ASTRONAUTICS

Chimp Pioneers Space

A chimp named Ham traveled 420 miles in a Mercury capsule and landed safely. Twelve more sub-orbital flights of animals and men are scheduled before chimp or man orbits.

See Front Cover

➤ SIX OF THE SEVEN MERCURY Astronauts cheered the successful 16-minute sub-orbital space flight of a four-year-old Air Force-trained chimpanzee 155 miles up.

The safe return of the high-flying simian space pioneer, named Ham, recovered from the ocean 420 miles down the Atlantic Missile Range means that one of the Mercury Astronauts will follow the chimp's lead in space very soon.

And the safe sub-orbital launch and return of a man will mean that this part of Project Mercury will have entered an operational stage, thereby vindicating the more than $300,000,000 already invested in the National Aeronautics and Space Administration's program for manned space flight. The estimated cost of finally putting a man in orbit is more than $500,000,000.

The one-ton project Mercury spacecraft that carried Ham aloft is hoisted to the top of its Redstone booster in the left panel on the cover of this week's SCIENCE NEWS LETTER. In the right cover panel is Ham in his space couch before take-off.

The sub-orbital program of Project Mercury includes 12 more flights—unmanned, animal shots and several manned launches. At least two, and probably more, of the seven astronauts will experience the stress of sub-orbital launch and recovery, to test human ability to withstand the additional stresses expected in an orbit in space.

When the 12 flights are successfully completed, a chimp again will blaze a trail in space, this time in orbit, for an astronaut to follow.

The scheduling of the chimp orbital flight will depend, however, on the success of an unmanned orbital launch and recovery. The NASA program has allowed for "so-called failures" in the orbital experiments, both in its unmanned and animal-passenger phases.

At least four or five manned orbital flights are expected to follow the launch and recovery of an orbiting chimp.

Although the Mercury vehicle is designed as an automatic system, the role of the Astronaut aboard will not be that of a passive-observer passenger. His job demands levels of skill similar to those required in flying high-performance aircraft.

With man added to the system, vehicle attitude may be achieved not only by the automatic control but also by three manual control systems. Except for guidance control over the booster, man in space will have control over all aspects of the mission.

His success in orbit will mean that it will be only a matter of time before man will be able to land on and explore the moon and then will come long-range flights to Mars and Venus.

Although instruments can teach man much about space, human observation and analysis remain the best-known of all computer systems. On this basis alone, the large investment to put man in space is well justified, NASA officials said.

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ASTRONOMY

Supernova Dies 300 Years

➤ THE GLORIOUS death flash of a supernova—a light brighter than a billion suns—likely is the climax of a 300-year dying process.

This conclusion by Drs. Robert Stabler of the Aeronutronic, Research Operations, Newport Beach, Calif., and Hong-Yee Chiu of the Institute of Advanced Study at Princeton, was reported at the American Physical Society meeting in New York. The theory is based on a study of supernova, the brilliant explosion of a dying star.

It is believed that the heavy elements of the universe are formed inside these stars, then distributed into space by the explosions.

After such an explosion, a misty cloud is formed, which expands a few thousand miles per second.

In about a million years, the cloud may mix with an enriched interstellar hydrogen to form new stars and even a new planetary system. The process that leads to the final explosion has been studied since 1054 A.D., when the Chinese made the first study of a supernova. Several theories have been set forth.

One states that the star collapses because of the disintegration of iron after the star's temperature reaches seven billion degrees. This disintegration requires lots of energy that can be supplied only by gravitational contraction of the star.

F. Hoyle calculated the rate of these contractions and concluded that they lead to the eventual internal collapse. This ignites the nuclear fuels in the exterior of the star and the supernova results.

The 300-year death process is set in motion when the star's temperature rises to the point that the carbon core begins to burn. The star then begins to throw off particles of energy.

Astrophysicists are still uncertain as to the length of time it takes for the birth of the star. However, Drs. Stabler and Chiu have concluded that there is considerably less uncertainty in the length of time for the death.

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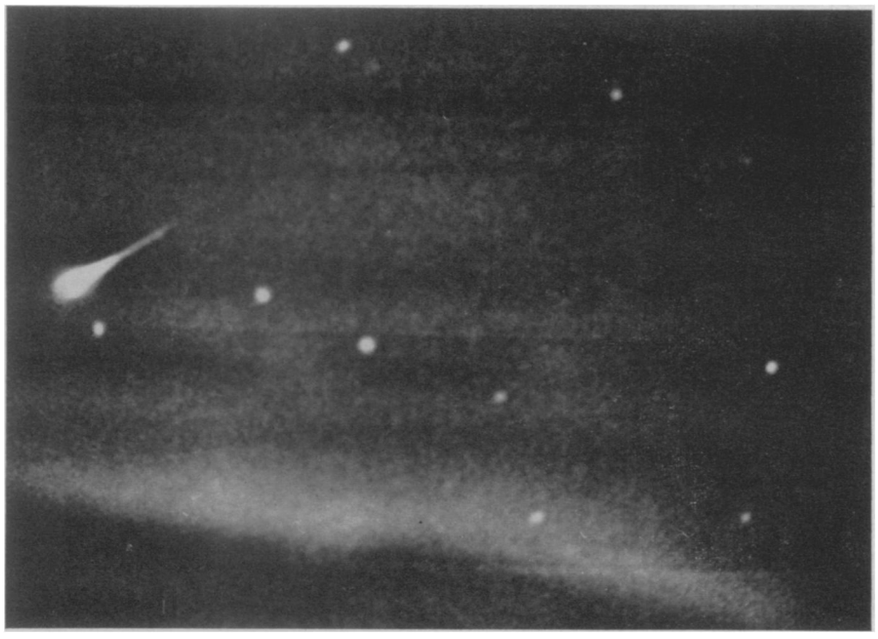

METEOR TIPS THE DIPPER—A meteor aglow in the atmosphere passes the Big Dipper in the constellation Ursa Major. The photograph was taken at General Electric Company Observatory near Schenectady, N. Y., with a new optical system that required no time exposure.