

landing vehicle called Viking is planned for 1973 and two or three of a new Explorer series similar to the IMP-E spacecraft that orbited the moon in 1967 are also targeted for Mars.

Other Explorers are planned for Venus, and a 1973 Mariner mission is planned to swing by the mysterious planet, using its gravity to pick up speed to whip by Mercury, nearest planet to the sun. In 1972 or 1973, NASA plans to send one of the far-ranging Pioneer space probes out to the orbit of Jupiter, particularly to gather information on the asteroid belt that clutters up space in an orbit between the giant planet and Mars. This information will be vital in designing an even more elaborate mission, a grand tour that will visit the vicinities of Mars, Jupiter, Saturn and Uranus, taking advantage of a rare celestial line-up in the mid-seventies that will not occur again for almost 180 years.

Before NASA can send men to other planets, however, it is likely to need a booster even more powerful than the mighty Saturn 5, to get enough speed up to complete the mission in a reasonable length of time. A prime candidate is the NERVA nuclear rocket, which the agency has been trying to promote for years but which has been held to research-only levels for two years by lack of funds. The new budget request calls for a \$5 million increase to \$27.5 million in order to begin work on a flight-weight version, although it will only develop 75,000 pounds of thrust compared to the 200,000 pounds planned as recently as three years ago.

All the unmanned spacecraft will not be heading for deep space, however. NASA will continue launching its automatic solar and astronomical observatories, as well as geodetic and weather satellites. The biggest of the unmanned earth satellite items in the 1970 budget is \$44.2 million, almost doubled from \$24.7 million in FY 1969, for a pair of large Applications Technology Satellites designed to try out advanced ideas before they are put into operational use. Unlike their predecessors, ATS-F and ATS-G will carry large, 30-foot-diameter antennas for communications tests.

NIH

Hard choices made

Launched already into 1970 in terms of dollars and cents, the new National Institutes of Health are shifting gears to set priorities in the face of drawn purse strings.

Following a move begun by former director Dr. James A. Shannon, the powerful institutes, for 20 years a prime force in basic research, are matching their resources to the most

pressing demands of the health community, making choices that promise results in the short run, although the long-term effect cannot be foreseen. The total NIH budget is up \$90 million, to a total of \$1.5 billion.

Coping with an increase of funds for biomedical research of only \$21.2 million, NIH chose to funnel its money into existing priority programs such as cancer chemotherapy, heart disease and rapidly expanding efforts to find new methods of fertility control. Young basic scientists applying for training grants and fellowships will pay the price of that choice, though on the non-research side, the institutes will make a concerted effort to handle the manpower shortage by assisting medical, dental and related professional schools.

The schools, representing a total enrollment of 80,000, are slated for portions of a \$96.4 million package destined to go for faculty salaries, curriculum improvement and research into ways of shortening the training period without impairing quality. The package represents a jump of \$30.4 million, a 49 percent expansion over the 1969 program.

On the research side, the National Cancer Institute anticipates raising its obligations by \$2.983 million in fiscal 1970, says NIH budget officer Lee May, with emphasis on drug therapy, radiation treatment and lung cancer studies. The coronary drug program of the National Heart Institute stands to gain \$1 million over last year, with the heart institute as a whole prepared to spend \$163 million in 1970—a boost of \$2.131 million.

Other institutes in which research programs will gain include the National Institute of Dental Research (up \$504,000), the National Institute of Allergy and Infectious Diseases with a \$749,000 raise (\$200,000 marked for transplantation immunology work), and National Institute of Child Health and Human Development, by far the most favored with a boost of \$7.6 million. Of that, \$2.747 million are set aside for population research, much of which will be carried out under the new CHHD Center for Population Research.

In 1969, NIH awarded 6,966 training grants and fellowships worth \$198 million. Faced with economic facts of life, it plans to award 688 fewer in 1970, to the tune of \$190 million.

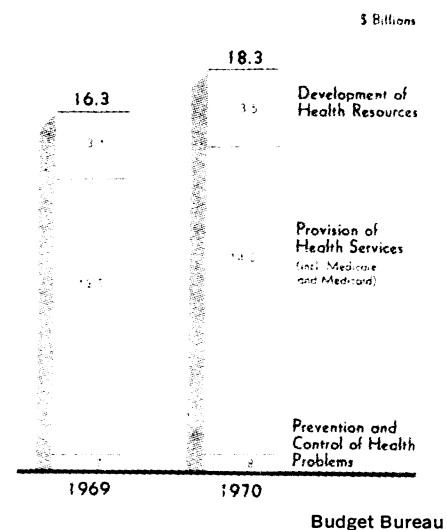
Theoretically, May explains, the Bureau of Health Manpower, slated to jump \$39 million in obligational funds next year to \$245 million, will make up for some of the loss by granting support that might otherwise have come from individual institutes.

In the last few years, the total of NIH grants, including training grants, fellowships and awards to individual

scientists to carry out specific research projects, has dropped in spite of small but regular increases in the budget. May points out that the cost of each award has risen, even if numbers haven't. In 1968, 11,182 grants cost \$804 million; in 1969, 10,598 grants will total \$814 million; in 1970, 10,549 grants are expected to cost NIH \$824 million.

HEALTH CARE

Something for everybody



Government increases health outlay.

Decent medical care for every citizen is the ambitious goal set forth by President Johnson in his budget message, and the allotment of funds for Medicare, Medicaid, veterans and children seems adequate on the surface to make this possible.

Outlays for health services will rise to \$14 billion in 1970, with \$9.8 billion going for the Medicare and Medicaid programs, and \$3.1 billion for the health care programs of the Veterans Administration and the Department of Defense.

The President points out that an estimated 9.5 million aged persons will get assistance in paying their hospital and doctor bills through Medicare payments and that Medicaid will provide medical assistance for more than 10 million needy persons.

Although expenditures for the 1970 Health, Education and Welfare programs total \$51.8 billion, which is an increase of \$5.6 billion, obligations by HEW for research and development, including facilities, will decrease by \$36 million to a level of \$1.339 billion in 1970.

Major biomedical research and development efforts will continue to be concentrated on mental illness, cardiovascular disease and cancer. Other biomedical research and development that will receive emphasis include in-