REHEARSAL FOR ORBITAL FLIGHT—Project Mercury Astronaut M. Scott Carpenter looks out the top of the spacecraft used for checkout procedures in the white room facility of Hangar S during practice of leaving the capsule through the top.

SPACE

Second U. S. Astronaut

Astronaut M. Scott Carpenter becomes the world's fourth spaceman, circling the earth three times. He tried several experiments during his five-hour, globe-girdling journey.

➤ LT. COMDR. M. SCOTT CARPENTER was rocketed into space at 8:45 a.m., EST, on May 24 to become the second U. S. astronaut. He circled the earth three times at heights varying from 164 miles to 99 miles at the nearest approach.

Seconds after Astronaut Carpenter went into orbit at 8:50, he took over the attitude control system of his bell-shaped capsule, called the Aurora-7. His speed was 17,532 miles an hour.

As one of his experiments, Astronaut Carpenter released a small, 30-inch balloon within minutes after he had passed over the Cape Canaveral launch site for the first time. The balloon was on the end of a 100 foot nylon line and a coiled, eight-foot strip of aluminum.

The balloon, colored orange, white, silver and yellow, trailed behind the capsule for two orbits. The idea of the experiment was to determine whether a man undergoing the rigors of weightlessness could maintain his depth perception. Astronaut Carpenter found that he could. Measurement of aerodynamic drag was a secondary objective.

This information is important in future manned flights involving attempts to link together pieces of a rocket, space ship or space station while in orbit.

The balloon was multicolored to determine which shades show up best against the dark blue-black of space. The experiment also involved the simultaneous release of a package of "confetti," multicolored plastic discs a quarter-inch thick and placed in the folds of the balloon.

Another experiment was to eat solid food. Astronaut Carpenter reported he had no difficulty with the bite-sized snacks he carried into orbit in a plastic bag—they went down all right despite his weightless condition. He noted that they were a little crumbly, however.

Astronaut Carpenter's description of his observations as the balloon was deployed and then separated were recorded on tape and compared with photographs taken during the experiment.

Another experiment was observation of the behavior of fluids in a weightless state. This was the first opportunity to study and photograph such behavior for an extended period, in order to obtain knowledge essential for the proper design of fluid storage tanks for such future space projects as Gemini and Apollo.

The liquid was distilled water, green dye, an aerosol solution to reduce surface tension, and a silicone additive to inhibit foaming. The flask was designed so that in the event of breakage no fluid would leak into the cabin.

As a result of the flight of the first U. S. Astronaut, John Glenn Jr., a few changes were built into the Aurora-7. The low-thrust chambers were modified to prevent clogging and the switches that actuate the heat shield were rewired with platinum instead of stainless steel.

These changes were indicated as a result of the difficulties with the low thrust attitude control chambers of Astronaut Glenn's flight that required him to control the ship manually, and the fear of losing the heat shield during reentry.

Astronaut Carpenter landed some 200 miles down range from the planned landing area, and was picked up by helicopter three hours after he splashed into the Atlantic Ocean. The helicopter took him to the U. S. Navy's carrier, Intrepid. He was then taken to Grand Turk Island in the Bahamas for "debriefing."

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ASTRONOMY

Russians "See" Hydrogen In Distant Galaxy

➤ HUGE CLOUDS of glowing hydrogen have been "found" by Russian astrophysicists in a distant galaxy similar to our Milky Way.

Stars and galactic systems are formed from hydrogen. Stellar hydrogen changes into atoms of helium and into other higher elements as the star exhausts its hydrogen fuel.

According to one theory, the more hydrogen in cosmic matter, the "younger" it is. The finding of the hydrogen nebulae or gaseous clouds tends to prove that there will always be a process of stellar formation.

It is possible, the Russians pointed out, that these previously unknown nebulae have concentrations of matter from which stars are born.

The astrophysicists of the Crimean Observatory concluded that "hot" stars are not responsible for the luminescence of hydrogen after studying photographs of galaxies taken with a 2.6 meter telescope by electron-optical photography.

On several photos it is possible to see jets coming directly from galactic nuclei, and in some cases the clouds of luminous hydrogen seemingly occupy the galactic nucleus itself, they reported.

The conclusions were drawn by M. M. Butslov, I. M. Kopylov, V. B. Nikonov, A. B. Severnyy and K. K. Chuvayev in a translation by the Office of Technical Services of the U.S. Department of Commerce.

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