



**PARACHUTE LANDING SYSTEM**—A National Aeronautics and Space Administration Project Mercury spacecraft is shown landing after a successful test flight at Wallops Island, Va. Astronaut Walter M. Schirra's descent was accomplished by means of a parachute similar to this one developed for NASA by the Northrop Corporation, Ventura Division.

SPACE

## Schirra, Sarah in Tune

Sarah, responsible for bringing Project Mercury astronauts safely back to earth, again performed perfectly for Astronaut Schirra's return from outer space.

➤ **ASTRONAUT WALTER M. SCHIRRA** told the world that he did not have time to think of his wife Jo during his ride in space, but he failed to reveal that Sarah was very much on his mind. Now it can be told: Schirra and Sarah were really in tune!

In fact, Sarah is tops with all Project Mercury astronauts who have flown in space, particularly with Astronaut M. Scott Carpenter, *SCIENCE SERVICE* learned. The astronauts' wives do not object, although Sarah always gets their men. They like Sarah too; for Sarah is largely responsible for bringing their husbands back alive, as well as chimpanzees Ham and Enos, from space.

Always on the beam, Sarah is the name for the Search And Rescue And Homing electronic location system used in every manned Project Mercury flight as the mainstay of the capsule's recovery system.

Sarah's most dramatic service was in the recovery of Astronaut Carpenter when his capsule overshot the recovery zone by 250 miles last May. His location was pinpointed by the toothbrush-sized, 11-ounce radio beacon, 21-pound breadbox-sized visual display receiver and twin antennas of which Sarah is composed.

Three Sarah beacons are part of the Mer-

cury capsule recovery system. Two were with Carpenter on the capsule and one on the raft when he ejected in the water. The astronaut actuated the beacon and it transmitted a special signal over a distress frequency of 243 megacycles. The signal was picked up by a Sarah receiver in a Navy P2V Neptune from Fleet Air Wing 11 at 1:45 p.m., EDT, 250 miles away. In half an hour, the Neptune, guided by Sarah's signal, was over the capsule and Carpenter.

In 1961, it was Sarah that pinpointed the bobbing capsule of chimpanzee Ham after it had overshot the recovery zone by 130 miles.

In addition to its use in Project Mercury, the Sarah system, originally designed for aircrew recovery, is used in search and rescue operations by 26 nations. It is now standard equipment for NATO Air Forces, the Royal Air Force, the Royal Canadian Air Force, and the U.S. Air Force in the Arctic and the Pacific.

Sarah also is used for the location of oceanographic survey instrument packages and by the Army and Navy for classified projects.

The instrument is made by Simmonds Precision Products Inc.

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SPACE

## Schirra's Acrobatics in Space Successful

➤ **ASTRONAUT** Walter M. Schirra performed acrobatics with his spaceship under the "big top" of space during his five-and-three-quarter orbits around the earth, Wednesday, Oct. 3.

The astronaut deliberately put the Mercury Sigma-7 capsule in a "loop-the-loop" or somersault and performed several coasts or slides in the great space "ring."

These exercises in space and other engineering tests were given top priority over scientific investigations in the planning of the Schirra flight. The results will make it possible to lighten the fuel payload of the Mercury spacecraft now being constructed for an 18-orbit try next year.

The loop-the-loop was accomplished when Astronaut Schirra changed the motion or pitch movement by varying his course two or three degrees. This was sufficient to put him in a wide circular spin that provided a unique global view of earth and space. After the spin, the craft was set back on course and the astronaut coasted by cutting off the fuel supply for the attitude control. The coasting after fuel cut-off is similar to the action in the coasting of a car set in overdrive. (Overdrive is a fourth gear used in some car models to automatically cut down fuel consumption during driving after the car reaches a certain speed.)

Since the "overdrive" in space worked, it assures an 18-orbit flight with present Mercury Atlas systems.

No fuel was spent on the attitude control system by Astronaut Schirra to enable him to take better camera or visual observations of astronomical phenomena. As a matter of fact cloud cover prevented much use of the camera during his flight.

However, while astronomy and other space sciences were given second place, Astronaut Schirra did navigate by the stars rather than by instruments in the sea of space, much as early sailors did on the oceans.

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TECHNOLOGY

## Radio Messages Ride On Meteor Trail

➤ **HUNGARIAN** radio amateurs have hurdled the Iron Curtain by sending messages on the trail of a fiery meteor. The messages reached amateurs as far away as England.

This "hams-across-the-sea" feat was achieved by bouncing radio signals off a meteor trail. Messages have been exchanged with two English, one Dutch and one Swedish amateur.

The Dutch amateur received Hungarian signals for about half an hour. The experiment seems worth continuing and other radio amateurs are urged to participate, according to a translation of a Hungarian technical magazine by the Joint Publications Research Service.

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