高等职业教育
大学专科 系列教材

科技英语阅读

Scientific English Reading

主 编 张月杰

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内 容 简 介

本英语系列教材是一套大学专科改革教材。本系列教材以国家教育部颁布的《普通高等专科英语课程教学基本要求》为编写依据，根据高等职业教育培养目标的特点，突出加强语言能力的培养和应用，具有较强的实用性。

本教材中所选用的材料绝大部分来自国内外（主要是国外）最新书刊，内容丰富、新颖，涉及领域广泛，具有较强的知识性、趣味性和可读性。全书共十四个单元，每个单元讲述国内外科学技术最新发展的一个专题，如：地震预报、汽车工业、快餐饮食、计算机科学、自动化技术、野生动物保护以及克隆技术的研究与发展等。

为使学生通过大量阅读提高英语水平，本书每个单元有正课文一篇（Part A），副课文两篇（Part B1，Part B2）。正课文后面附有词汇表、注释、练习（多以主观题为主）。全书最后附有总词汇表和科技英语翻译常识。

本书可供高等职业教育大学专科、普通大学专科及成人教育类大学专科学生第二学年使用。

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高等职业教育
大学专科 系列教材

英语系列编写委员会

前　言

高等职业教育(又称高等技术教育或高等职业技术教育)是高等教育的重要组成部分,是适应高新技术推动下的现代社会经济发展的产物。联合国教科文组织1997年公布的教育分类中,将这类教育称为"高等技术和职业教育",它大体可以分为本科和专科两个层次。而某些经济发达国家,已开始将这类教育拓展到研究生层次。我国改革开放以来,由于经济的高速发展,产业结构的调整,高等职业教育人才的需求已迫在眉睫。随着教育改革的深化,自90年代初以来,我国的高等职业教育从大学专科起步,以培养我国社会主义现代化建设和现代社会经济发展的技术大军为目标,正在蓬勃发展起来。高等职业教育的发展极大地推动了大学专科的改革,和国际高等教育的共同规律一样,我国高中后二至三年的大学专科教育必须以同层次的高等职业教育为共同目标。

北京联合大学是我国发展高等职业教育的重点学校,在国家教育部和北京市教委的大力支持下,自90年代初以来进行的大学专科改革就是以培养高等技术应用人才为主的高等职业教育为目标。目前,北京联合大学的教育改革正在向课程体系、教学内容和教材改革方面深入。为达到这一目标,在近几年来进行的高等职业教育大学专科改革的基础上组织编写了"高等职业教育大学专科系列教材"供试用。

该系列教材是一套大学专科改革教材,适合高等职业教育学生和普通大学专科学生使用。英语系列教材包括5个教程:《精读》(第一、二册)、《听说》(学生用书)、《听说》(教师用书)、《科技英语阅读》、《实用英语》。英语系列教材以国家教育部颁布的《普通高等专科英语课程教学基本要求》为编写依据,根据高等职业教育培养目标的特点,在选材的科学性、实用性、教育性等方面力求正确处理好语言基础和语言应用的关系,突出加强语言能力的培养和应用,既注重于打好语言基础、教授语法知识、摆正听说关系,又注重于满足高等职业教育对语言应用能力及岗位需要的要求,具有较高的实用价值。

英语系列教程由中国人民大学谌馨荪教授、北京大学孙玉教授和北京理工大学李鹏飞教授等主审,并请David Sitterley博士等美籍专家审阅。在编写过程中还得到了姜成坛教授、高林教授等的支持和指导,从而确保了教材的科学性和可靠性,在此一并向他们表示感谢。

由于时间较为仓促,作者水平有限,书中错误在所难免,恳请广大读者不吝赐教。

高等职业教育大学专科系列教材
英语系列编写委员会
1998年3月

使 用 说 明

本书为“高等职业教育大学专科系列教材”之一，主要供高等职业教育（以下简称高职）大学专科、普通大学专科及成人教育类大学专科学生第二学年使用。

全书共十四个单元，每个单元涉及科学领域的一个专题。目的在于使学生在学习英语的同时更广泛地了解世界科学技术的新发展，从而提高学习英语的兴趣和积极性。

本书各单元包括三篇课文，正课文一篇（Part A），副课文两篇（Part B1，Part B2）。Part A 为教师在课上重点讲授的内容。针对高职学生的特点，本书在每篇正课文之后附有详尽的生词表（并加注了音标）、注释和 2 至 3 个练习题，题型多为主观题，用以帮助学生正确理解课文，并掌握、运用从课文中所学的语言知识。学生可在教师的指导下对每个单元的两篇副课文进行自学。为帮助学生更好的学习，副课文之后加注了较详细的注释。

全书供两个学期使用，共需 110～120 学时。教师可根据学生的具体情况和每个单元课文长、短以及难易程度的不同，灵活安排各单元的学习时间，亦可从实际出发，调整各单元的学习顺序。

CONTENTS

UNIT ONE

Part A Text

Earthquake Prediction

Warnings Precede Chinese Temblors

It doesn't rain much in parts of far northwestern China, but when it comes to earthquakes there, it can pour. During the past three months, seven magnitude-6-plus quakes have rocked Jiashi County in China's Xinjiang Uyghur Autonomous Region. But while spates of earthquakes are nothing unusual in that part of China, what's new is that Chinese scientists made four predictions about the time and magnitude, and three were apparent successes. Their insights prompted wholesale evacuation as little as hours before the earthquakes and protected thousands of lives.

Western researchers are intrigued but puzzled by these reported successes. "It's wonderful they were able to evacuate and save lives," says Lucile Jones of the US Geological Survey in Pasadena, California, "but there isn't enough information to say whether they have a better understanding of the potential for earthquake prediction than what we already have." US seismologists have not yet successfully made an official prediction, and the technique the Chinese relied on —— extrapolating from ongoing seismic activity —— has yielded few consistently reliable results in the West. Still, Jones is eager to learn more. "We hadn't heard anything about Chinese earthquake prediction since China opened up."

China has spent the past 30 years trying to identify reliable precursors for impending earthquakes. A new test of these prediction skills began on January 21, when two quakes struck Jiashi one minute apart, registering at magnitude 6.4 and 6.3, according to Chinese seismologists. (Magnitudes calculated by the USGS National Earthquake Information Center in Golden, Colorado, from distantly recorded seismic waves run about 0.5 unit lower.) Neither quake was predicted. When another magnitude 6 hit on 1 March, it was obvious that a swarm of quakes could be under way like the one that shook an area of 90 kilometers to

the west in April 1961, notes Zhang Guomin, deputy director of the Center for Analysis and Prediction of the State Seismological Bureau (SSB) in Beijing. That seismic record, the recent quakes, and the public's heightened awareness of the threat encouraged scientists at the Xinjiang Seismological Bureau in Urumqi to make "imminent predictions," explains Zhu Lingren, director of the Xinjiang Bureau.

Predicting the next quakes boiled down to deciphering the pattern of ongoing seismicity. For example, following three magnitude 4 quakes between April 1 to 4, Xinjiang seismologists took the ensuing quietude as a sign that stress was still building and would soon be released in a larger quake. So late on 5 April they predicted that an earthquake between magnitude 5 and 6 would strike within a week. During the night, the authorities evacuated 150,000 people to shacks and canvas shelters. Early the next morning, a magnitude 6.4 quake occurred, and at noon a magnitude 6.3 struck. Together they destroyed 2,000 houses and severely damaged 1,500 more, but no one was killed. Similarly based predictions preceded a magnitude 6.6 quake on 11 April and a magnitude 6.3 on 16 April.

An independent prediction was issued 3 days before the twin 6 April quakes by a group of seismologists working with a Beijing-based United Nations program linking public administration and disaster science. Zhang Guomin, deputy director of the Center for Analysis and Prediction of the State Seismological Bureau, says their predictions were based on the crustal stress and a variety of "alternative methods." This one got the time and location right but called for a single quake in the range of magnitude 7.0 to 7.5, 10 times more powerful than any of the quakes that struck.

Chinese researchers are modest about their prediction accomplishments. "We are still at our initial stage of scientific approaches," says Zhu. "Currently our ability to make imminent predictions is very low." Xinjiang scientists did have a false alarm in March, and Zhang and Zhu note that this swarm has lasted far longer than the 1961 example so they can't say when the shaking would stop.

Of course, says seismologist Max Wyss of the University of Alaska, predicting the next quake in a swarm is hardly as challenging as predicting a quake in isolation. "Nevertheless, if 150,000 people in the epicentral area evacuated and lives were saved," he says, "I would say it came close enough to a correct prediction to be useful." Both Wyss and Jones would like to know more, and they may soon get the chance. Zhang says that next year the SSB will hold an international

symposium on earthquake prediction so that foreign scientists can examine the data for themselves.

Words to the Text

temblor	[tem'blɔ:]	*n*.	[美]地震
evacuate	[i'vækjueit]	*v*.	疏散
magnitude	['mægnitju:d]	*n*.	等级;大小
seismologist	[ˌsaiz'mɔlədʒist]	*n*.	地震学家
rock	[rɔk]	*v*.	使震动
extrapolate	[eks'træpəleit]	*v*.	推测,推断
spate	[speit]	*n*.	大量
ongoing	['ɔnˌgəuiŋ]	*a*.	进行的
insight	['insait]	*n*.	洞察力
seismic	['saizmik]	*a*.	地震的
precursor	[pri(:)'kə:sə]	*n*.	预兆,先兆
wholesale	['həulseil]	*a*.	大规模的;大批的
impending	[im'pendiŋ]	*a*.	即将到来的
intrigue	[in'tri:g]	*v*.	引起……的好奇和兴趣
heighten	['haitn]	*v*.	加强,加深
embolden	[im'bəuldən]	*v*.	使更大胆;鼓励
crustal	['krʌstl]	*a*.	(地球)外壳的
imminent	['iminənt]	*a*.	迫切的,急切的
accomplishment	[ə'kɔmpliʃmənt]	*n*.	成就
decipher	[di'saifə]	*v*.	辨认
initial	[i'niʃəl]	*a*.	最初的;原始的
seismicity	[saiz'misiti]	*n*.	震态;震状;震级
isolation	[aisə'leiʃən]	*n*.	单独;孤立
ensuing	[in'ʃu:iŋ]	*a*.	紧接着的
epicentral	[epi'sentrəl]	*a*.	震中的
quietude	['kwaiitju:d]	*n*.	寂静,平静
symposium	[sim'pəuzjəm]	*n*.	专题讨论会

Phrases and Expressions

be under way	正在进行着

in a swarm	成群,大批
boil down to	(被)归结为

Notes

1. 本文系中国记者李辉与美国记者 Richard A·Kerr 联合报道,发表于 1997 年 4 月 25 日美国《科学》杂志第 296 卷上。该文主要报道了中国地震学家成功预报新疆伽师县三次大地震并有效预防的消息。这一消息令西方有关研究者们大为震惊,甚至不可思议,从而向世人揭示了地震这一给人类带来毁灭性打击的自然灾害是可以预报和预防的。
2. Jiashi County: 伽师县(位于新疆维吾尔自治区)
3. Lucile Jones: 美国地质学家
4. the US Geological Survey: 美国地质勘探所,简称 USGS
5. the USGS National Earthquake Information Center: 美国地质勘探所地震信息中心
6. the Center for Analysis and Prediction of the State Seismological Bureau: 国家地质分析预报中心(简称 SSB)
7. the Xinjiang Bureau: 新疆局,即新疆乌鲁木齐地震局
8. Beijing-based United Nations program: 联合国在北京搞的项目

Exercises

I. Choose the best answer according to what you have learnt from the text.

1. The result of the three successes of the prediction was that ____.
   A. thousands of people evacuated
   B. few people were killed
   C. thousands of lives were protected
   D. few people were hurt
2. In the first line of the second paragraph, the word "intrigued" means ____.
   A. interested B. fascinated
   C. delighted D. astonished
3. A swarm of quakes could be under way like the one that shook an area 90 kilometers to the west in April 1961. The one here refers to ____.
   A. the quake B. one quake
   C. any quake D. some quake
4. According to paragraph 4, the magnitude 6.4 and 6.3 quakes occurred ____.
   A. on the early morning and at noon of April 6
   B. at noon and on the early morning of April 6
   C. on the early morning and at noon of April 7
   D. at noon and on the morning of April 7
5. In the second line of paragraph 6, the word "initial" means ____.
   A. beginning B. primacy
   C. original D. elementary

II. Filling in blanks with the words given in their proper forms.

1. rock (*n.*), rock (*v.*)
   A. She ____ her baby to sleep.
   B. We kept on digging until we struck ____.
2. predict, prediction
   A. Have you listened to today' weather ____?
   B. It ____ a good harvest this year.
3. evacuate, evacuation
   A. During the war the small town was ____.

B. There were not enough hours for such wholesale ____ before the flood.

4. rely, reliable

A. You'd better ____ on your own efforts.

B. Scientists have been trying to identify ____ precursors for impending earthquakes.

5. succeed, success, successful, successfully

A. Wish you ____!

B. Chinese researchers ____ in making three predictions about the time and magnitude of earthquakes.

C. These ____ reported quakes intrigued western researchers.

D. He was the first ____ Italian sailing around the world.

III. Translate the following phrases and sentences into Chinese.

1. spate of earthquakes _____
2. nothing unusual _____
3. as little as hours _____
4. reported successes _____
5. ongoing seismic activity _____
6. since China opened up _____
7. following three magnitude 4 quakes _____
8. take the ensuing quietude as a sign _____
9. 3 days before the twin 6 April quakes _____
10. be based on crustal stress and a variety of alternation methods _____
11. 10 times more powerful than any of the quakes that struck _____
12. be modest about their prediction accomplishments _____
13. It doesn't rain much in parts of far northwestern China, but when it comes to earthquakes there, it can pour _____
14. "It's wonderful they were able to evacuate and save lives," said Lucile Jones. _____
15. "I would say it came close enough to a correct prediction to be useful." _____

Part B1

The Interior of the Earth

The planet we live on is not just ball of inert material. During past ages dramatic changes have taken place inside the earth. Indeed, it is likely that without these changes life could never have originated on the earth. And changes are still going on today. They show themselves the occurrence of earthquakes, in the outbursts of volcanoes, and in the uplift of mountain ranges.

In outward appearance, the earth is a nearly spherical ball with a radius of 6,350 kilometers. Internally the earth consists of two parts, a core and a mantle. An essential difference is that the core consists mainly of liquid and the mantle of solid rock. The core extends outwards from the center to the distance of some 3,450 kilometers. The mantle, as its name shows, is an outer covering extending from the core to the surface of the earth.

Judged by ordinary standards, the core is made of rather dense stuff. The material at the center of the earth is at least thirteen times as heavy as ordinary water, while in the outer parts of the core the material is about ten times as heavy as ordinary water.

The mantle possesses a thin outer crust that is exceptional in being composed of a particularly light kind of rock, with a density about 2.7 times that of water. (Compare this with a density of 13 at the center of the earth). Over the continents of the world this crustal rock is about thirty-five kilometers thick, while over the oceans it is at most only two or three kilometers thick. Below the crustal layer comes a different, denser rock, probably of a basic silicate variety. Indeed it seems likely that, apart from the thin outer crust, the rocks of the whole mantle are of a basic silicate variety right down to the junction with the core, at a depth below the surface of about 2,900 kilometers.

We must now introduce the idea that the pressures occurring inside the earth are very considerable. It is well known that at sea level our atmosphere exerts a pressure of about fifteen pounds per square inch. This in itself is no mean pressure, as we all soon come to realize if we have to pump up an automobile tire. But the pressure inside the earth is vastly greater than this, amounting to tens of mil-

lions of pounds per square inch. At such enormous pressures, ordinary rock becomes appreciably squashed. Therefore, as we go inwards to greater and greater depths, the density of the rocks of the earth's mantle increases. The density immediately below the outer crust is about 3.3 times that of water. We may compare this with a density of 4.0 at a depth of 500 kilometers, 4.5 at 1,000 kilometers, about 5.0 at 2,000 kilometers, and with about 5.6 at the surface of the core, which is at a depth of 2,900 kilometers.

The last of these values is important. We are now saying that in the part of the mantle immediately outside the core, the density is about 5.6 times that of water. On the other hand immediately inside the core the density is about 9.7. This means that at the surface of the core there is not only a change from liquid on the inside to solid on the outside, but there is also a very considerable change in the density of the material, from 9.7 on the inside to 5.6 on the outside. This change gives an important clue to the nature of the material in the core.

Notes

1. the interior of the earth: 地球的构造
2. inter material: 惰性物质
3. mean pressure: 一般的压力
4. originate: 起源
5. outburst: 爆发
6. uplift: 降起
7. spherical: 球形的
8. radius: 半径
9. core: 地核
10. mantle: 地幔
11. rather dense stuff: 相当致密的物质
12. a basic silicate variety: 一种普通的硅酸盐类
13. junction: 相连，接合
14. considerable: 相当的，可观的
15. atmosphere: 大气
16. pump up: 打气
17. squash: 压平，展平
18. give a clue to: 为……提供线索