

GENERAL SCIENCE

# R & D Funds Requested

Most of the funds designated for research and development in the President's budget will go toward space and military development rather than basic research—By Ann Ewing

► **RESEARCH AND DEVELOPMENT** will account for more than 15% of the total budget of \$97.9 billion submitted to Congress by President Lyndon B. Johnson for the year ending June 30, 1965.

However, less than a third of the \$15.3 billion will be spent for basic research. Most of it will go toward building launching rockets and spacecraft and for testing military "hardware."

Basic research is not directed at any particular application but is aimed at the fuller understanding of a subject. Such knowledge is the rich soil from which technical advances grow.

More than two-thirds of the total funds spent in the United States for research and development comes from the Government. And of that, almost two-thirds goes under contract to private industry. A little more than 20% is spent for work done in Government agencies by scientists and engineers, and about 13% is granted to universities and other nonprofit organizations.

However, the funds awarded to universities have a double-barreled effect, involving not only research but also the education and training of science and engineering students so necessary for future growth.

In terms of total amount of money to be spent for science and technology by the Government during the fiscal year starting next July and its importance to the nation, six programs merit particular attention:

1. **MILITARY.** The Department of Defense will have slightly less for research and development, \$7.1 billion, than for the fiscal year 1964. This is because several of the systems needed for adequate military defense are now nearing completion and because of cancellation of the Dynasoar program.

Included in the total are the manned orbiting laboratory and increased efforts to develop methods of antisubmarine warfare.

2. **SPACE.** Costs of running the U.S. space program, estimated at \$6.7 billion, is about \$500 million higher than is now expected for 1964. Agencies involved include the National Aeronautics and Space Administration, Department of Defense, Atomic Energy Commission (for nuclear rocket propulsion), the U.S. Weather Bureau (for meteorological satellites) and the National Science Foundation (basic research in astronomy and geophysics using instruments on rockets and satellites).

Despite the small rise in space expenditures, much less than requested by NASA, President Johnson said the U.S. goal to place a man on the moon in this decade remains unchanged.

3. **HEALTH.** All the medical and health-related activities of the Government will cost an estimated \$5.4 billion, distributed

among seven Cabinet departments and more than a dozen other agencies. These activities cover hospital care and medical treatment in Government or private facilities, construction of hospitals and nursing homes, and health research and training.

Part of the increase for the Department of Health, Education and Welfare reflects the emphasis being placed on prevention and treatment of mental illness and mental retardation.

4. **WEATHER WATCH.** Increasing and more effective use of computers, radar, rockets and satellites to give more accurate weather forecasts for everyone is the aim of the \$354.7 million requested for meteorological activities.

The Weather Bureau is specifically directed to develop a plan to prevent other agencies from duplicating its functions and to increase production of weather predictions by computers.

5. **PROBING THE OCEANS.** President Johnson called for spending \$138.1 million on a variety of U.S. oceanographic programs. Research in and on the ocean is particularly important for exploiting in the future for fish and minerals the waters that cover more than three-fourths of the world.

More information on oceans is also valuable for weather prediction, antisubmarine warfare and determining the potential dangers in dumping radioactive wastes and other pollutants into the sea.

6. **NATIONAL SCIENCE FOUNDATION.** The budget for this agency, which supports much of the Government's basic research,

has increased steadily since its establishment and this year is no exception, with \$204 million scheduled for fiscal year 1965, compared to \$175 in 1964 and \$142 in 1963.

The funds will provide increased support for Project Mohole and for the Antarctic research program, with continued support for the International Years of the Quiet Sun and the Indian Ocean Expedition. Also included is money to start construction of a 150-inch optical telescope at Kitt Peak, Ariz.

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General Dynamics

**FUEL FOR SPACE**—Stainless steel is flooded with fluorine gas after being lowered into a tank containing liquid nitrogen at the astronautics division of General Dynamics Corporation, San Diego. Bob Fromius, laboratory technician, prepares the steel for the tests, which are a part of a program to study fuels for space launch vehicles.

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## Talent Search Honors

► **HONORS HAVE BEEN** given to the most talented high school science students in the 1964 graduating classes. The 314 students in towns and villages scattered from New England to Hawaii have received letters of congratulations accompanying the news that they have won a place in the Honors Group of the 23rd Science Talent Search for the Westinghouse Science Scholarships and Awards. The Search is conducted annually by Science Clubs of America, a SCIENCE SERVICE activity.

A total of 3,141 students completed all entry requirements. Ten percent of these entrants were selected as members of the Honors Group.

The students receiving honors are 14 to 18 years old and go to schools in 203 communities in 41 states and the District of Columbia. Sparsely populated Nevada had only one completed entry, but quality com-

pensated for lack of quantity, and Nevada appears in the Honors Group listing.

Their principals rank them very high in their graduating classes, with 68% of the boys and 78% of the girls in the top 5%; 19% of the boys and 29% of the girls rank first in their classes.

The outstanding student-scientists include 75 girls and 239 boys, with the ratio of girls among the members of the Honors Group determined each year by the percentage of girls among those completing entries. All of the group are being recommended for admission and scholarship awards to the nation's colleges and universities.

Forty members of the Honors Group selected as the top winners of the 23rd Science Talent Search will be listed in SNL, Feb. 8.

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