LBJ's Budget: Lean Fare Set Forth for Research and Development

For the huge and costly research and development establishment that federal subsidy has fostered in this country, there is little good news to be found in the budget that President Johnson sent to Congress this week. R&D is not about to undergo a famine. But, by most accounts, the relatively lean federal budgets of the past 2 years have consumed most of the fat in the system, and the forthcoming budget, for the year that starts next 1 July, is by no means intended to reverse the pattern. Furthermore, when Congress gets through with the President's figures, the scientific community may really have something to weep about.

According to the administration's interpretation of the budget figures, "New investment in development will decline in 1968, while funds for basic and applied research will increase significantly."* But when the numbers are subjected to detailed analysis and viewed against the pruning knife that is being honed on Capitol Hill, there appears to be little justification for this semi-optimistic interpretation.

In gross amounts, according to the administration, annual federal expenditures for R&D will rise from $16.5 billion to a trifle over $17 billion. Within this total, the spending on development is budgeted to decline from $10.4 billion to $10.3 billion, reflecting, the administration says, slight cutbacks in Defense activities as well as the completion of a good deal of work in the manned lunar landing program. In the research category, which includes both basic and applied research, expenditure is budgeted to increase from $5.3 billion to $6 billion, with the bulk of the growth occurring in Defense, NASA, the AEC, and HEW. In line with the President's interest in dealing fast with many of the problems that afflict the nation, there appears to be a good deal of emphasis on applied programs, such as an increase in "water research," from $112 million to $143 million, and in "atmospheric sciences," from $221 million to $278 million. But scrutiny of the figures suggests there may be more bookkeeping hanky-panky than fiscal substance in the appearance of growth. Basic research expenditures, it is stated in the Special Analyses of the budget, will rise from $2 billion to $2.3 billion, but then it goes on to add that "about three-fifths of the overall increase is related to the basic research flight programs of the National Aeronautics and Space Administration." (Overall, NASA is budgeted to spend $5.3 billion in the coming fiscal year—a decrease of $300 million from the current year.) The ostensible growth in NASA's basic research budget will help pay for development of the Voyager system for unmanned exploration of Mars and Venus, as well as for that of the Mariner spacecraft for a shot at Mars in 1971. Just how much is being charged to launch vehicles and how much to instrumented payloads is not clear. Space researchers, especially the academic type, do not like to have the huge cost of launch vehicles added on to the relatively minor cost of the instrumented payloads they devise; NASA officials, on the other hand, point out that the payloads cannot get there without the launch vehicles, and that, therefore, the high cost of rocketry can legitimately be categorized under the heading of basic research. In any case, it is the administration's contention that the NASA contribution to basic research will rise from $685 million this year to $875 million next year. But, at the same time, the administration states, in *The Budget in Brief*, that NASA "grants for university research and facilities will be reduced in 1968." Moreover, whenever NASA has run into financial trouble with the moon landing program, it has rarely suppressed the temptation to make up the difference with money drawn from its basic research budget. If NASA's three-fifths contribution to the increase in basic research fails to show up, there are no grounds for surprise.

Under the heading of "academic research," the administration points out that the federal government now pays for about three-fourths of all research performed in institutions of higher learning. In the coming year, it says, it will obligate (that is, commit itself to spend, though not necessarily spend in the same fiscal year) $1.7 billion for academic research and development. This, it notes, is $100 million above the current figure—which is probably just about enough to heat and sweep the various academic laboratory buildings that have been constructed in the last few years with the urging and cooperation of federal research agencies.

A Careful Look

To get some sense of what the budget means for academic research, it is useful to look carefully at some of the figures for the National Science Foundation and the National Institutes of Health. For the past 2 years, Congress has held the NSF budget to a trifle under $480 million. The demise of Mohole last year had the effect of freeing some $20 million of NSF funds for other purposes, and the rapid expansion of the Office of Education has provided another source of funds for functions, such as fellowships and construction, for which NSF was once a mainstay. But, at the same time, NSF, under pressure from Congress and in line with Lyndon Johnson's directive for broader geographic distribution of federal research money, has had to make just a little bit more go a long way further. In fiscal 1966, for example, NSF awarded 3647 research grants; in the current fiscal year the number was 3600; next year, if NSF gets the money it is seeking, it plans to award 3870.

Meanwhile, however, NSF's highly valued fellowship and traineeship programs continue to turn out more customers for grants. In 1966 there were 8278 persons receiving such support for graduate training; this year the

Special Analyses, Budget of the United States, 188 pages; price, 55 cents. Other documents on the budget are: *The Budget of the United States*, Appendix, 1316 pages, $6.50, and *The Budget in Brief*, 72 pages, 35 cents, U.S. Government Printing Office, Washington, D.C. 20402.

number is 8610, and NSF hopes it will be 9038 next year. There is, of course, some overlap from year to year, and not all who emerge from graduate training seek to go into research. But a lot of them do, and the virtually unanimous report from campuses throughout the country is that these are grim days for a beginner who wants to get some money to do research. In the new budget, the President is seeking a $46 million increase for NSF, for a total of $526 million. If this amount should emerge intact from the appropriations process this would be a sufficiently rare occurrence to warrant the declaration of a day of rejoicing in the scientific community.

Guardianship Changes

NIH, which now must fare without the loving guardianship of John E. Fogarty in the House [his successor as chairman of the Labor-HEW appropriations subcommittee has not yet been selected, though it appears likely that it will be Representative Daniel J. Flood (D–Pa.)], is budgeted for expenditures of $989 million next year, as compared with $929 million at present. These figures do not include the now separately budgeted National Institute of Mental Health, for which expenditures are budgeted to rise from the current nearly $200 million to $257 million. By the standards of a decade ago, these sums are of stupendous proportions, and they are the envy of scientists throughout the world. But, again, federal largesse has created a research establishment of stupendous proportions, and the amounts budgeted for next year are, in many instances, insufficient to maintain the ongoing level of activity. Whether it deserves, in terms of humanity and economics, to be maintained is a separate and difficult question, but the NIH budget provides little, if any support, for the administration's contention that "basic and applied research will increase significantly." In general, there is a slight increase in research grants at most of the NIH institutes. But at the National Heart Institute the number of research grants will decline from the present 2081 to 1820; fellowships will rise from 522 to 555, but traineeships will decline from 1415 to 1340. And many of the institutes will be reducing slightly the number of schools receiving training grants. In addition, the number of fellowships and traineeships at several of the institutes will be declining

Table 1. Federal expenditures (in millions of dollars) for the conduct of basic research.

Agency	Expenditures		
	1966	1967	1968
Department of Defense—Military	251.5	265.0	270.0
National Aeronautics and Space Administration	568.1	685.0	875.0
Atomic Energy Commission	280.9	303.2	321.4
Department of Health, Education, and Welfare	286.0	352.7	374.8
National Science Foundation	176.3	196.5	226.4
Department of Agriculture	91.8	102.2	105.9
Other	86.9	95.4	112.9
Total	1741.5	2000.0	2286.4

Table 2. Federal expenditures (in millions of dollars) for research and development, including facilities.

Fiscal year	Department of Defense	NASA	AEC	HEW	NSF	Other	Total
1959	4,183	145	877	253	51	293	5,803
1960	5,654	401	986	324	58	315	7,738
1961	6,618	744	1,111	374	77	356	9,278
1962	6,812	1,257	1,284	512	105	403	10,373
1963	6,849	2,552	1,335	632	142	478	11,988
1964	7,516	4,171	1,505	791	197	496	14,676
1965	6,728	5,093	1,520	707	195	587	14,830
1966	6,735	5,933	1,462	877	235	774	16,016
1967	7,169	5,600	1,486	1,096	254	916	16,521
1968	7,682	5,300	1,599	1,184	304	987	17,056

—which, in one sense, may be a merciful step in view of the increasing tightness of research funds.

In a briefing last Monday afternoon, preceding the public release of the President's budget, Donald F. Hornig, the White House science adviser, stated that the budget was "put together against a background of a high level of expenditures for Vietnam and the need to maintain fiscal soundness." He noted that $10 million had been included for proceeding with designs on the AEC's 200-Bev proton accelerator, and that a good deal of the growth in the R & D budget involved such things as tunneling technology (for which the Bureau of Mines will undertake a new program), highway safety, water resources, pollution, and applied technology programs under the auspices of the National Bureau of Standards. Hornig, who came to the White House post from the chemistry department at Princeton, did not have to be told that inklings of the budget figures had spread deep gloom among many of his academic colleagues who move in and out of White House advisory panels. "There is not as much for basic research as we would like," he frankly acknowledged, "but this is a prudent budget in a year when the overall budget is restrained by the costs of Vietnam. There is no simple answer to how much is the right amount for basic research." he said in response to a question.

Hornig was reminded that various National Academy of Sciences Studies had concluded that an annual increase of 15 percent was necessary to keep basic research growing at a healthy pace. "Yes," he replied, "but 15 percent is a very rough kind of estimate. . . . Its only status is as a suggested guideline." And he added, "You can't budget everything that is requested."

American science will certainly not die, or even wither, with the sums allotted it in next year's budget. But good scientific opportunities will be delayed or lost, and, quite probably, some useful scientific careers will be stunted. When other segments of our society are confronted by similar circumstances they make full use of their constitutional right to scream in protest. But federal subsidy, largely inspired by the A-bomb and Sputnik, came easily to the scientific community. Politically, the scientific community is very soft, very polite. It will grumble, accept its dole, and hope for better things next year.

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