



Last month, the Human Spaceflight Commission (known as the Augustine Commission after its chair, Norman Augustine) released its report to President Obama. This article looks at some of NASA's past accomplishments as well as prospects for its future.

■ Objectives

- Help students connect recent news stories on NASA's budget and the prospect of human travel to Mars with NASA's past projects and accomplishments.
- Encourage students to draw their own conclusions after learning background facts.

■ The Basics

A series of early NASA programs focused on human spaceflight: Mercury, Gemini, and Apollo. (For milestones of the Soviet space program, see the reproducible on p. T-7 of this Teacher's Edition.)

- **Mercury (1958-1963):** This program's goal was to send a U.S. astronaut into low-Earth orbit. Its first great success came on February 20, 1962, when astronaut John Glenn—in a tiny capsule called *Friendship 7*—was shot into low-Earth orbit by a powerful rocket. He circled the planet three times in a flight lasting 4 hours, 55 minutes, and 23 seconds. In all, the Mercury program had 26 flights, only 6 of which had a human aboard.
- **Gemini (1962-1966):** Its goal was to advance our technical and human abilities by developing two-astronaut vehicles that could carry people into higher orbit, allow them to maneuver the craft, stay in space longer, and leave and re-enter Earth's atmosphere safely. Its 10 human spaceflights included the first American to walk in space.
- **Apollo (1961-1973):** This project was focused on landing a person on the moon. There were four three-astronaut Apollo flights—two orbited Earth, two orbited the moon—before the success of July 20, 1969, when two astronauts set foot on the moon. The third astronaut stayed aboard the main craft. Six additional Apollo missions were carried out (in one, the famous Apollo 13, the planned lunar landing was aborted) before the project ended.

■ Words' Worth

The U.S. and the Soviet Union/Russia use different names for the people they train to go into space, but both words were constructed the same way—from ancient Greek. Americans use the term *astronaut*, Russians use *cosmonaut*. The *-naut* comes from *naútes* (NAW-teez), meaning sailor. The *astro-* is from *ástron*, star, and *cosmo-* is from *kosmos*, meaning universe.

■ Content-Area Questions

CULTURE/SOCIAL STUDIES

1. Do you think that NASA's share of the federal budget should be expanded, cut, or left as is? Explain. (Answers will vary.)
2. Do you agree with Buzz Aldrin's opinion that "It's mankind's destiny to walk on another planet"? Why or why not? (Answers will vary.)

GEOGRAPHY

1. Why do you think we are aiming for Mars when Venus is closer? (greater likelihood of water, not as close to the sun, other answers acceptable)

LANGUAGE ARTS

1. What nickname for Mars is used in this article? (the Red Planet)

MATH

1. *Salyut 1*, the Soviet Union's first space station, was launched in 1971. How long afterward was the first U.S. space station launched? (two years; Skylab was launched in 1973)
2. If Mars is 34 million miles from Earth and you take six months to get there, about how far would you travel per day? (183,784 miles; $34,000,000 \div 185$ —the approximate number of days in 6 months)

SCIENCE

1. What kinds of technical advances will be needed before humans are able to travel to Mars? (protection from radiation, a craft capable of safely taking people that far and for that long, additional fuel capacity; other answers acceptable)
2. Give students a quick overview provided in "The Basics" above. Then discuss: Why did NASA attempt human spaceflight in stages rather than immediately try to land on the moon? What kinds of things might researchers have had to learn along the way to help them reach the next stage?



World: Norway (pp. 8-11)

► **NCSS STANDARD**
Global connections

In this issue, JS goes to Europe, far north above the Arctic Circle—to a tiny fishing community in northern Norway.

■ Objectives

- Examine life in a peaceful, traditionally stable country, in which the natural world plays a more significant role than it does for most Americans.
- Give a picture of how global warming is affecting other people far from our shores.

■ Backstory

Correction and amplification: Traditionally, JS has listed Norway in its World Affairs tables as a

parliamentary democracy rather than a *constitutional monarchy*. (See JS Oct. 19 & 26, pp. 4-7, for definitions.) In preparing this article, the editors perceived that the country's King did retain a prominent function in government, and hence described Norway here as a constitutional monarchy.

■ Rapid Review

- What is the scientific name for the northern lights? (*aurora borealis*)
- Why is the duration of days in Reine so radically different in the winter and summer? (*Being north of the Arctic Circle causes this imbalance.*)

■ A World Away

Have students consider the phenomenon of the Arctic's long summer days and winter nights. How different would their lives be under such conditions? What would they do with the summer days? How would they survive the winter darkness?

WEB LINKS

- Facts About Norway: vg.no/vg/norway
- The Lofoten Islands: visitnorway.com/en/Stories/Norway/North/Lofoten
- Norway Country Profile: news.bbc.co.uk/2/hi/europe/country_profiles/1023276.stm



American History Play: General Washington's Spectacles (pp. 18-21)

► **NCSS STANDARD**
Power, authority, & governance

A little-known incident in the early days of the United States was significant in securing democracy as we know it today.

■ Objective

- Understand that the course of history can hinge on a single event.

■ Backstory

- Congress's inability to raise funds for back pay and pensions for the Army was a consequence of the weak national government created by the Articles of Confederation (1781-1788). The Newburgh incident, among other events, allowed the so-called "nationalists" (such as Alexan-

der Hamilton) to make a case for a strong central government, which was eventually created by the U.S. Constitution.

- General Horatio Gates (1728-1806) had a prominent role in the American Revolution. His ambition and his resentment of Washington led to much political intrigue and a failed attempt to replace Washington as commander of the Continental Army.

■ Rapid Review

- Why were Continental Army troops upset with Congress? (*It had not paid them for years.*)
- Why did Hamilton want Congress to believe that the troops were

about to mutiny? (*So its members would realize that the U.S. needed a strong central government.*)

- What might have happened to the country if Washington hadn't been able to defuse the mutiny? (*Answers will vary, but the U.S. might be a very different place today.*)

WEB LINKS

- Learning About George Washington: gwpapers.virginia.edu/education/kids/kids1.html
- The Newburgh address and Washington's speech in reply: earlyamerica.com/earlyamerica/milestones/newburgh