ASTRONAUT SEAT FOR SPACE LANDINGS—Built to withstand 60 g's.

pected to follow—sometime between 1975 and 1980. The younger generation of today will take an active part in such flights, Dr. Koelle predicted.

He said the following developments could contribute to cheaper space transportation:

1. Increased size of launch vehicles.
2. Increased reliability of launch vehicles.
3. Multiple use of each launch vehicle.
4. Increased performance of propulsion systems.
5. Eventual use of extraterrestrial resources.
6. Increase of available economic resources.
7. Increase of space activities in general.

• Science News Letter, 80:267 October 21, 1961

Life Support Systems

➤ NO MAJOR TECHNOLOGICAL DEVELOPMENTS will be necessary to meet the life support requirements for the next generation of manned spacecraft, a physician and an engineer reported to the American Rocket Society in New York.

Dr. James N. Waggoner, health director of the Garrett Corporation, Los Angeles, and project engineer William L. Burriss, also of the Garrett Corporation, said they have concluded that certain changes should be made in environmental control systems in order to meet man's physiological requirements for extended trips in space.

The scientists reported a mixed gas atmosphere rather than 100% oxygen would be preferable. They suggested a mixture of oxygen and nitrogen be used. The "atmospheric" fluids could be stored on the space ships at extremely low temperatures (at about minus 400 degrees Fahrenheit) in smaller and therefore lighter containers because these fluids contract when cooled.

The scientists also recommended that a space radiator with an ethylene-glycol-water mixture be used for removing heat from the astronaut's cabin. This would reduce the amount of evaporation on the skin and cut down the astronaut's water requirements.

These changes would make the longer space trip possible, using chemical power systems such as hydrogen-oxygen fuel cells or hydrogen-oxygen dynamic heat engines.

• Science News Letter, 80:268 October 21, 1961

Seat for Space Landings

➤ A SEAT designed to protect an astronaut from pressures up to 60 times his own weight, during space landings, was described at the American Rocket Society meeting in New York.

The safety device was reported by W. C. Boyce and H. E. Freeman of the Chance Vought Corporation, Dallas, Tex. Developed for the Air Force, it will be tested first with dummies and later with men.

The seat includes a fiberglass "jacket" to protect the body and an "apron" for the legs. The device could also be used in military aircraft for crash landings or in automobile and aircraft accidents in which the high gravitational forces of 60 g's occur.

• Science News Letter, 80:268 October 21, 1961

SPACE

Zero-Gravity Cell Makes Oxygen for Use in Space

➤ A ZERO-GRAVITY electrolytic cell, capable of producing oxygen under the weightless conditions of space flight, has been developed by scientists at Battelle Memorial Institute, Columbus, Ohio.

Standard cells depend on the pull of gravity on the electrolytic solution to separate water into hydrogen and oxygen. The new experimental cell, however, defies natural gravity. The centrifugal force produced by rotation acts as an artificial gravity field.

In space, the cell could be used with another Battelle-made device that chemically changes carbon dioxide in an astronaut's breath into carbon and water. This device can use the hydrogen produced by the cell, while the cell uses the water to produce more breathing oxygen. Together, the two could create a livable atmosphere in a spacecraft for a two-year flight, with no supplemental oxygen supply needed.

• Science News Letter, 80:268 October 21, 1961

RADIO ASTRONOMY

Biggest U.S. Radio "Dish" Installed in California

See Front Cover

➤ AMERICA'S BIGGEST radio telescope "dish," 150 feet across, has been installed on Stanford Universitly campus, Stanford, Calif.

The steel and aluminum parabolic antenna, seen on the cover of this week's SCIENCE NEWS LETTER, will be used for radar and radio explorations of the solar system before the end of the year.

The $350,000 dish was designed and built by Stanford Research Institute with support of the Air Force Office of Aerospace Research and the Defense Atomic Support Agency. It is the first of three such radio telescopes planned for the U. S.

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