

RDT&E will generally hold steady, with about \$1.5 billion going for research and about \$6 billion going for development, test and evaluation. Basic research, however, which totaled \$369 million in the 1970 budget, is slipping. If it continues the same trend as seen in the 1969 and 1970 budgets, then it can expect a 10 to 15 percent cut in this budget.

The criterion for cutting basic research projects—in fact, all research—is the Mansfield amendment (Sen. Mike Mansfield, D-Mont.), which decreed that all DOD research projects must show a direct and apparent relationship to military applications. The amendment pertained to the 1970 budget, “but the wording will carry over and all future programs will be judged by that,” says one official. “We take it as a signal that that’s what Congress intends DOD to do.”

One research program that apparently meets the Mansfield criterion, but which has disappeared as a line item in Defense’s 1971 budget anyway, is Project Themis. This was an attempt to create new “centers of excellence” in universities by financing 118 defense-related projects.

“Project Themis efforts will be incorporated in the three service’s regular research programs,” points out one spokesman. “We hesitate to say Themis is dead altogether.”

But the Nixon budget has energized another program: Safeguard. After narrowly escaping death in the Senate (SN: 8/16, p. 127), Mr. Nixon’s anti-ballistic missile system is alive and well in the 1971 budget, with \$1.5 billion, an increase of \$598 million over 1970.

In fact, President Nixon wants to expand it beyond the original schedule. As originally outlined, the Safeguard plan called for initial deployment at two sites, in Montana and North Dakota, by 1974. Ten others would be completed by the late 70’s. Now Mr. Nixon wants to use the additional funds to start deployment at some of the other sites.

Joining Safeguard on the upswing are such projects as the AWACS (Airborne Warning Alert Command System), a flying radar station to warn of a missile attack, and the F-14 fighter-bomber.

But apparently a trend has been established, for as Presidential Science Adviser Dr. Lee A. DuBridge speculated, “I think there will be possibly further declines in DOD.”

SPACE

Down in the valley

Last summer the Environmental Science Services Administration, unused to the huge, monolithic projects that

typify the National Aeronautics and Space Administration’s activities, had to turn to the space agency for help in processing the data from the Barbados Oceanographic and Meteorological Experiment (SN: 4/26, p. 411). To do the job, ESSA borrowed the elaborate computer complex at NASA’s Mississippi Test Facility.

At the time, it was a simple case of Government agencies working together on a big research project. Now, however, NASA is finding the existence of such outside efforts to be a potentially life-or-death matter for some of its major field centers, whose developmental roles in the Apollo program are largely behind them.

One such center is the very MTF that has already helped with BOMEX. Another is the nearby Michoud Assembly Facility in New Orleans. The Electronics Research Center in Cambridge, Mass., is to be closed down by this summer, and NASA is frantically looking for outside users in search of big facilities to keep the critical list from becoming a body count.

The disease, of course, is financial malnutrition. With Apollo over the hill and national space goals denounced in favor of broader programs, the fiscal 1971 budget is a downbeat introduction to the new decade.

For every dollar given to NASA by Congress in fiscal 1970, the administration is asking less than 88 cents in the new budget. In working out his budget proposal with the space agency, President Nixon first asked that expenses be kept to a minimum, then emphasized the demand more strongly, and at last, only a week before the budget was submitted to Congress, added a “final turn of the screw.” The result, even before cost-cutters on Capitol Hill get a crack at it, is the lowest NASA budget since fiscal 1962, with a requested total of \$3.33 billion.

The major cut comes from the diminishing Apollo program, dropping from \$2.03 billion to \$1.69 billion to less than \$960 million in two years. A wide range of smaller savings result from postponing a variety of smaller, upcoming programs for a year or so beyond their previous target dates. A pair of Interplanetary Monitoring Probes, for example, scheduled for launch in 1971 and 1972, have been moved to 1972 and 1973. Similar slow-downs have been applied to the Applications Technology Satellites, the International (with Canada) Satellites for Ionospheric Studies and others. In general, the budget follows, though at a slightly slower pace, the middle option of the three offered by the administration’s Space Task Group, which was headed by Vice President Agnew.

Even the agency’s biggest new pro-

grams, however, are getting off at a restrained pace. For the planned large, orbiting space station and the shuttle vehicle that will service it, the budget asks \$110 million. To achieve NASA’s goal of having both operational by 1977, says administrator Dr. Thomas Paine, would have required \$250 million or more in fiscal 1971.

The Apollo Applications Program has also been delayed from three to six months past its former target date of July 1971, though at \$364 million it is still the largest single item in the NASA request except for the Apollo spacecraft bill itself.

Manpower cuts will be severe, with California by far the hardest-hit state with 16,000 NASA and contractor jobs to be eliminated there in the next 18 months. In addition, the agency’s Sustaining University Program of research support, trimmed in past years from \$30 million to \$7 million, is finally being dumped completely, although NASA officials point out that about \$90 million of NASA money will still go into university work.

As the cutting goes on, NASA officials hope that new programs can be fired up soon enough to keep large chunks of the agency from going into what Assistant Administrator for Administration William Lilly calls “the mothball mode.” □

MARINE SCIENCES

More research, few ships

The budget includes \$537.2 million to support Federal activities in marine science and technology. This is an increase of \$22.9 million over the current fiscal year. The funds are contained in the budgets of 11 different departments and independent agencies.

Civilian programs constitute \$293 million of the new budget. This is the first year since 1966, when the marine sciences program was defined in its present form, that the military’s share of the total wasn’t more than half.

Of the total, \$337.5 million is for research and development. An additional \$46.5 million is for investment in ships, major equipment and shore facilities, and \$153.2 million is for operations. The totals reflect a shift toward more expenditures for R&D and less for ships and facilities.

Most of the new money is to implement the Administration’s five-point interim marine sciences program announced in October 1969 (SN: 10/25, p. 372), pending more complete governmental review of the recommendations of the Stratton commission (SN: 2/1/69, p. 111).

Funds were requested for the International Decade of Ocean Exploration,

an expanded program of environmental research in the Arctic, and a pilot lake-restoration project. The other two points of the October recommendation, concerned with coastal zone management and establishment of coastal laboratories, are being implemented by legislation and interagency planning, respectively.

Most of the new money for marine sciences will be sought by the National Science Foundation. Additional funds it will request include \$3.4 million for the Sea Grant Program, \$1.2 million for the marine component of the Arctic Research Program, \$1.5 million for the Ocean Sediment Coring Program, and \$15 million for initial contributions to the Decade of Ocean Exploration.

The Department of Transportation will seek an additional \$7.2 million for the advanced development stage of the Coast Guard's Data Buoy System. This is aimed toward an eventual development of a network of buoys to monitor ocean conditions.

Partially offsetting the increases is a \$19.3 million reduction in the De-

fense Department's share of the marine sciences program. The Navy's program for development of the Deep Submergence Search Vehicle received a large cut, and a variety of basic research programs in the Office of Naval Research are being trimmed wherever possible.

One new program added to the nation's over-all marine sciences effort this year is the Advanced Surface Platforms Program of the Pentagon's Advanced Research Projects Agency. This project includes exploratory investigations of a surface-effects vehicle for the Arctic. Its budget request of \$12.3 million represents a \$6.3 million increase over 1970.

Nowhere in the President's budget is there mention of a National Oceanic and Atmospheric Agency, proposed last year in the Stratton report. Dr. Lee A. DuBridge, the President's science adviser, says this should not be taken as a sign that the NOAA proposal has been rejected. Review within the Government (SN: 10/11, p. 325), he says, is still in progress. □

control theories of what is called the Chicago school of economics may soon be tried out.

Mr. Burns is considered an admirer, if not a disciple, of the most prominent of the Chicago economists, Dr. Milton Friedman of the University of Chicago. In Dr. Friedman's analysis, increases or decreases in Federal spending are not correlated with inflationary cycles; the only factor associated with inflation is a low total volume of money in circulation.

If Dr. Burns hopes to cure the present inflation along the lines recommended by the Chicago school, says Arthur Okun, former chairman of President Johnson's Council of Economic Advisers, he will shortly begin to relax the Federal Reserve Board's monetary restrictions so as to inject a greater volume of money into the national economy. Although the Federal Reserve Board legally is entirely independent of other Governmental bodies, Mr. Nixon has made it clear that he favors such a relaxation. When swearing in Dr. Burns last Saturday, the President offered "a standing vote of appreciation in advance for lower interest rates and more money."

The Administration thus appears to be headed on a dual course, attempting to regulate inflation both by restricting spending and by expanding the country's money supply. If the strategy devised by Mr. Nixon's Council of Economic Advisers works out as predicted, the Government's fiscal restrictions should continue to level out the economy for the first three quarters of this year; then, in the last quarter of the year, the stimulus supplied by an increase in the monetary supply should cause the economy to pick up again, thus avoiding a severe recession. By the end of 1970, McCracken estimates, prices will be rising at a rate of only 3.5 percent a year, as compared to the 4.7 percent rate of price increase at the end of 1969.

Whether the Administration's strategy will succeed is anybody's guess at this point, economics being a notoriously imprecise science. If it does, many observers believe the success will be attributable to luck as much as to sound planning. "Inflation is a psychological problem as well as an economic one," says Dr. Robert Tufts, an Oberlin College economist. "The budget surplus is not large enough to make much real difference, but if the Administration can convince everyone that it is taking a hard stand, then maybe current inflationary expectations can be overcome. However, the projected upswing in the economy is really a hope, not a scientific calculation. We are just as liable to wind up with a recession." □

ECONOMICS

Exploring the budgetary process

It was no easy matter for President Nixon to come up with a \$1.3 billion surplus in the Federal Budget this year. In part, the surplus is a reflection of a new accounting method the Administration has employed since last year. Under the old method, which did not include in the over-all budget the Government's trust fund investments, the budget for fiscal 1971 would show not a surplus but a deficit of more than \$7 billion.

Even so, the President was forced into the politically troublesome position of vetoing the appropriations bill for the Department of Health, Education and Welfare (SN: 1/31, p. 121) in order to hold down the budget. And in estimating the surplus, Mr. Nixon was obliged to assume that Congress will go along with various measures he has proposed to increase Federal revenues, including a deferment of Federal pay raises, the postponement of already-scheduled reductions in automobile and telephone excise taxes, and a new levy on transportation that Congress previously has rejected.

All these difficulties will be justified, the Administration feels, if a balanced budget helps to control inflation. Inflation, according to conventional economic theory, occurs when the economy is operating so close to the top of its capacity that the nation's plant and labor resources cannot meet the public's demands. Under these circumstances, increased demands for goods and services

are met only by higher prices. The conventional solution is to reduce the demands on plant and labor resources; therefore the Government attempts to curtail its spending.

The difficulty with this solution, as the Administration fully recognizes, is that the economic slow-down produced by the Government's restrictive policies is liable to turn into a highly unpopular recession. During the last two recessions in this country, the unemployment rate rose to seven percent. Paul W. McCracken, chairman of the President's Council of Economic Advisers, expressed hope last week that the unemployment rate this time will climb as high as five percent. "The objective of economic policy is not to produce unemployment," he added. Nevertheless many observers, including Leon H. Keyserling, chief economic advisor to former President Truman, believe that the traditional solution to inflation inevitably causes unemployment, and that the country is already on the edge of a recession.

There are signs that the Administration is beginning to listen to other than the voices of conventional economic wisdom. The liberal remedy for inflation, wage and price controls, with which Presidents Kennedy and Johnson experimented, is not currently in favor at the White House. However, the recent appointment of Arthur Burns as chairman of the Federal Reserve Board suggests to economists that inflation-