

## TELEOPERATORS

### Astronaut helpers

The constant tug-of-war between Congressional and scientific proponents of manned or unmanned space flight may be resolved by the National Aeronautics and Space Administration with the use of a sophisticated teleoperator or robot program in space. NASA has set up a task team of members throughout the agency to recommend a coordinated program to develop this system for use in the exploration of space.

The teleoperator differs from the computer in that it is adaptive to real-time emergencies or responses instead of relying, as a computer does, on preprogramming. The robot would respond in real time to identical arm or hand motions which are being simulated on the ground. As an astronaut pushed a button or retrieved a lunar rock on the ground in simulation, the robot would go through the same motions in space.

The program may start simply by means of a small flight experiment in which a human arm is simulated, but could expand from this to a sophisticated device with artificial intelligence. In the future, the majority of the assembly in space would be done by manipulators or robots rather than by time-consuming extra-vehicular activity using men.

Although the teleoperator would not take the place of astronauts, the system could free man for the unique tasks that only man is capable of. The robots could also be used in some cases without man.

As the space agency faces a dwindling coffer and increased costs for man in space, the robot program may assume a major portion of the total NASA activity.

## RESEARCH CENTERS

### Coast Guard agreement

One of the results of the budget cuts for this year's space agency funding was the phasing out of the Mississippi Test Facility, Hancock County, Miss., the NASA computer center at Slidell, La., and the Michoud Assembly Facility in New Orleans. The principal role of the Mississippi Test Facility was for ground testing of the Saturn 5's first and second stages; Saturn 5 production has been suspended.

The United States Coast Guard has now signed an agreement with NASA to use the facilities to conduct the National Data Buoy Development Project. The Coast Guard will fund its program and reimburse NASA for additional, identifiable costs incurred.

## TESTING

### Simulating Concorde

The Flight Simulator for Advanced Aircraft at NASA's Ames Research Center, Moffett Field, Calif., can be programmed for all types of craft, from the C-5A and the Boeing 747 to the supersonic transports, the Concorde, and the hypersonic transport.

French pilots have been using the simulator to fly the Concorde since the first of June. The work is a multipurpose project, but it is largely to develop certification criteria and specifications for the SST. Representatives of the Civil Transport Aircraft Regulation

agencies of France, England and the United States met at Ames in June to assess the proposed certification specifications. Since that time, the simulator has been programmed for the Concorde, and the pilots have flown more than 500 simulated take-offs. Landings under emergency situations are simulated as well as normal landings.

The work with the Concorde will continue for the rest of the year. Flight researchers will also be looking at the lateral directional handling qualities in situations in which two engines on one side go out, and other such emergencies.

## HEALTH CARE

### From space to hospitals

One of the most important areas of space applications is the biomedical technology field. Miniaturized sensors, automated urine analyzers, data display and rapid retrieval systems used in space are but a very few technological applications that can be and have been translated into the health care field.

However, NASA's Office of Space Science and Application decided a more direct means of communication with the health field was needed. A new project called the Space Health Applications Program has been set up.

The project involves two initial studies. One is a collaborative effort by NASA, the Department of Health, Education and Welfare and the General Electric Co., whose representatives will visit various intensive-care wards around the United States to survey the present techniques now in use.

Secondly, NASA has contracted the Teknekron Corp., Berkeley, Calif., to undertake the complementary study of investigating research and technological developments at all of the NASA centers.

At the end of the study period, explains Dr. Joseph Saunders, of NASA's environmental biology department, a coordinating committee will assemble the data and an ad hoc committee will work at means to translate the space developments into the health and patient care areas and insure a continuous flow of data.

## RESOURCE SATELLITES

### Flights planned

The space agency has announced flight opportunities for its first satellites devoted exclusively to the study of earth resources. The Earth Resources Technology Satellites, ERTS A and B, will fly in 1972 and 1973 respectively.

The observations made aboard ERTS will be applied to agriculture, cartography, geology, geography, hydrology, hydrography and oceanography. It is expected that the results will aid in identifying agricultural species, observing changes in vegetation areas, assessing crop vigor and stress, classifying land use, determining land surface composition and structure, mapping snow cover areas, assessing water run-off characteristics, mapping shore lines and estuaries, and identifying and mapping air and water pollution.

Design of the experiments flown on the satellites will be handled by NASA; the agency is looking for experimenters to interpret the data collected.