

A new item in the budget is a missile carrying frigate, for which \$196 million in procurement funds have been slated in 1970. The Manned Orbiting Laboratory is up from \$515 million to \$576 million in 1970.

For research and development, the total funding required to complete programs approved or proposed in the year is \$5.6 billion, an increase of \$850 million over 1969.

Chief programs initiated in previous years and considered vital enough to be continued include conversion of more ballistic missile submarines from Polaris to Poseidon missile systems and replacement of Minuteman I with Minuteman III missiles. The Poseidon and Minuteman missiles will be equipped with multiple warheads and penetration aids to overcome enemy defenses. The RDT&E and procurement funds for conversion from Polaris to Poseidon missile systems is \$492 million in this year's budget, \$356 million in last year's. Other carry-overs are the F-111 planes, deployment of the Sentinel missile defense system and modernization of U.S. air defenses.

A portion of the \$500 million increase in the defense research and development budget is due to financial adjustments which include greater funding of university projects and to funding for new centers-of-excellence Project Themis contracts. Expenditures for support of research in colleges and universities will increase in 1970 from \$252 million to \$275 million, but Defense Department spending in higher education will still be below its 1966 level.

Military sciences programs, which support most basic research, show an increase from \$561 million to \$617 million. Included under military sciences are programs such as the effects of boundary layer turbulence on aircraft, propulsion and explosive chemistry, superconductivity, electro-optics, information processing, acoustics and oceanography. More research will also be pursued in marine technology, missile guidance, propulsion and electronics.

## ATOMIC

### Over the 50 percent line

The Atomic Energy Commission, spending more but requesting less, finds itself over a line it did not want to cross. For years the AEC has boasted that it spent more on civilian uses than on weapons. In fiscal 1970 51.8 percent of its money will go toward weapon building and development.

The commission expects to spend \$2.571 billion, if Congress approves. It is asking for appropriations of \$2.438

billion; the rest would be money already on hand. Last year it spent \$2.451 billion.

Over all, research and development programs will take some 67 percent of the total outlay. This is an increase of \$16 million, about four percent. The commission admits that the cost of such activities is rising faster than the four percent rate, but that is true of research in most areas of the budget.

A major effort will be the 200-400 billion-electron-volt accelerator being built in Batavia, Ill. The AEC would like Congress to authorize the full remaining cost, \$217 million (of a \$250 million total), and actually appropriate \$102 million. Congress in the past has been hesitant to put up more than one year's worth of money at a time.

Although most of the budget will go to weapons-related projects, the commission will be building fewer nuclear bombs. This gives it a major saving in the procurement of raw material, particularly uranium concentrates, which will run to \$66 million, instead of the current year's \$103 million.

The cost of testing weapons, including site preparation, should drop from \$311 million to \$275 million. This will include a one kiloton calibration shot this spring at Amchitka, Alaska.

In the reactor program, the money will continue to flow toward breeders, with \$92 million scheduled. Total civilian reactor funds: \$137 million.

A next generation of ship-driving reactors, including submarine and surface models, will be up \$14 million from last year's \$125 million.

While spending \$286 on physics (up \$11 million), the commission will invest \$92 million in biology and medicine, an increase of \$3.5 million.

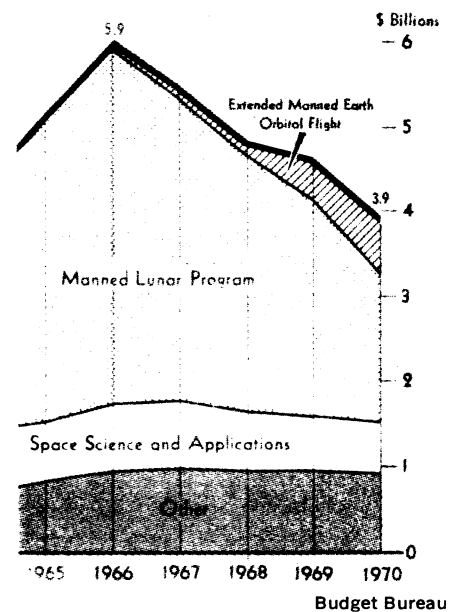
The Plowshare program, designed to develop civilian uses of nuclear explosives, will stay close to its 1969 funding rate of \$14 million. This will include one scientific shot, and two or three carried on in partnership with interested industries.

## NASA

### Post-Apollo question mark

The manned lunar landing, as the National Aeronautics and Space Administration's proposed fiscal 1970 budget clearly reflects, is almost at hand.

As the fantastically complex, \$24 billion Apollo program builds up to its climax, most of its bills have already been paid. For the budget year 1970, the space agency plans to spend only about \$1.65 billion to cover as many as five landings on the lunar surface. In the present fiscal year, Apollo is costing more than \$2 billion, and in fiscal 1968, it took a \$2.56 billion bite out of



*Apollo shrinks, post-Apollo grows.*

the plunging space budget.

With the leveling off of the Apollo program itself, and with preparations underway for post-Apollo activity such as orbiting workshops, the space agency's pocketbook may finally stop its drastic shrinkage, which has cut the NASA budget from \$5.25 billion in fiscal 1965 down to \$3.88 billion four years later.

Congress's approval, in fact, says acting agency Administrator Thomas Paine, "would halt a four-year downward trend in the NASA budget." Taking into account funds that were trimmed off in the Government-wide fiscal 1969 budget-cutting, but which will again be available next year, the Administration's budget request calls for a spending level of \$3.878 billion, almost exactly the same as the present year.

After Apollo, which could last into calendar 1971, with team after team of astronauts setting up packages of scientific experiments at different locations on the moon, the manned space flight emphasis for the time being will be on using leftover Apollo hardware for research in earth orbit. The Apollo Applications Program's two major projects will be a huge workshop in orbit, made of an empty S-4B rocket stage, and a large telescope, mounted on the workshop, for detailed studies of the sun and stars. The budget request more than doubles 1969's, bringing the amount to almost \$309 million.

While manned space flights may be keeping fairly close to earth in the early part of the coming decade, NASA has plans for unmanned probes to visit all but two of the eight other known planets in the Solar System.

Mars is the chief target, with a pair of Mariner spacecraft already set for this year, and another in 1971. A small