

► **Profit in Traffic Jams** In 1993, the phrase that seemed to describe the impending digital revolution in communications was Vice President Al Gore's "information superhighway." Licensed to drive on electronic roadways are now being granted in record numbers. All anyone needs to enter the traffic jams on the Internet is a personal computer, network software, phone line, modem and a "domain name," which is akin to a postal address or a phone number. The National Science Foundation (NSF) developed the Internet from DarpaNet, devised from packet-switching developments in the early 1970s by the Defense Advanced Research Projects Agency to link military computers. A decade later, NSF upgraded DarpaNet to connect scientists at universities with each other and with supercomputers.

At first, NSF registered the domain name addresses. But by 1993, with the number of domain names at 4000 and new registrations coming in at about 200 each month, NSF sought help. After a peer-reviewed competition among large and small firms, NSF selected a new company, Network Solutions, in nearby Herndon, Virginia, for a five-year run. The agreement between NSF and Network Solutions stipulated that 30% of the \$50 registration fee would be deposited in a special fund for the foundation to use for "the preservation and enhancement of the 'intellectual infrastructure' of the Internet."

Now that some 1.2 million names bearing suffixes "com", "net", "org", "edu" and "gov" have been registered by Network Solutions since 1993, nearly \$30 million has accumulated in the fund, Philip Sunshine, NSF's deputy inspector general told the Senate Committee on Commerce, Science and Transportation on 24 July. According to Sunshine, the fund is increasing at \$2.7 million per month, and is likely to contain more than \$60 million when the agreement expires in September 1998. "Not surprisingly," he said, "a pool of money in this amount has engaged our attention—especially because there appears to be no clear consensus in the foundation or within the scientific community about how best to expend these substantial funds."

Sunshine said the agency's office of inspector general has recommended that NSF call for proposals for scientific projects to advance R&D on the Internet. But NSF hasn't decided what to do with the return on its investment. In response to a question from Senator John McCain, the Arizona Republican who heads the Commerce Committee, Sunshine said the agency has spent more than \$300 million since 1990 to support development of the Internet, access to it and basic research in computer networking.

► **Two Awards and a Tribute** At its annual meeting on 7 October, the National Academy of Engineering (NAE) will present its Founders Award posthumously to Mario G. Salvadori and its Arthur M. Bueche Prize to Erich Bloch. Salvadori, who died on 25 June, shortly after the awards were announced, was honorary chairman of Weidlinger Associates, an engineering consulting firm, and founder of the Salvadori Educational Center on the Built Environment in New York City. His citation reads "for leadership in the design of complex structures, the education of several generations of structural engineers and the introduction of our younger generation to science and mathematics." In an article published in the NAE's quarterly *The Bridge*, Salvadori tells how he broke with the family tradition of studying engineering to pursue mathematics at the University of Rome, where he found he could attend courses in physics conducted by a young Enrico Fermi.

Thus, wrote Salvadori, he was "painlessly introduced to the mysteries of quantum mechanics, relativity theory and

the other revolutionary ideas about the physical world that changed the way we look at it." In those classes, he noted, "I discovered . . . how to coax unwilling students (of the kind I myself had been) into a fascination with a new subject and, thus, [in teaching at the university] to excite their will to learn." Salvadori foresook the German pedagogical methods favored by most professors. "I would have my students look first at problems from the physical, intuitive point of view, after which I would show them how simple the mathematical solution was when dictated by a clear understanding of the physical problem. (Who could have predicted then that 60 years later I would adopt the same approach in dealing with students in the elementary and junior high schools of New York City?)"

He left Italy, he wrote, "rather than fight in World War II on the side of the Nazi-Fascists," and came to the US in January 1941 to teach at Columbia University "by the unexpected and never admitted help of my mentor and by then good friend, Enrico Fermi," who was teaching there at the time.

The Bueche Award, created in 1982 in honor of a former senior vice president of corporate technology at General Electric, will go to Bloch, a former vice president of IBM and one-time director of the National Science Foundation, "for his path-finding leadership in the computer industry, for distinguished and bold leadership on national science and technology policy, and for stimulating industry-government-academic cooperation." Bloch is now distinguished fellow of the Council on Competitiveness in Washington, DC.

► **Virtually OTA** When Republicans took over the House of Representatives in 1995 for the first time in 40 years, one of their first acts was to abolish the Office of Technology Assessment (OTA), Congress's own uniquely nonpartisan think tank (PHYSICS TODAY, October 1995, page 53). In the 23 years of OTA's existence, its staff had provided lawmakers with 735 timely and readable reports on scientific and technical issues ranging from fusion energy to the global securities market. Its demise was attributed at the time to the need by newly elected members to demonstrate to voters that Congress was willing and able to downsize its own operations.

Since then, OTA's staff (including eight PhD physicists) have scattered about Washington and elsewhere, and its director, John Gibbons (another PhD physicist) has taken charge of the White House Office of Science and Technology Policy. But some lawmakers miss the advice they got from OTA. So, on 16 July, two senators, Robert F. Bennett, the Utah Republican who chairs the appropriations subcommittee on the legislative branch, and Jeff Bingaman, a Democrat of New Mexico, submitted an amendment to Congress's spending bill for fiscal 1998. The amendment would set aside \$500 000 for a pilot program of scientific and technical studies related to legislative issues. As Bingaman explained it on the Senate floor, the amendment uses the same legislative authorities, on which OTA was established, to conduct the studies.

Still on the books, said Bingaman, is the authority for a bipartisan Technology Assessment Board consisting of six members from the House and six from the Senate, who would decide on the topics for studies. The studies would not be done by reinventing OTA but by existing scientific, technological or academic institutions that the board would choose to do the work. "Think of it as a 'virtual OTA' or, if you prefer, an 'outsourced' OTA," said Bingaman. The amendment passed by voice vote, as did the Senate bill for funding Congress next year. The bill now awaits a House-Senate conference in September and will then come before each chamber for final action.

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