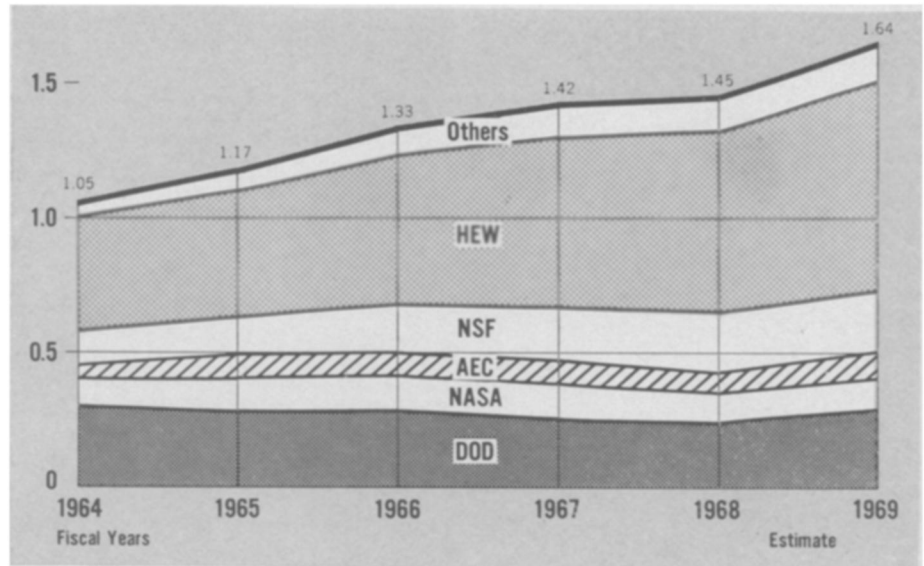


# Guns Health and Oleo

President Johnson's R&D budget for next year is fodder for the wars, at home and overseas



Office of Science and Technology

Research funds to universities: classified, under Great Society, as education.

If any one attitude characterizes the research and development components of the budget proposals President Johnson made last week, it shows in the statement made in its support.

"There are new starts where the nation is making a substantial effort."

It is a payoff budget proposal on which the President has put his brand.

At first blush it appears that the 5 percent increase from the \$16.9 billion available this fiscal year to the \$17.8 billion proposed for the year starting July 1 represents a level of growth in some areas that have been neglected in recent years' austere wartime budgets. The figures show a 7 percent growth in proposed support of research overall—from this year's \$5.5 billion to \$6 billion in fiscal 1969—and a 13 percent increase in university-based research to a \$1.6 billion total.

**But the figures** are deceptive.

Last year and this one were such lean years for the support of research that many Federal research programs were able to survive only by spending money that had been made available for future years. The proposed expansion for next year does little more than attempt to recharge the pipeline, and keep abreast of the increasing costs of doing research.

On the development side, as well, the totals don't tell the story.

The relatively static total—\$11 billion for next year as opposed to \$10.9 billion this—conceals sharp increases in spending for the development of new

*Federal funds support 70 percent of the science and technology done in the United States. The allocation of these funds has a massive impact in all fields of science and its applications. For this reason, SCIENCE NEWS this week devotes its entire news section to an analysis of relevant portions of the budget President Johnson has proposed to Congress for fiscal 1969.*

nuclear weapons systems, offset by reductions—and no major new starts—in the space program, where most Apollo development has been completed.

**In fact**, the Defense Department and the Atomic Energy Commission increases, aimed at the development of the Sentinel antiballistic missile and new multiple warhead configurations for the Minuteman and Poseidon strategic missiles, will more than absorb the overall increase in research and development funds.

So where there have been increases, or new starts, proposed, they are invariably at the expense of something.

With notable exceptions, for instance, the construction of new facilities for research and development—by universities, government research organizations or whatever—will be at a virtual standstill. A major and indicative exception is the near-tripling of the Atomic Energy Commission's \$169 mil-

lion facilities budget; most of the increase is tied to the development of nuclear warheads.

On the university research side, some increases have been forthcoming. Growth there, overall, is in the support of individual students and researchers rather than in support of institutions.

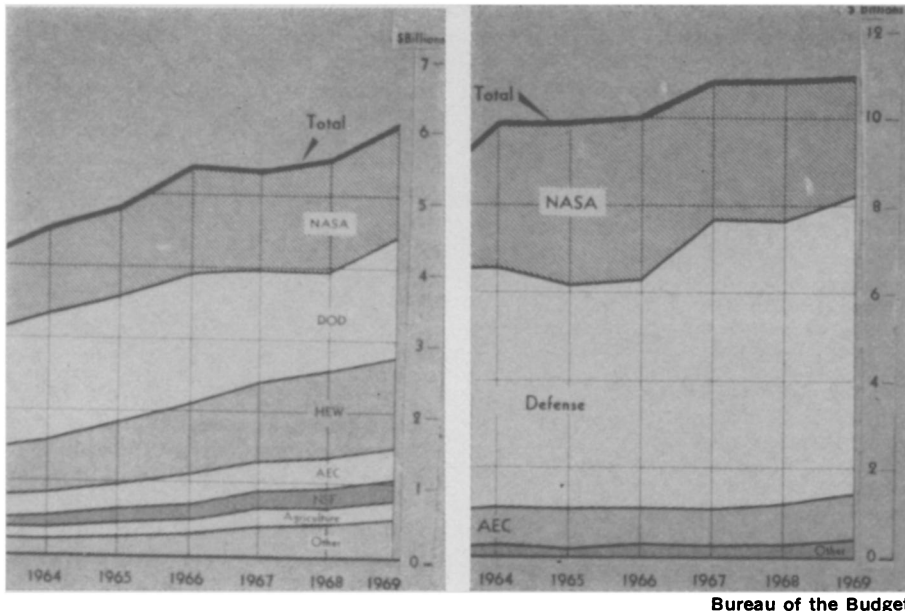
University-based research—the great bulk of the nation's basic research effort—has been segregated from other research and development this year and, for the first time, classified by Federal budget analysts as part of the higher education programs.

Where the increases in fellowships and research grants are not being justified in terms of the contributions they will make to strengthening the educational process, the justification is the support they offer to other Great Society programs.

Health research will grow as it contributes to the delivery of health services or expansion of the manpower pool; oceanographic research will develop in terms of exploitation of the oceans and research in the social sciences will be geared to finding answers to the nation's urban problems.

**Applications**, even of so-called basic research, will continue to be the key as President Johnson's two-year-old call for payoffs from investment in biomedical research dominates the nation's overall research efforts.

Even within the National Science Foundation—the only Federal agency



Research money (left) grows slightly; Development holds steady.

Bureau of the Budget

charged with the support of basic research for its own sake—policy-directed shifts in direction are perceptible.

The Foundation cannot, under the law, support applied research.

Nevertheless, it has been decided that the Foundation will emphasize programs in oceanography, atmospheric sciences, chemistry and the social sciences, where, in the words of an analysis by the Federal Bureau of the Budget, “fundamental knowledge is required . . . if significant progress is to be made on some of the critical problems facing society in such areas as air and water pollution abatement, weather modification, urban redevelopment and exploitation of marine resources.”

And in further support of the decision to put research at the service of national objectives, the only new starts proposed by R&D budget planners are in such departments as Transportation, Housing and Urban Development, the Post Office and those doing work on air and water pollution. These programs, totaling less than \$200 million, are nevertheless regarded as highly significant. HUD, for instance, will more than double its R&D to \$54 million.

**One notable victim** of the tradeoffs that had to be made in the planning of an austere budget proposal is what has come to be known as the Centers of Excellence program.

This effort to inject significant sums of money into the programs of good university research centers in the effort to make them first rate has been singled out many times as a most promising and imaginative effort of Federal research planners.

But the pioneering National Science Foundation has been forced to cut back on this effort, while the National Aeronautics and Space Administration and

National Institutes of Health could do no more than hold steady at relatively modest levels.

The Defense Department’s Project Themis is the only Centers of Excellence program proposed for growth next year, and this is certain to become an early victim of Congressional efforts to hold back what seems to be non-essential Federal spending.

## DEFENSE

### Missiles and phenomena

The Department of Defense was faced with requests from all its constituent parts for “the largest sum of money ever asked at one time of anyone by anybody in the history of man,” according to an officially faceless official. From the welter of requests, science and technology emerged with more budget money than observers had expected.

Most of the \$8 billion in R&D money programmed, of course, would go into straight military uses: biggest gainer is the Sentinel antiballistic missile, which will take some \$1.1 billion from all sectors of the budget, including R&D.

The Manned Orbiting Laboratory, which will put the United States Military officially into the piloted space race for the first time, will account for another large piece of the pie: a raise to \$600 million in fiscal 1969 from the \$430 million this year.

Overall, DOD’s backing of R&D would grow eight percent over 1968, an advance of \$602 million to a new total of \$8 billion.

Basic research—which the Pentagon has suddenly renamed “phenomena-oriented research”—into such areas as

crystal growth, plasma dynamics, energy conversion, polymer chemistry, information theory and sensory physiology will, according to the budget appendix, receive \$659,394, a jump from the current year’s \$563,415. But the Pentagon, in the midst of its most stringent budget review in history, plans to hand off many similar programs—including radio astronomy at Arecibo, Puerto Rico and the cryogenic accelerator at Stanford University—to other agencies. The National Science Foundation expects to pick up at least the Arecibo tab.

Among other developmental efforts, DOD expects to define contracts for the superhard silos for some of its Minuteman 3 missiles, the F-106X interceptors, over-the-horizon radar, new nuclear guided missile destroyers and the light, intratheater transport plant.

Sure to stir the Congress is a request for 30 more F-111B’s, the Navy version of the controversial TFX swing-wing fighter. For Air Force versions—the A and the D—Defense wants \$1.1 billion to buy 163 planes. Still another version, the fighter-bomber FB-111, would cost \$550 million for 74 aircraft.

More pressure from Asia—in Vietnam, Korea, or nearby trouble spots—could force an even more stringent review of the already stringently reviewed figures. Then research, if not development funds, could be deeply cut.

## THE ATOM

### Warheads, reactors, research

For several years the Atomic Energy Commission has boasted that it spends more money on peaceful nuclear development than on weapons production.

The fiscal 1969 budget makes a close thing of it. Of the \$2.75 billion appropriation request, \$1.14 billion is directly attributable to the military program, and more is distributed in small pieces through the budget.

Of the military expenditures, \$840 million will go for weapons development and production, mostly for warheads for the Minuteman 3 and Poseidon missiles and the Sentinel antiballistic missile system. An additional \$184 million is requested for plants to make the weapons.

Nuclear reactors for Navy propulsion make up another \$115 million of the budget request.

On the civilian side, a big increase in appropriations requests for nuclear power development shows the AEC’s enthusiasm for that booming industry. Wide commercial acceptance of light water reactors has led to a tailing off of AEC expenditures in that category, from \$13 million last year to \$11 million in fiscal 1969. But this is offset by