SCIENCE & TECHNOLOGY IN CONGRESS

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JULY 1999

Science Committee Proposes IT Initiative

Rep. F. James Sensenbrenner, Jr. (R-WI), Chairman of the House Science Committee, has introduced a bill, whose co-sponsors include the ranking minority member of the Committee the late Rep. George E. Brown, Jr. (D-CA), that would nearly double federal funding for research in information technology (IT) by the year 2004. H.R. 2086, the Networking and Information Technology Research and Development Act of 1999 (NITRD), would allocate $4.8 billion for IT initiatives over the next five years for six federal agencies under Science Committee jurisdiction. This signals a five-year 92 percent increase over fiscal year (FY) 1999 levels.

Like the Administration's proposed IT^2 initiative, NITRD used the President's Information Technology Advisory Committee's (PITAC) report on the national state of information technology to determine its policy initiatives. NITRD authorizes funds for IT research for the following agencies: the National Science Foundation (NSF), the National Aeronautics and Space Administration (NASA), Department of Energy (DOE), the National Institute of Standards and Technology (NIST), the National Oceanic and Atmospheric Administration (NOAA), and the Environmental Protection Agency (EPA). IT^2 approaches the problem a little differently by buttressing funding for IT initiatives in the NSF, the Department of Defense, DOE, NASA, NOAA, and the Department of Health and Human Services.

Comparing NITRD's authorizations with the Administration's budget request, all the agencies would receive lower authorizations for FY 2000 due to existing budget constraints but a gradual five year increase more than makes up for any deficiencies for the upcoming year. One glaring decrease in FY 2000 authorizations, is the funds to be allocated for the DOE. A background paper released by the House Science Committee concluded, "In light of the PITAC report, the selection of DOE for a large share of the new funding seems inappropriate." Hence, DOE's authorization under NITRD is $100.6 million in FY 2000 as compared to the $186 million requested by the President.

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Debate Over Embryonic Stem Cells Grows

A group composed of scientists, ethicists, and theological and legal scholars issued a statement at a Capitol Hill briefing that research involving embryonic stem cells is ethically and legally insupportable. The press conference was hosted by Sen. Sam Brownback (R-KS) who opposes the use of federal funds to support research in this field. "The research being proposed by NIH on human embryonic stem cells is immoral, illegal and unnecessary," said Brownback. Joining him at the press conference were Dr. Nigel Cameron of the Center for Bioethics and Human Dignity, Richard Doerflinger of the National Conference of Catholic Bishops, Dr. Edmund Pellegrino of the Center for Clinical Bioethics at Georgetown University, and Dr. Frank Young a former Commissioner of the Food and Drug Administration.

At the executive branch level the Department of Health and Human Services (HHS), which houses the National Institutes of Health (NIH), issued a statement in January that the current federal

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Also In This Issue

GOP Bills Disagree Over Database Protection

On May 19, Rep. Tom Bliley (R-VA), Chairman of the House Commerce Committee, introduced H.R. 1858, the Consumer and Investor Access to Information Act, an alternative bill to H.R. 354, the Collections of Information Antipiracy Act, introduced by Rep. Howard Coble (R-NC) earlier in the year. Both bills are meant to address concerns about protecting proprietary information contained in electronic databases, but from different jurisdictional perspectives.

H.R. 1858 takes a simple approach to protecting databases. Its underlying tenet is that duplicates of databases cannot be sold or distributed. What is protected is the unique design and compilation of data. It remains faithful to legal precedents in copyright law by not protecting the duplication of "any individual idea, fact, procedure, system, method of operation, concept, principle, or discovery." The bill also allows for the duplication and dissemination of a database if used for news reporting, law enforcement and intelligence, or research. Also, the bill only extends protection to databases created after its enactment as opposed to H.R. 354's provision which allows protection to databases which have been around for less than 15 years.

Proponents of H.R. 1858 argue that it provides a more focused solution to the much more broad and ambiguous H.R. 354. Some of the criticisms of H.R. 354 include infringement on copyright law by protecting databases even if they contain factual material that can be copied, and the term of protection because electronic databases are easily changed and therefore the inception of a database is nearly impossible to determine. "Any type of information that is currently provided on the Internet could be jeopardized by an overly broad statute or one that does not adequately define critical terms," argued Matthew Rightmire, Director of Business Development for Yahoo! Inc., during a June 15 hearing on H.R. 1858.

During the same hearing, Phyllis Schlafly, President of Eagle Forum, gave a more scathing review of H.R. 354 along with the merits of H.R. 1858. Her overall message implies that H.R. 354 fails in four areas where H.R. 1858 succeeds: it provides the right to extract essential data, does not create new federal penalties for violations, does not protect those who misuse data, and treats database protection as a commercial issue rather than an intellectual property issue. "On each of these important points, H.R. 1858 is far superior to H.R. 354," Schlafly continued.

Schlafly's last point, database protection as a commercial rather than an intellectual property issue, underlines the premises of both bills. Whereas H.R 354 views the piracy of databases not only as a threat to the market share of the original database providers but also as a theft of original work. Hence, penalties for H.R. 354 not only include civil penalties such as monetary damages sustained by the database owner but also criminal penalties of up to $500,000 in fines and/or a 10 year prison sentence. H.R. 1858, recognizing that databases are only a compilation of facts and copying a database is only an infringement on the commercial success of database providers, only serves out civil penalties for violations. H.R. 1858 cedes authority to the Federal Trade Commission to determine violations which would be governed under fair competition statutes.

However, opponents of H.R. 1858 believe that it is too specific and does not adequately protect database owners. Opponents argue that H.R. 1858 protects databases only as whole entities and the theft and copying of parts of databases are enough to incur substantial damage to their commercial success. While H.R. 1858 offers protection against duplicates of databases, pirates can add just a small amount of data to a duplicate to exempt themselves from prosecution. Furthermore, database providers will have to provide free use of data for scientific,

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The biggest winner for IT research support in NITRD is the NSF, which would receive over half of the total authorizations for the bill during the five-year span. While FY 2000 levels in NITRD are lower than the President's request, $445 million versus $460 million, the funding increases in the outyears are dramatic. Eventually, NSF's funding level for IT research would increase over $100 million to $571 million in 2004 for a total authorization of $2.5 billion. Another agency benefiting from the plan is NASA with proposed authorizations totaling $1.03 billion over the five-year span.

H.R. 2086 also concentrates heavily on encouraging long term basic research for IT providing grants of up to $60 million in FY 2000 and 2001, $75 million in FY 2002 and 2003, and $80 million in FY 2004. With respect to a diminishing domestic IT workforce, the bill authorizes $95 million to be spent on providing internships in IT companies for students in all types of colleges. $385 million will also be authorized for hardware to be used for terascale computing. Other initiatives of the bill include making permanent the research and development tax credit, extending funding for the Next Generation Internet until 2004, and requiring the NSF to review and report on the types of and the availability of encryption products in other countries.

In contrast, IT^2 allocates $228 million for basic and applied IT R&D for FY 2000. Also, $123 million for multidisciplinary applications of IT and $15 million for Social, Economic, and Workforce Implications for Information Technology. All told, it allocates an additional $366 million to augment existing IT R&D programs.

According to the Science Committee, NITRD addresses areas that IT^2 misses. "I believe this proposal [IT^2], however, well-intentioned falls short of what PITAC envisioned," said Chairman Sensenbrenner in a speech to the Technology Network, Silicon Valley's lobbying organization. Even though the Balanced Budget Agreement constrains most spending programs and allows IT^2 to authorize funds only for FY 2000, Rep. Sensenbrenner made it a point to show that "the Administration's own figures show flat or declining budgets beyond next year for IT^2 agencies, so any increases in information technology research would have to come out of other important science programs, an untenable situation."

In a push to make H.R. 2086 into law, Sensenbrenner has approached the Chairman of the Senate Commerce, Science, and Transportation Committee, Sen. John McCain (R-AZ), to introduce a similar bill in the Senate. According to congressional sources, Sen. McCain is expected to introduce a Senate version of H.R. 2086 before the August recess.

As with biomedical research last year, Congress appears to be concentrating on one specific area of scientific research to bolster in this year's budget. Whether it is NITRD or IT^2, and the differences in funding and initiatives for both seem to be close enough so that a compromise could be reached, it is evident that a significant increase in authorized funding for IT research will be in this year's budget. Regardless of which funding plan moves forward, it will still rely on annual appropriations to be realized, which means that NITRD's five year vision may only be a one year reality.■

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research, and educational purposes. Database owners will not be able to maintain these databases if they are not able to create a revenue stream for their upkeep.

So far, H.R. 1858 is still going through hearings within the Commerce Committee and recently caused an uproar in the financial sector since stock quotes would be considered as factual information and the New York Stock Exchange would no longer be allowed to charge a fee for their usage. A middle ground may need to be found with H.R. 354, a bill that was passed in the full House twice last year before being dropped amid protests from the scientific and academic communities. One thing is clear, however, the line staking that middle ground will depend upon whether the piracy of databases will be considered as a commercial violation or whether it is also a theft of intellectual property.■

Computing Export Controls to be Changed

In addition to allegations about espionage, the Cox Report also pointed out that the United States' export control system was inadequate in ensuring that critical technologies, High Performance Computers (HPCs) in particular, were kept out of the hands of "questionable" countries. In response to these accusations, the Administration and Congress have proposed new policies that would tighten the rules governing the granting of export licenses.

Over the last five years, current U.S. export control policy has been controlled by the President under the International Emergency Economic Powers Act (IEEPA, P.L. 95-223). Before then, export licensing had been under the jurisdiction of the Export Administration Act (EAA) of 1979 (P.L. 96-72). But, the EAA was allowed to lapse in 1994 since its original intention, to ensure critical technologies were denied to the Soviet Union and Warsaw Pact nations, became obsolete at the end of the Cold War.

Current U.S. policy under IEEPA on exporting HPCs places foreign nations in four tiers. Tier 1 countries (Western Europe, Japan, Canada, Mexico, Australia, and New Zealand) can import any type of HPC without a license and only requires keeping a record of transactions and reporting for more advanced machines. An export license is required in Tier 2 countries (South America, South Korea, ASEAN, Hungary, Poland, Czech Republic, Slovak Republic, Slovenia, and South Africa) for machines that exceed 10,000 millions of theoretical operations per second (MTOPS). Exports to Tier 3 countries (India, Pakistan, the Middle East, the Maghreb Union, the former Soviet Union, China, Vietnam, and the rest of Eastern Europe) require an export license for military and weapons end-users and end-uses for 2,000 MTOPS. All other non-military users require a license for 7,000 MTOPS machines. Tier 4 countries (Cuba, Iran, Libya, North Korea, Sudan, and Syria) are not permitted HPC exports. License applications are considered on a case-by-case basis and all the criteria are based on whether or not the intended use of the HPC will threaten U.S. national security.

This current process has long been scrutinized as being out-of-date and insensitive to current technological advancements. "Those efforts are self-defeating; will undermine an important market for the United States, and the growth and development in the future of one of America's most important industries," said Richard Perle, Assistant Secretary of Defense for International Security Policy during the Reagan Administration, at a recent presentation for the Forum on Technology and Innovation. "It's the wrong way to achieve a result, even though the result which is the restraint of technological development among our potential enemies is a highly desirable result." Regardless of this warning, policymakers have been caught up in the Cox Report frenzy and have crafted responses in the form of new export policies along the lines of the current controls.

The Senate Banking Committee has proposed a revival of the defunct Export Administration Act (EAA) that includes 17 of 18 recommendations from the Cox Report, to improve national security. The new EAA would increase the monetary penalty for violations up to $1 million ($10 million for corporations) and/or 10 years imprisonment, expand export control reviews to include the Department of Defense and the Department of Energy (if nuclear-related), create a National Security Control List in order to properly rate exports, and redistribute foreign nations into 5 tiers.

"I believe the draft strikes an appropriate balance between the conflicting interests of promoting exports and protecting our national security interests," said the bill's co-author Sen. Michael Enzi (R-WY) in a statement regarding the proposal, "The draft seeks to build a taller fence around a smaller number of items, so the most critical items will receive the most scrutiny."

Another interesting clause within the proposal establishes foreign availability and mass market status for exports. Items will be exempt from controls if deemed to be readily available in other nations or are thoroughly pervasive in the marketplace. In order to determine these standards and to keep track of technological innovations that have national security implications both in other countries and the U.S., the bill creates an Office of Technology Assessment (OTA) within the Department of Commerce.

The new OTA has six main objectives: 1) to determine the availabilty of items "critical to United States national security and non-proliferation objectives" to other countries and whether these items can be denied; 2) determine if products or components of products are mass marketed in order to be exempt from controls; 3) monitor and evaluate "worldwide technological developments in industry sectors critical to United States national security;" 4) monitor other international export policies and practices that could affect U.S. national security; 5) create detailed reports of U.S. industrial sectors critical to defense and how these sectors

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develop in respect to technological development, technology transfers, and foreign competition; and 6) conduct assessments of the impact of U.S. export controls on the U.S. economy.

Not to be outdone, the Administration recently announced a revision of current export control policies regarding HPCs. The proposal would increase the export license threshold in Tier 2 countries from 10,000 to 20,000 MTOPS with a planned review in 6 months that may increase it to 32,000-36,000 MTOPS. Tier 3 countries will still maintain the two-level system with military end-users now required to apply for a license at 6,500 MTOPS and civilian users' levels at 12,5000 MTOPS. In addition, export controls on microprocessors will increase from 1,200 to 1,900 MTOPS. "These reforms are needed because of the extraordinarily rapid rate of technological change in the computer industry," argued President Clinton, "The number-crunching ability of a supercomputer that once filled a room and cost millions of dollars is now available in an inexpensive desktop computer."

Clearly the U.S. must protect its critical technologies in the interest of national security. However, critics argue that security must be balanced by ensuring that the information technology sector, which is so critical to economic growth, be allowed free market advantage. "So what we are facing with, what we are flirting with, is trying to control that silicon chip," said Andy Grove, Chairman of the Intel Corporation, speaking at the Tech Forum. "The ubiquity of computing, the ubiquity of computer technology, and the wide proliferation of expertise around the world are the realities in which we tackle this problem." The problem is, can policy and policymakers keep pace with these realities without endangering national security or undercutting the U.S. technology sector? ■

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ban on research utilizing human embryos did not extend to human embryonic stem cells (*see STC February 1999*). In response to the revised interpretation of the law, NIH requested that the National Bioethics Advisory Commission (NBAC), established by executive order in 1995 to provide guidance on the ethical conduct of research, craft guiding principles for research involving embryonic stem cells.

In response, a letter signed by over seventy Republican members was sent to HHS Secretary Donna Shalala in early February protesting the interpretation. The press conference hosted by Sen. Brownback is the latest in the ongoing debate over this highly controversial subject matter. Echoing the protests from his colleagues, Sen. Brownback stated at the press conference, "This language is clear – the law is clear." Mr. Doerflinger called the HHS interpretation "disingenious" and a "transparent effort to circumvent the law."

The promise that research involving embryonic stem cells could provide medical breakthroughs in many cell-based diseases such as diabetes, Parkinson's disease, Alzheimer's and heart disease is very real. The difficulty lies in the ethical issues that surround it. Dr. Pellegrino acknowledged that research utilizing embryonic stem cells does hold great promise, but emphasized that it was unethical since it involved the destruction of the embryo, and was premature since other credible work was available. Other participants at the press conference stated that one does not have to cross a moral line in order to conduct research in these promising fields and cited adult stem cells as a viable solution.

In the past few months, research involving adult stem cells, which are different from embryonic stem cells in that they have differentiated or developed more fully and therefore are limited in its ability to regenerate into any type of organ, have made headlines. Researchers have isolated human blood stem cells, stem cells from adult bone marrow capable of becoming bone or cartilage, and other researchers claim they are close to isolating neural stem cells from humans. Opponents of embryonic stem cell research argue that more federal funds should be focused on adult stem cells research since the ethical lines are not obscure and advances in promising research in some diseases can be made. Proponents of utilizing embryonic stem cells argue that research in both adult and embryonic stem cells is still in its infancy and therefore all avenues should be explored, especially since the potential of adult stem cells appears too specialized and limited for all diseases to benefit.

NBAC is expected to review the final draft recommendations at a July 13-14 meeting before submitting them to the White House for consideration. In a July 14 statement, President Clinton saw no reason to change the regulatory structure governing human embryo research since embryonic stem cells will not be obtained with the use of federal funds. "No other legal actions are necessary at this time, because it appears that human embryonic stem cells will be available from the private sector," said the President. Until the Administration approves the NBAC guidelines, NIH will not fund any research utilizing embryonic stem cells.■

Status of Major Legislation

CYBER SECURITY

PROMOTE RELIABLE ON-LINE TRANSACTIONS TO ENCOURAGE COMMERCE AND TRADE (PROTECT) ACT OF 1999

S. 798

Introduced by Sen. John McCain (R-AZ). A bill to promote electronic commerce by encouraging and facilitating the use of encryption in interstate commerce consistent with the protection of national security, and for other purposes. 6/10/99 Committee on Commerce hearings held. 6/23/99 Ordered to be reported without amendment favorably.

SECURITY AND FREEDOM THROUGH ENCRYPTION (SAFE) ACT

H.R. 850

Introduced by Rep. Bob Goodlatte (R-VA). A bill to amend title 18, United States Code, to affirm the rights of United States persons to use and sell encryption and to relax export controls on encryption. 2/25/99 Referred to the Committees on the Judiciary and on International Relations. 3/24/99 Ordered to be reported by Judiciary Committee. 4/27/99 Referred jointly and sequentially to the House Committee on Intelligence (Permanent Select), the House Committee on Commerce, and the House Committe on Armed Services. 6/23/99 Ordered to be reported (Amended) by the Commerce Committee. 7/13/99 Ordered to be reported (Amended) by International Relations Committee.

COMPUTER SECURITY ENHANCEMENT ACT OF 1999

H.R. 2413

A bill to amend the National Institute of Standards and Technology Act to enhance the ability of the National Institute of Standards and Technology to improve computer security, and for other purposes. 7/1/99 Referred to the Committee on Science.

EDUCATION

TEACHER TECHNOLOGY TRAINING ACT

S. 1188

Introduced by Sen. Dianne Feinstein (D-CA). A bill to provide grants to State educational agencies and local educational agencies for the provision of classroom-related technology training for elementary and secondary school teachers. 6/8/99 Read twice and referred to the Committee on Health, Education, Labor, and Pensions.

EDUCATION FOR THE 21ST CENTURY (E-21) ACT

H.R. 1786

Introduced by Rep. Steven Rothman (D-NJ). A bill to enable America's schools to use their computer hardware to increase student achievement and prepare students for the 21st century workplace. 5/12/99 Referred to the House Committee on Education and the Workforce. 6/4/99 Referred to the Subcommittees on Postsecondary Education, Training, and Life Long Learning and Early Childhood, Youth, and Families.

INFORMATION TECHNOLOGY

NETWORKING AND INFORMATION TECHNOLOGY RESEARCH AND DEVELOPMENT ACT

H.R. 2086

Introduced by Rep. F. James Sensenbrenner, Jr. (R-WI). A bill to authorize funding for networking and information technology research and development for fiscal years 2000 through 2004. 6/9/99 Read twice and referred to the Committees on Science and Ways and Means.

BASIC RESEARCH

TWENTY-FIRST CENTURY RESEARCH LABORATORIES ACT

S. 1268

Introduced by Sen. Tom Harkin (D-IA). A bill to amend the Public Health Service Act to provide support for the modernization and construction of biomedical and behavioral research facilities and laboratory instrumentation. 6/23/99 Read twice and referred to the Committee on Health, Education, Labor, and Pensions.

METHANE HYDRATE RESEARCH AND DEVELOPMENT ACT OF 1999

H.R. 1753

Introduced by Rep. Michael Doyle (D-PA) A bill to promote the research, identification, assessment, exploration, and development of methane hydrate resources, and for other purposes. 5/11/99 Referred to the Committees on Science, Transportation, and Commerce and Resources. 51/12/99 Referred to Subcommittee on Energy and Environment 5/21/99 Referred to the Subcommittee on Energy and Mineral Resources. 6/30/99 Ordered to be Reported (Amended) by Voice Vote.

GENETICS

HUMAN CLONING RESEARCH PROHIBITION ACT

H.R. 2326

Introduced by Rep. Cliff Stearns (R-FL). A bill to prohibit the expenditure of federal funds to conduct or support research on the cloning of humans, and to express the sense of the Congress that other countries should establish substantially equivalent restrictions. 5/23/99 Referred to the Committees on Science and Commerce. 7/7/99 Referred to the Subcommittee on Health and Environment.■

Reports and Publications

CONGRESSIONAL RESEARCH SERVICE

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

Technology Transfer to China: An Overview of the Cox Committee Investigation Regarding Satellites, Computers, and DOE Laboratory Management (RL30231). This report addresses technology transfer to China with respect to satellite launches, high performance computers, and management of DOE laboratories. Within each sector it provides background information, a summary of the Cox report's findings and recommendations, and White House and Congressional response.

Small, High Tech Companies and Their Role in the Economy: Issues in the Reauthorization of the Small Business Innovation Research Program (RL30216). This paper discusses the role that small high-tech firms play in the nation's economic growth. It provides background on the SBIR program, related legislative initiatives to facilitate innovation, and explores issues associated with achieving the goals of SBIR within the context of other federal endeavors.

GENERAL ACCOUNTING OFFICE

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Food Safety: Experiences of Four Countries in Consolidating Their Food Safety Systems (RCED-99-80). U.S. food supply safety and the weaknesses in the federal food safety system are being questioned. This report reviews the experiences of Canada, Denmark, Great Britain, and Ireland in consolidating their food safety systems, and examines the approaches taken to consolidation, the costs and savings associated, and efforts to assess effectiveness.

Renewable Energy: DOE's Funding and Markets for Wind Energy and Solar Cell Technologies (RCED-99-130). This report addresses past and current support of R&D in wind turbines and photovoltaics that convert wind and sunlight, respectively, into energy. It found that since the 1970s, the objectives of the wind and photovoltaic programs have expanded from fundamental research to applied research to improve U.S. market share.

Antimicrobial Resistance: Data to Assess Public Health Threat From Resistant Bacteria Are Limited (HEHS/NSIAD/RCED-99-132). The full extent of antimicrobial resistance remains unknown. Ongoing efforts to improve existing data sources and to create new ones may allow better characterization of the public health burden. This report addresses existing limitations to data and ways that access to data could be used to learn more about the number of resistance infections, treatment costs, and antibacterial usage.

Information Security: Many NASA Mission-Critical Systems Face Serious Risks (AIMD-99-47). This report highlights tests done by GAO that found mission-critical information systems for earth orbiting spacecraft vulnerable to unauthorized access. The report includes recommendations for NASA to improve it's security program in five areas.

Satellite Control Systems: Opportunity for DOD to Implement Space Policy and Integrate Capabilities (NSIAD-99-81). This report discusses the DOD limited action to foster integrated and interoperable satellite control for all government space activities. It recommends that DOD consider using commercially available products and acquisition practices used by leading firms.

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Securing America's Industrial Strength (ISBN 0-309-06448-1). This report presents a series of studies of 11 industries in the manufacturing and service sectors that examined reasons for improved U.S. industrial performance in the 1990s. In addition, the report highlights four issues of importance for the next century: long-range research investment, intellectual property rights, high-technology workforce, and statistical data compilation.

Groundwater and Soil Cleanup: Improving Management of Persistent Contaminants (ISBN 0-309-06549-6). This report addresses management of DOE groundwater and soil cleanup at the nation's nuclear weapons facilities. It notes that conventional technologies currently used are inadequate and do not meet federal and state regulatory standards. Most innovative methods for cleaning up contaminated ground water and soil, however, are in the early stages of development, and those that are available are infrequently used.

Safety of Silicone Breast Implants (ISBN 0-309-06532-1). This report is the result of a study that reviewed all relevant scientific research on the safety of silicone breast implants. It concludes that women with implants are no more likely than the rest of the population to develop cancer, immunologic diseases, or neurological problems. It also concludes, however, that implants commonly lead to complications that require surgery or other medical interventions to correct.■

HEARD OFF THE HILL

A new study from Britain indicates that the public does not truly understand or appreciate advances made in science. The study was done by the opinion research firm, Mori, and presented to the Royal Society, Britain's distinguished scientific society. Results indicated that the public is wary of scientific advances such as cloning (only 2 percent polled believed it beneficial) or genetically modified food (1 percent thought this to be beneficial). Meanwhile 63 percent of respondents trusted the scientists themselves. *BBC Online* July 13, 1999.

A mathematical law that dates back to 1881 is about to be used to help auditors determine fraud. Benford's Law, first discovered in 1881 by Simon Newcomb and extensively studied by a General Electric physicist named Frank Benford in 1938, states that numbers do not occur randomly. For instance, any set of data from clinical trial data to economic indicators to R&D analyses will show that around 30 percent of numbers begin with a 1, 18 percent with a 2, all the way to 4.6 percent for 9. The U.S. Institute of Internal Auditors has already planned to hold training courses for application of the law. *New Scientist* July 10, 1999.

Carnegie Mellon University and the Consortium for Speech Translation Advanced Research (C-STAR) are planning to introduce a revolutionary portable web-interfaced translation device. On July 22, they will unveil new technologies that will enable participants speaking six languages to converse seamlessly. They will also introduce a new portable computer that allows travelers to converse in the language of the country they are visiting. It will also be able to give directions and give descriptions of places. *Eurekalert* July 13, 1999.

Slowing down the speed of light is nothing new since scientists at MIT and Stanford have already figured out a method. Now, a group of researchers at Texas A&M University have achieved the same result but with less cost which could mean the practical applications of slowing down light could be just around the corner. These scientists simply heated rubidium metal into a hot gas and sent light beams through them. This process slows down light to three-tenths its normal speed. Some new applications could be a more efficient communications system and the ability to pack more data onto compact discs. *The Economist* July 10, 1999.■

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