

disaster. But he's probably best known for his mantra "faster, cheaper, better," which translates into a push to switch from costly spacecraft that took years to develop to smaller, more focused missions that could be launched for under \$500 million within 18 months of receiving funding approval. The Lunar Prospector, Deep Space 1, and the 1997 Mars Pathfinder missions are examples.

Goldin's departure comes on the cusp of NASA's biggest-ever financial crisis. The ISS is projected to be \$4.8 billion over budget, the human spaceflight program faces a \$1 billion shortfall in its budget for next year, and a \$500 million overrun in NASA's 1999 budget was discovered this fall. In response, this year NASA slashed 40% from the ISS science budget and reduced the space station's crew from seven to three.

Further fixes will follow from the ISS management and cost evaluation task force report, ordered by Goldin this past July to get the ISS back on track without new money. The task force recommends that NASA slash jobs and, to avoid future cost overruns, that the agency adopt strict accounting methods.

NASA's top job is proving hard to fill—by early November, an appointment by President Bush had been imminent for months. It was well known that Goldin didn't want to leave NASA, but the Bush administration had given him no indication that it wanted him to stay. Courtney Stadd, one of Goldin's possible successors and NASA's chief of staff, is temporarily running the day-to-day operations.

Meanwhile, north of the border, Marc Garneau has been appointed president of the Canadian Space Agency. Garneau, Canada's first astronaut, has a bachelor's degree in engineering physics and a PhD in engineering.

The CSA's annual budget of Can\$300 million (\$188 million) is just 1.5% of NASA's. Since 1999 the CSA has emphasized terrestrial applications, such as remote sensing, and closer strategic links among government, academia, and industry. Garneau succeeds Mac Evans, who retired after 35 years at the agency.

PAUL GUINNESSY

New Directors for NIST, NOAA

Two veterans of both science and government service were set to become the new directors of the National Oceanographic and Atmospheric Administration (NOAA) and NIST following their nominations by President Bush. Both men, retired Vice Admiral Conrad Lautenbacher and Purdue University nuclear engineer Arden Bement Jr, were awaiting what were expected to be quick confirmations by the Senate as PHYSICS TODAY went to press.

Bush selected Lautenbacher, who holds a PhD in applied mathematics from Harvard University, to become the new under secretary of commerce for oceans and atmosphere, the official title for NOAA's director. Lautenbacher, a 1964 graduate of the US Naval Academy, was the commander of the US Third Fleet, and advised the Joint Chiefs of Staff on the size and composition of US military forces. He served in both the Vietnam and Gulf Wars and is considered an expert in antisubmarine and anti-air warfare. Scott Gudes has been the acting director of NOAA since Bush took office.

In recent testimony before the

House Science subcommittee on research, Lautenbacher advocated greater study of the seas, telling representatives that only 5% of the world's oceans have been mapped and that "today we know more about other planets than we do about our ocean depths." He called for a wide range of oceanic research, including increased study of the link between the oceans and the atmosphere so that climate shifts such as El Niño and La Niña can be better understood.

Bement, the head of Purdue University's school of nuclear engineering, was chosen by Bush to be the director of NIST. Bement was the vice president of science and technology at TRW throughout the 1980s and before that served as the deputy under secretary of defense for research and engineering. He moved to Purdue in 1993, where he served for a time as the director of the Midwest Superconductivity Consortium.

"I can think of few people more deserving of the appointment," said Ray Kammer, NIST's director from 1997 through 2000. "Dr. Bement has been associated with NIST for the last 20 years in a variety of posts, including chairman of the Visiting Committee on Advanced Technology." The visiting committee makes recommenda-

Math Solution to Nobel Problem

Rumor has it that a century ago, when Alfred Nobel established his prestigious prizes, he shunned mathematics because his wife had jilted him for a mathematician. A good tale but, it turns out, a tall one. Still, mathematicians feel a pang of envy each fall when the Nobels roll around and their field never shares the limelight.

Now Norway has created an international math prize that could achieve Nobel stature. The Abel Prize will be bestowed annually beginning in 2003. Its purse is expected to be in the upper six digits—the annual earnings from the Norwegian government's endowment of roughly \$23 million.

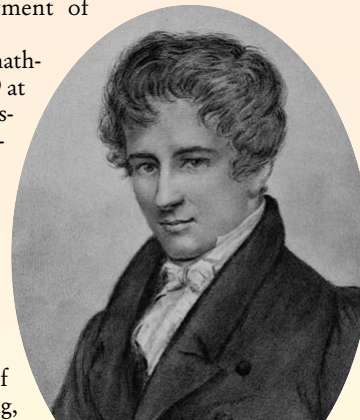
The new prize's namesake is Norwegian mathematician Niels Henrik Abel, who died in 1829 at age 26. He is best known for proving the impossibility of a general algebraic solution to quintic, or fifth-degree, equations, and for his work on elliptic integrals. Groups of commuting elements are called abelian groups in his honor.

In announcing the establishment of the Abel Prize, Norway's Prime Minister Jens Stoltenberg said the aims are "increased interest among young people to study science, strengthening of the country's research in the field of mathematics, increased awareness of Norway as a country of knowledge and learning, as well as positive international awareness."

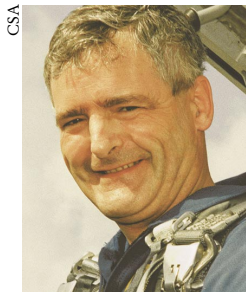
An Abel Prize was first proposed by Oscar II, the king of Norway and Sweden, in 1902, at the centenary of Abel's birth. It fell through when the union between the two countries was dissolved in 1905.

Until the Abel, the closest thing to a Nobel Prize in math was the Fields Medal, which is awarded every four years to mathematicians aged 40 or younger.

TONI FEDER



NIELS HENRIK ABEL (1802–29), in a reproduction based on a painting by Johan Gørbitz.



GARNEAU

CSA

tions for NIST on the agency's organization, budget, and programs. Karen Brown, who has served as acting director since Bush took office, will return to her former position as NIST's deputy director. **JIM DAWSON**

Physics Societies Seek to Aid Fight against Terrorism

Since the terrorist attacks on 11 September, scientific societies—like individuals and organizations across the country—have been casting about for meaningful ways to help counter terrorism.

Scientific organizations—about 20 were on board at press time, led by the American Physical Society (APS) and including the American Institute of Physics and several of its other member societies—have set up a scholarship fund for survivors of the terrorist attacks and for victims' spouses and children. The Science and Engineering Scholarship Fund is a subset of the Families of Freedom Scholarship Fund, for which former President Bill Clinton and former Senator Bob Dole are raising \$100 million. To make a tax-deductible donation, or for more information, visit <http://www.aps.org/sciencefund.html> or call 1-800-335-1102.

Among other responses in the days following the attacks was a forum at the Optical Society of America's annual meeting, at which attendees discussed ideas ranging from upping security at scientific conferences to holding meetings focused on sensing devices for domestic defense technologies, reports OSA Executive Director John Thorner. But, he adds, "there was a real wariness about getting the society into a position of supporting the war effort by immediately holding conferences on, for example, laser-guided bombs. Instead, the sentiment seemed to be that the purpose of a scientific society is to encourage worldwide exchange of knowledge to help break down walls of prejudice and ignorance." A letter by Caltech astrophysicist Anneila Sargent, president of the American Astronomical Society, urged "all AAS members to take responsibility for ensuring that our profession is one that welcomes and celebrates diversity." And the American Geophysical Union's Executive Director Fred Spilhaus says AGU is "discussing how new demands on government may affect our science and its funding and how we might want to

modify our advice on public policy matters. We are also taking special care to assure that we are serving our members in the Middle East as well as possible."

More generally, the science community hopes that President Bush's new science adviser will serve as a conduit for funneling technical skills and knowledge to the White House. John Marburger, former director of Brookhaven National Laboratory (see *PHYSICS TODAY*, August 2001, page 22), was confirmed as science adviser on 23 October. Two weeks earlier, at his confirmation hearing, he named the fight against terrorism as his highest priority.

Marburger will be among the high-profile physicists and policy-makers at a meeting of the APS physics policy committee in mid-December. The idea is to get physicists thinking about how they might contribute to antiterrorism and war efforts by applying existing, and developing new, methods for such things as seek-

ing survivors in rubble, sensing biological and chemical agents, identifying faces and voices, tracking movement of individuals, and detecting underground hideouts.

The first thing, says Mike Lubell, head of public affairs at APS and the meeting coordinator, "is to ask questions such as: What are we facing in the area of terrorism? What kind of risk assessment can we do? Then, if we look at the risks, which ones can we take care of with existing technologies? Which need new technological developments to be successfully handled? Once you have this list, you can then ask what R&D we should look at to address the shortfall."

"One reason that this whole government structure for supporting science was put together at the end of World War II was to make sure we had a well-trained scientific force that could come to the nation's help as needed," continues Lubell. "The science community has an obligation."

TONI FEDER

Terrorism Sets Agenda for New Congressional Fellows

Physical chemist Kristen Kulinowski was in the Madison Building at the Library of Congress on the morning of 11 September, excited at being a new congressional fellow for the Optical Society of America (OSA) and the International Society for Optical Engineering. The congressional fellows were just settling in for the day's orientation session when the announcement came that the World Trade Center in New York had been hit by an airplane.

Within a couple of hours, Kulinowski was standing in the heat and smoke outside the Pentagon. She was providing food and drinking water to the first wave of firefighters battling flames in the gaping hole that had been ripped into the building by a terrorist-piloted airliner. In addition to science, Red Cross disaster relief work is a "passion," Kulinowski said, and during the past 10 years she has worked a hurricane, a tropical storm, floods, and house fires. When the Pentagon was hit, she quickly offered her services to the local Red Cross. "There was a lot of chaos," she said. "I identified myself as an experienced Red Cross team member, and I had my uniform on. I looked the part."

Kulinowski eventually found herself in the courtyard at the center of the Pentagon, helping crews fighting

the fire from the inside out. "The inside walls weren't damaged. There were broken windows, but I think those were broken by the firefighters."

Two months later, Kulinowski, who received her PhD in physical chemistry from the University of Rochester in New York, was working in Representative Edward Markey's (D-Mass.) office on Capitol Hill, dealing with the ongoing anthrax scares



KULINOWSKI

and refocusing her political agenda on chemical and biological weapons and nuclear power plant safety. Nanoscience, the area she planned to work on when she came to Washington, DC, "seemed less immediate after September 11," she said.

While Kulinowski's story is perhaps the most dramatic of the 30 or so scientists who are beginning their yearlong fellowships on Capitol Hill under the sponsorship of a host of scientific societies, the 11 September events and the subsequent anthrax attacks have changed the lives of virtually all of the fellows.

Karen Wayland, the 2001–02 fellow for the American Geophysical