

科技英语自学课本

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顾建光 高拥霓 编著

同济大学出版社

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出 版 前 言

《科技英语自学课本》是一套供有一定英语基础的科技人员学习的英语教材。全书分上、下两册，一学年学完。

这套书主要是训练学生阅读和翻译科技书刊的能力，要求学生掌握一定数量的科技书刊中常见的词语及基本语法知识，从而为今后阅读专业书刊打下较扎实的英语基础。

本书经由上海外国语学院函授部科技英语函授班的使用，学员反映良好，认为教材课文内容新颖，生动易懂，语言规范，词汇积极，练习丰富，便于实践。我国广大科技人员因种种原因不能脱产学习以提高自己的英语水平，这套课本将为他们在业余时间学习英语提供有利的条件。读者可根据自己的实际情况，安排教学进度和计划，一课课循序渐进由浅入深地自学。练习答案及课文参考译文另编成册，便于读者自我查对。此外，科技书刊中常见的语法现象，如动词不定式、动名词及分词等，在《练习答案及参考译文》中每隔五课列为专题作为专门归纳总结。课文中的语言难点都作了较详尽的注释。另外每课都配有两篇题材与课文相仿的阅读材料，可供学有余力的学生选学，本套书还备有录音磁带，上册3盒，下册4盒。

本书编者顾建光、高拥霓均为同济大学外语系副教授。上海外国语学院英语系钱绍昌副教授审阅了全书。该书虽经一段时间教学实践，但缺点与错误仍在所难免，诚恳希望专家和读者批评指正。

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Lesson 1

Text

How Nature Breaks Rocks

An object which is placed in the sunshine becomes hot, and heat causes most materials to become slightly bigger — that is, to expand. An iron bar, for example, whose ordinary length is 6 feet becomes about $1/2$ inch longer when it is made red-hot. The sun, of course, does not make rocks on the earth's surface red-hot, but rocks which are not protected by soil and plants do become quite warm in the sunshine.¹ The surface of the rock expands very slightly, but the inside of the rock, which is not heated, does not expand. This causes a little crack, and gradually little pieces of the rock break away.

The freezing of water also breaks off little pieces from rocks. When water is made cold enough, it turns into ice, and the ice takes up a little more space than the water from which it is made. One cubic foot of water forms $1\frac{1}{10}$ cubic feet of ice. If we take a bottle full of water, tie the cork firmly in place, and leave it where it is so cold that the water freezes, we find that the bottle breaks. This is because the

ice which is made needs more space.

Water may fill a crack in a rock; it freezes when it is very cold and, in doing so, makes the crack wider. Gradually little pieces of rock break away. We should expect rocks to be broken in this way near the tops of high mountains, where it is very cold. The little pieces of rock which are broken off from hills and mountains roll down into the valleys, and we sometimes find great heaps of rough, sharp stones near the bottom of a mountain.

The wind causes much wearing of rocks, particularly if sand and dust are blown along by it. If the wind blows over sandy country, such as deserts and beaches, it picks up quite a lot of sand and carries it along. The particles of sand rub, scratch and cut the rocks against which they are blown. Soft rocks may be gradually worn away and harder rocks are rubbed so that they become smooth and shiny. Sometimes a rock is made into a very strange shape because softer parts are worn away and harder parts are left. The wind near the ground carries most sand with it and so wears the lower parts of big masses of rock most². The lower part of a cliff may be worn away and then, in time³, the upper part falls down.

Sooner or later, the sand and the particles of rock drop from the wind to the ground. In sandy places you can often see heaps of sand forming little hills. They are called 'sand dunes'. Sand is blown along near the ground and some forms a little pile against a small bush, some grass, or a small rock.

The pile grows and forms a sand dune. Sand may be carried many miles by the wind. A dry wind called the Harmattan, which blows from the Sahara desert over Ghana and Nigeria, carries much sand and dust. The dust falls to the ground as a fine powder.

Much wearing and breaking of rocks takes place on the seashore, for the action of the sea is very powerful. As you stand on a beach, you can hear and see the sea at its work.⁴ Stones are dragged up and down the beach, and worn so that they become round and smooth. On some parts of the coast the waves beat against the rocky cliffs. The mere force of the water would slowly wear the cliffs, but this damage is small compared with that caused by the stones and sand which the water throws against them.

New Words

sunshine ['sʌnfain] *n.* 日光, 阳光

slightly ['slaitli] *ad.* 稍微, 少量

expand [iks'pænd] *v.* 膨胀

bar [bɑ:] *n.* 条, 杆, 棒

red-hot ['red-'hot] *a.* 炽热的

rock [rɒk] *n.* 岩石

cubic ['kju:bik] *a.* 立方的, 立方体的

cork [kɔ:k] *n.* 软木, 软木塞

firm ['fɜ:m] 坚固的, 牢固的, 结实的

firmly *ad.*

crack [kræk] *n.* 裂缝, 缝隙

vt. 使破裂 *vi.* 裂开

valley ['væli] *n.* (山)谷, 溪谷, 凹地

heap [hi:p] *n.* (一)堆, 大量 *vt.* 堆积

heaps of 许多, 大量, 一堆堆

rough [rʌf] *a.* 粗糙的, 粗制的, 粗略的

wearing ['weəriŋ] *n.* 磨损

a. 磨损的, 使人疲乏的

particular [pə'tikjulə] *a.* 特殊的, 特别的, 个别的

particularly *ad.* 特别, 尤其, 格外

sandy ['sændi] *a.* 沙的, 含沙的, 多沙的

desert ['dezət] *n.* 沙漠, 荒凉的境地

rub [rʌb] *v.* 摩擦, 擦

scratch [skrætʃ] *v.* 抓, 擦

shiny ['ʃaini] *a.* 磨光的, 磨损的, 晴朗的, 闪耀的

cliff [klif] *n.* 悬崖

dune [dju:n] *n.* 沙丘

pile [pail] *n.* 堆, (一)堆

bush [buʃ] *n.* 灌木, 矮树

dust [dʌst] *n.* 灰尘, 尘土 *vt.* 撒, 撒在...上

Phrases and Expressions

break away 脱离, 脱落

take up 占据

in place 在适当的地位

break off 脱落

wear away 磨损

sooner or later 迟早, 早晚

at work 在起作用, 在工作

Notes

1. ... which are not protected by soil and plants do become quite warm in the sunshine: 没有土壤和植物掩蔽的岩石, 在阳光下确实会变得相当热。

句中 do 用来加强语气。

2. The wind near the ground ... of rock most: 靠近地面的风带走砂土最多, 因此大块岩石下部磨蚀得最为厉害。

句中第一句 most 是形容词, 修饰 sand, 意即: “最多的砂”; 第二个 most 是副词, 修饰动词 wears。又如:

1) He is the one who worked (the) most, and yet was paid the least.

他的工作最多, 然而报酬最少。

2) Of these sports, I like rowing most.

这些运动中, 我最喜欢划船。

3. in time: 终于

4. ... you can hear and see the sea at its work:

你可以听到和看到大海在起作用。句中 at its work 作宾语补足语。

Exercises

I. Answer the following questions:

1. If an iron bar becomes $1/2$ inch longer when it is made red-hot, how long was it before it was heated?

2. Why does the surface of a rock expand more on a hot day than the inside part of the rock?

3. When water freezes, does its volume increase or decrease?
4. Describe one way of breaking a bottle without hitting it.
5. Are the tops of high mountains hot or cold?
6. 'We sometimes find heaps of rough stones near the bottom of a mountain.' Where have these stones come from?
7. How does sand affect hard and soft rocks when it is blown against them?
8. Why does it often happen that the lower part of a cliff is worn away before the top part?
9. What may cause a sand dune to begin to form?
10. Why are stones on a beach usually smooth?

II. Translate the following phrases and expressions:

1. the length of a steel bar
2. wear away
3. the particles of sand
4. yellow powder
5. be compared with this object
6. in some parts of coast
7. 一堆书
8. 占一点点地方
9. 把水变成冰
10. 裂缝
11. 地球表面
12. 一立方英尺

III. Replace the underlined words or phrases with the following words or phrases:

after a long time heated occupies separated
raise removed occurs a little

1. Much wearing and breaking of rocks takes place on the seashore.
2. Fed and Jim did not like each other at first, but in time they became friends.
3. Little pieces of rock which are broken off from hills and mountains roll down into the valleys.
4. When the wind blows over deserts and beaches, it will pick up a lot of sand and carry it along.
5. Sometimes a rock is made into a very strange shape because softer parts are worn away and harder parts are left.
6. As we have known, ice takes up a little more space that the water from which it is made.
7. An iron bar will become longer when it is made red-hot.
8. We know that heat causes most materials to become slightly bigger.

IV. Fill each space with one of the words from the list in proper form:

expand protect surface crack freeze
cubic particle mass pile powder

1. Spaces are sometimes left between the ends of metal rails on the railway so that they cause no trouble when

they _____ on a hot day.

2. "Be careful!" he cried. "That yellow _____ is poisonous!"
3. It is possible to _____ water in a refrigerator.
4. The _____ of the road was damaged by the bad weather.
5. A _____ foot of gold is heavy and valuable.
6. The water was not pure ; _____ of sand could be seen in it.
7. The tendency of a body to remain at rest is due to its _____.
8. When we paint a window-frame, the paint _____ the wood.
9. The explosion made a _____ in the glass of one window.

10. A _____ of books stood on the professor's desk.

V. A. Write out the corresponding adjectives of following words:

length *n.* _____ long *a.*

1. heat _____
2. width _____
3. height _____
4. breadth _____

B. Write out the corresponding adjectives of following words:

sand *n.* _____ sandy *a.*

1. cloud _____

2. health _____
3. wind _____
4. ice _____
5. snow _____

VI. Translate the following sentences into English:

1. 这座山是那么高,以致我们在二小时内不能到达山顶。
2. 从山上脱落的岩石滚入山谷形成一堆堆石头。
3. 这就是海滩上的石头通常很光滑的主要原因。
4. 岩石内部由于没有受热,因而不膨胀。
5. 这块石头又大又重,所以他们不能将它从路(面)上搬开。
6. 放在太阳下的任何物体都会变热。

READING MATERIALS

I

Weight On and Off the Earth

We are so used to our life on the surface of the earth that it can be quite an effort for our minds to break free of all the ideas that we take for granted¹. We talk about “up” and “down”, but we know that what is “down” for us is “up” for someone on the other side of the world.

Because we can feel that things are heavy, we think of “weight” as being a fixed quality in an object, but it is not really fixed at all. If you could take a one-pound packet of