

科技英语 读写译 教程

[上册]

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葛纪红 编著



An English Course for
Science and Technology

外语教学与研究出版社

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科技英语**读**与**译**教程

(上册)

AN ENGLISH COURSE FOR SCIENCE AND TECHNOLOGY

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王令坤 等 编著

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前 言

《大学英语教学大纲〔修订本〕(高等学校本科用)》规定“大学英语的教学目的是培养学生具有较强的阅读能力和一定的听、说、写、译能力,使他们能用英语交流信息。”同时又规定:“学生在完成基础阶段的学习、达到四级或六级后,必须修读专业英语。”《大纲》明确指出“专业英语是大学英语教学的一个重要组成部分,是促使学生完成从学习过渡到实际应用的有效途径……,各校要切实保证大学英语学习四年不断线。”本教材就是根据《大纲》的这些要求,为修完大学英语基础阶段的理工科学生编写的科技英语阅读、写作和翻译教材,也适合于广大科技工作者提高英语专业阅读、写作和翻译能力之用。

编者希望学习者通过本教材的学习,不仅能比较顺利地过渡到阅读本专业的英语参考书,而且能比较顺利地阅读背景熟悉的一般科普及科技文章,从而能通过阅读最新出版的英语科技文章,以最快速度获得科技信息,扩大知识面。编者还希望学习者通过本教材的学习,了解和掌握科技英语作为一个特殊的英文语体所具有的文体、词汇、句子等特征及其翻译、写作应必备的常识,以便能为进一步掌握和使用科技英语打下良好的基础。为此本教材旨在帮助理工科高年级学生及科技人员完成从基础英语向专业英语的过渡。这个过渡阶段的主要任务有:

1. 通过阅读本教材所提供的语言材料熟悉科技语体的语言特征,进一步提高语言能力。
2. 掌握科技语体常用词 1000 个左右,固定词组 100 个左右以及科技语体常见的语法结构。
3. 介绍科技语体的翻译知识,训练翻译能力。
4. 介绍科技语体的写作方法,进一步培养写作能力。

本教材共 24 个单元,学完本教材约需 72~96 课内学时。

本教材每单元含同一主题的阅读课文三篇,其中 Text A 为精讲课文;翻译知识一讲和语法一讲;每 2 个单元含写作知识一讲。课文多选自现代英美书刊,基本未作改动。为了体现各专业的通用性,所选课文内容不局限于某一专业,但能为任何理工专业学生理解和接受。每单元课文后配有一定量的练习,包括以检查学生是否掌握文章所传达信息的课文理解练习,以及帮助学习巩固词汇从而扩大词汇量的词汇练习等等。翻译、语法和写作知识讲座后均配有相应练习以帮助学生掌握和巩固

所学知识。

本教材在编写过程中得到华东船舶工业学院教务处、教材服务中心的大力支持；在试用过程中得到了宋京生、赵洪江等老师的许多宝贵意见；在出版过程中得到了外语教学与研究出版社的热情指导；在此一并致谢。

由于编者水平有限，难免有不足之处，敬请专家、同行和广大读者不吝赐教。

编 者

于华东船院

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Unit One



Text A Protecting the Environment

Arguments for the effort and cost of protecting species are often couched in esthetic or ethical terms such as the beauty of diversity or the arrogance of people in assuming that the earth was created solely for their benefit.

However, one problem that is viewed with growing seriousness is the reduction of the earth's total gene pool with the passing of each species. By allowing plants and animals to pass out of existence, it is argued, we may be losing things of incalculable and irreplaceable value to people, if only we knew it^①. Who knew the value of bread mold 50 years ago? But the discovery of penicillin has saved countless lives.

Increasingly, scientists and environmentalists are coming to the conclusion that^② the destruction of species is directly related to the viability of the human race itself. The disappearing life forms resemble the canaries that coal miners used to carry down into the shafts before the introduction of the safety lamp. If the canary died, it was an indication that poison coal gas was in the vicinity and that the miners were in grave danger. Today, the endangered species are an early warning system indicating that the human environment is becoming dangerous.

The history of life on earth has been punctuated by mass extinctions, the sudden disappearance of a large variety of plants and animals, possibly as a result of impacts by giant meteors. In one of the most dramatic dieoffs, 65 million years ago, more than half of all species on earth, including the dinosaurs, vanished. While experts debate the cause of these catastrophes and the probability and timing of the next one, scientists at the recent National Forum on BioDiversity warned that another sort of mass extinction is now taking place.

The current problem has been brought on not by meteors but, as biologists agreed during the four-day meeting in Washington, by man. They attribute the developing ecological disaster to the systematic destruction of the world's tropical rain forests, particularly those in Latin America and Southeast Asia. Perhaps most troubling to the scientists is the fact that plants and animals are disappearing faster than they can be found and described. Naturalists have catalogued 1.6 million species, a small fraction of the estimated 4 million to 30 million that remain undiscovered.

Tropical rain forests blanket about 7% of the planet and support nearly 50% of the earth's known species. A single hectare (2.5 acres) of this dense growth may include more than 100 species of tree, each with its own interdependent colonies^③ of plants and animals. But in the past several hundred year, the area of the globe covered by rain forest has decreased by some 44%. According to one U.N. study, 23,000 sq. mi. of rain forests are cut down every year – an area about the size of West Virginia.

These threatened ecosystems have already proved exceedingly valuable as a source of medicines, foods and new seed stock for crops. Nine years ago, for example, a strain of perennial, disease-resistant wild maize was found in a Mexican mountain forest, growing in three small plots. Crossing domestic corn varieties with this maize produces hybrids^④, also with a high resistance to many crop diseases, that should ultimately be worth billions of dollars to farmers. A great many of the prescription drugs sold in the U.S. are based on unique chemical compounds found in tropical plants. Scientists are convinced that still undiscovered forest plants could be the source of countless new natural drugs.

In search of such medical bounty, Mark Plotkin, director of the World Wildlife Fund's plant program, has spent months at a time living with the elders of the Tirio tribe on the Suriname-Brazil border, studying the little-known plants the tribesmen use to treat patients.

Plotkin and his colleagues are also assessing the economic potential of such tropical plants as 'killer' potatoes, which trap insects on their sticky surface hairs; the Amazonian palm, rich in vitamins A and C; the pupunha palm, whose proportions of carbohydrates, proteins, oil, minerals and vitamins make it an ideal staple food; and Fevillea, a vine with seeds rich in an oil that may one day be used as an industrial lubricant.

Even plants and animals with no immediate use are worth saving. Each contains a unique store of genes that might someday have important applications in bioengineering. 'Natural species are the library^⑤ from which genetic engineers can work,' says World Wildlife Fund Executive Vice President, Thomas Lovejoy. 'Genetic engineers don't make new genes; they rearrange existing ones.'

Alarmed by the rate of tropical deforestation, scientists are no longer shy about criticizing commercial and public development organizations that persist in the removal of vast areas of rain forests. 'In the past, many biologists thought it was almost unscientific to get involved in conservation politics,' says Lovejoy. 'But no more. The rate of species loss is suddenly dawning on people.'

The warning has been heeded in government circles as well. The House of Representatives has passed legislation sponsored by Gus Yatron, Democrat of Pennsylvania, mandating that the U.S. Agency for International Development set aside \$10 million to preserve biodiversity. Scientists have applauded the bill, claiming that when we have seen one ant, one bird, one tree, we have not seen them all. What is happening to the rain forests of Madagascar and Brazil will permanently affect everyone. The time has come to link ecology to economic and human development.

New Words

couch /kaʊtʃ/ vt.

to put (a thought etc. in words), esp. to soften or temper

esthetic	/ɪs'tetɪk/ <i>adj.</i>	美学的; 有审美能力的
ethical	/ˈeθɪkl/ <i>adj.</i>	of morals or moral questions
diversity	/daɪ'vɜ:sɪti/ <i>n.</i>	different kinds
arrogance	/ˈærəɡəns/ <i>n.</i>	骄傲自大, 傲慢
gene pool		基因库
bread mold		面包霉菌
penicillin	/ˌpenɪ'sɪlɪn/ <i>n.</i>	青霉素
environmentalist	/ɪnvaɪrən'mentəlɪst/ <i>n.</i>	a person who studies environment
viability	/ˌvaɪə'bɪləti/ <i>n.</i>	the ability to exist/survive
resemble	/rɪ'zembəl/ <i>vt.</i>	be like; be similar to
canary	/kə'neəri/ <i>n.</i>	金丝雀
shaft	/ʃæft; ʃɑ:ft/ <i>n.</i>	矿井
vicinity	/vɪ'sɪnəti/ <i>n.</i>	附近
punctuate	/ˌpʌŋktʃueɪt/ <i>vt.</i>	打断, 间断
impact	/ˈɪmpækt/ <i>n.</i>	a striking together; violent contact; collision
meteor	/ˈmi:tjə/ <i>n.</i>	流星, 陨星
mass extinction		大量灭绝
dieoff	/ˈdaɪəf/ <i>n.</i>	绝种, 死尽
dinosaur	/ˈdaɪnəsə:/ <i>n.</i>	恐龙
catastrophe	/kə'tæstrəfi/ <i>n.</i>	disaster
timing	/ˈtaɪmɪŋ/ <i>n.</i>	the regulation of the speed, or of the moment of occurrence, of something so as to produce the most effective results
forum	/ˈfɔ:rəm/ <i>n.</i>	论坛, 讨论会
biodiversity	/ˌbaɪəʊdaɪ'vɜ:səti/ <i>n.</i>	生物多样性
ecological	/i:kə'lɒdʒɪkəl/ <i>adj.</i>	生态的, 生态学的
tropical rain forests		热带雨林
catalogue	/ˈkætəlɒɡ/ <i>vt.</i>	list
blanket	/ˈblæŋkɪt/ <i>vt.</i>	to cover with or as with a blanket; overspread; overlie
hectare	/ˈhekta:/ <i>n.</i>	公顷
interdependent	/ɪntədi'pendənt/ <i>adj.</i>	dependent on each other; mutually dependent
colony	/ˈkɒləni/ <i>n.</i>	集群, 群体
ecosystem	/ˈi:kə'sɪstəm/ <i>n.</i>	生态系 (统)
seed stock		种子储备
strain	/streɪn/ <i>n.</i>	种, 品系
perennial	/pə'reniəl/ <i>adj.</i>	常年的, 终年的; 多年生的
maize	/meɪz/ <i>n.</i>	玉米
hybrid	/ˈhaɪbrɪd/ <i>n.</i>	杂 (交) 种
bounty	/ˈbaunti/ <i>n.</i>	赠与物, 礼物
tribesman	/ˈtraɪbzməŋ/ <i>n.</i>	部落人
assess	/ə'ses/ <i>vt.</i>	to estimate or determine the significance, importance, or value of; evaluate
Amazonian palm		亚马逊棕榈树
pupunha palm		一种棕榈树名
carbohydrates	/ˌkɑ:bəu'haidreɪts/ <i>n.</i>	碳水化合物

staple	/ˈsteɪpl/ <i>adj.</i>	主要的
Fevillea	/fəˈviliə/ <i>n.</i>	一种树名
lubricant	/ˈluːbrɪkənt/ <i>n.</i>	润滑剂, 润滑油
bioengineering	/ˌbaɪəʊendʒɪˈniəriŋ/ <i>n.</i>	生物工程
deforestation	/diːfɒrɪsˈteɪʃən/ <i>n.</i>	砍伐森林
conservation politics		自然资源保护的政治事务
heed	/hiːd/ <i>vt. & vi.</i>	to pay close attention to; take careful notice of; listen to; follow (esp. advice)
government circle		政界
legislation	/ˌledʒɪsˈleɪʃən/ <i>n.</i>	立法, 法规
sponsor	/ˈspɒnsə/ <i>vt.</i>	倡议, 提议
mandate	/ˈmændeɪt/ <i>vt.</i>	命令, 指示
applaud	/əˈplɔːd/ <i>vt.</i>	to praise; approve
ecology	/ˈiːˈkɒlədʒi/ <i>n.</i>	生态 (学)

Phrases and Expressions

in the vicinity	in the neighborhood
bring on	to cause to be, happen, or appear
attribute to	把……归因于; 把……归咎于
cross... with...	使……与……杂交
at a time	一度
burn down	burn to the ground
dawn on	to begin to be understood, felt

Proper Names

National Forum on BioDiversity		全国生物多样化问题专题研讨会
Latin America		拉丁美洲
Southeast Asia		东南亚
U.N. (United Nations)		联合国
West Virginia		西弗吉尼亚州 [美国州名]
Mark Plotkin	/mɑːkˈplɒtkɪn/	马克·普洛特金
World Wildlife Fund		世界野生动物基金会
Tirio	/ˈtɪriəʊ/	蒂里奥人 [马布]
Suriname	/ˌsʊrɪˈnæm/	苏里南 [拉丁美洲]
Brazil	/brəˈzɪl/	巴西 [拉丁美洲]
Thomas Lovejoy	/ˈtɒməsˈlʌvdʒɔɪ/	托巴斯·洛夫乔伊
the House of Representatives		众议院
Gus Yatron	/ɡʌsˈjɑːtrən/	格斯·亚特隆
Pennsylvania	/ˌpensɪlˈveɪnjə/	宾夕法尼亚 [美国州名]
Madagascar	/ˌmædəˈɡæskə/	马达加斯加 [非洲]

Notes

- ① if only we knew it. 要是我们知道这一点就好了。
【点评】本句为虚拟语气，其隐含的意思为“可惜我们没能意识到这一点”。
- ② Increasingly, scientists and environmentalists are coming to the conclusion that... 科学家及环境学家们逐渐地得出了如下结论……
【点评】that 所引起的从句为 conclusion 的同位语从句。
- ③ each with its own interdependent colonies
【点评】这是“逻辑主语 + 介词短语”构成的独立结构，colonies 在生物学上的意思为“群体”，colonies of rare birds 意为“稀有鸟群”。
- ④ Crossing domestic corn varieties with this maize produces hybrids 将当地产的玉米品种与这种玉米杂交就生产出杂交种。
【点评】句中“crossing... this maize”为动名词短语作主语。
- ⑤ 本句中 library 意为“贮备基因库”。

Exercises

I. Answer the following questions briefly according to the text.

1. What do people argue for? Why?
2. What is the growing serious problem?
3. What is the result of the passing of each species?
4. Who is responsible for the destruction of species according to scientists and environmentalists?
5. What were the canaries used for?
6. What happened and what will happen in the history of life on earth? What was or is the cause?
7. What is the value of tropical rain forests?
8. Why should we save plants and animals without immediate use?
9. What is the work of genetic engineers?
10. What have scientists begun to do? Why?
11. What measures have been taken in the U.S.A.?

II. Say whether the following statements are the same as or different from statements in the text.

1. When people talk about protecting species, they usually base their arguments on the concept that human beings, as the only masters of the world, are responsible for preserving the beauty of diversity on this planet.
2. No more than 50 years ago bread mold was considered as a complete waste, yet penicillin made from it has proved to be a very effective medicine against many diseases.
3. It has become clear that the disappearance of plants and animals may directly endanger the existence of the human race itself.
4. The mass extinctions in the history of life on the planet are thought to have been caused by collisions of some great meteors with the earth.
5. A new sort of mass extinction is believed to be taking place as a result of the continuous destruction of the tropical rain forests by Latin America and Southeast Asia.
6. Naturalists can hardly keep up with the speed of disappearance of species in their attempt to save them.
7. The number of plants and animals found in one single hectare of rain forests amounts to no less than one hundred species.

8. Evidence shows that tropical rain forests can not only supply us with valuable natural drugs and foods, they can also serve as a base for cultivating new crops.
9. Each species on this planet, whether it is of any immediate use or not, serves as a gene stock which may represent a potential treasure house to bioengineers.
10. Scientists welcome the bill put forward by Gus Yatron because they know that the species known so far comprise only a very small part of the estimated ones.

III. Replace the italicised parts in the following sentences with the given words or expressions.

1. we may be losing things of incalculable and irreplaceable value to people, *if only* we knew it.
- only if
 - it would be good if
 - on condition that
2. The history of life on earth has been *punctuated* by the mass extinctions.
- disturbed
 - threatened
 - marked
3. The current problem has been *brought on* not by meteors but... by man.
- turned from bad to worse
 - solved
 - caused
4. Tropical rain forests *blanket* about 7% of the planet and support nearly 50% of the earth's known species.
- protect
 - cover
 - give warmth to
5. In search of such medical bounty, Mark Plotkin... has spent months *at a time* living with the elders of the Tirio.
- on each occasion
 - at one time
 - at the time when
6. Plotkin and his colleagues are also assessing the economic potential of such tropical plants as 'killer' potatoes, which trap insects on *their* sticky surface hairs.
- Plotkin and his colleagues'
 - potatoes'
 - tropical plants'
7. Even plants and animals with no *immediate* use are worth saving.
- in the near future
 - instant
 - not far away
8. 'In the past, many biologists thought it was almost unscientific to get involved in conservation politics,' says Lovejoy. '*But no more.*'
- but they no more think so
 - but no more is conservation politics true
 - but no more is conservation politics scientific
9. '*The rate of species loss is suddenly dawning on people.*' This sentence roughly means that suddenly people are beginning _____.

- a. to realise the rate of species loss
- b. to find that dawn has arrived and the rate of species loss can be slowed down
- c. to understand that the possibility of solving the problem of species loss is brighter than ever before

10. The House of Representatives has passed legislation sponsored by Gus Yatron, mandating that the U.S. Agency for International Development *set aside* \$ 10 million to preserve biodiversity.

- a. save
- b. put aside
- c. settle aside

Text B What Makes the Weather

During the early period of the earth's history, the weather on earth apparently fluctuated between bright sun and showers. In recent times, however, the mountains and valleys on land and under water have had a great influence on the earth's weather. They effect the movements of the thin film of water we call the sea and the thin layer of air around the earth. These movements produce changes in the temperature and humidity prevailing at the surface.

Although the sun is approximately 93 million miles away, its rays warm the earth. The areas that receive the sun's rays vertically are, naturally, warmer than those areas that receive only slanting rays. Vertical rays do not need to make as long a journey through the atmosphere before reaching the surface of the earth. Therefore, less of their heat is lost in the air and more of their heat is saved to warm the earth. Furthermore, slanting rays are spread over a wider area than vertical rays, so that less heat is available at a given point.

The sun's rays do not heat the vast stretches of space between the sun and the earth. If they did^①, we should expect to be warmer on top of a high mountain or riding in an airplane than we are on the ground. Actually, however, we feel cooler at the top of a mountain; and, if we fly a plane high enough, we encounter freezing temperatures, even over the equator.

This is true because the sun's rays are like the waves used in radio broadcasting. Music sent out by a radio transmitter does not fill the air with sounds for all to hear. Instead, the music travels in the form of electromagnetic waves, which must pass through a receiver and an amplifier to be heard. Similarly, the sun's rays cross our atmosphere and are absorbed by the surface of the earth. These rays warm the surface, which sends back some of this heat into the air.

When the air near the earth's surface has been warmed, it rises and is replaced by cooler air which comes down to take its place. This cool air, in turn, is warmed and rises to be replaced by more cool air. As air rises it becomes cooler because it expands and is less concentrated. The air above it weighs less because there is less of it. If the air is suddenly let out of a tire, the air expands rapidly and becomes much cooler. On the other hand, when air is put under greater pressure, it becomes warmer. This is what happens to the cold air that comes down to take the place of rising warm air.

The earth is much cooler than the sun, and the wave length of the earth's radiation is much longer than that of sun rays. These longer heat waves cannot pass through the atmosphere as easily as the short waves coming from the sun. Similarly, radio stations that transmit programs to distant countries broadcast in short waves, which can travel all around the world. Stations that broadcast local programs send out longer waves, which can be received more easily, but only in a limited area.

Heat waves, rising from the earth, meet resistance in the atmosphere from the water vapor there. Many of the waves are stopped by the water vapor and cannot get back out into space. The atmosphere, when it is warmed up, also sends some heat back to the earth's surface.

When the sun's rays strike water surfaces, some of the water becomes absorbed by the air as water vapor. The warmer the air is, the more vapor it can hold. When the air has absorbed its maximum amount of vapor, it is said to be saturated. If the air is then cooled, some of the vapor will condense and clouds will form. These clouds will contain drops of water at temperatures below freezing.

Clouds can greatly affect the temperature of the earth's surface. When there are many clouds in the sky, all of the sun's rays cannot reach the earth. The cloudy day, then, will be cooler than the cloudless day. Clouds also prevent the earth from cooling off rapidly at night. For this reason, countries such as the British Isles, which are often covered by clouds, have a relatively constant temperature. The weather in these cloudy areas is neither very hot in summer nor very cold in winter. On the other hand, places such as deserts, which have few or no clouds, have very sharp variations in temperature—between night and day as well as between summer and winter.

Wind is caused by air moving between cold and warm regions. The warm air around the equator rises, while the cold air near the poles sinks to the ground. Therefore, in the upper atmosphere there is less air pressure near the poles than near the equator. To compensate for this condition the upper air moves toward the poles in an attempt to equalize the pressure. This makes the surface pressure greater at the poles, and sends air toward the equator.

The earth is always spinning from west to east, taking the atmosphere with it. Let us take, for example, a mass of air that is moving at the same speed as the earth at the equator. When some of this air begins moving toward the north pole it will travel in smaller circles as it moves northward. Thus it will pick up speed. This will appear as a west wind. On the other hand, let us take a mass of air that is originally moving as fast as the earth near the pole. As it starts traveling toward the equator it will have to travel in larger circles. Hence it will seem to lose speed. If it moves around more slowly than the earth it will appear as an east wind. Finally, the many variations caused by air masses which become cooler and descend, while other masses become warmer and rise, produce constant changes in the weather.

New Words

fluctuate /'flʌktʃueɪt/ *vi.*

to move back and forth or up and down

humidity /'hjuː'mɪdəti/ *n.*

湿度

prevail	/pri'veil/ <i>vi.</i>	to exist widely
vertical	/ˈvɜ:tikəl/ <i>adj.</i>	directly overhead
vertically	<i>adv.</i>	垂直地
slant	/slɑ:nt, slænt/ <i>adj.</i>	sloping, inclined
slanting	<i>adj.</i>	倾斜的
stretch	/stretʃ/ <i>n.</i>	an unbroken length, or space; continuous extent or distance
equator	/i'kweɪtə/ <i>n.</i>	赤道
transmit	/trænz'mit/ <i>vt.</i>	传导, 播送, 发射
transmitter	<i>n.</i>	(无线电) 发射器
electromagnetic	/i'lekt'rəmæg'netik/ <i>adj.</i>	电磁(体)的
amplifier	/ˈæmplifaɪə/ <i>n.</i>	放大器
saturate	/ˈsætʃəreɪt/ <i>vt.</i>	to cause (sth.) to be filled, charged, supplied, etc. with the maximum that it can absorb
condense	/kən'dens/ <i>vt. & vi.</i>	(使) 凝结
compensate	/ˈkɒmpenseɪt/ <i>vi.</i>	(for) 补偿
equalize	/ˈi:kwəlaɪz/ <i>vt.</i>	使相等, 使相同
spin	/spɪn/ <i>vi.</i>	to rotate
descend	/di'send/ <i>vi.</i>	to come down or go down

Notes

① If they did

【点评】本句为虚拟条件句, 其中 did 为代动词, 相当于 if the sun's rays heated the vast stretches of space between the sun and the earth.

Exercises

Choose the best answer according to the text.

- It is warmer at the equator because _____.
 - that part of the earth is close to the sun
 - the sun's rays are like radio waves
 - the sun's rays are vertical there
 - there are no mountains at the equator
- Air can hold more water vapor when it is _____.
 - warm
 - cool
 - freezing
 - rising
- Clouds do not often form over deserts because _____.
 - there is no water to form vapor
 - the winds blow them away
 - the sun's rays are too hot
 - the nights are too cold
- A man who wants to predict the weather must watch _____.
 - the winds
 - the humidity
 - the clouds
 - all of the above
- This article gives the impression that the weather _____.
 - is easy to predict