

## PRESS ADDRESSES A POLITICAL DILEMMA, CHOOSING AMONG SCIENTIFIC PRIORITIES

At their "markup" of the Energy Department's fiscal 1989 budget request on 5 May, six senior members of the House Committee on Science, Space and Technology each referred to it. On 11 May, at a crowded Congressional Economic Leadership Forum on Capitol Hill, Senator Jay Rockefeller IV, a West Virginia Democrat, and Representative Buddy MacKay, a Florida Democrat, hailed it as a first step in the right direction. The next night, at the National Science Board's fancy annual dinner, Lawton Chiles, a longtime Florida Democrat who is giving up his Senate seat in January, and with it his chairmanship of the powerful Senate Budget Committee, spoke of it as "a necessary look at the big picture." "It" is the address to the 125th annual meeting of the National Academy of Sciences that Frank Press, the NAS president, delivered on 26 April.

What made Press's speech so topical was its attempt to come to grips with the quandary Congress faces from a miscellany of "megascience" initiatives that have come up for funding in this era of budgetary stress. In the past few years, scientists have clamored with almost equal ardor for more research support for AIDS, for space science, for ground-based astronomy, for sequencing the human genome, for fusion energy machines, for the Superconducting Super Collider and for dozens of less expensive but no less expedient projects. But while scientists in particular specialties argue persuasively for their own pet projects, they refuse to judge their favorites against those promoted by researchers in other fields.

A few advisory panels are bold enough to list priorities for projects within a specialty, as did two Academy committees, one viewing astronomy, led by George Field, the other ranking major facilities in materials



Frank Press: A new mission impossible?

research, under the cochairmanship of Frederick Seitz and Dean Eastman. Most often, however, scientists are reluctant to make choices across a wide discipline because they claim they cannot know for certain which projects will provide the greatest payoffs and they fear that projects ranked low will be decimated or dropped.

The Reagan Administration, to be sure, has been an exceptional patron of many research projects, for a variety of reasons—notably, to advance the nation's scientific prestige, promote its trade competitiveness, support its defense system and improve the human condition—all worthy goals, of course. But the White House finds it harder each year to put its money where its mouth is. Congress for its part argues that the Administration's spending increases for science have come at the expense of social programs. Thus Congress finds it harder each year to fund new scientific initiatives at the same time it seeks to limit the economic and

social damage that could result from the record budget deficits. The task has become especially difficult since last October's stock market collapse.

This was the setting for last November's bipartisan accord between Congress and the White House, according to which nonmilitary discretionary spending in 1989 is to be no more than 2% above the current figure—a limitation that allows slightly more than \$3 billion in 1989. In such a tight squeeze, Congress considers the Reagan R&D agenda both daunting and distressing.

### Studying the priorities

After Wall Street's Black Monday, Chiles asked Press for a way out of Congress's predicament. In fact, the House-Senate conference agreed on 25 May to accept an admission in a report issued earlier by Chile's committee that Congress has failed to devise a coordinated national R&D program that can be carried out by some 30 government agencies. To bring some order to such chaos, the conference committee's report calls upon the scientific community to help Congress establish priorities and identify gaps in R&D programs. In the final paragraph of the report, the committee calls on the National Academies of Science and Engineering, along with the companion Institute of Medicine, to provide a framework, containing scientific and educational criteria, that the Congress could use in "determining funding and organizational priorities for science and technology"—a tall order by any standards.

Press, in an interview, said the Academies are willing to undertake such a study, though the Senate request is no more than a recommendation right now and requires an act by both chambers and the President's signature. Nevertheless, Press's speech departed significantly from



the customary practice of NAS presidents and virtually every other scientist who has ever had to deal with setting priorities about what, when and why certain fields or facilities should get the most of the government's largesse.

This has been the scientific dilemma for decades. But it has become more difficult and divisive in recent years as new fields have flourished, older fields have withered and government funds for discretionary use on huge new projects have been scarce. To such a somber situation, Press offered a sobering solution: With an abundance (some would say overabundance) of insistent, innovative and ineluctable things to do, tough choices need to be made within and across fields of science—and if scientists fail to make the choices, then they cannot argue with the choices made for them by politicians, who after all control the public purse.

Press knows the problem firsthand. He served as President Carter's science adviser and as director of the Office of Science and Technology Policy for four years before his election to head NAS. One of his first actions as NAS president was to hold a convocation of some 100 academic and industrial scientists, national laboratory directors and government policy-makers to discuss actual and proposed cuts in R&D budgets by the newly elected Reagan Administration. George A. Keyworth II, Reagan's science adviser, said he found the meeting "confrontational and self-centered." In his Academy address, entitled "The Dilemma of the Golden Age," Press cannot be accused of either malediction.

The dilemma, said Press, really lies in the exuberance of science—"in that golden age of discovery and advance." As Press put it: "It is not the lack of political support for science. Political decision makers in the executive branch and Congress no longer need convincing that leadership of American science and technology is vital to our nation's future. The real political issue is what does science most urgently need to retain its strength and

its excellence."

In recent weeks, other voices have also spoken up for establishing criteria for ranking scientific projects in some order of merit and necessity. Robert M. Rosenzweig, president of the Association of American Universities, whose members include 54 leading research universities, and Roland W. Schmitt, president of Rensselaer Polytechnic Institute and chairman of the National Science Board, argued before different audiences in Washington that neither scientists nor politicians are prepared to participate constructively in setting budget priorities in science. At its meeting in Baltimore on 17 April, The American Physical Society's Council agreed to support a summer study of the way physics research priorities should be identified and allocated in the next decade.

When the Academies undertook the last comprehensive survey of physics, led by William Brinkman of Bell Labs, one objective was to sort out the community's priorities. To avoid fratricidal internecine warfare among physicists, the survey group refused in the end to do this (PHYSICS TODAY, April 1986, page 22). Press noted in his speech to NAS members that many scientists "urge us not to enter what they feel can only be a quagmire" serving to divide various communities and ensure political disaster.

While recognizing that listing priorities is fraught with dangers, Press nevertheless makes a persuasive, pragmatic case for doing so. In this he has the backing of NAS members who have been telling him at regional meetings in the past six months that it's high time to take the high road for the sake of both science and society.

### A grand design

As improbable as it is for an NAS president to do so, Press provides, in a surprisingly assertive way, a grand design for setting priorities in research. Press's "absolute" highest priority is academic training and research grants for the largest num-

ber of scientists, engineers and clinical investigators. In an interview, he said he would include some mission-agency labs, such as the Naval Research Laboratory and Lawrence Berkeley, in his top category because they epitomize the best in basic research and graduate studies. In a subgroup of the category, Press would list reacting to national crises, such as AIDS and the problems of the space program, and responding to major scientific breakthroughs, such as high-temperature superconductivity. Press believes the Administration and Congress should be able to know what to fund first, even in a budget crunch.

Category 2 consists of projects with important scientific and political goals. Examples from science are the SSC and the sequencing of the human genome. From politics would come the space station, manned spaceflight, the Pentagon's R&D budget and projects that contribute to regional economic development, and hence jobs, or that enhance the nation's competitiveness in world markets. Accordingly, Press said, "It may be wise for huge multibillion-dollar projects like the space station to be left for major funding decisions by the next President, who... will have the responsibility for seeing them done."

Press told PHYSICS TODAY that he believes he has the duty to speak out about the problem, knowing that his message would be controversial. Part of the problem is that the government planning system for dealing with R&D appropriations is in disarray, Press admits. "It is astounding but true that nowhere in the Federal budget-making process is there an evaluation of the complete Federal budget for science and technology and its overall rationale in terms of national goals." Some 15 departments and agencies request funds in 14 separate budget categories, which are reviewed in at least six divisions of the White House Office of Management and Budget and require approval by nine different appropriations committees in Congress.

—IRWIN GOODWIN

## FIVE YEARS AFTER 'A NATION AT RISK' US SCHOOLS STILL SEEK BETTER GRADES

In April 1983 the American public was numbed to read that ours is "A Nation at Risk." The scary phrase was the title of a searing report on US schools by the National Commission on Excellence in Education, a presti-

gious 18-member panel appointed by, of all people, Terrel H. Bell, a mild-mannered University of Utah professor who had been appointed Secretary of Education with the charge of dismantling the agency (PHYSICS TODAY,

June 1983, page 44). Not since the Sputnik era of the late 1950s had the school alarms clanged so loud: A "rising tide of mediocrity" was engulfing the US education system, the report warned, "threatening our