上海市专业人员英语电视讲座

科普英语

石 玲
曲卫国 合编
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前　言

《科普英语》是1986—1987年《上海市专业人员英语电视讲座》用书，是继《英语》之后的补充教材。本书旨在帮助学员今后阅读科技方面的英语论著打下初步基础。

《科普英语》共十二课，按易难顺序编排，内容均选自原版科普英语教程或刊物。每课分 Words and Expressions, Notes, Structures for Technical English 和 Exercises 五部分。我们力图使《电视讲座》学员从本书中得益，当然也使它有助于其他具有一定英语基础的科技人员阅读和翻译浅易的科技文章。

在本书编写过程中，我们得到了美籍教师 Martha Jane Ebey 的热情帮助，得到办学单位上海市人事局干部培训中心的鼎力支持，谨此一并深致谢意。

由于时间匆促，编者水平有限，错误和欠妥之处在所难免，欢迎读者批评指正。

编　者

1987年5月

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Lesson One

Text

Man-Made Moons

Before men take off from earth in rockets, they want to know about conditions far above earth, such as the intensity of ultraviolet radiation and cosmic rays, the density of the atmosphere, the temperature, and the presence of solid particles. To find out all this, and more, scientists have put tiny moons, or satellites, circling in orbits 200 miles or more above the earth. These first moons are small, but they are packed with intricate instruments that report, by radio, on conditions they meet in space.

The Russians put the first man-made moon in the sky in 1957. They called it Sputnik (Russian for satellite). Shortly after, their second moon was sent into orbit. Sputnik Num-ber 2 had a live passenger, a dog. And in 1958 the United States satellites, Explorer and Vanguard, were launched. Delicate instruments in these satellites reported back to earth, by radio. These reports tell

scientists what dangers human beings will meet when they rocket out into space so that they can prepare safeguards against them.

A satellite requires a three-stage rocket to lift it into orbit in our sky. There it circles the earth at about 18,000 miles an hour. Notice that this is below escape velocity. Gradually, over a period of time, most of our man-made satellites spiral back to earth because of the earth's gravitational pull. Once a satellite drops down into the heavier air near the earth, air friction turns it white-hot and it completely burns up, much like a meteor flashing across the heavens. But by then it has served its purpose of telling men what conditions are like up in space hundreds of miles above the earth.

Words and Expressions

man-made	[mæn'meid]	*a*. 人造的
take off	['teikɔf]	起飞
rocket	['rɔkit]	*n*. 火箭
rocket out		乘火箭(出大气)
intensity	[in'tensiti]	*n*. 强度
ultraviolet	[ˌʌltrə'vaiəlit]	*a*. 紫外(线)的
radiation	[reidi'eiʃən]	*n*. 辐射,放射
cosmic	['kɔsmik]	*a*. 宇宙的
ray	[rei]	*n*. 射线,光线

density	[ˈdensiti]	*n*. 密度
atmosphere	[ˈætməsfiə]	*n*. 大气
presence	[ˈprezns]	*n*. 存在
solid	[ˈsɔlid]	*a*. 固体的
particle	[ˈpɑ:tikl]	*n*. 粒子
satellite	[ˈsætəlait]	*n*. 卫星
circle	[sə:kl]	*v*. 环行
orbit	[ˈɔ:bit]	*n*. 轨道
intricate	[ˈintɤikit]	*a*. 复杂的
Russian	[ˈrʌʃən]	*n*. 俄国人，俄语
sputnik	[ˈsputnik]	*n*. 人造(地球)卫星
launch	[ˈlɔ:ntʃ]	*v*. 发射
safeguard	[ˈseifgɑ:d]	*n*. 保卫措施
velocity	[viˈlɔsiti]	*n*. 速度
spiral	[ˈspaiərəl]	*v*. 螺旋形地运行
gravitational	[ˈgrævi|teiʃənəl]	*a*. 引力的
friction	[ˈfrikʃən]	*n*. 摩擦
white-hot	[ˈhwait-hɔt]	*n*. 白热化
meteor	[ˈmi:tjə]	*n*. 流星
flash	[flæʃ]	*v*. 掠过

Proper Names

Explorer	[iksˈplɔ:rə]	*n*. “探险者号”(美国卫星名)
Vanguard	[ˈvængɑ:d]	*n*. “先驱者号”(美国卫星名)

Notes

1. 本文选自 *Young People's Book of Science* ed. Glenn O. Blough。
2. … report, by radio, on conditions they meet in space: 通过无线电，把它们在太空中所遇到的情况报告回地球……report 与介词 on 连用，表示"报告有关……"的意思。
3. a live passenger: 一位有生命的乘客
4. prepare safeguards against them: 准备对付它们的保护性措施
5. a three-stage rocket: 一枚三级式的火箭
   这种由数词与名词合成的形容词，其名词后不需加-s。
   例如：eight-cylinder engine 八汽缸的发动机
   a 220-volt lamp 一盏 220 伏的电灯
6. escape velocity: 第一宇宙速度
7. the heavier air: 密度较大的空气
8. has served its purpose: 已完成所赋于它的使命

Structures for Technical English

Movements

Ⅰ. 用 rotary(转动的), transverse(横向的), backward (向后的)等形容词。

There is a	rotary	forward	movement.
	transverse	downward	
	backward	sideward	

Ⅱ. 用 ascend(上升), descend (下降), rotate (转动), spin(旋转), swing (摆动), circulate (打转), advance (前进)等动词。

1. The piston(活塞)

moves	rises
runs	sinks
ascends	advances
descends	

.

2. The wheels

turn	revolve
rotate	spin

.

3. The liquid circulates.

4. The pendulum swings.

Ⅲ. 用 up, down, over 等副词。

It moves

up(wards)	backward(s)	through	under
down(wards)	sideways	around	away
forward(s)	over	back	

Exercises

I. Answer the following questions:

1. What should men know before they take off from the earth?
2. How can they find out all this?
3. When was the first man-made moon launched?
4. When did the United States launch their first

satellites?

5. Can an ordinary rocket lift a satellite into orbit?

Ⅰ. Translate the first paragraph of the text("Before men take off…against them.") into Chinese.

Ⅱ. Fill in each blank with one of the words given.

1. The blades(叶片) of the electric fan begin to _____(rotate, circle) when the button is pressed.
2. The electrons(电子) _____(circle, spin) about the nucleus(原子核).
3. A rocket _____ (travels, advances) much faster than an aeroplane.
4. A beam (波束) of light produced by laser can burn_____(through,over) a diamond(金刚石).
5. This new gramophone (唱机) can turn the record (唱片)_____ (over, back) when its first side is done.
6. When you whirl (使回转) a ball on the end of a piece of string (细绳) and the string breaks, the ball flies_____ (sideways, away) from your hand.
7. The river_____ (descends, sinks) from the mountain.
8. If you could put all the molecules in a pint (品脱) of water side by side, they might_____

(circle, rotate) the equator more than 200 million times.

9. Started by jet(喷气的) engine, the plane _____ (advanced, traveled) swiftly (飞快地)and soon it took off from the runway(跑道).

10. The sun_____ (rises, ascends) in the east.

Ⅳ. Translate the following sentences into English.

1. 心脏跳动(to pump)并循环(to circulate)血液，这样就把氧带到身体的各个部分。

2. 当飞机通过空气运动时，其翼翅 (wings) 上有一向上的推力。

3. 铁沉于水中而浮于水银(mercury)之上。

4. 当我们说话时，声波向各个方向传去。

5. 当火车向前行驶时，树林和房子看上去似乎是在向后移动。

6. 当公共汽车转弯时，有一股力会把你朝旁边拉。

7. 突然推一下墙，你会感到自己被向后一推。

8. 通过无线电，人的声音能在一秒钟内传遍全球。

9. 怎样才能使这部机器从运转状态停下来？

10. 由于水蒸气非常轻，所以它能高高地升向空中。

Lesson Two

Text

Electricity: The Force That Transformed the World

In order to talk about electricity, it is necessary first to talk about the atom. The idea of the "atom" has a long history, one extending back to about 600 B. C. and the time of the ancient Greeks. They believed that all matter was made up of atoms. The word "atom" in fact comes from the Greek word "atmos," which means "indivisible." It was not until 1897 that it was discovered that the atom is not indivisible but is composed of even smaller particles. Among these particles is one called the electron.

Electrons orbit around the center or nucleus of the atom, much as the planets in the solar system orbit around the sun. Electrons closer to the nucleus are held more tightly than those in the outer orbits. It is the electrons in the outermost orbit of certain kinds of atoms that can be made to flow as electric

current

Electrons flow easily through certain kinds of materials calle l "conductors." Many metals, such as silver, copper, gold, and aluminum are good conductors Good conductors are used in electric circuits to provide a path for the current.

Other substances provide strong resistance to the flow of current These substances are called "insulators," which are used to confine a current to the desired path. Substances such as hard rubber, glass, wax, and certain kinds of plastic are good insulators. Thus, the cord on an electric appliance consists of a piece of wire, generally copper, surrounded by a type of plastic or vinyl, which is the insulator confining the current to its path.

The pressure that makes electrons flow along wires is called "voltage." Voltage may be created by a generator at a power plant or by an electric battery. When you turn on a light or an electric appliance,electrons are drawn from a generator at a power plant. When you turn the light or appliance off, there will be electric pressure or voltage built up at the switch, but no current will flow. It is some what similar to the way a water system works

When you turn on a water faucet, water flows through the pipes, which is like electric current