Ford's Farewell Budget: Science Fares Quite Well

It is budget time in Washington—never mind that there was just an Inauguration too. As required by the Constitution, on 17 January Gerald R. Ford, in one of his last acts as President, submitted to Congress his budget for fiscal year 1978, which begins next 1 October. On the surface, it may seem a bit superfluous for an outgoing President to propose a budget that will not take effect until his successor has been in office almost 9 months. But budget-making is a long, complex process—federal agencies already are drawing up budgets for FY 1979 and beyond—and there is no chance that President Jimmy Carter could prepare a complete budget of his own in time for congressional action for FY 1978.

Therefore, much in the Ford budget is likely to stand; in any case, it will bear a direct relationship to the way things will actually be during the next fiscal year. This is not to suggest, however, that Congress, which always makes changes in the President's budget, and Carter, who has ideas of his own, will not make substantial changes in the Ford budget in certain areas, for surely they will. Nevertheless, the Ford budget remains a document of considerable political importance. As such, it becomes a baseline against which one can measure the actions of the new President and the new 95th Congress for clues to their visions of how things ought to be, for they will say a lot by what they accept and what they change.

Generally speaking, what Ford proposes for science is favorable to research, although the National Institutes of Health did not fare terribly well (see box on page 375). He came to office seeking a kind of reconciliation in American political life and he achieved it. Science was not left out, and during his tenure the mistrust of science and technology research that pervaded the Nixon White House was replaced by understanding, and even a touch of appreciation. Speaking of the nation's total research and development program, H. Guyford Stever, outgoing director of the Office of Science and Technology Policy (OSTP) and the President's science advisor, said recently, "In the past three years we've managed to reverse the trend of decreasing R & D support." He called the proposed budget for fiscal 1978 "constrained, but not as bad as in previous years," while acknowledging that there are "ups and downs as far as growth is concerned" in terms of individual programs.

In "Issues '78," one of three volumes the Office of Management and Budget (OMB) put out as companions to the 456-page main budget book, the relationship between government and R & D, according to the Republican gospel, is this: "The Federal Government invests in R & D largely to improve its capability to supply services to the people, and to carry out government responsibilities such as defense. R & D is not a separately budgeted activity of the Federal Government and *should not be viewed as an "end-in-itself"* [emphasis added]. Rather, it is a means whereby agency and national goals can be achieved more effectively or more efficiently." It will be interesting to see what Carter and his budget advisers do with that definition.

In order to achieve real growth in the total R & D budget, the Administration recognized that support would have to go beyond the 6 percent inflationary figure against which budgets must be measured, a recognition Stever finds gratifying. The total R & D budget, cutting across departments and agencies, calls for $28 billion—an 8 percent increase or 2 percent rise in real terms.

Table 1. Federal research and development.

Conduct of R & D	Federal R & D budget			
	Obligations ($ millions)			Change (%) 1977–1978
	1976	1977	1978	
Defense	9,592	11,132	12,317	+11
NASA	3,488	3,800	3,833	+ 1
ERDA	2,499	3,610	4,064	+13
HEW	2,543	2,910	2,976	+ 2
NSF	617	693	766	+11
Agriculture	467	530	579	+ 9
Other	1,487	1,777	1,787	
Total	20,694	24,461	26,322	.+ 8
R & D facilities	801	1,455	1,636	+12
Total, all R & D	21,495	25,916	27,958	+ 8

A comparison of these two tables shows clearly the difference in proposed research spending compared with that for development. The total R & D package represents a 2 percent increase; looking at R alone, the increase is 3 percent.

Table 2. Amounts obligated for conduct of basic research ($ million).

Agency	1976	1977	1978	Change (%) 1977–1978
Defense	248	274	314	+14.6
NASA	298	352	365	+3.7
ERDA	350	389	427	+9.8
HEW	660	744	796	+7.0
NSF	541	612	688	+12.4
Agriculture	171	193	215	+11.4
Other	195	221	236	+6.8
Total	2463	2785	3041	+9.2

Agriculture

One of the more important new science programs proposed in the Ford budget would establish a competitive grants program for basic research in the U.S. Department of Agriculture (USDA). USDA has been criticized repeatedly for failure to emphasize innovative, basic research, while relying instead on more or less applied research at land-grant colleges and agricultural research stations for "progress." As Stanford University biologist and OSTP adviser Donald Kennedy notes, "Plant sciences have been allowed to wither," and really good, young biologists have gravitated to

the biomedical sciences. It is hoped that the new competitive basic research grant program will mark the beginning of the end of that trend. Ford has requested $150 million over a 5-year period for this program so that USDA can award grants for investigator-initiated projects in basic research just like the National Institutes of Health (NIH) and National Science Foundation (NSF) do. One or the other agency will be the model for establishing a peer review system within USDA. Although investigators at land-grant colleges and agricultural research stations will be eligible to compete for the new grants, the real point of the program is to attract researchers from the nation's other colleges and universities.

Ford is asking Congress to start off with an appropriation of $27 million for FY 1978 for basic research in photosynthesis, nitrogen fixation, gene transfer among plants, and protection of crops from biological stress—pests, choking weeds, and the like. There is every reason to think that Congress and Carter will go along with this proposal. In fact, Agriculture Secretary-designate Bob Bergland (D–Minn.) is among members of the House Agriculture Committee who already this year have endorsed the National Agricultural Research Policy Act that contains similar provisions.

Earthquakes

Another "major initiative" of the Ford budget is in earthquake research. Convinced by the scientific community that it will be possible to accurately predict earthquakes within a decade, the President accepted OSTP recommendations for expanded support of research in this field. If Congress goes along, available funds will more than double, going from $23 million in FY 1977 to $54 million in FY 1978. According to the proposal, $28 million would go to the U.S. Geological Survey to deploy networks of instruments in various parts of the country to test earthquake prediction theories and to develop and publish regional maps of hazardous areas. With $26 million to spend, NSF would conduct research on earthquake-proof structures and study the social, legal, and economic implications of earthquake prediction. Both agencies are slated to increase support of basic studies of the causes of earthquakes as well.

NSF

All things considered, the NSF did well in the Ford budget. The outgoing Administration is asking that it get $885 million in fiscal 1978. That amounts to a 12.4 percent increase over 1977 spending, with 6.4 percent being a real increase and 6 percent for inflation. Among the features of the NSF budget highlighted by acting director Richard Atkinson are these:

• Instrumentation. There is considerable concern that the quality of scientific instruments in the United States is slipping, posing the possibility that the country will lose out in intellectual achievement as well as in sales of instruments abroad. Therefore, $28 million, slightly more than a quarter of NSF's increase, will go to programs to upgrade instruments for a variety of purposes: use of synchrotron radiation, support of the Very Large Array radio tele-

NIH Budget on the Decline

According to the official word from the Department of Health, Education, and Welfare (HEW), President Ford's budget for FY 1978 includes an increase of $40 million for the National Institutes of Health (NIH) that would bring its total budget to $2.571 billion. What the Department failed to point out is that what is called a $40-million "increase" does not take inflation into account. Using the 6 percent inflation figure that the Office of Science and Technology Policy used in computing the increases in the federal R & D budget as a guide, NIH would have to receive an increase of $152 million in FY 1978 just to stay even. This means that, if the Ford budget for NIH were to be accepted by Congress and the Carter Administration (which is not likely), in terms of real purchasing power, NIH would be down $112 million. In fact, NIH officials point out, although the NIH budget has seemed to go up dramatically in recent years because of significant increases in money for the cancer and heart programs, overall the institutes have been losing out in terms of real growth for the past several years.

One thing that is abundantly clear from the Ford budget for FY 1978 is that if the outgoing Administration were to have its way, the National Cancer Institute (NCI) would, for the first time since 1971, have a budget that allows for virtually no growth at all. In a move that reflects a definite set of priorities regarding the controversial cancer program, the budget proposal asks only for an additional $4 million for cancer, and directs that that sum be used specifically by the institute to carry out its part of a cooperative program with the Environmental Protection Agency for the implementation of the Toxic Substances Control Act that passed Congress last year. Although Congress is likely to appropriate more than $4 million for cancer research in the next fiscal year, there is no reason to think that it will go overboard as it has in the past. For now, at least, the political infatuation with the war on cancer seems to be over.

If one takes the President's budget request at face value just for the sake of seeing where in NIH the "big" increases are slated to be, basic investigators might be pleased to see that the National Institute of Allergy and Infectious Diseases and the National Institute of General Medical Sciences—two of the nonglamor institutes—come out on top with increases of $12 million and almost $15 million, respectively. In particular, the money is requested for research on immunology, virology, cell biology, and genetics, including the development of safer techniques for studying recombinant DNA.

Next in line is the National Institute of Environmental Health Sciences for which an additional $9 million would be earmarked were the Ford budget to be accepted. After that comes the National Institute of Arthritis, Metabolism, and Digestive Diseases, with a meager $8 million increase, hardly enough for support of the new programs—such as a major research effort in diabetes—it has been given by Congress and the Administration during the past year. This puts the National Heart, Lung, and Blood Institute, which used to be second only to the NCI in budget-makers favor, fifth among the 11 institutes. It would get only $7 million more than last year. The increases proposed for the other institutes are hardly enough to even bother reporting.

Asked if he had anything encouraging to say to the biomedical community about the Ford budget, NIH director Donald S. Fredrickson replied to *Science*, "Not a thing."—B.J.C.

scope network, containment of recombinant DNA, development of a heavy ion facility, and others.

• Science Education. Increased support of science education at 2- and 4-year colleges, often through funds to purchase modern equipment, is planned, as is new support of programs to get women, minorities, and handicapped persons into careers in science.

At the same time, NSF anticipates decreasing by almost 27 percent its support of programs in curriculum development, such as the controversial MACOS program that got the agency in such hot water with conservative congressmen because it included lessons on cultures whose values were said to be un-American.

• Research Applied to National Needs (RANN). The major projected change in RANN derives from increased funds to study earthquake engineering, as mentioned above.

• Biological, Behavioral, and Social Sciences. Increases in these areas are, in particular, slated for research on cognitive development, as well as the nature of language, studies in economic theory, in which this country is said to be lagging, and research in plant science, to coordinate with the new basic research program in USDA.

NASA

Under the Ford proposal, the NASA budget would show real growth of 4 percent, with much of the increase—$152 million or 51 percent—going for the Space Shuttle program. Other new funds would be allocated to new satellite projects including the Space Telescope, for studies of space without the obscuring effects of the earth's atmosphere ($435–470 million over 7 years); the Jupiter/Orbiter Probe to conduct the first comprehensive study of Jupiter and its 12 moons ($280 million over 5 years); and the LANDSAT-D advanced technology earth resources survey satellite ($182 million over 6 years). Mars follow-on studies would also be funded (at $5 million in FY 1978) as a potential follow-up to the Viking missions.

In order to achieve these increases without pushing the total NASA increases above 4 percent, certain budget cuts and deferrals would have to be made. Among those proposed are these: deferral of the Lunar Polar Orbiter to map the moon; deferral of engineering and design studies of a future manned earth-orbiting space station with an eye to possibly not developing it at all; and reduction of general support for R & D in contract studies at NASA field installations.

DOD

DOD, which accounts for about 47 percent of all federal R & D, is marked for a 15 percent increase in budget, with emphasis on such controversial items as the M-X intercontinental ballistic missile, the Trident submarine, and the B-1 bomber. Inasmuch as these projects involve as much politics, if not more, as they do science, and in light of the fact that Carter is known to disagree with Ford on some of these matters, it is most likely that the new President will single out the DOD budget for changes.

ERDA

As is the case with defense, Carter is known to have a great interest in energy and probably will want to put his own stamp on an energy proposal to the Congress. Therefore, he may not go along with Ford's budget proposals which place the emphasis on developing new technologies for using coal and uranium as "the only cheap and abundant alternatives in the next several decades to high-priced imported coal and gas."

Carter has said he will submit budget measures to Congress sometime in mid-February. His transition staffers were in contact with OMB officials and agency people during the final stages of preparation of the Ford budget, and were, reportedly, in agreement on some items—agricultural research and earthquake studies stand out as examples. Within a month or so, scientists should know where the new President stands across the board on research and development questions.—BARBARA J. CULLITON

Briefing

Carter Says No to Cooper; Fredrickson's Future Unsure

Theodore Cooper, the highly popular assistant secretary for health in the Department of Health, Education, and Welfare (HEW), has submitted his resignation, effective at noon on Inauguration Day, after learning that President-elect Jimmy Carter could not be persuaded to keep him on in the new Administration. There would be nothing noteworthy about the departure of a major political appointee were it not for the fact that Cooper's supporters, who are numerous in the biomedical community, made a concerted effort to get Carter and his transition people to make an exception to the rule of bringing in their own.

There also has been pressure to get Carter to retain Donald S. Fredrickson as director of the National Institutes of Health (NIH), a position he has held only for about a year and a half. As this is written, 3 days before the Inauguration, there is no word on whether Carter will agree.

After the November election, Cooper, a Democrat and former director of the National Heart Institute,* let it be known that he would stay on as assistant secretary if asked. Many individuals and even the Association of American Medical Colleges as an institution proceeded to speak on Cooper's behalf. Cooper was no patsy for academic interests, but he clearly was a friend of biomedical research. Shortly after New Year's Day it became apparent that the lobbying of Cooper's friends was not going to work. It is reported that HEW Secretary-designate Joseph A. Califano, Jr., at one point expressed willingness to retain Cooper as assistant secretary for health, an area in which Califano himself has little direct experience; but the President-elect said no, he wanted his own appointee, an attitude even Cooper finds readily understandable. (It is speculated that Cooper's association with the controversial swine flu program led to his undoing, but there is little evidence to support the idea that this is the primary reason he lost his bid to stay.)

Rumors in Washington about who will be Cooper's successor are just that—rumors. Cooper, who resisted making other plans until it was certain he would be asked to leave, has not yet decided what he will do.

Cooper's job clearly is a political one. Fredrickson's, at least in theory, is less so, even though it became a Presidential appointment 5 years ago when the Congress made the director of the cancer institute a Presidential appointee. When Fredrickson, a Republican, took the NIH job, Senate and House leaders assured him he could look forward to a long tenure. They have no authority to make that promise, however, and now must rely on their powers of persuasion with Carter in order to keep it. Fredrickson met recently with Califano but got no reassurances there—being told to "hang loose" for a couple of weeks until a decision is made in the Carter White House.—B.J.C.

*Now the National Heart, Lung, and Blood Institute.