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Senate Confirms Science Advisor

The Senate confirmed Dr. John H. Marburger III as science advisor to the President on October 23, just five days after his nomination was reported out of the Committee on Commerce, Science, and Transportation. As science advisor he will also assume the role of director of the Office of Science and Technology Policy (OSTP), a position first created in 1957 by the Eisenhower Administration in response to the launch of Sputnik.

A respected researcher and administrator of science, Marburger's confirmation, it was hoped, would dispel anxiety that the current administration is not interested in the scientific enterprise. Marburger's first move as director of OSTP, however, was to shake up and reorganize the office; which has only served to increase apprehension among some science policy experts.

"[N]o one can spend time around Jack Marburger without being impressed. He is thoughtful, articulate and straightforward—traits all too rare around this town," remarked Rep. Sherwood Boehlert (R-NY) at Marburger's confirmation hearing on October 9. Rep. Boehlert, Chairman of the House Science Committee, considered Marburger an "excellent manager" and a "natural leader." He noted the important role that the President's science advisor would play to "marshal our public and private research resources in service of the effort to protect our citizens and prosecute the war against terrorism."

Dr. Marburger's testimony to the Senate Commerce Committee highlighted the economic and national security challenges that face our nation today and provided insights into how these challenges could affect the scientific community in the future.

He opened his remarks by reinforcing the importance of science and technology (S&T) and stated that it has "provided us with increased security, better health, and greater economic opportunity and will continue to do so for many generations to come." However, he forewarned that "[w]e must make important choices together because we have neither unlimited resources, nor a monopoly of the world's scientific talent. While I believe that we should seek to excel in all scientific disciplines, we must still choose among the multitudes of possible research programs. We must decide which

>>> Continued on page 2

Tracking Foreign Students

From the standpoint of academic science, a major issue to arise on Capitol Hill in the aftermath of September 11 is the tracking of foreign students at U.S. colleges and universities. While the issue has sometimes pitted control of the nation's borders against attracting foreign students to the United States, a consensus has recently emerged that a better tracking system is needed and should be implemented as quickly as possible.

As recently as April, the Immigration and Naturalization Service (INS) faced vehement criticism from university groups over its proposal to institute an electronic tracking system for individuals entering the U.S. on student visas. But after press reports indicated that one or more of the September 11 hijackers may have entered the country on student visas, that criticism has largely evaporated. Universities are now emphasizing that their objections apply only to the fee structure associated with the new system, not the system as a whole.

Nevertheless, because of the importance of attracting international students to study in the U.S., and because of a controversial moratorium on student visas briefly proposed by Sen. Diane Feinstein (D-CA), concerns about the issue remain.

>>> Continued on page 4

FEATURES

"U.S. pre-eminence in science is not an accident; it is due fundamentally to our openness to scientific exchange."

TURN TO PAGE 6

Science Advisor

Continued from page 1

ones to launch, encourage, and enhance and which ones to modify, reevaluate, or redirect in keeping with our national needs and capabilities."

Potential redirection for S&T were revealed in four "grand challenges" that Dr. Marburger outlined in his testimony: national security, environment, health care, and education. He noted that S&T could assist in developing innovative technologies and vaccines, as well as traditional weapons for U.S. soldiers. In the area of the environment, he stated that scientific advances hold promise for the "creation of a sustainable future in which our environmental health, our economic prosperity, and our quality of life are mutually reinforcing." With respect to health care he noted that genetic medicine offers the "greatest hope" but also raises important ethical, legal, and social implications. While our nation should pursue the latest technologies, we should also be sure to "incorporate our oldest and most cherished human values." Finally, in the field of education Dr. Marburger reflected that achieving diversity in the S&T workforce presents a "formidable challenge."

It remains to be seen whether Dr. Marburger's smooth passage through the nomination and confirmation process will lay to rest the irritation among members of the scientific community that the White House was proceeding through the muddy waters of science policy without the proper guidance of an official science advisor. Decisions made at the outset of the new administration on topics such as arsenic in drinking water, global climate change, and national missile defense left some science policy experts contemplating the willingness of the new President to incorporate recommendations from scientists into the decision-making process.

While the White House has since dealt with some of these issues in a manner that has quieted down previously held reservations, Dr. Marburger will need to spend time cultivating the scientific community and reaching out to them. He has his work cut out for him, however, as his first step as director of OSTP was to eliminate two of the four associate director positions—namely, environment and national security—and incorporate them under the jurisdictions of either the associate director for science or for technology.

This has disturbed some that monitor science and government activities as the two eliminated OSTP positions represent the very volatile issues that weakened the stance of the Bush Administration in the eyes of the scientific community in the first place.

Dr. Marburger's first test in the realm of science policy will be how well he incorporates scientific research and education into terrorism-related programs. He was immediately tapped to work with the Foreign Terrorist Tracking Task Force, part of the new Homeland Security Council, to address the issue of monitoring nonimmigrant student visitors and utilizing innovative technologies for enforcing immigration policies. Members of Congress have introduced legislation to tighten student visa policies (see story on page 1).

The irritation leveled towards the Bush Administration by the scientific community earlier in the year made its way into the exchange between Sen. Ron Wyden (D-OR), chairman of the Science, Technology, and Space Subcommittee, and Dr. Marburger during his confirmation hearing.

Dr. Marburger expects to have "full access" to the White House and is confident his advice will reach the President.

Alluding to previous media reports that any incoming science advisor would have little access to the White House, Sen. Wyden asked what role Dr. Marburger expects to play in the decision-making process. Dr. Marburger responded that he expected to have "full access" and that he is confident that his advice will reach the President through "direct and indirect" avenues. Chairman Wyden then asked Marburger whether he was consulted by the White House before it established its policy on the controversial issue of federal funding for research utilizing human embryonic stem cells. Marburger was reluctant to discuss details, but acknowledged that he did talk the matter over with President Bush.

Before becoming director of OSTP, Marburger served as the director of the Brookhaven National Laboratory since 1994, where he ensured the completion of the Relativistic Heavy Ion Collider. Prior to that, he was president of the State University of New York (SUNY) at Stonybrook. •••

FOR MORE INFORMATION:

White House Office of Science and Technology Policy: www.ostp.gov

EPA Science Bill Passes House Committee

The House Science Committee on October 3 passed a bipartisan bill designed to strengthen science at the Environmental Protection Agency (EPA). The committee approved the legislation by a voice vote.

The bill (H.R. 64) would establish a new Deputy Administrator for Science and Technology at EPA, who would have authority over all aspects of science at the agency. It would also make the director of EPA's Office of Research and Development a non-political appointee, who would have a five-year term and the additional title of Chief Scientist.

"While the EPA is tasked with protecting our environment, the agency is not inherently a scientific one," said Environment, Technology, and Standards Subcommittee Chairman Vernon J. Ehlers (R-MI), the bill's author. "Since EPA was created the Agency has struggled with this problem of how to appropriately apply relevant research to the regulatory decision-making process. I think it is finally time for Congress to address this problem."

H.R. 64 implements key recommendations of a June 2000 report by the National Research Council that sought to ensure an enhanced role for science in EPA decision-making.

The bill would "increase the voice of scientists within the Agency," Science Committee Chairman Sherwood Boehlert (R-NY) said. "I look forward to working with the Administration to achieve that goal." •••

Tech Talent Bill Introduced

In order to address the shortage of undergraduate students pursuing degrees in science, mathematics and engineering, bicameral legislation was introduced on October 15 with the goal of strengthening academic programs in the United States.

The Technology Talent Act of 2001, dubbed the "Tech Talent" bill, authorizes $25 million in fiscal year (FY) 2002 for a pilot program within the National Science Foundation (NSF). The funding would establish three-year grants to be awarded to U.S. universities, colleges and community colleges that plan to utilize the funds to increase the number of U.S. citizens and permanent residents that pursue bachelor degrees in science, mathematics, engineering, and technology fields.

The Senate bill (S. 1549) was introduced by Sens. Joseph Lieberman (D-CT), Christopher "Kit" Bond (R-MO), Barbara Mikulski (D-MD), Bill Frist (R-TN), and Pete Domenici (R-NM). The companion measure (H.R. 3130) was introduced by House Science Committee Chairman Sherwood Boehlert (R-NY) and Rep. John Larson (D-CT).

In introducing the bill, the bicameral, bipartisan group cited the importance of a highly trained workforce to our nation's economy and security. "Arresting the trends in reduced numbers of science and engineering graduates is not only imperative to maintaining our Nation's prosperity, it is also important for our national security," the background portion of the bill states.

It also notes that "[i]n international comparisons of 24-year olds, there have been shown to be fewer holders of natural science and engineering degrees in the United States than in Japan, South Korea, Taiwan, the United Kingdom, and Canada."

Chairman Boehlert emphasized the importance of encouraging research universities to place more emphasis on teaching. "[F]ederal science funding slights undergraduate education," he said. It "encourages professors to concentrate more on research than on education. Colleges and universities claim to want to improve undergraduate education, yet gear their introductory courses to weeding out students interested in science, math and engineering."

In order to be eligible for a NSF grant, community colleges and institutions of higher learning must have existing programs in science, mathematics, engineering, and technology fields. In addition, the universities and colleges must propose a target number of graduates that will be awarded associate and bachelor degrees as a metric for success. NSF must evaluate the progress of the participating institutions annually.

NSF is required to award no fewer than ten grants a year contingent upon the availability of funds, but the legislation does not specify how much each grant should be. Each award is to be peer reviewed, but the legislation does encourage NSF to give priority to institutions that increase the number of students studying in fields "where there is a specific industry need or where the number of graduates has been flat or declining in recent years."

Other policy elements that NSF should take into consideration in establishing the pilot program include increasing the number of low-income students, ethnic minorities, and women; improving student learning; encouraging "high-caliber teaching"; developing "new pedagogical approaches"; and expanding programs that expose students to potential careers (e.g., industry internships).

The Tech Talent bill was in the works long before the events of September 11, but it comes at a time when national security and the future strength of our nation's economy are of acute significance. Some members of the science policy community have wondered whether the national response to the terrorist attacks could generate another groundswell of students pursuing degrees in science and engineering similar to the response that resulted after the Sputnik launch. Legislation such as the Tech Talent bill could pave the way for another changing tide.

It is extremely unlikely that the companion bills will advance all way to the White House this session given the immediate congressional focus on the special supplemental, the economic stimulus package, and the appropriation bills that are still being debated. However, the bill's authors are likely to pursue passage next year. •••

FOR MORE INFORMATION:
www.house.gov/science
www.senate.gov/~lieberman

Water Security Research Bill Advances

In the wake of the September 11 attacks, new attention has been focused on the security of the nation's water supply. As part of the effort to protect our drinking water from terrorist attack, House and Senate Committees have passed a bipartisan bill to create a new research program at the Environmental Protection Agency (EPA).

Called the "Water Infrastructure Security and Research Development Act," the legislation (H.R. 3178, S. 1593) would authorize $12 million per year for the next five years for research and development designed to find new ways of protecting the water supply. The bill passed the Senate Environment and Public Works Committee on November 8 and the House Science Committee on November 15.

Authored by Senate Environment and Public Works Chairman James Jeffords (I-VT) and Ranking Member Robert Smith (R-NH), and House Science Chairman Sherwood Boehlert (R-NY) and Rep. Brian Baird (D-WA), the bill received the endorsement of four experts who testified before the House Science Committee on November 14.

Among those testifying was Dr. Richard G. Luthy, the chairman of National Research Council's Water Science and Technology Board. "We have a lot to do here in learning what agents and in what quantities can cause physical and emotional harm," he said. Joining Dr. Luthy were representatives of the New York State Office of Public Security, the District of Columbia Water and Sewer Authority, and Sandia National Laboratories.

In supporting the bill, Chairman Boehlert emphasized the importance of long-term counterterrorism needs. "Just as we waged and won the Cold War largely through technological advancement," he said, "we must apply our research and development capacity to finding better ways to win the war against terrorism."

The bill is backed by several major engineering and water agency associations. •••

Tracking Foreign Students

Continued from page 1

Currently, colleges and universities are required to keep track of several types of information for each of their foreign students, including program end date, field of study, credits completed per semester, and any employment a student engages in. Schools must provide this information to the INS upon request, but the system is paper-based, meaning that requiring frequent reports of such information would generate a huge quantity of paperwork.

"U.S. pre-eminence in science is not an accident; it is due fundamentally to our openness to scientific exchange, which has enabled us over the generations to benefit from the best scientific expertise in the world."

Sen. Feinstein has strongly criticized the current system. "Today, there is little scrutiny given to those who claim to be foreign students seeking to study in the United States," she said in a September 27 press release. "In fact, the foreign student visa program is one of the most unregulated and exploited visa categories."

Education groups dispute this claim, arguing that the existing tracking requirements, scant as they may be, still place foreign students among the most scrutinized groups of temporary visa holders. Nevertheless, all sides have agreed to move forward with implementation of an electronic tracking system under development by the INS.

Dubbed the Student and Exchange Visitor Information System (SEVIS, formerly known as CIPRIS), the tracking system was mandated by a 1996 immigration law, but its implementation has lagged behind schedule because of a lack of funds. Congress intended for the system to be supported by fees collected from the visiting students, but a working fee structure has yet to be implemented.

INS first proposed a fee structure in 1999 that would have required colleges and universities to collect a $95 fee from each foreign student. However, university officials objected to this proposal on the grounds that it imposed an undue burden on their institutions. They particularly criticized INS for proposing to collect fees before the tracking system was operational, in order to cover the system's development costs.

The INS then proposed a new fee collection system requiring students to pay directly before entering the country, but this proposal raised new questions about students' ability to pay.

The American Council on Education (ACE), a broad-based university association, delineated these concerns in a strongly worded April 4, 2001, letter to the INS. "We cannot support regulations that will do obvious harm to our programs, bilking and raising false hopes among prospective foreign students," the organization declared.

In recent testimony before the Senate Judiciary Committee, however, ACE President David Ward adopted a vastly different tone. "Colleges and universities have an obligation and a responsibility to work cooperatively with the federal government in keeping track of international students when they are enrolled on our campuses," he testified. "... [T]he relationship between the colleges and the government is generally constructive and collaborative."

An international education organization known as NAFSA, which describes itself as having been the leading opponent of SEVIS, released a September 20 statement also dropping its opposition. "We have felt that the very complex and expensive system being developed by the INS under 1996 legislation constituted an unreasonable barrier to foreign students who seek legitimately to pursue their higher education in the United States, and an unnecessary reporting burden on colleges and universities," the statement reads. "... However, if the United States Congress can cease debate on the many divisive issues that consumed it before September 11, surely no less can be expected of us. Accordingly, we will no longer oppose the foreign student tracking system that is being implemented by the INS. The time for debate on this matter is over, and the time to devise a considered response to terrorism has arrived."

"The time for debate on this matter is over, and the time to devise a considered response to terrorism has arrived."

In this conciliatory atmosphere, the INS has said that it will proceed with implementation of SEVIS. INS Commissioner James W. Ziglar testified at the Senate hearing that "[o]bjections, primarily by the academic establishment, have delayed its development and deployment. However, with the events of September 11, that objection has virtually disappeared and the INS, with your help, will meet, and intends to beat, the Congress' date of December 20, 2003 to start imple-

>>> Continued on page 6

AAAS NOTES

- "THE WAR ON TERRORISM: WHAT DOES IT MEAN FOR SCIENCE?"
  A one-day symposium to examine scientists' responsibilities, as well as scientific freedom and human rights, in post-September 11 America.
  December 18, 2001, 8:30 – 4:00 pm, AAAS Auditorium, 1200 New York Avenue, NW.
  For more information, go to: www.aaas.org/spp/scifree/terrorism

- SPECIAL REPORT ON COUNTER-TERRORISM R&D
  An analysis of the FY 2002 budget request.
  Available at: www.aaas.org/spp/dspp/rd/new.htm

CONGRESSIONAL RESEARCH SERVICE

Copies of CRS reports for congressional use are available by calling 202/707-7132.

- Stem Cell Research and Patents: An Introduction to the Issues (RL31142)
  This report provides an overview of existing patent law; it's implications to federally funded research and development (R&D), as well as the relationship between the public and private sectors involved in R&D. The report addresses how existing patent law could impact human embryonic stem cell research under the new White House policy, and highlights issues that may need to be addressed in the future.

- Terrorism and Security Issues Facing the Water Infrastructure Sector (RS21026)
  This brief report addresses the potential national security issues posed to our nation's water infrastructure system. It discusses previous analyses conducted, efforts underway to protect the system from intentional acts of terrorism, and policy options that Congress and other policymakers may want to consider.

- Aviation Security Technologies and Procedures: Screening Passengers and Baggage (RL31151)
  This report discusses technology options for improving security at U.S. airports. It provides an overview of the existing screening process, and highlights new technologies for screening passengers, checked baggage, and carry-on baggage. The report also addresses policy options for Congress, including potential cost estimates for implementation.

GENERAL ACCOUNTING OFFICE

Copies of GAO Publications are available online at www.gao.gov or by calling 202/512-6000.

- Bioterrorism: Federal Research and Preparedness Activities (GAO-01-915)
  This report describes federal activities related to the public health and medical consequences of a bioterrorist attack against the civilian population. It provides information on federal activities and funding; describes how activities are coordinated among federal agencies; and evaluates the effectiveness of these activities in preparing state and local authorities.

- Information Sharing: Practices That Can Benefit Critical Infrastructure Protection (GAO-02-24)
  The federal government's strategy for protecting the nation's critical computer-dependent infrastructure sectors includes efforts to establish information sharing and analysis centers within both the federal government and individual industry sectors. This report identifies practices that could be adopted to promote successful sharing of information on computer-based vulnerabilities and incidents.

- Combating Terrorism: Selected Challenges and Related Recommendations (GAO-01-822)
  This report updates and summarizes extensive evaluations conducted in recent years of federal programs to combat domestic terrorism and protect critical infrastructure. It includes a series of recommendations for executive action to improve overall leadership and coordination of federal efforts.

- Food Safety: CDC Is Working to Address Limitations in Several of Its Foodborne Disease Surveillance Systems (GAO-01-973)
  This report describes the CDC's foodborne disease surveillance systems and identifies limitations of these systems, as well as any initiatives designed to address the deficiencies.

THE NATIONAL ACADEMIES

Government offices may obtain single complimentary copies by calling the Office of Congressional and Government Affairs at 202/334-1513. Others may order copies from the National Academy Press (800/624-6242, www.nap.edu).

- The Secret Life of the Brain (ISBN: 0-309-07435-5)
  Ten years ago a presidential proclamation ushered in the "Decade of the Brain," and we have since realized enormous benefits from this era of discovery. Development of the brain continues across the entire life span through five specific stages: gestation, childhood, adolescence, adulthood, and old age. In each of these phases, the opportunities are abundant, while the dangers remain equally apparent. This report follows the PBS series of the same name, and presents the complex subject of leading-edge brain science through anecdotes and real-life stories.

- Adding It Up: Helping Children Learn Mathematics (ISBN: 0-309-06995-5)
  This report explores how students in pre-K through 8th grade learn mathematics and recommends how teaching, curricula, and teacher education should change to improve mathematics learning during these critical years. The report identifies five interdependent components of mathematical proficiency and describes how students develop this proficiency. It discusses what is known from research about teaching for proficiency, the interactions between teachers and students around educational materials, and how teachers improve their own knowledge.

- Educating Children with Autism (ISBN: 0-309-07269-7)
  Children with autism are challenged by the most essential human behaviors, and education is the primary form of treatment for this mysterious condition. This book outlines an interdisciplinary approach to education for children with autism. It explores what makes education effective for the child with autism and identifies specific characteristics of programs that work.

scientific definitions

1. The act of making clear and distinct.
2. the act of stating a precise meaning or significance.

ANTIMICROBIAL AGENTS A general term for the drugs, chemicals, or other substances that either kill or slow the growth of microbes. Among the antimicrobial agents in use today are antibacterial drugs, antiviral agents, antifungal agents, and antiparisitic drugs.

BACTERIA Bacteria are single-celled microorganisms that live in and around us and multiply by simple division. Bacteria may be helpful, but in certain conditions may cause illnesses that often respond to specific therapy with antibiotics. Bacterium is the singular form of bacteria.

BIOLOGICAL AGENT A microorganism (or a toxin derived from it) which causes disease in humans, plants or animals or which causes the deterioration of material. Biological agents are classified as bacteria, chlamydia, fungi, ricketssiae, toxins, or viruses.

CHEMICAL AGENT From a military warfare perspective, a chemical agent is a substance which is intended for use in military operations to kill, seriously injure or incapacitate people because of its physiological effects. Agents can be in gas, liquid, or solid form, and are generally classified as nerve, blister, choking, blood, and incapacitant agents. It can also refer to herbicides, riot control agents, and smoke, fuel, and incendiary materials.

CHLAMYDIA Intracellular parasites incapable of generating their own energy source. Like bacteria, they are responsive to broad-spectrum antibiotics. They can exist only inside a living cell.

ENDEMIC Referring to a disease associated with particular locales or populations.

EPIDEMIOLOGY The science concerned with the determination of the specific causes of a disease or the interrelation between various factors determining a disease, as well as disease trends in a specific population.

FUNGI Single-celled or multicellular organisms. Fungi can be either opportunistic pathogens that cause infections in people with compromised immunities or pathogens that cause infections in healthy persons. Fungi are also used for the development of antibiotics, antitoxins, and other drugs used to control various human diseases.

MICROORGANISM An organism that is usually a single cell and so small that a microscope is required to see it. Also known as a microbe.

PANDEMIC Referring to an epidemic disease of widespread prevalence.

PARASITE Any organism that lives in or on another organism without benefiting the host organism.

PATHOGENS Bacteria, viruses, parasites, or fungi that can cause disease.

>>> More definitions on next page

Tracking Foreign Students

Continued from page 4

mentation of SEVIS."

Several proposals have been put forward on Capitol Hill to hasten the implementation of SEVIS. The USA-PARTIOT Act, an anti-terrorism bill signed into law on October 26, authorizes INS to spend $36.8 million on the system through the end of 2002. If such funds are made available, the INS would no longer be forced to use fees collected from students to cover development costs, one of the objections raised earlier by education groups. Student fees would continue to be necessary, however, to cover maintenance costs. The anti-terrorism act also expands SEVIS to include students at flight, language, and vocational schools.

On September 27, Sen. Feinstein proposed a six-month moratorium on all student visas in order to "give the INS time to remedy the many problems in the system." The proposal raised the ire of the higher education community.

"Senator Feinstein's proposed moratorium would have disastrous consequences for colleges and universities," reads a list of talking points published on ACE's website. "A moratorium would also wreak havoc on graduate schools, which rely heavily on international students and scholars to assist with teaching and research."

Opponents of a moratorium point to the relatively small number of nonimmigrant aliens who obtain student visas. According to the INS, of 31 million nonimmigrant visas issued in fiscal 1999, only 1.8 percent (567,000) were student visas. "To make a difference," read the ACE talking points, "any changes or modifications to the visa system must affect all visa recipients."

International education advocates also argue that student exchanges enhance global understanding and increase goodwill toward the United States after students return to their home countries. They emphasize that several important world leaders attended U.S. universities.

Moreover, foreign students make substantial contributions to scientific research. "U.S. pre-eminence in science is not an accident," writes NAFSA CEO Marlene M. Johnson; "it is due fundamentally to our openness to scientific exchange, which has enabled us over the generations to benefit from the best scientific expertise in the

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Tracking Foreign Students

Continued from previous page

world."

Indeed, a large percentage of students earning degrees in science and engineering in the U.S. are foreign nationals on temporary visas. According to the National Science Foundation, 7,800 foreign nationals earned doctoral degrees in science and engineering in 1996, 29 percent of all such degrees awarded. Over 25,000 earned master's degrees, 23 percent of those awarded, and over 14,000 earned bachelor's degrees, 4 percent of those awarded.

Sen. Feinstein suggested the moratorium because of the resistance to SEVIS from colleges and universities, but dropped the idea on October 9 after meeting with education officials. She says the proposal "got their attention," and she is now confident that the education community will cooperate with implementation of SEVIS.

Reps. Michael Bilirakis (R-FL) and Marge Roukema (R-NJ), however, are not so sure. They have introduced a bill (H.R. 3221) which would impose a nine-month moratorium on student visas.

Several other legislative proposals are also in the works. One is a bill (S. 1627) authored by Sen. Feinstein along with Sen. Jon Kyl (R-AZ) that would require implementation of SEVIS by January 1, 2003, direct the State Department to impose an application fee on anyone applying for a student visa in order to fund SEVIS, require quarterly reports to be filed by any university hosting foreign students, and prohibit anyone from terrorist-supporting states such as Iran, Iraq, Sudan, and Libya from obtaining a student visa.

A border security bill (S. 1618, H.R. 3205) by Sens. Edward M. Kennedy (D-MA) and Sam Brownback (R-KS) and Rep. John Conyers (D-MI) includes sections that would expand data collection and reporting requirements under SEVIS, and mandate periodic reviews by the INS of institutions certified to host foreign students.

Another bill (S. 1518, H.R. 3077) offered by Sen. Kit Bond (R-MO) and Rep. Michael Castle (R-DE), would expand SEVIS to include information on any dependent family members accompanying a student.

The White House has also taken an interest in the issue. The newly created Homeland Security Council's Foreign Terrorist Tracking Task Force has as one of its main goals a "thorough review of student visa policies." The task force has been asked to "institute tighter controls and ensure that student visas are being issued appropriately. A goal of the program is to prohibit the education and training of foreign nationals who would use their training to harm the United States and its Allies." •••

FOR MORE INFORMATION:

INS report on temporary visas for FY 1999: www.ins.usdoj.gov/graphics/aboutins/statistics/temp99.pdf

NSF Science and Engineering Indicators 2000: www.nsf.gov/sbe/srs/seind00

American Council on Education: www.acenet.edu

NAFSA: Association of International Educators: www.nafsa.org

October 12 Senate Judiciary hearing: www.senate.gov/~judiciary/hr101201st.htm

October 31 House Education and the Workforce hearing: edworkforce.house.gov/hearings/107th/21st/21sthearings.htm

Scientific Definitions

Continued from previous page

RICKETTSIAE Microorganisms which have characteristics common to both bacteria and viruses. Like bacteria, they possess metabolic enzymes and cell membranes, utilize oxygen, and are susceptible to broad-spectrum antibiotics. They resemble viruses in that they grow only within living cells.

TOXIN A poisonous substance produced or derived from living plants, animals, or microorganisms; some toxins may also be produced or altered by chemical means. Compared with microorganisms, toxins have a relatively simple biochemical composition and are not able to reproduce themselves. In many aspects, they are comparable to chemical agents.

VIRUS A strand of DNA or RNA in a protein coat that must get inside a living cell to grow and reproduce. Viruses cause many types of illness; for example, varicella virus causes chickenpox, and the human immunodeficiency virus (HIV) causes the acquired immune deficiency syndrome, or AIDS.

SOURCES: CDC National Center for Infectious Diseases (www.cdc.gov/drugresistance/miscellaneous/glossary.htm); All the Virology on the WWW (www.virology.net/ATVdict.html#Dict); NATO Handbook on the Medical Aspects of NBC Defensive Operations, AMedP-6(B)

INFO/DETAILS

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Heard off the Hill

An Eye for Detail • Careful measurement of the sea level in Venice Lagoon did not begin until 1871, but a resourceful climatologist in Padua has calculated estimates of the sea level 130 years prior by an unconventional method. He has analyzed more than 100 paintings by the artist Canaletto, who used a portable *camera obscura* to produce extremely realistic paintings every three days for more than ten years during the 1730s and 1740s. The paintings are so accurate that they capture a layer of algae on the sides of the canals, indicating the high-tide line. The results are impressive: official estimates begun in 1871 show a rise of 2.4 mm per year, while calculations from the paintings indicates a very similar rate of 2.7 mm per year.
---> *Science, October 19, 2001*

Crunching Bugs • Are fruit-eating insects chomping too loudly for their own good? That's how it looks at a USDA lab in Florida studying insect infestations. Infestations often start out invisibly within trees and plants, and are detected only when significant damage has already been done. But now, entomologists are developing ways to use sensors pushed into the soil or attached to a tree trunk to detect pests early by the noises they make. The vibrations made by the pests are amplified, and a computer program is used to identify the pest by its sound "fingerprint."
---> *Science, September 14, 2001*

Stuck Tunes • Do you have thoughts of a three-hour tour stuck in your head? Are there Yellow Brick Roads winding through your thoughts? If so, you are probably a victim of "Stuck Tune Syndrome," according to James Kellaris, a marketing professor at the University of Cincinnati who has embarked on a project to figure out its cause. Kellaris surveyed 1,000 students, who almost without exception reported frequent bouts with the "syndrome." He theorizes that a stuck tune is like a "cognitive itch" which only gets worse as the mind keeps replaying it. Factors such as repetition and simplicity, he says, may enhance a song's stickiness. Thus, tunes such as the Gilligan's Island theme and Follow the Yellow Brick Road are frequent offenders. Others, however, liken stuck songs to recurring dreams. "Something in the back of your mind is trying to tell you something," says a UC San Diego psychology professor. "Even songs without words can have a larger meaning."
---> *Los Angeles Times, October 7, 2001*

A Tea-Jerker • Researchers have long been interested in the compounds in tea which are reputed to have myriad beneficial effects. But now, Indian scientists may have discovered a new health benefit from tea: fighting cataracts. Researchers at an eye institute in Hyderabad injected tea extracts into rats with cataracts in a daily dose equivalent to half a dozen cups for a human. After 12 days, the exposed rats had less advanced cataracts compared to the control group. So keep drinking that daily cup of oolong: it could help clear your vision.
---> *Science, October 19, 2001*