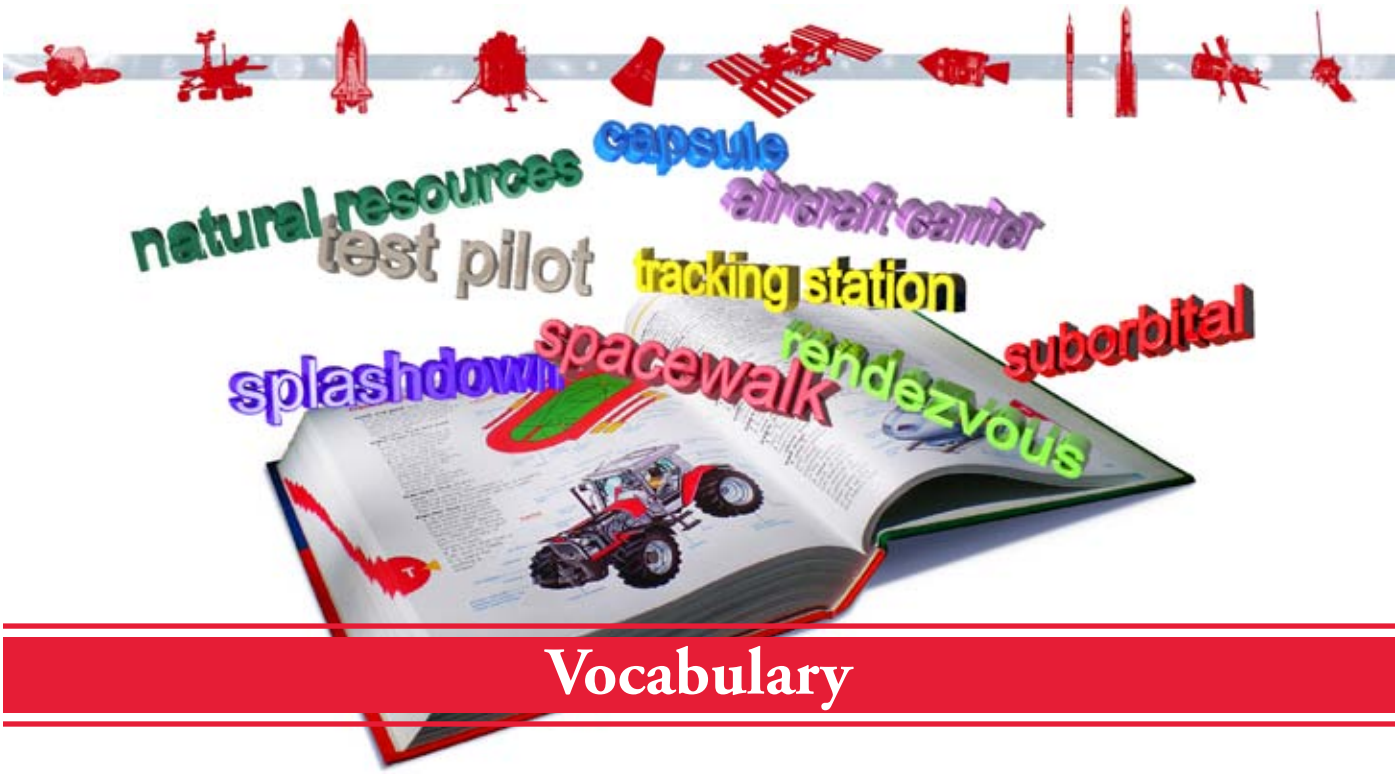


Vocabulary

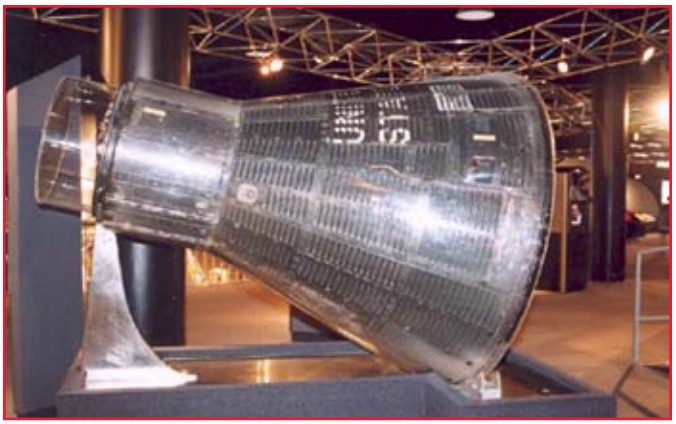
aircraft carrier – a large, naval ship with a long flat deck from which airplanes can take off and on which they can land

The crew of the aircraft carrier USS Kearsarge stood in a formation to spell out "MERCURY 9" on the flight deck while on their way to the recovery area to pick up Gordon Cooper and the *Faith 7* capsule.

applicant – one who applies for something; a person who requests or seeks something

capsule – a spacecraft designed to transport people and support human life in outer space

Orion, NASA's new crew capsule, will hold a crew of six.



A Project Mercury capsule could carry only one person into space.

cosmonaut – an astronaut of the Soviet or Russian space program

crewed – transported, operated by, or performed by a human; having a crew

decade – a period of 10 years

Image Credit: NASA
Artist's impression of Russian Cosmonaut Mikhail Tyurin driving a golf ball from the International Space Station

Cosmonaut Pavel Vinogradov

Nose of *Gemini XI* spacecraft and Agena Target Vehicle while docked

docked – to mechanically join two or more spacecraft in space

hold – a delay in a countdown; a halt in the pre-launch countdown, either planned or unexpectedly called, to allow correction of one or more faults in the spacecraft and/or launch system

maneuver – a clever or skillful move or action; a movement or procedure involving skill and dexterity

mph – an abbreviation for "miles per hour"

natural resources – resources (actual and potential) supplied by nature, such as land, forests, water, minerals, coal, oil, and natural gas

Some of Earth's natural resources

parachute – a device for slowing the descent of a person or object through the air that consists of a usually umbrella-shaped, light fabric canopy beneath which the person or object is suspended

A parachute slows the descent of the *Gemini XII* capsule.

rendezvous – an orbital maneuver between two spacecraft where the two arrive at the same orbit, make the orbital speeds the same, and travel close together, typically within 100 meters (330 feet); an approach maneuver that may or may not include docking

The first U.S. rendezvous in space was made by *Gemini VI* and *Gemini VII*.

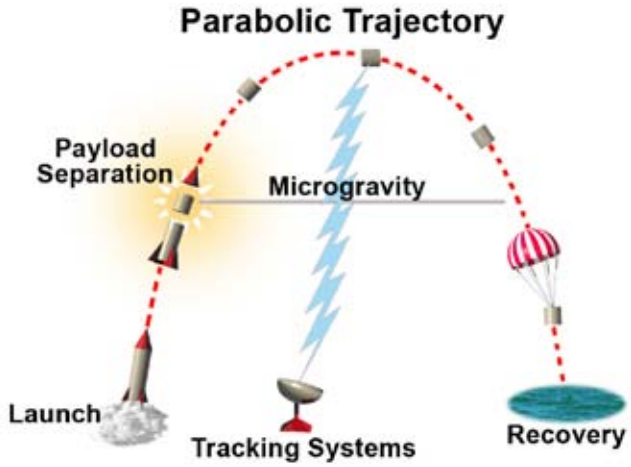
Edward White performs America's first space walk from *Gemini IV*.

The *Gemini X* capsule splashdown

spacewalk – any kind of physical activity by an astronaut outside a spacecraft in space, sometimes called an extravehicular activity (EVA)

splashdown – a landing of a spacecraft in the sea at the end of a space flight

suborbital – a spacecraft not in orbit; having or following a trajectory (curved path) of less than one orbit



Suborbital flight

test pilot – a pilot who flies aircraft of new or experimental design to test them

The Mercury Seven astronauts were all test pilots.

A NASA tracking station

tracking station – a station for observing the path of and maintaining contact with an object in the atmosphere or in space especially by means of radar or radio

Mercury Control Center (Notice the flight paths on the screen.)

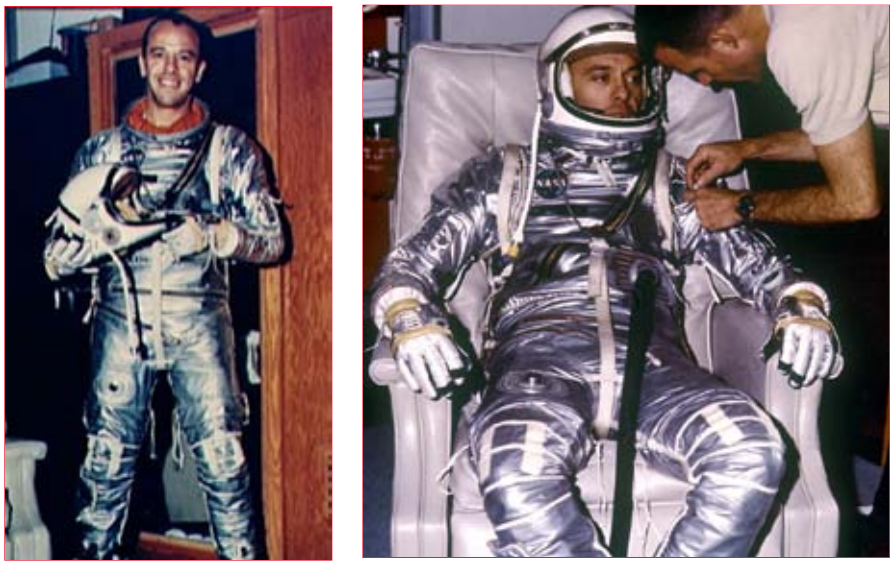
uncrewed – having no crew (or no human) aboard

Humankind in Space

The Mercury Seven

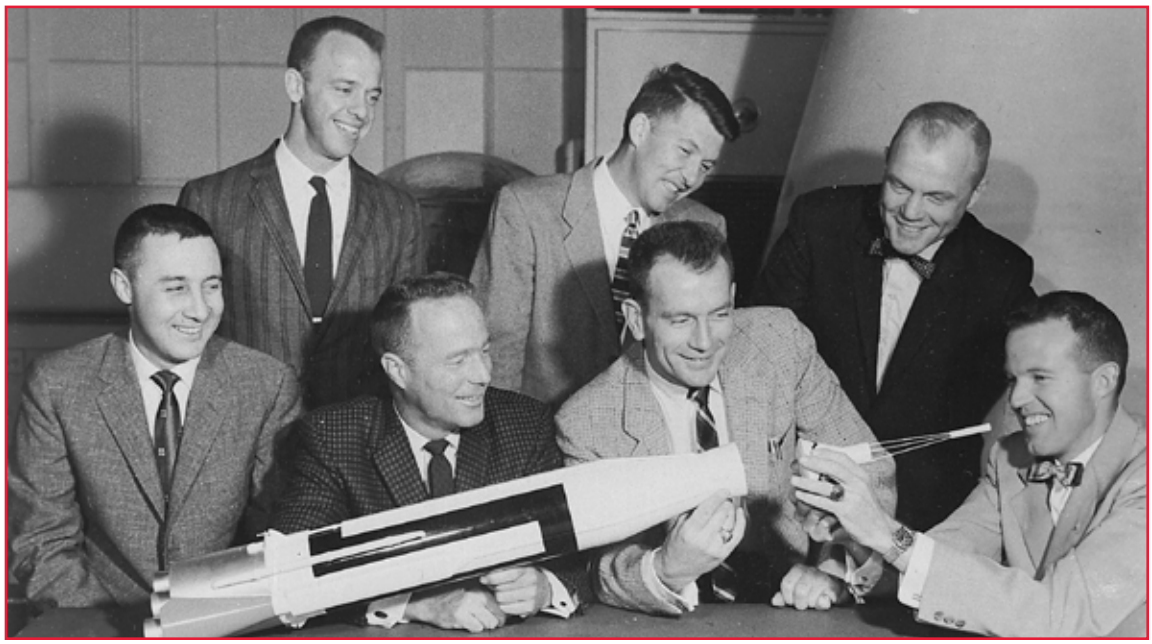
Alan Shepard was a very special man. He was one of the Mercury Seven, the group of men chosen by NASA to be the first astronauts. These seven men were going to work for Project Mercury, NASA's first space program. Project Mercury's goal was to put a spacecraft with a human aboard into orbit around the Earth, and bring both the human and the spacecraft back safely.

Actually, all of the first astronauts were special men. They had been chosen from hundreds of **applicants**. Every one of them was a **test pilot** in the military. They all had families, and they all had college degrees. They had also passed some very difficult tests to show that they were physically and mentally fit. This fitness was necessary for the demanding task of space travel.



Alan Shepard in his pressure suit just before launch

The Mercury Seven soon became famous. They even had a movie, The Right Stuff, made about them. The movie was based on the book with the same title written by Tom Wolfe. Wolfe said that he wrote the book to find out why the astronauts accepted the danger and risks of space flight. The title referred to the character of the astronauts. Because they were smart, brave, strong, and daring, they had the right stuff to become astronauts. Of these seven men, Alan Shepard was chosen to be the very first American to travel into space.



(1959) — The original Mercury astronauts are pictured around a table admiring a model of the Atlas rocket. Standing, left to right, are Alan B. Shepard, Jr., Walter M. Schirra, Jr., and John H. Glenn, Jr. Sitting, left to right, are Virgil I. Grissom, M. Scott Carpenter, Donald Slayton, and L. Gordon Cooper, Jr.

NASA had done all it could to prepare for the first **crewed** flight. Thousands of scientists, engineers, and many other workers had labored to complete the dream of sending a human into space. They had conducted many tests to prove that the **capsule** and rocket were safe. Twenty **uncrewed** flights were made to help solve a lot of problems. But one of these flights was not exactly uncrewed. That's because Ham was aboard the Mercury-Redstone 2 (MR–2) mission.


Ham and a technician look over equipment.


Biosensors are attached to Ham's body before his trip.

Ham tries out his combination couch and life support system.

In January 1961, NASA launched a chimpanzee into space. His name was Ham. After the flight, Ham's capsule landed in the ocean and was picked up by a helicopter. The helicopter carried the capsule to the deck of a ship. When Ham came out of the capsule, he happily ate an apple and half an orange. Ham became almost as famous as the Mercury Seven! Ham's mission paved the way for the launch of America's first human in space. Finally, NASA felt that a crewed space flight would be safe.


Ham is greeted by the recovery ship commander.


Ham reaches for an apple following his brief space ride.

The First U.S. Space Flight

On the morning of May 5, 1961, Alan Shepard was perched high atop a Redstone rocket. He felt snug in *Freedom 7*, his one-person capsule. He was nervous, of course, but he also felt confident. Even though he sat all alone on the launch pad, he was surrounded by people. He could hear his team talking to him through his headset. Hundreds of reporters and writers were there to announce the flight to the world. Thousands of people all over the U.S. were sitting in front of their TV sets. The first American would soon zoom into space, and no one wanted to miss this important event!

Astronaut Alan B. Shepard, Jr., awaits liftoff in *Freedom 7*.

Shepard sat waiting in the capsule for 4 hours and 14 minutes, enduring several "**holds**." NASA wanted to be sure that it was safe. When it was time for him to blast off, he soared 116 miles (186.7 kilometers) high and reached a speed of over 5,000 **mph**. The capsule made a giant arc in the sky. With the help of a **parachute**, it landed in the ocean, where helicopters were hovering nearby. They lifted the astronaut to safety and hoisted the capsule out of the water. Then, both were taken to the deck of an **aircraft carrier**.

The launch of MR–3

Astronaut Alan Shepard is rescued by helicopter at the end of his MR–3 flight. Notice the Mercury capsule in the water.

The *Freedom 7* capsule recovery.

Image credit: Huntsville Times

On April 12, 1961, Russian cosmonaut Yuri Gagarin became the first human in space, making an orbital flight in his *Vostok 1* spacecraft.

The ride was only 15 minutes long. Shepard had not gone into orbit, but he went into the history books. His **suborbital** flight made him the first American in space. The U.S. was thrilled with Shepard's success. Many people were displeased with the U.S. space program. The USSR had beaten the U.S. by putting the first human in space a month before. The **cosmonaut**'s name was Yuri Gagarin, and he had actually orbited the Earth. The U.S. was behind once again.

John F. Kennedy delivers his "Send a man to the Moon before the end of the decade" speech.

A few weeks after Shepard's flight, President John F. Kennedy tried to lift the country's spirits. In a speech to Congress, he set the U.S. space program on a new and daring course. "I believe that this nation should commit itself to achieving the goal, before this **decade** is out, of landing a man on the Moon and returning him safely to the Earth." NASA and the rest of the nation were thrilled. The U.S. would be doing all it could to win the space race.

However, this was a big challenge. The announcement put a lot of pressure on NASA because the race for the Moon was to start right away. NASA had barely gotten one person into space. Now they were supposed to land a man on the Moon!

More Mercury Flights

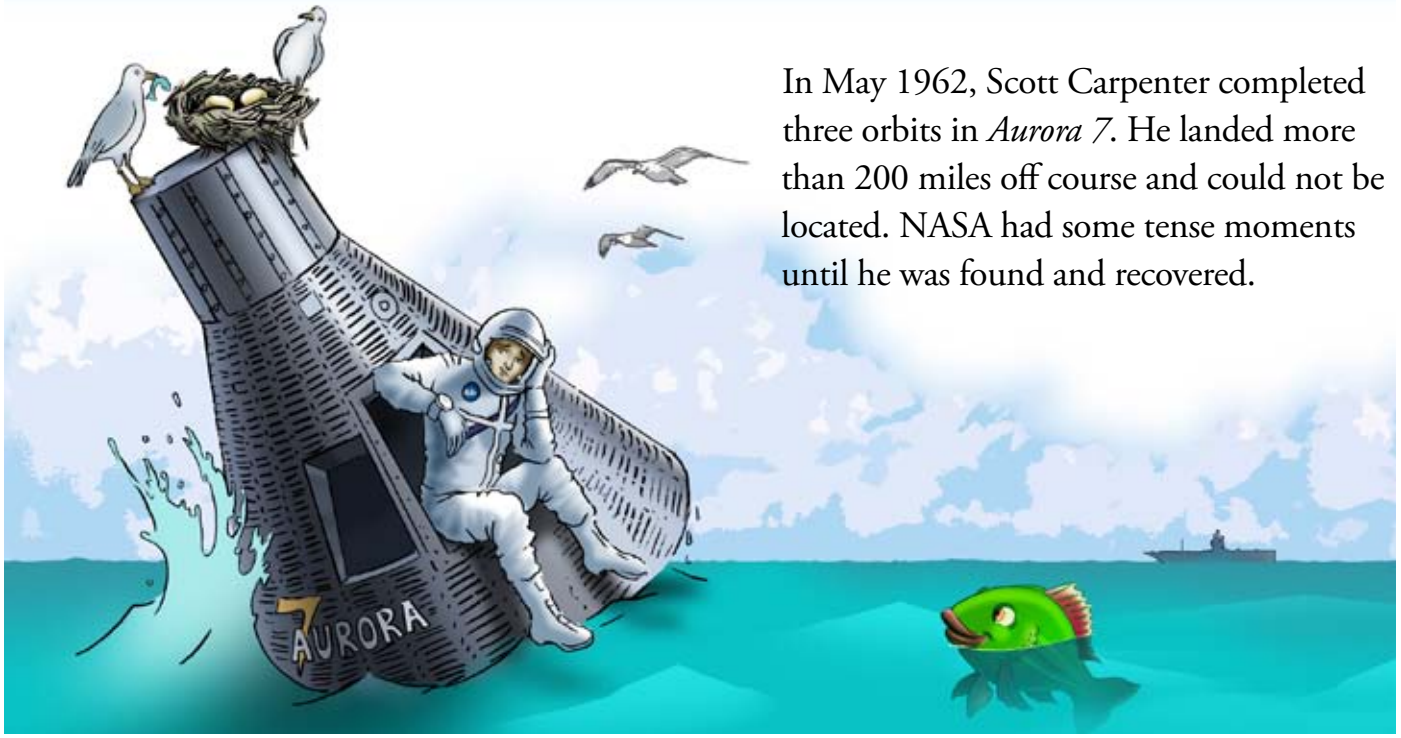
In the meantime, five more Mercury flights took place. The second Mercury flight took place in July. Gus Grissom was launched on a 15-minute suborbital flight in the *Liberty Bell 7*. His rescue in the ocean turned scary when the hatch blew off and his capsule was filled with water. The capsule sank, but Grissom was safe.

Gus Grissom became the second American to reach space on July 22, 1961.

John Glenn enters his *Friendship 7* capsule.

In February 1962, a powerful Atlas rocket pushed John Glenn's *Friendship 7* into orbit. Glenn made three orbits and became the first American to orbit the Earth. Once again, though, the USSR had beaten the U.S. Six months earlier, Cosmonaut Gherman Titov had made 17 orbits.

In May 1962, Scott Carpenter completed three orbits in *Aurora 7*. He landed more than 200 miles off course and could not be located. NASA had some tense moments until he was found and recovered.



Wally Shirra made six orbits in *Sigma 7* the following October. The last Mercury flight took place in May 1963, when Gordon Cooper made 22 orbits in *Faith 7*. He traveled almost 18,000 mph and performed eleven experiments. **Tracking station**s, located all over the world, talked to him as he passed high above. The flight lasted 34 hours and 20 minutes. Project Mercury was over, and all of its goals were met.

Now, America turned its attention to landing an astronaut on the Moon. The name of the program would be Apollo. It was going to be an extraordinary task, but NASA was up to the challenge. The world would soon know that the U.S. was the leader in science and technology. NASA and the

The Rocket Garden at Kennedy Space Center

The Gemini Step to the Moon

NASA had many good ideas for a Moon landing, but all of these ideas needed to be tested. So, after Mercury, NASA developed a project to help with the testing that would be needed for a successful Moon mission. The project was named Gemini, and its 10 crewed flights took place in 1965 and 1966.

The *Gemini VII* capsule

Project Gemini had several objectives. NASA wanted to test the effects of putting a human in space for up to two weeks. They wanted the astronauts to **rendezvous** and dock with other space vehicles, and they wanted to perfect ways of entering the atmosphere and landing. The project successfully put more astronauts in space. People all over the U.S. watched the launches and the **splashdown**s on TV. NASA knew it was important to keep the country's space efforts in the news.

Project Gemini kept the U.S. space effort in the news.

During Project Gemini, NASA gained a lot of experience that would help with landing an American on the Moon. The Gemini capsule was made for two people. The extra weight caused NASA to use a more powerful rocket. So a huge, powerful, Titan rocket lifted each of the crewed Gemini capsules into space. These flights gave the ground crew practice in taking humans to and from space. *Gemini 3* carried the first pair of astronauts into space.

Astronauts Edward White and James McDivitt inside the *Gemini IV* spacecraft

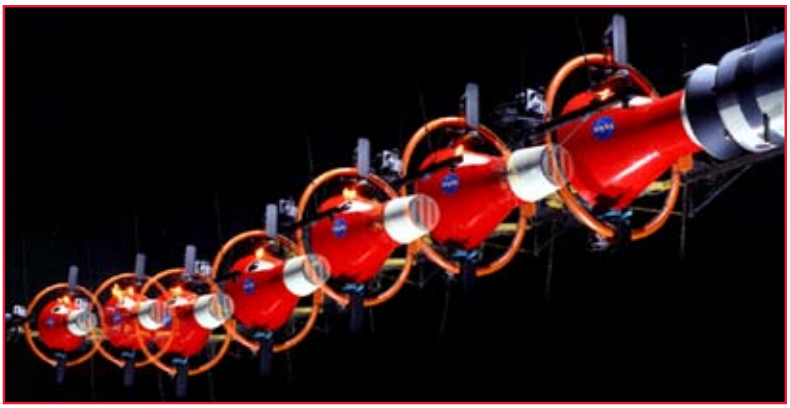
Edward White performs the first U.S. spacewalk during the *Gemini IV* mission.

During the *Gemini IV* mission, Edward White performed America's first **spacewalk**. (With this flight, NASA began to use Roman numerals to name the flights.) His 22-minute walk in space took place in June 1965. Americans were very excited about this spacewalk, but it was still not a first. A Soviet cosmonaut had walked in space three months earlier.

In December 1965, the astronauts in *Gemini VII* spent 14 days in space. While in orbit, the *Gemini VII* capsule was met by *Gemini VI* to perform the first rendezvous in space. The two spacecraft remained together for five hours at distances from one foot (.30 meters) to 295 feet (90 meters). The U.S. had finally accomplished a "first" in space.

Gemini VII is photographed from the hatch window of *Gemini VI* during the first space rendezvous.

Gemini VIII performed the first successful docking of two spacecraft when they joined the Gemini capsule with the Agena target vehicle seen in this photograph.



This multiple exposure (several images superimposed over the first image) of NASA's Rendezvous Docking Simulator shows the Gemini spacecraft on the left being guided by the astronaut inside into a docking position.

Then, in March 1966, *Gemini VIII* performed another first when it **docked** with another spacecraft, the Agena target vehicle.

They were the first two spacecraft to join in space, a **maneuver** that would be needed for a trip to the Moon. The plan called for the two spacecraft to remain docked all night. But, after 30 minutes, the two began to spin out of control. Astronaut Neil Armstrong undocked his capsule, but it was some time before he was able to control the capsule. He finally fired a reentry rocket and made an emergency landing. Later, Gemini flights perfected the rendezvous and docking of two space vehicles.

Astronaut Dick Gordon straddling an Agena target vehicle to attach a tether

The *Gemini XII* spacecraft receives preflight preparation.

During *Gemini XII*, Edwin "Buzz" Aldrin spent a record 5 hours and 28 minutes outside the spacecraft in three separate trips. Aldrin completed 19 tasks during the longest single spacewalk of 2 hours and 6 minutes.

A view of Cape Canaveral, home to Kennedy Space Center, from the *Gemini V* capsule

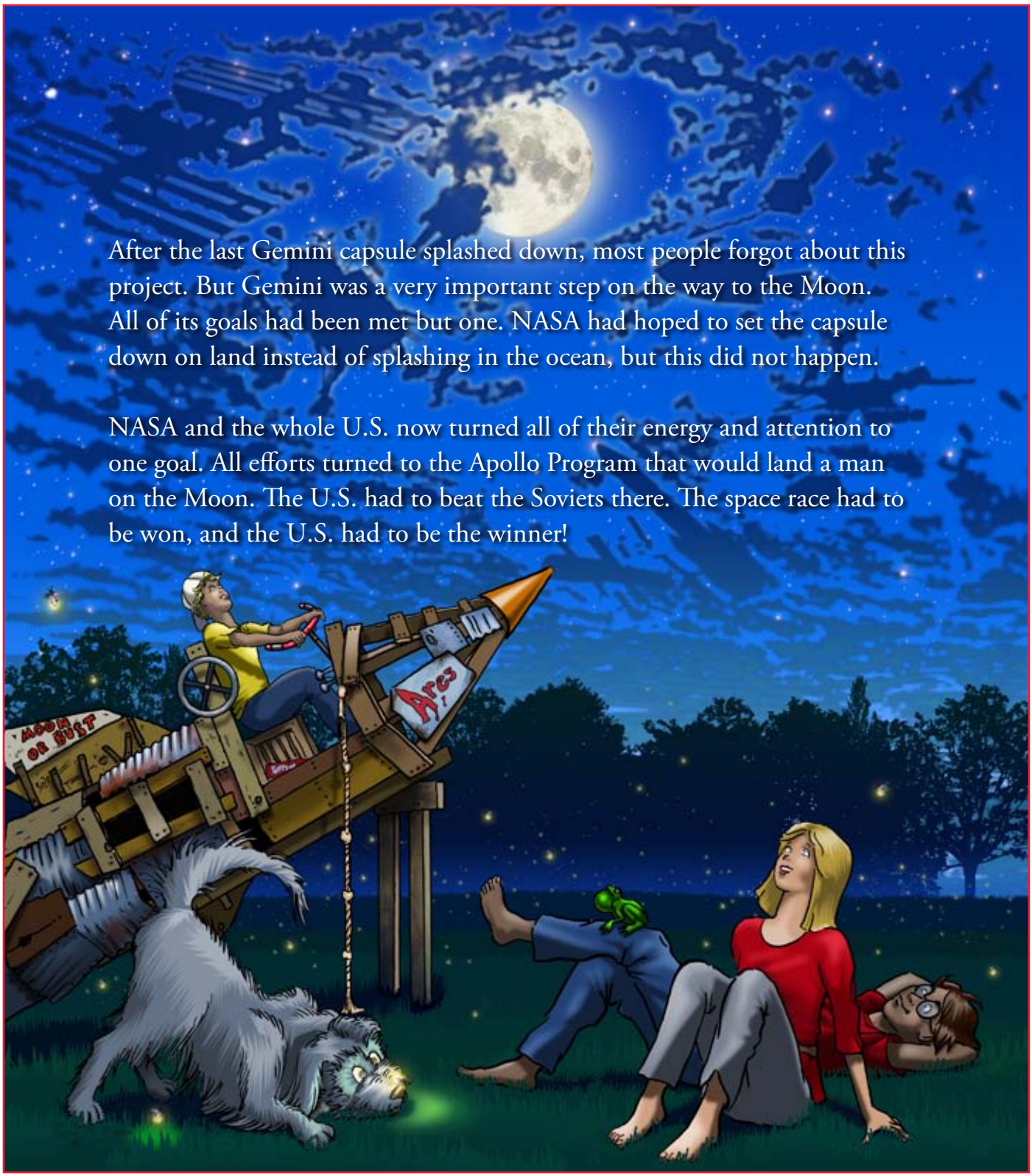
Besides all of the advances in technology, Gemini also helped U.S. scientists. The Gemini astronauts took many photos of Earth. These were the first color photos taken of Earth from various altitudes. When the scientists looked at the pictures, they were able to study the surface of the Earth. The photos showed that many of the Earth's **natural resources** were being reduced, and the scientists started to worry.

The Himalayas in Asia

Nicaragua and Honduras

The Imperial Valley in California

The Nile Delta in Egypt



After the last Gemini capsule splashed down, most people forgot about this project. But Gemini was a very important step on the way to the Moon. All of its goals had been met but one. NASA had hoped to set the capsule down on land instead of splashing in the ocean, but this did not happen.

NASA and the whole U.S. now turned all of their energy and attention to one goal. All efforts turned to the Apollo Program that would land a man on the Moon. The U.S. had to beat the Soviets there. The space race had to be won, and the U.S. had to be the winner!