广播电视大学英语专业教材

泛读读本

第六册

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BOOK 6

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江苏电大英语教材编写组编
主编　钱佼汝　佟元晦

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前　言

本书供电大英语专业英语阅读教程第三学年下学期使用。

本书的编写体例，教学要求与教学方法与前五册大体相同，共计十五个单元，教学时间为十八周。

本册内容可以大致分为四部分。第一部分（第一、二单元）为科普读物；第二部分（第三至六单元）包括历史公案、国际关系和当代外国经济生活的叙事内容；第三部分（第七单元）为英语报刊文选；第四部分（第八至十五单元）内容涉及哲学、政治学、经济学、法学、心理学、社会学、历史学、人类学、教育学，语言学等，主要为高年级英语专业学生拓宽应有的知识面和扩充基本的专业词汇。除第五和第七单元分别为两周和三周的阅读量外，其余各单元教学进度均为每周阅读一单元。

本册主编为南京大学外文系教授钱佼汝和江苏广播电视大学佟元晦。参加本书编写工作的还有韦润芳、徐德培（以上江苏电大）、肖飞、朱萍、周跃雄（以上南京电大）、刘文昌（天津电大）等人。受聘在江苏电大任教的美籍语言专家 Patricia Duffy（杜佩玲）女士审阅了全部书稿，在此表示谢意。

由于时间匆促，水平有限，错漏与不妥之处恐在所难免，诚恳希望使用本书的广大电大师生批评指正。

编　者

一九八八年五月

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UNIT ONE

We Reach the Moon

by John Noble Wilford

Chapter 1

Footprints on the Moon

On the lonely, lifeless landscape of the moon, a strange-looking vehicle squats motionless under the sun's glaring rays. On one of its four spindly legs is attached a small, stainless steel plaque which reads:

HERE MEN FROM THE PLANET EARTH
FIRST SET FOOT UPON THE MOON:
JULY 1969 A.D.
WE CAME IN PEACE FOR ALL MANKIND.

The vehicle, the cast-off lower half of a lunar landing craft, is a monument to the historic event on July 20, when two American astronauts planted the first human footsteps on the moon. The monument will stay there for ages, for there is no wind or water on the moon to wear it away.[1]

The man who took the first step was Neil A. Armstrong,[2] the 38-year-old civilian commander of the Apollo 11.[3] As he reached the bottom of the landing craft's ladder and extended his booted left foot to touch the moon's pow-

dery surface, he said: "That's one small step for a man, one giant leap for mankind."

He was followed down the ladder minutes later by Edwin E. Aldrin, Jr.,[4] a 39-year-old Air Force colonel. For 2 hours and 21 minutes, the two men, carefully at first and then boldly, wandered about on the barren, rock-strewn surface. They tested their ability to move about on this strange world. They took photographs of the landscape. They set up scientific experiments and collected rock and soil samples. They set up a television camera so the whole world could watch. At one point, Armstrong said to Aldrin, "Isn't this fun?"

All the while, the third member of the crew, Michael Collins,[5] 38, an Air Force lieutenant colonel, piloted the Command Ship[6] in lunar orbit 70 miles above the surface, waiting for the two explorers to rejoin him for the trip back to earth. Altogether, the visit to the moon lasted 21 hours and 37 minutes.

An incredible triumph

For the Apollo 11 crew, and for the United States space team, the successful 500,000-mile mission involving 88 separate steps was an incredible triumph of skill and courage. For the world, it was the most dramatic proof of what man can do if he puts his mind to it. The moon, which used to seem unreachable, was now within man's reach, the first port of call[7] in the new age of spacefaring.

There have been other daring expeditions, of course. But Apollo 11 was different: the world watched it as it happened. Through television and radio, hundreds of millions of people followed the activities aboard Columbia, the command ship, and Eagle,[8] the landing craft — names chosen because, as Armstrong put it, they were "representative of the flight and the nation's hope." The television pictures across the 238,000 miles from the moon were so clear and sharp, showing the deep shadows and bright sunlight, that they seemed almost unreal.

Though the mission was completed almost without flaw, it was filled with suspense and anxiety. The astronauts faced risks on the moon never before met by man. And, as with all space flights, chances of failure and disaster were ever present — the blast-off of the giant Saturn 5 rocket[9] at Cape Kennedy,[10] the entry of the spaceship into earth and lunar orbits, the never-before-attempted landing and lift-off from the moon, the link-up of Columbia and Eagle, the re-entry into the atmosphere, the splashdown. An error or failure of any of the millions of individual parts anywhere along the way could have ended the mission short of the goal.[11] An equipment failure or accident on the moon could have left the astronauts stranded.

Heroes

But they made it. After eight days in space, they splashed down in the Pacific to a presidential greeting aboard

the recovery carrier, the U. S. S. Hornet.[12] They were the heroes of the nation and the world.

"This is the greatest week in the history of the world since the Creation," President Nixon[13] told the space travelers. "As a result of what you've done, the world has never been closer together before."

There were critics who said that the Apollo program cost too much, that the money and talent could be more usefully directed to fighting disease and poverty, that it was a "childish stunt"[14] to make a race out of going to the moon. But by the time of the moon trip, many people began to think that the astronauts might bring back some clues to help solve the mysteries of the universe.

Whatever would be learned from the Apollo 11 voyage, it was a great expansion for mankind. It was a journey that took man beyond the earth to walk on another world.

Chapter 2

The Target

By the time the Apollo 11 astronauts began preparing for their lunar voyage, scientists had gathered enormous amounts of data about the moon. For thousands of years astronomers have been looking at the moon, studying its appearance and its motion through the sky. For the past 360 years, detailed views of the moon have been made possible through the use of telescopes. More recently, we

have been able to reflect radar signals from the moon and to send scientific instruments to the moon on unmanned rockets. Radar signals and rockets able to travel through outer space are the products of our fast-moving scientific age, and they have shown us things about the moon that could never have been known before.

What, then, was known about the moon as the Apollo astronauts set out for their landing? What sort of world were they going to visit?

One way to picture the earth and the moon is to think of them as a pair of dancing partners spinning wildly around a dance floor with the sun in the center. Since the earth is 81 times as heavy as the moon, it is the anchor man in the dance.

Instead of keeping the same face toward its little dancing partner all the time, the earth spins like a top. This spin turns all parts of the earth toward the moon. The same spin also turns all parts of the earth toward the sun, giving us our day and night. A single spin of the earth takes about 24 hours — actually 23 hours and 56 minutes.

The moon spins much more slowly than the earth — so slowly that it always keeps the same face toward the earth. It makes one complete spin in the same amount of time that it takes to make a complete orbit around the earth. The time that the moon takes for a single orbit and a single spin is $27^1/_2$ days. This period of time has an old name — it is called a "month."

Astronomers have a down-to-earth way[15] of illustrating the moon's motions. Stand in a room, they suggest, and place a chair in front of you. You are the moon; the chair is the earth. First, go all the way around the chair, always facing the same wall. That is *not* the way the moon moves, because you "orbited" but you did not spin. Now, go around the chair, facing the chair at all times. You will find that you orbited once around the chair, *and* you spun once. The same part of your body was always facing the chair. So it is with the moon and earth.

The way the moon always keeps its same side toward the earth comes about because the gravitational pull of the earth controls the motions of the moon. Each of the bodies is constantly affected by the other's presence. The tidal forces between the two, for instance, are unmatched elsewhere in the solar system. The moon's gravitational force causes earth's oceans to rise and fall and that is why we have high and low tides. Also, the earth's constant tugging has caused a definite bulge on the side of the moon that faces the earth. The earth is not a perfect ball either, but is a little bit pear shaped, and the moon's pull has partly caused that.

Other planets in the solar system have their moons, too. Jupiter,[16] the largest of the nine planets, has twelve moons orbiting around it. The smallest of these is only 14 miles in diameter, and the largest is Ganymede,[17] 3100 miles in diameter, the largest moon in the solar system.

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Saturn[18] has ten moons, in addition to its amazing rings. The largest of Saturn's moons is Titan,[19] 3,000 miles in diameter. Uranus[20] has five moons, Neptune[21] and Mars[22] have two moons each, and Mercury[23] and Venus[24] have none. If far-away Pluto[25] has any moons, they have not yet been observed. In fact, many astronomers think that Pluto may once have been a moon of Neptune until it escaped into its own orbit around the sun.

The earth-moon system is unusual, though, because the earth (with a diameter of 7,963 miles) is a comparatively small planet, while our moon (with a diameter of 2,160 miles) is a comparatively large moon. Therefore, astronomers often think of the earth-moon system as a double planet. This double planet, making a full orbit around the sun once every 365 days, may be one of the most beautiful systems in the universe. Of course, we cannot know that for certain, because we are not yet able to travel to another sun and see its family of planets. But we did take a step in that direction when the Apollo astronauts landed on the moon.

The moon has no detectable atmosphere — neither air nor any other gases. Therefore, it has no weather — no wind, no clouds, no rain, no snow, no water on the surface. People obviously have to take along their own air and water.

The moon's lack of atmosphere causes strange effects. Except for the voices and cracklings on their built-in radio

sets and the sounds of their own breathing and motions, the astronauts hear nothing, because there is no air to carry sound waves. Also, there is no color in the moon's sky — only blackness, both day and night. (The blue of earth's sky is caused by particles of air scattering the sunlight.) By day a brilliant sun lights the surface of the moon. By day and night, stars shine in the black sky much more brightly than they do in our night sky. Stars seen from the moon do not twinkle — the twinkling that we are used to is caused by the starlight passing through the air.

Looking up from the moon's surface, the Apollo astronauts were able to see the great, shining earth. Since the earth is larger than the moon and a better reflector of sunlight, earthshine on the moon is more than eight times as bright as moonshine on the earth. If the astronauts had been on the moon for an entire month, they would have seen the earth go through different phases[26] — crescent earth, half earth, and full earth. The phase of the earth (like the phase of the moon when we look at it) would depend on the direction that the sunlight was coming from and what portion of the sunlit part of the earth was visible at any time.

The earth's atmosphere protects people in many ways. Astronauts on the moon have to do without that protection. For instance, with no air to filter out some of the sun's heat, the surface of the moon is heated to a temperature of about 260 degrees Fahrenheit. Just how hot that is can be

seen from the fact that water boils at the earth's surface at 212 degrees Fahrenheit. During the lunar night the temperature plunges to at least 240 degrees below zero Fahrenheit — low enough to freeze the mercury in a thermometer. This is because the moon does not have an atmosphere to act as a blanket, to hold much of the day's heat when the sun goes down. Visitors to the moon must also remember that, becuase of the moon's slower spin, lunar days and nights each last about two weeks of earth time.

In addition to light, there are dangerous radiations given off by the sun. These rays are made up of atomic-sized particles that do not reach earth because of the shielding air. But these rays do bombard the moon. A sudden flare-up of this radiation could be very dangerous to astronauts and they would have to take cover inside a shielded spacecraft or inside caves or other shelters on the moon.

Scientists are not sure whether the moon ever did have an atmosphere. If the moon did have an atmosphere billions of years ago, its weak gravity could not hold onto the gases and let them slip away into space. The moon's surface gravity is only about one-sixth as strong as earth's surface gravity.

The moon's low gravity has its advantages. For one thing, it would be easier to launch a rocket off the moon than off the earth. The moon's grip on objects is not as strong as earth's. This makes it possible for astronauts on

the moon to lift heavier objects and take longer, springier steps than they could on earth. A person or object weighing 180 pounds on earth would weigh only 30 pounds on the moon. An astronaut would be able to leap 20 feet off the ground.

However, there is another kind of heaviness called "inertia" that has nothing to do with gravitational pull. The heavier an object is, the harder it is to stop it or make it turn once it is in motion, and the harder it is to start it moving when it is still. It is inertia that makes a big truck harder to stop, or turn, or get moving again, compared with stopping, turning, or pulling away from a stop in a small sports car.

Even though the *weight* of a person or an object on the moon would be much less, making enormous leaps and the lifting of very heavy objects possible, *inertia* would not change. An object on the moon would have just as much inertia as it would on earth. So, an astronaut making great leaps and bounds across the moon would find that it would be hard to turn or dodge or come to a stop. The result could be a dangerous crashing against things that might damage his spacesuit or break his bones. Therefore, astronauts on the moon do not make the great leaps that they could make.

The landscape of the moon

When you look at the sunlit surface of the moon, you can see that there are both light and dark patches. It is

the pattern of dark patches on the bright moon that people have seen as the outlines of an imaginary face — "the man in the moon."

Telescope studies of the moon show that the brighter areas are mountains and rugged highlands. The dark patches are smoother plains. The early astronomers thought that these plains were seas. They gave them such names as "Sea of Showers," "Sea of Clouds," and "Ocean of Storms." These names are still used, even though the so-called seas are now known to be dry, flat stretches of land.

Scientists have suggested various theories to explain how these great plains were formed on the moon. One theory is that they are great areas of dust cuased by meteorites and dust particles striking the moon for billions of years — and some scientists thought that these dust layers were so deep and loose that they might swallow up anyone who landed there.

Another theory is that these plains were formed as spreading pools of molten lava.[27] According to this theory, a large meteor hitting the moon would melt the surface rock by the force of the collision. The melted rock would flow, as lava, across the landscape, covering old craters and all but the highest peaks. Another possible source of the lava might have been the eruption of a volcano.

Still another theory is that these plains are dark areas because they are covered with the leftovers of plant life that might have existed on the moon billions of years ago.

Dr. John J. Gilvarry of the National Aeronautics and Space Administration (NASA)[28] originated this theory. He believed that the moon had true seas when it was young, but that they evaporated into mist, which drifted away into space because of the moon's weak gravity. But the seas might have been there long enough for life to develop. After the seas were gone, layers of this living material may have been left behind.

Scientists also have different theories about the lunar craters, the most striking features of the moon's surface.

Thousands of craters, ranging in diameter from the 160-mile-wide Clavius down to those no bigger across than a silver dollar, give the moon its scarred appearance. A person standing at the center of one of the broader craters would be unable to see the crater walls. That is because the moon, being smaller than earth, has a surface that curves more sharply.

Some of the craters are amazingly deep. The crater Newton is so deep (29,000 feet) that Mount Everest[29] would barely peep out the top if it were set down there. No sunlight or earthshine ever casts a cheery ray on the dark floor of Newton. A number of craters, such as the 75-mile-wide Alphonsus, are a puzzle to astronomers because of the mountain peaks rising from their floors. These peaks are usually found near the centers of the craters and never seem to be as high as the surrounding walls. There are even craters within craters, as in the case

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