabrication at Efremov; (front, from left) Victor Duryinin, Izhora; Vladimir Alunin, Izhora; Vitaly Shangin, Efremov; and Samuel Aronson, PHENIX Project Director, BNL.



Roger Stoutenburgh

BNL Lecture

(cont'd.)

laboratory CERN may or may not be the first glimpse of the formation of quark-gluon plasma.

With ten times the energy of CERN's SPS accelerator, RHIC will collide two beams of heavy ions at energies theorized to be high enough to achieve the necessary temperature and pressure conditions to create quark-gluon plasma. This phase transition from nuclear matter to quark-gluon plasma is expected to take place in a space the size of an atomic nucleus and last for a mere 10^{-23} seconds. As a result, RHIC will open wide the window on the phenomenon.

The collider is expected to come on line in 1999 — with its experiments ready to go. After reviewing progress on collider construction, Aronson will focus on the detectors: two large ones — PHENIX and STAR; and two small — BRAHMS and PHOBOS. After comparing and contrasting the rationale and subsystems involved in these four complementary experiments, Aronson will present an overview and update on the project that he directs: the Pioneering High Energy Nuclear Interaction Experiment, or PHENIX.

Approved in 1991, PHENIX hardware and software will be the product of over 400 collaborators from about 50 institutions. BNL's role, as Aronson will outline, is being acted out by members of the Physics Department and the RHIC Project, who are building the tracking and calorimeter subsystems, and developing the on-line software. Aronson will show a two-minute video of the installation of the Russian steel for the muon system (see photo caption above).

Aronson received his M.A. and Ph.D. in physics from Princeton University, in 1966 and 1968, respectively. From 1968-72, he was a research associate at the University of Chicago's Enrico Fermi Institute for Nuclear Studies. From there, he moved to the University of Wisconsin, to serve as an assistant professor of physics until 1977.

Aronson joined BNL's Accelerator Department in 1978, as an associate physicist with the ISABELLE Project. He was named a physicist in 1979 and received tenure in 1982.

Also in 1982, he joined the Physics Department, and he was named its Associate Chairman in 1987 and Deputy Chairman in 1988. Aronson gave the 256th BNL Lecture in 1989 on his then hobby, the fifth force.

In 1991, Aronson became a senior physicist and gave up his deputyship when asked to form a collaboration for the second large RHIC experiment, which became PHENIX. He became PHENIX Project Director in 1992.

After the lecture, those interested in joining the speaker for dinner at *La Plage* in Wading River may call Donna Earley, Ext. 4007.

Martin Blume

(cont'd.)

to making sure that we had the right culture in terms of integrating ES&H

into the Lab. In this, he will be missed."

But Blume is not going far, just moving to the Physics Department in Bldg. 510, where his BNL career be-

New Division of Duties

BNL Director Nicholas Samios announced that, as of October 1, the duties of the Deputy Director were divided among other members of the Laboratory's Directorate, as follows:

- The **Department of Advanced Technology (DAT)** reports to Mark Sakitt, Assistant Director for Planning & Policy. Samios explained that DAT and Sakitt are a natural match because "Mark has had a strong interest and capability in the matters of the department, namely national security and technology development."
- The **Computing & Communications Division** reports to Thomas Kirk, Associate Director for High Energy & Nuclear Physics. Samios noted, "Great progress has been made in distributed computing at the Lab. This has to be sustained and integrated with the large-scale computing anticipated with our larger facilities," such as the Relativistic Heavy Ion Collider, of interest to both the nuclear and high-energy physics communities.
- The **Information Services Division** reports to Henry Grahn, Associate Director for Administration. "This couples with Hank's concerns and responsibilities in the business information systems area," said Samios.

Additionally, Richard Setlow, Associate Director for Life Sciences, oversees the Marshall Islands Project; Sakitt has oversight for the Diversity Office, although the office remains part of the Human Resources Division, which reports to Samios; and Samios himself now chairs the Laboratory-Directed Research and Development Committee.

Phytoplankton

(cont'd.)

The BNL scientists show that it is nutrients, not grazing, that restricts the population. But they stop far short of saying that adding iron to underproductive patches of ocean could slow global climate change.

The experiment was led by scientists from Moss Landing Marine Laboratories in California. The researchers who designed and built Brookhaven's instruments with funding from the U.S. Department of Energy and NASA also include BNL's Paul Falkowski and Zbigniew Kolber, and scientists from Britain's Plymouth Marine Laboratory.

Lack of Iron Stresses Them Out

It may be easy to tell when humans are stressed, but what about phytoplankton? OASD biochemist Julie La Roche and her colleagues reported in *Nature* on August 29 that they have devised a phytoplankton stress test and used it in the waters off of Vancouver, British Columbia.

The test takes advantage of the fact that phytoplankton living in iron-poor oceans "make do" by substituting an iron-free protein, flavodoxin, for their usual ferredoxin, which has to be made with iron. "So, by detecting whether the phytoplankton cell is making flavodoxin, we can tell if it's stressed for iron," La Roche explained.

In May and September of 1995, La Roche and her colleagues sampled populations of diatoms, a kind of phytoplankton known to be particularly

sensitive to iron deficiency, at five stations in the ocean. Their 560-mile course ran from just off Vancouver to the center of the Pacific Ocean.

After collecting the samples, they mixed phytoplankton cells with antibodies that bound to flavodoxin and revealed how much there was. They found that phytoplankton taken from offshore, iron-poor waters had nearly 200 times more flavodoxin than those from fertile waters close to shore.

The test may help oceanographers with their experiments, since it can indicate phytoplankton iron-stress levels in water samples carried home from a research cruise, without sophisticated equipment or large-scale fertilization.

The study, which included scientists from the University of British Columbia, the University of Delaware and the Plymouth Marine Laboratory, was funded by DOE, the National Science Foundation and the Canadian Joint Global Ocean Flux Study.

— Kara Villamil

gan 34 years ago, in 1962, as an associate physicist. In 1968, he was appointed Group Leader of Solid-State Theory, then Head of Solid-State Physics and Deputy Department Chair, in 1975.

Early on, Blume understood and appreciated the potential usefulness and importance of synchrotron radiation to a wide variety of disciplines. He was one of the principals involved in developing BNL's National Synchrotron Light Source (NSLS), heading the NSLS design committee, 1975-77.

After ground was broken for the NSLS in 1978, Blume was named NSLS Scientific Program Head and Deputy Project Head, in 1979. The NSLS began operating in 1982, the year after Blume was awarded DOE's prestigious Lawrence Award, for his scientific leadership in solid-state physics, especially in the research program then emerging at the new NSLS.

In 1981, Blume became BNL's Associate Director for Low Energy Physics & Chemistry, serving also as NSLS Chair, 1983-85.

"Dr. Blume guided the NSLS through a critical time when the project was struggling to reach full operations," said Denis McWhan, Associate Director for Basic Energy Sciences. "In addition, he has made major contributions to our theoretical understanding of the use of neutrons from the High Flux Beam Reactor and photons from the NSLS in the study of magnetism."

Though named Deputy Director in 1984, Blume continued his solid-state physics research, as he had throughout his years in Lab administration. At the time of his Lawrence Award, he was cited for "definitive contributions to the theoretical analysis of magnetic phenomena in neutron scattering and for his work on relaxation and critical phenomena."

For the past several years, Blume said, "I've been looking into the theory of x-ray scattering, an area that is obviously of considerable relevance to work that goes on at the NSLS."

This is the work that Blume will intensify now that he has returned to Physics, where he will interact with theorists and experimenters who work with x-rays at the NSLS and with neutrons at the High Flux Beam Reactor.

— Anita Cohen

Welcome Sons to Work Monday

On Monday, October 14, about 200 sons of BNL employees will participate in the Lab's second Take Our Sons to Work Day (girls have their special day in April). The 11-to-15-year-old boys will visit their parents' or host parents' workplaces in the morning, then tour various Lab areas in the afternoon.

Susan Foster, Human Resources Division, who heads the Lab committee planning the day's events, asks employees to encourage the boys' questions and make them feel welcome during their day at BNL.

Contractor Remembers to 'Do the Right Thing' in Spill

When contract mason Charlie Gates saw another worker covering up some hydraulic fluid that had leaked onto the ground from a backhoe near Bldg. 1006 on Tuesday, October 2, he knew exactly what to do: Report the incident to BNL's authorities.

Remembering the training that he had received when he first arrived on site, Gates, a Lettieri Excavating employee helping to build a retaining wall in the area, called his BNL supervisor, Bill Pinto, in the Plant Engineering (PE) Division.

Pinto and Peter Boyle, also of PE, investigated and saw the oil-soaked

ground, then called Ext. 2222 to alert spill responders in the Safety & Environmental Protection Division. PE personnel cleaned up the oil spill according to environmental guidelines.

Gates did the right thing, says PE Head Bruce Medaris. "It's only by virtue of having a responsible contractor that we were able to catch the irresponsible contractor," he said. An excavator for subcontractor Philip Ross, Inc., has admitted to covering up the several-quart leak with a rock and failing to report it.

When informed, BNL promptly reported the incident to the New York

State Department of Environmental Conservation, as is required when any such spill occurs on soil at BNL or elsewhere.

The excavator who covered up the leak has been banned from future work on site, and the company he works for is responsible for cleanup costs and will have to retrain all its BNL-based workers on proper procedures. Because the incident violated environmental laws, further action is pending.

Medaris added that contractors, contract laborers and employees alike should not hesitate to report any incident, including spills, fires, accidents

or injuries, that they are involved in or observe.

"Calling Ext. 2222 or alerting a supervisor is the right thing to do," he explained. Even though the contracting company will have to pay for cleanup, those costs are small compared with the potential costs of fines, lost business and other penalties if the incident is not reported and later discovered.

Gates's story may become a part of the Lab's compulsory PE contractor-training courses, Medaris said, as an example of proper behavior in case of a spill.

— Kara Villamil

Anger & Hostility: Harmful to Your Health?

Anger and hostility are emotions that have been handed down through the generations from human beings' primate ancestors. In fact, their success at becoming the dominant species was based not only on having a big brain, being carnivorous and being able to make weapons — but also on being able to wield those weapons against other carnivores with explosive anger and to recall with great hostility who their predators were.

Obviously, the "fight or flight" reaction incited by anger and hostility served human evolution well in the past. Today, however, most people do not face such physical dangers as did their ancestors. So, the question is, "Does readily aroused anger and never-forgotten hostility still serve us well?" asks Dianne Polowczyk, a staff psychologist with the Employee Assistance Program (EAP) of the Occupational Medicine Clinic.

The answer, according to Polowczyk, may surprise you.

She explains, "Studies have found that expressing anger and hostility do not effectively resolve the underlying problems — and, contrary to what is believed, being an angry and hostile person is not good for one's physical or emotional health."

In fact, compared with those who express the least anger, outwardly angry and hostile people are five times more likely to have heart disease and seven times more likely to die within the next 25 years from any cause.

What Are Anger, Hostility?

"As with many emotions, anger is difficult to define objectively because it involves other, similar emotional reactions, such as rage, hostility and hatred," explains Polowczyk. "Subjectively, however, we are all familiar with that strong, emotional reaction that wells up inside us if we are attacked, threatened or restrained — and, from their facial grimaces, body position and tone of voice, we all know an angry person when we see one."

More diffuse and long-lasting than anger, hostility is characterized by

Test Your Anger & Hostility

To measure your level of anger and hostility, check all that apply:

- When in the express checkout line at the supermarket, I often count the items of the people ahead of me to see if they are over the item limit.
- I am often irritated by other people's incompetence.
- If a cashier gives me the wrong change, I assume that I was cheated.
- I tend to remember irritating incidents and get mad all over again.
- Little annoyances have a way of adding up during the day, leaving me frustrated and impatient.
- When I get into an argument, I feel my pulse climb, breath quicken and jaw clench.
- When someone doesn't show up on time, I plan the angry words that I'm going to say.
- I've been so angry at someone that I've thrown things or slammed doors.
- When I get cut off in traffic, I flash my lights, honk my horn, pound the steering wheel, tailgate, shout or gesture at the offender.
- If someone mistreats me, then I look for an opportunity to pay them back just on the principle of the thing.

If you scored 2 or less, then you are generally cool-headed. If your score is 3 to 6, then your anger and hostility may be raising your risk of heart disease. A score of 7 or more means that your anger and hostility most likely are endangering your health and relationships.

enmity toward others and by a desire to harm those at whom it is directed. "Hostility can be thought of as chronic anger," Polowczyk comments.

According to Polowczyk, anger has three components: First, there is a thought, which essentially boils down to "I am being physically or psychologically trespassed," says Polowczyk.

Second comes the bodily reaction: The nervous system and muscles mobilize for the assault, physical or not. Reaction rate to stimuli quickens, muscles tense, blood pressure increases, respiration rate is elevated, heart rate goes up, digestive processes stop and brain chemistry changes. "These physical reactions work against your physical and emotional well-being if your attack is psychological instead of physical," states Polowczyk.

Third, to end the actual or perceived trespass, the angered person attacks. Comments Polowczyk, "Even if the trespass is physical, if you are socialized, then you may respond verbally. But, if you are unable to control your anger, even if the trespass is verbal, you may respond physically. And, if you save your fury for later, either waiting for a more opportune time or for revenge, then you may be feeding your hostility in the process."

She adds, "It is well known that anger is the emotion that fuels violence, and that anger can socially isolate a person. Chronically angry people often find themselves without friends or a support network, leaving them vulnerable to developing diseases."

In addition, says Polowczyk, "You may feel better having blown off some steam, but it is well documented that anger begets anger — in other words, your attacker will most likely become more hostile toward you."

Though they are negative emotions, anger and hostility perform a useful function in letting a person know that

they have become uncomfortable — and that they have to do something to right the situation. So, asks Polowczyk, "What do you do with anger and hostility — what is the most effective and efficient expression of these emotions? If you are always angry at everyone for everything, then, clearly, you have a problem with anger."

The majority of those having difficulty with anger, however, find that only certain incidents — such as being interrupted during tasks with trivia, or being treated disrespectfully, or having to deal with incompetent people — trigger their anger or hostility. (To see if there is a pattern to your anger, take the quiz above.)

Regardless, those who want to make their anger work most effectively for them are invited to contact Polowczyk, Ext. 4567, to explore the underlying causes and to develop strategies for the healthy expression of negative emotions.

— Marsha Belford
Next Friday and Saturday during Healthfest '96, visit the EAP's booth at the Health, Fitness & Safety Fair to get a stress dot and more information about anger, depression, substance abuse and other mental health and emotional issues that may be affecting your well-being.

Community Forum: Open Meeting

The Community Work Group has scheduled an open, public meeting on Tuesday, October 15, at 7 p.m. in Berkner Hall, Room B.

On the agenda are: a workshop on the U.S. Department of Energy's environmental management budget process, within the context of the federal budget, and a review of the 1994 fire that occurred at the TRISTAN experiment at the High Flux Beam Reactor.

Healthfest '96 Coming

Healthfest '96 — BNL's fourth celebration of personal health, fitness and safety — will take place next week, including the following events:

• **Aerobic Stretches** — Wednesday, October 16, and Thursday, October 17, 11:40 a.m. - noon, at the Science Education Center, Bldg. 438, preregistration recommended.

• **2-mile Fitness Walk** — Wednesday, October 16, noon to 1 p.m., start at Science Education Center, Bldg. 438.*

• **5-kilometer (3.1-mile) Fitness Run** — Thursday, October 17, noon - 1 p.m., start at Biology Department, Bldg. 463.*

• **Health, Fitness & Safety Fair** — for employees on Friday, October 18, 11 a.m. - 2 p.m.; for employees and their families on Saturday, October 19, 10 a.m. - 2 p.m., Berkner Hall; foot & hearing screenings.*

• **Stress Management & Relaxation Techniques Workshop** — Friday, October 18, noon-12:30 p.m. OR 12:30-1 p.m., Berkner Hall.*

• **Tennis Tune-Up & Fun Doubles** - Saturday, October 19, 10 a.m. - 1 p.m., BNL Tennis Courts.*

• **10-mile Individual & Team Fitness Biathlon (2-mile run & 10-mile cycle)** - Saturday, October 19, 11 a.m., start at Gym, Bldg. 478.*

• **Reiki Healing Circle** - Saturday, October 19, 11:30 a.m.-12:30 p.m., Berkner Hall.*

*preregistration required

For registration forms, see last week's Bulletin or the recent Healthfest mailing. For more information, call Mary Wood, Ext. 5923.

Learn to Recognize Suspect Parts

Faulty, fraudulent parts, commonly known as "suspect/counterfeit parts" have plagued the U.S. Department of Energy (DOE), as well as the Department of Defense and industry, since the 1980s.

Sold and distributed through various channels, these parts — ranging from fasteners to electrical items to piping components — usually look like the real thing but often do not comply with established standards. At BNL, suspect bolts have been found in inventory and installed in equipment.

Victor Gutierrez, who heads BNL's Quality Management Office (QMO), says, "It is important that Lab personnel learn how to identify suspect/counterfeit items and know what action to take if they are found."

To help BNLers address this issue, QMO and the DOE Brookhaven Group will offer Suspect/Counterfeit Part Training on Wednesday and Thursday, October 16 & 17.

To be presented by Westinghouse Hanford's Quality Training Resource Center, the training will cover suspect/counterfeit parts discovered to date, and inspection techniques and reporting. It will also offer tips for writing purchasing specifications and evaluating part vendors.

Anyone interested in attending should call Gina Bernard, Ext. 3689.

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Coming Up

The 1996-97 BERA Concert Series will begin on Sunday, October 27, with a concert by Jacques Després, the highly acclaimed pianist who had also opened the series last year. The opening program will be held at Berkner Hall, beginning at 4 p.m.

Tickets are \$14 for adults, \$9 for seniors and \$5 for students and youths under 18. Purchase tickets at the door or in advance from M. Kay Dellimore, Bldg. 185, Ext. 2873.

Toastmasters Club

If you are wondering what to say to neighbors when they ask about BNL's environmental problems, then come to the next regular meeting of the BNL Toastmasters to learn the answers to these controversial questions — from BNL's official spokesperson.

On Tuesday, October 15, Mona Rowe, who is Supervisor of External Communications in the Public Affairs Office, will speak on "BNL's Environmental Issues," beginning at 5:15 p.m. in the new conference room 160, Biology Department, Bldg. 463. Members and nonmembers are invited. For more information, call Beth Lin, Ext. 3372.

Weight Watchers

Registration for the next on-site Wednesday lunchtime Weight Watchers at Work program will be held on Tuesday, October 15 (not Wednesday, October 16, as previously advertised in a Healthline flyer), from noon to 1 p.m. in the South Dining Room, Brookhaven Center.

Since the Lab pays \$10 per employee participant, the fee is \$89 for either eight or ten sessions, depending on the number of registrants. The first class will be held on Wednesday, October 23. For more information, call Health Promotion Specialist Mary Wood, Ext. 5923.

Retirement Counseling

A TIAA-CREF representative will visit the Lab on Wednesday and Thursday, November 6 & 7, to answer BNL employees' questions regarding the TIAA-CREF retirement plan in one-on-one counseling sessions. Questions employees might have include:

- What are the differences between TIAA and CREF?
- How should I allocate my money between TIAA and CREF?
- How can I save on taxes?
- What options and flexibilities do I have for my existing dollars with TIAA-CREF?
- What are my options for retirement?

A limited number of 45-minute appointments are available; to arrange one, call Valerie James, (800) 842-2011.

Computing Corner

The Computing & Communications Division (CCD) offers the following:

MIX Meeting

The next Monthly Information eXchange (MIX) meeting with CCD will be held at 11 a.m. on Wednesday, October 16, in Room B, Berkner Hall. Topics to be discussed include: BNL's "new" computing facility and e-mail at the Lab, today and tomorrow. All are welcome to attend.

Open Windows 95

A one-hour overview of Windows 95 will be presented by CCD's Personal Computer Resource Center at 2 p.m. on Tuesday, October 15, in the second-floor seminar room, Bldg. 515. For more information, call Pat O'Connor, Ext. 7341.

Volunteers Needed

Researchers in BNL's Medical Department are conducting the following studies requiring male and female volunteers:

For **Positron Emission Tomography**, study subjects ages 20-70 are needed. Participants will receive remuneration. Call Naomi Pappas, Ext. 2694, for more information about the following two studies investigating the brain mechanisms involved in:

- **Compulsive Eating:** Volunteers must weigh between 250 and 450 pounds.
- **Alcoholism:** Participants must be alcoholics who do not smoke.

For **Magnetic Resonance Imaging**, participants who are over 18 years of age are required for baseline studies. For more information, call Noelwah Netusil, Ext. 8032, after 9:30 a.m.



Cooking Exchange

The Hospitality Committee invites spouses of on-site residents to the next meeting of the Cooking Exchange, on Thursday, October 17, from noon to 1:30 p.m. in the Recreation Building.

Participants are asked to bring a favorite dish to share, as well as an appetite to sample culinary delights from around the world. Bring the children, but also a toy or two. For more information, call Ext. 1087.

Arrivals & Departures

Arrivals

Michael Becker.....Biology
Kathleen D. Blackett.....Physics
Evelyn Gallego.....Physics
Garry N. Hubbard.....AGS
Basim M. Kamal.....Physics
Vangal N. Muthukumar.....Physics
Diep T. N. Nguyen.....Physics

Departures

None

Atlantic City Trip

A few seats remain for tomorrow's BERA-sponsored, one-day trip to the Trump Castle Hotel & Casino in Atlantic City. The bus will leave BNL at 8:30 a.m. and, after a six-hour stay, return about 10 p.m. The initial cost will be \$22, but the hotel-casino will give a \$10 coin return. For tickets, call Andrea Dehler, Ext. 3347; Rosalie Piccione, Ext. 3160; or Kay Dellimore, Ext. 2873.

Bowling

Red and Green League

K. Koebel 261/223/644 scratch series, D. Fisher 241/221/656 scratch, B. Kollmer 226/206/621 scratch, R. Mulderig 222/201/614 scratch, J. LaBounty 252, E. Sperry IV 233, E. Larsen 231, N. Besemer 223, K. Riker 223, A. Pinelli 218, G. Weresnick 204, R. Prwivo 203, J. Goode 202.

Purple and White League

J. Zebuda 289/210/203/702 scratch series, B. Tozzie 227/227/212/666 scratch, M. Meier 258/225/664 scratch, B. Guiliano 226/213, E. Sperry IV 225/215/610 scratch, D. Riley 218/212, R. Raynis 213/185, E. Sperry III 203/196, N. Fewell 213, S. Logan 210, P. Buonaiuto 194/184, K. Botts 191, M. DiMauita 190, P. Callegari 186, P. Baker 185, R. Flack 183, R. Picinich 183, P. Manzella 179.

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 Human Resources Division lists new placement notices, first, to give employees an opportunity to request consideration for themselves through Human Resources, 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 (344-7744), for a complete listing of all openings.

Current job openings can also be accessed via the BNL Home Page on the World Wide Web. Outside users should open "http://www.bnl.gov/bnl.html", then, under "Information," select "Jobs." For scientific staff openings, select "Scientific Personnel Openings"; for all other vacancies, select "General Personnel Openings."

SCIENTIFIC RECRUITMENT - Doctorate usually required. Candidates may apply directly to the department representative named.

POSTDOCTORAL RESEARCH ASSOCIATE - Trained in physics or electrical engineering, with emphasis in nuclear or high-energy physics instrumentation, in particular semiconductor particle and photon detectors. Experience with segmented detectors ("pixel detectors") and/or drift detectors is also required. Will work in the area of position-sensitive semiconductor detectors and participate in the development of new and innovative devices, as well as the application of detectors to experiments in high-energy and nuclear physics, and at the NSLS. Contact: Veijko Radeka, Instrumentation Division

OPEN RECRUITMENT - Opportunities for Laboratory employees and outside candidates.

NS 6190. PHYSICS ASSOCIATE POSITION - Requires BS in physics or related field or equivalent, and excellent communication skills. Experience desirable in high-power, pulsed power supplies, digital electronics, computer controls and programming, as well as laboratory test and measurement techniques. Primary duties, as part of a rotating shift team, include operating and troubleshooting AGS accelerator complex for the experimental physical program. Alternating Gradient Synchrotron Department