

Spacecraft Reenter Like Helicopters

► A NEW METHOD by which astronauts could reenter earth's atmosphere and settle gently to earth in a helicopter-like landing is being tested in a wind tunnel by the National Aeronautics and Space Administration.

A rotor that turns without power is the key to the method. Using it, an astronaut could have a choice of landing points in an area roughly 3,000 miles long and 1,200 miles wide. The proposed vehicle would not require prepared landing strips but could come down on any solid level surface.

The system could return vehicles of a wide range of shapes from orbit because most of the lift would be supplied by the attached auto-rotor, not by the aerodynamic shape of the vehicle itself.

The blades for the rotor would be folded and stored during orbit. On approaching earth, the blades would be released and passage through the thin gas at the top of the atmosphere would start them turning.

Scientists who are conducting the wind tunnel tests at NASA's Ames Research Center, Mountain View, Calif., predict that the rotor could survive the high heat generated during reentry because of the very low air density during periods of highest speeds. Also contributing to survival is the fact that the rotor blades would be tilted back out of the hot bow shock wave from the vehicle heat shield.

During the first half of the vehicle's reentry path, the system would appear much like an enlarged badminton shuttlecock.

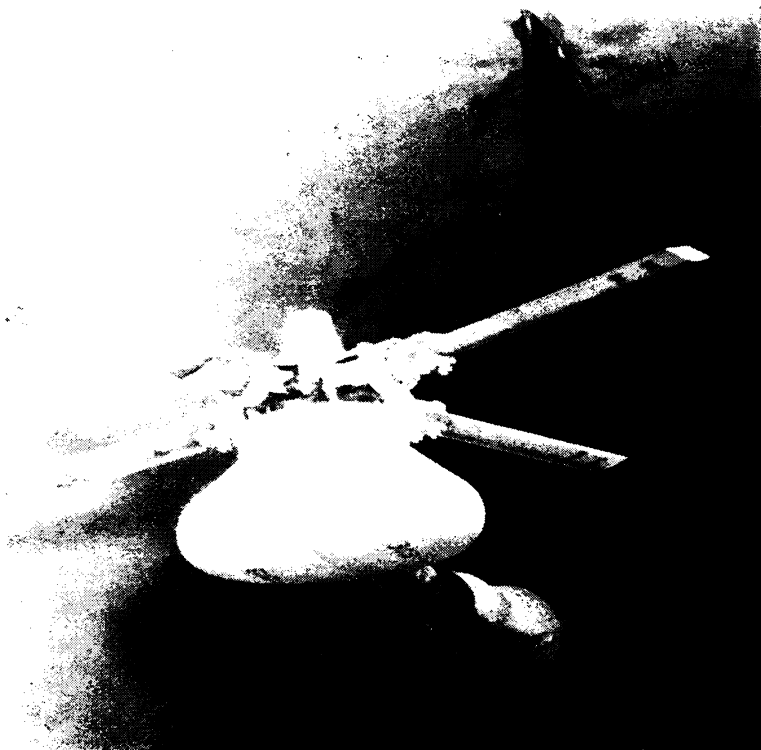
The four rotor blades—the "feathers" of the shuttlecock—would be angled back about 45 degrees from the trailing storage position.

The rotor would supply drag and some lift during the period of deceleration from 17,000 miles an hour to 11,000 mph, which is from altitudes of about 400,000 feet down to 160,000 feet.

Once the lower speed had been reached, the astronauts would move the rotor blades perpendicular to the rotor axis to provide the highest possible gliding capability.

From then on, the vehicle would behave like a helicopter making an unpowered landing at the site selected.

The wind tunnel tests have so far been conducted at speeds up to 10,000 mph.



NASA

SPACE BLADES—Spacecraft may descend and land on earth in much the same manner as a helicopter making an unpowered landing. At the National Aeronautics and Space Administration's Ames Research Center, Mountain View, Calif., models are being studied. The wind tunnel test model shown here has a 45-inch-diameter rotor that has undergone flight stability tests at speeds up to 600 miles per hour.

ASTRONOMY

Star Flares Again

By Ann Ewing

► A STAR that suddenly exploded to great brilliance in 1901 has been discovered flaring up again.

The chances that the light from this nova, the first spotted in 1966, will rival the high output of the same star when it brightened 65 years ago are not yet known.

In 1901, Nova Persei blazed forth from an obscure 11th magnitude star to first magnitude, a change of 100,000 times in brightness, in slightly more than one day. The same nova in 1966 has so far brightened only two magnitudes, or six times, and is still too faint to be seen without the equivalent of a four-inch telescope.

The brightening star is in the constellation of Perseus, which rises in the northeast in early September.

Nova Persei 1966 was discovered by Leslie C. Peltier of Delphos, Ohio, who has detected 12 comets and several novas during his many years as an amateur observer. Mr. Peltier told SCIENCE SERVICE in a telephone interview that he had been checking up on Nova Persei whenever possible for 46 years, hoping that it would brighten.

His last look before he found it brightening on Aug. 24 through his 12-inch telescope was on July 15, at which time the star was its usual dim magnitude of 13.

A study of the fanned-out light, or spectrum, from Nova Persei will show how fast the matter being exploded from the star is expanding into space. The spectrum also tells scientists of what elements the star is composed.

The American Association of Variable Star Observers, Cambridge, Mass., told SCIENCE SERVICE that Edwin Fritton of Webster Groves, Mo., had reported the brightness of Nova Persei as 11.5 on Aug. 14. However, it was not until Mr. Peltier's observations on Aug. 24 that other astronomers were alerted to check on the star's sudden outburst of light.

News of the discovery of Nova Persei's flare-up was telegraphed or cabled to astronomers around the world by Smithsonian Astrophysical Observatory, international clearing house for astronomical information.

The 1966 coordinates for the recurring nova are three hours, 28.9 minutes, in right ascension and 43 degrees, 48 minutes in declination.