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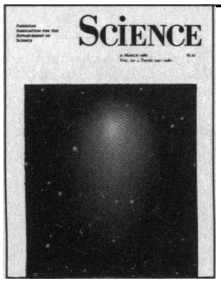
■ The American Association for the Advancement of Science was founded in 1848 and incorporated in 1874. Its objects are to further the work of scientists, to facilitate cooperation among them, to foster scientific freedom and responsibility, to improve the effectiveness of science in the promotion of human welfare, and to increase public understanding and appreciation of the importance and promise of the methods of science in human progress.



COVER Image of comet P/Giacobini-Zinner taken 22 August 1985, 0934 U.T., using the Catalina 154-cm telescope of the University of Arizona Observatories. It is taken with a Charge Coupled Device (CCD) electronic camera using a visual (V) filter (center wavelength 5500 angstroms). The exposure time was 1 minute and the field of view of the picture is roughly 8 minutes of arc. See page 353. [Uwe Fink, Al Schultz, and Mike DiSanti, Lunar and Planetary Laboratory, University of Arizona, Tucson, AZ 85721]

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Survival Politics: Science and the Budget Dilemma

At the 11th AAAS Research and Development Colloquium (26 and 27 March) in Washington, D.C., the hearts and minds of the 400 participants were riveted on the wondrous workings of Gramm-Rudman-Hollings, a.k.a. the Deficit Reduction Act of 1986. No government speaker could predict the outcomes of the standoff between Congress and the Administration, much less the extent of the damage likely to befall funding for research and development. The good news was that the worst has already happened for the 1986 budget; the bad news was that under some scenarios the blow in 1987 could be much more damaging.

Not for the first time, the audience at the colloquium was advised to practice up on the martial arts, to climb into the ring and fight for their scientific lives, interests, and projects. The complaint is that legislators rarely hear from the scientists, who forget that reminders of their voting power are efficacious in inspiring legislators to do the right thing. There is a point to this, in that members of Congress are seldom visited by their scientific constituents during the long recesses when fence-mending and opinion-sounding are practiced. On the other hand, there is no lack of evidence that some universities have discovered the value of professional lobbying in persuading legislators to tuck money for special research facilities into appropriations bills. But the question is whether, in the long run, much semblance of balance and scientific merit in the conduct of research could survive the close and inelegant combat that pressure politics sooner or later becomes. It is one thing to systematically inform legislators about the consequences of allowing our scientific and engineering assets to depreciate with the concomitant danger to U.S. technological leadership, but quite another to employ the muscular tactics of the organized voting bloc. Perhaps a middle ground is to learn to thank legislators when they do stand up for science.

All this said, it is apparent that the overwhelming consensus for public investment in R&D is insufficient to avert damage to what Frank Press called the "ecology" of the research system in his remarks at the colloquium. In much of the ensuing discussion participants struggled with the question of the research community's ability to agree internally on strategies to preserve the core strengths of the system, as support dwindles. Here the issues pile up quickly: the upthrust of funding for defense-applied R&D while support for the nondefense sector rapidly ebbs; allocations to university-based special research centers as opposed to project support; the inevitable consequences of terminating support for student education; the displacement implications of costly megaprojects relative to general purpose research; and the fading chance to put a floor under the existing reinvestment deficit in the tools and facilities for research. Answers to these complex and confusing issues and to science's ability to find answers were not visible. But there was a strong sense that unless science produces some answers soon, government will produce them under the forcing pressures of its fiscal problems and its mainstream priorities.

Lost and unnoticed in the blizzard of the budget numbers is a significant data point. By the fifth year of the deficit-reduction plan now engraved in law, the discretionary region of federal expenditures—the area in which civil R&D reside—is programmed to fall to only 7 percent of total spending. The sleeper is that nondefense R&D will then occupy a startling fourth of the small discretionary pie. Here lies trouble, because such a conspicuous share of the controllable fraction of the budget is bound to draw heavy fire from every interest group that is feeling hunger pains.

At risk is the broad national consensus, supported by this Administration and all others since World War II, that strong financial support for basic research is not only critical to national strength but the almost exclusive responsibility of the federal government. If this can be reaffirmed by the President and Congress amid the confusion surrounding Gramm-Rudman-Hollings, the financial basis for the consensus can be stabilized. It is urgent for the scientific community to remind our political leaders of this and assist in the process of setting priorities. The clock is running.—WILLIAM D. CAREY and J. THOMAS RATCHFORD