program. Oddly enough, Northeastern intends to use the money to build a research library, not to study VHSIC computer chips.

D'Amato, who is running for reelection in November, also managed to outfox the formidable opposition of AAU, the American Association for the Advancement of Science and the National Academy of Sciences and obtain $11.1 million from the Defense Nuclear Agency for a Center for Microelectronics Engineering and Imaging Sciences at Rochester Institute of Technology and $12 million out of DARPA's Strategic Technology program funds for the computer research project at Syracuse that had been voted down in the Commerce bill. In his letter to members of the Senate and House appropriations committees, NAS President Frank Press declared that the academic and scientific communities have watched "with dismay and alarm" the continued increase in the number of major research projects earmarked for universities out of Federal funds. "Approval of such earmarking," he wrote, "creates new incentives and pressure for other institutions to seek similar treatment from the Congress."

On 10 December, during debate on the Senate floor over the 1986 continuing appropriations bill, Senator William Proxmire, a Wisconsin Democrat, set forth an amendment to delete the earmarking of $12 million for Syracuse University from DARPA funds. "We need a policy in this body," he said. "That policy should be to keep hands off the process of merit-based selection of colleges and universities for Federal grants. Let them compete on a fair basis—not sneak in the back door with an earmarking in an appropriations bill. Let them withstand the tests of competition, peer-group review and rigid analysis.... Let them be judged on the basis of merit, not political pull."

Opposition to such arguments came from Senator Ted Stevens, the Alaska Republican who heads the Appropriations Committee, and Hatfield, who is chairman of the Appropriations Subcommittee on Defense. Stevens, in fact, read a list of 33 universities and colleges that Congress has favored on its own since 1983 with funds that Federal agencies would have used for peer-reviewed research projects. Some beneficiaries of Congress's largesse are small (such as Tufts and Lincoln University), others large (Northwestern and Indiana Universities, for instance); some famous (Columbia, say, or the University of Pennsylvania) and a few little known (St. George University in Utah and Cheyney State in Pennsylvania). The scientific and academic establishments ridicule the list as a "dishonor roll." In the end, Proxmire's amendment to remove the pork for Syracuse was defeated on a roll-call vote, 55 to 35.

Pork rashers. As for the Rochester Institute of Technology's Center for Microelectronics Engineering and Imaging Sciences, D'Amato said on the Senate floor, it is needed because it "addresses a critical national need by providing the US electronics industry and the Department of Defense with increased numbers of high-tech engineers." He noted that the center already had received pledges totaling some $7 million from 16 corporations to match the Federal contribution. In addition to D'Amato, Rochester called on Cassidy and Associates, arguably the nation's most successful lobbying specialists in obtaining money for academe. Gerald S. J. Cassidy, president of the firm, says Congress understands that high-tech research at a university acts as a catalyst for economic growth in the area—and that's what every Senate and House member wants. What's more, claims Cassidy, what is called academic pork by the "haves" is called academic equity by the "have nots." It could be argued, he says, that some 30 universities that get half of the nation's research money "control the allocation of research through the old-boy network. Like all economic cartels," Cassidy adds, "they don't like competition."

Congress's rasher of pork in the 1986 budget produced some surprises. The first came shortly before the final version of the continuing resolution went to a vote in both chambers. Presumably unaware of Congress's gift, Cornell's president, Frank H. T. Rhodes, expressed his chagrin and fierce objections to $10 million being reprogramed from DARPA to the university's supercomputer center. "Cornell respects the responsibility of Congress to set priorities in broad policy areas such as access to supercomputers and restoring US leadership in supercomputer technologies," Rhodes announced. "The university attaches equal importance to the merit review processes used by funding agencies to select specific projects for support." Accordingly, said Rhodes, Cornell refuses to accept Federal awards of this sort that bypass normal agency review procedures.

Joseph Ballantyne, vice-president for research and advanced studies at Cornell, followed Rhodes's lead and asked Hatfield to instruct DARPA to use an appropriate review to determine which university should get the Floating Point Systems machine. It so happens that Cornell had already submitted a proposal to DARPA for FPS's still-to-be-developed supercomputer system, which presumably would be installed at the center that NSF is sponsoring with IBM and others (PHYSICS TODAY, May, page 51). The efforts of D'Amato, AuCoin and Hatfield would have guaranteed success for the proposal. It is doubtful, though, that any other applicant will bid against Cornell, where FPS already has parallel processors installed at the supercomputer center.

An even greater surprise was the Reagan Administration's decision to defer or rescind all six university projects that Congress had added to DOE's 1986 research budget. DOE's justification is that none of the projects fall into the mission of its Basic Energy Sciences program, from which the pork would be paid for. A deferral stands unless one body of Congress acts to overturn it. A rescission, by contrast, could be overturned if Congress does nothing, thereby letting its pork-laden amendments stand in the 1986 continuing resolution. Congress would then have to go on record to uphold DOE's action. DOE is counting on fiscal restraint to be a higher priority for most members of Congress this year than bringing home the bacon in an election year. In fact, the procedure is under close scrutiny across the Potomac River at the Pentagon, where similar actions may be expected if DOE succeeds.

Besides Cornell, Northeastern, the Rochester Instititute of Technology and Syracuse, the universities that DOD is required by Congress to fund in fiscal 1986 are as follows:

- ▶ Iowa State University, $6.5 million for unspecified defense research
- ▶ University of Kansas, $2 million for neurotoxin research
- ▶ University of Nevada, Las Vegas, $3.5 million for a computer center
- ▶ Oklahoma State University, $1 million for unspecified research
- ▶ Oregon Graduate Center, $1 million for semiconductor research
- ▶ Wichita State University, $5 million for aviation research.

—IRWIN GOODWIN

NSF selects fifth supercomputer center

The National Science Foundation announced on 23 January that it is creating a fifth National Advanced Scientific Computing Center with a consortium of the University of Pittsburgh, Carnegie–Mellon University and Westinghouse Electric Corp. Because all three are relative neighbors, the resulting organization will be called, not surprisingly, the Pittsburgh Supercomputing Center. Current plans call for its centerpiece, a Cray X-

MP48, the fastest machine at any of NSF's supercomputing centers, to be installed later this month at Westinghouse.

When fully "on the air" the new center will add about 30 000 hours of computing time to the amount already available to university researchers through the NSF program. This will bring the total usable supercomputer time at all five centers to 90 000 hours by the end of this year. The foundation will apportion 60% of the time to academic researchers on NSF grants and the remaining time will be allocated by the centers. Under the NSF agreements with the centers, all requests for computing time are subject to peer review.

This is the first supercomputing center NSF has established since setting up four others, at the University of California at San Diego, Cornell, the University of Illinois at Urbana–Champaign and the John von Neumann Center near Princeton, New Jersey (PHYSICS TODAY, May, page 51). All these are now operating and access to their machines is available through such networks as ARPANET, BITNET and TELENET.

Co-directors of the Pittsburgh center are Michael J. Levine of Carnegie–Mellon and Ralph Z. Roskies of the University of Pittsburgh. Funding for the new center will be on a matched basis, with NSF contributing $36 million over the next five years and the two universities, the state of Pennsylvania and industry putting up another $34 million during the same period.

In a separate action, the foundation made grants totaling $12.5 million to five universities to help establish and operate major experimental computer research facilities that will involve many computer scientists. The projects are identified as follows:

▶ The University of Massachusetts at Amherst ($4.7 million over five years) will develop an experimental project for research in cooperative distributed computing based on a tightly coupled multiprocessor containing 64 or 128 processing elements.

▶ The University of Colorado at Boulder ($3.2 million in five years) will use its funds for an experimental computational facility, jointly funded with NSF's Office of Advanced Scientific Computing, at which it is to develop a loosely coupled network of scientific work stations for research in numerical computation and software environments.

▶ The University of Minnesota ($1.5 million in five years) will concentrate on research, also jointly funded with NSF's Advanced Scientific Computing program, to design and analyze algorithms and applications software for a variety of projects.

▶ The University of Washington ($921 000 for two years) will deal with distributed computer systems, concentrating mainly on designing system software that uses essentially identical work stations and on achieving looser but still significant integration in a heterogeneous computer system.

▶ Princeton University ($2.2 million over five years) will study supercomputers with physical memories of tens of billions of bytes. The idea to be investigated is the ways such massive memories will lead to solving problems that have eluded scientists thus far and if the systems will lead to major improvements in performance. This work also is supported by the NSF Industry–University Cooperative Research Projects program, the Office of Naval Research and the Defense Advanced Research Projects Agency.

—IRWIN GOODWIN

NSF wants geosphere research ideas

Even before the US pulled out of the United Nations Educational, Scientific and Cultural Organization at the end of 1984, many scientists expressed fears for the future of transnational global studies. A report by the National Research Council of the National Academy of Sciences and National Academy of Engineering spoke of the personal loss to dedicated researchers if the US failed to take part in such UNESCO projects as Man in the Biosphere and the International Geological Correlation Program, as well as the incalculable loss to science itself. To make up for this, said the report, the US "withdrawal must be accompanied by a serious commitment, expressed in policy, institutional and budgetary terms, to a continued and strengthened American role" (PHYSICS TODAY, February 1985, page 53).

The Research Council proposed that, assuming funds are available, the National Science Foundation could take on the management of global-research programs and support international scientific societies such as the International Union of Pure and Applied Physics and the International Union of Geodesy and Geophysics. Unhappily, instead of NSF, the job fell to the State Department to support global science for the US—all on a paltry budget that was supposed to be $2.75 million in fiscal 1986 (PHYSICS TODAY, April, page 59). Instead, Congress cut the appropriation to $1.1 million for 1986, and the Administration decided to eliminate State's funds for international scientific research in fiscal 1987.

Anticipating the problems for international research in the geosphere and biosphere after the US severed its ties with UNESCO, the National Science Board set up the Committee on International Science, headed by William A. Nierenberg, director of the Scripps Institution of Oceanography, to recommend how NSF might run a specific set of programs, using its experience in operating the Antarctic research program as a model. In reports to the Science Board, Nierenberg persistently recommended that NSF take the lead in global research in the absence of any other body to do the planning and programing. The Nierenberg committee went so far as to urge NSF to undertake at least one major project, suggesting studies relating to tropical forests or to international aspects of scientific information systems.

Not quite satisfied that these were the most significant things to do, NSF asked the American Association for the Advancement of Science and its Consortium of Affiliates for International Programs to help compile a list of important global-research problems that could attract foreign participation and would be politically feasible. The AAAS came up with a short list of possible studies that included marine biotechnology, tropical ecosystems, tropospheric chemistry, global seismology, climatic impacts of the human environment and scientific and technical manpower.

Do any or all of these studies cry out for NSF support in a period of severe budgetary restraint? What criteria should be used in deciding on a single project or a set of studies that would cut across disciplinary and geographic boundaries? Last September, a steering group of AAAS and CAIP decided that an international research initiative should meet three criteria:

▶ It must concern a global problem of compelling importance

▶ It must possess a recognized potential of scientific, technological or intellectual content

▶ It must involve a wide range of disciplines.

In hope of getting suggestions for the ideal research programs to meet these criteria, the steering group is calling on individual scientists and engineers, along with professional societies and other groups. Suggestions should be limited to a one-page explanation of the scope of the study and its probable participation and research potential. They should be sent by 1 April to Sandra M. Burns, Office of International Sciences, AAAS, 1333 H Street, N.W., Washington, D.C. 20005.

—IRWIN GOODWIN □