Scientific English Practice

英语科普文选

第四集

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京广英 译

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内 容 提 要

本书收集了外国著名科普小品、科技史话和名科学家小传28篇。语言规范，文字流畅，深入浅出，生动有趣。每篇文章附有参考译文和注释。

本书可供具有中等英语程度的读者阅读。

G. C. Thornley
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·备有录音磁带·

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1 How Nature Breaks Rocks

W. E. FLOOD, M.A., Ph.D.

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 ½ 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. 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 1/10 cubic feet of ice. If we take a bottle full of water, tie the cork firmly in place[2], 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 most. The lower part of a cliff may be worn away and then, in time, 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[3]. 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[4] that caused by the stones and sand which the water throws against them.

Notes

1. 弗拉德博士是位资历很深的大学讲师和科普作家。本文选自他所著的 «The Earth on Which We Live» 一书。

2. tie the cork firmly in place

   in place 是 in the right or proper place（在适当的位置），例如：

   Every tool is in place.（每件工具都在适当的位置上。）

   与 in place 相对，是 out of place（不在适当的位置）

3. ..., you can hear and see the sea at its work.

   at work 意思是 doing something（在工作，从事于，忙于），例如：

   They are at work on a new machine.（他们正在忙于制造新的机器。）

4. ..., but this damage is small compared with that caused by ...

compared with 是“与……相比”。例如：

The output of our commune has increased by fifty percent (as) compared with last year. （我们公社的产量与去年相比增加50%。）

to compare ... with ... 是“把……与……相比”如：

You can compare one thing with another. （你可以拿一件事和另一件事相比。）

He compares me with my brother. （他把我和我弟弟比较一下。）

to compare ... to ... 是“把……比作……看待”如：

We may compare life to journey. （我们可以把生命比作旅程。）

Comprehension Exercise

1. If an iron bar becomes ½ 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?

大自然是怎样破坏岩石的

放在阳光下的物体会晒热，而热能使大多数材料稍微变大，也就是发生膨胀。例如，一根铁棒，原长六英尺，经加热到赤热状态时，就会长出约半英寸来。当然，太阳不会把地球表面上的岩石晒到赤热状态。但是，没有土壤和植物掩蔽的岩石，在阳光下的确会变得相当热。岩石的表面会微微地膨胀，而未受热的岩石内部则并不膨胀。这就产生小裂缝，逐渐地就有岩石碎片剥落下来。

水的冻结也会使岩石裂成碎片。水被冷却到一定程度时就结成冰，而冰比结冰前的水要占据稍大一些的空间。一立方英尺的水能结成$1\frac{1}{10}$立方英尺的冰。如果我们拿一只装满水的瓶子，扣紧软木塞，放到水能上冻的冷处，我们就会发现瓶子会冻裂。这是因为结成的冰需要更大的空间。

水可以灌满岩石里的裂缝；严寒的时候，水就结成冰，而水一结冰就加大岩石的裂缝。小块的岩石就逐渐剥落下来。高山顶上非常寒冷，我们可以想见山顶附近的岩石就是这样破碎的。从大小山顶上破碎的石块都滚到了山谷，我们有时就能在

山脚附近发现大堆质地粗糙而边缘锋利的石块。

风使岩石遭到很大磨蚀，风里裹着砂土和尘土吹来的时候尤其如此。如果风从沙漠和海滩等多砂地带吹过，它就会卷走大量砂土。风吹到岩石上面，砂粒就磨蚀、刮削这些岩石。硬度低的岩石逐渐被磨碎，坚硬的则磨得锃光滑溜。有时一块石头被弄成奇形怪状，因为质地不硬的部分被磨掉，坚硬的部分留了下来。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。一个悬崖的底部可能被磨蚀掉，于是，总有一天崖顶将会倒塌下来。

砂土和岩石的碎粒迟早会从风里落到地面上。在多砂的地区，你常常可以看到形成小山般的一堆堆砂土。这些小山叫做“砂丘”。砂土是贴着地面被吹走的，在碰到小灌木、草丛或小块石头的地方形成了小砂堆。砂堆越来越大，就形成了砂丘。砂土可以被风带到许多英里以外的地方。一种叫做“哈麦丹”(Harmattan)的干风，从撒哈拉大沙漠吹过加纳和尼日利亚，它带走很多砂粒和尘土。这些尘土落到地面就象很细的粉末。

海边也有大量的岩石磨蚀破坏的情况，因为海的作用是很大的。你站在海滩上的时候，就可以听到和看到大海在起作用。石块在海滩上被推上推下，磨得又圆又光。在海岸的某些地方，海浪拍打着石崖。仅是海水的力量就会慢慢地磨蚀悬崖，但是这种损坏同海水裹着砂石冲击石崖相比，就微不足道了。

2 Dr. Simpson and Chloroform

EVE BLANTRYE SIMPSON

In a letter to Mr. Waldie, Professor Simpson wrote, “I am sure you will be delighted to see part of the good

result of our hasty conversation.[2] I had the chloroform for several days in the house before trying it, as, after seeing it such a heavy liquid, I despaired of it, and went on dreaming about others. The first night we took it, Dr. Duncan, Dr. Keith, and I all tried it simultaneously, and were all under the table in a minute or two."

Dr. George Keith, writing to me in 1891, says: "Dr. Miller, in the appendix to his work on surgery, published soon after, gives a full account of the scene. It is pretty correct, only he says we all took the chloroform at once. This, with a new substance to try, would have been foolish, and the fact is, I began to inhale it a few minutes before the others. On seeing the effects on me, and hearing my approval before I became unconscious, they both took a dose, and I believe we were all more or less under the table together, much to the alarm of your mother, who was present."

Professor Miller, his neighbour, who used to come in every morning to see if the experiments had survived, says: "These experiments were performed after the long day's toil was over, at late night or early morn, and when the greater part of mankind were soundly asleep." He describes how, after a weary day's labour, the trio sat down and inhaled various drugs out of tumblers, as was their custom. Chloroform was searched for and found beneath a heap of waste paper: and with each tumbler newly filled, the inhalers resumed their occupation. A moment more,

then all was quiet, and then a crash.

On awakening, Dr. Simpson's first thought was: "This is far stronger and better than ether." Then he noticed that he was lying on the floor, and that among the friends around him there was both confusion and alarm. He saw Dr. Duncan snoring heavily, and Dr. Keith kicking violently at the table above him. They made several more trials of it that eventful evening, and were so satisfied with the results that the festivities of the evening did not end till a late hour, 3 a.m.

The onlookers to this scene were my mother, her sister Miss Grindlay, her niece Miss Petrie, and her brother-in-law Captain Petrie. Accustomed as they had grown to experiments,[3] they were startled by the results of this first "inhaling of chloroform". My aunt often spoke of Dr. Keith's ghastly expression when, ceasing to kick, he raised his head to the level of the table and stared with unconscious eyes on them. She had such a horror of chloroform that she refused ever to try it. My father used to threaten to put her under its influence, and when she fled, he gave chase; but, light of foot as he was in those days, she always escaped; for fits of laughter used to seize him and stop the pursuit. Great was my father's joy at his success, and in having so powerful an agent to deaden the suffering that he had to watch daily.

A certain Duchess expressed her feelings in a letter she wrote before chloroform was a month old: "Dear Dr.

Simpson, I cannot resist one line to wish you joy of your discovery[4]. I think your life must be a very happy one from the relief of *not* witnessing pain. It must make you very happy, dear sir, to have discovered so great a benefit."

Notes

1. 在初期，用乙醚作为麻醉剂，大大改进了外科手术条件。但J.Y.辛普森博士（1811—1870）和他的几个朋友对乙醚并不满意。他们希望找到更好的麻醉剂。他们常常在完成一天的工作之后，晚上聚会在一起，用不同的气体在他们自己身上进行实验。本文选自«Sir Janes Y. Simpson»一书，作者是辛普森博士的女儿。
2. I am sure you will be delighted to see part of the good results of our hasty conversation.
   沃尔戴先生曾建议辛普森教授试用化学药品。这里的 our hasty conversation 即指沃尔戴向辛普森提出建议的那次谈话。
3. Accustomed as they had grown to experiments, ...
   = Although they had grown accustomed, ...
   这是一个让步状语从句。as 是连词，引导让步状语从句。这种让步状语从句用的是倒装语序，即把从句里的表语，状语或动词提前，紧接着就是 as，然后再跟随其它成分。例如：
   Small as atoms are, electrons are still smaller. （原子虽然很小，但电子更小。）

Search as they would, they would find nothing in the house. （尽管他们在这房子里到处搜寻，但是他们找不到任何东西。）

Light of foot as he was in those days, she always escaped. （尽管那些日子他步履轻快，但她都跑掉了。）

4. I cannot resist one line to wish you joy of your discovery.

resist 是 keep back from, 作“忍住”解。常用于否定句，作“忍不住”，“禁不住”，“不得不”解。例如：

I can not resist peanuts. （我见到花生就禁不住要吃。）

line 是 short letter（短信）。

Comprehension Exercise

1. Which doctors tested chloroform with Dr. Simpson? Did it make them unconscious or not?
2. What was the subject of Dr. Miller's book mentioned here?
3. In his letter, Dr. Keith says that it would have been foolish for all three men to take chloroform (for the first time) simultaneously. Why?
4. Who was the first to inhale the chloroform?
5. What alarmed Eve Simpson's mother?
6. Why did Professor Miller go to the house every morning?
7. When the three men found the chloroform and inhaled it, there was a crash. What caused the crash?

8. Why was Dr. Duncan snoring? What was Dr. Keith doing at that time?
9. Why did Eve Simpson's aunt always escape when Dr. Simpson chased her? Why did he chase her?
10. What was the cause of Dr. Simpson's great joy?

辛普森博士与氯仿

辛普森教授在给沃尔戴先生的信中写道："我相信你会高兴地看到我们匆忙的谈话取得了部分的好结果。试用氯仿以前，这药已经在我的房间里放了好几天，因为看到它是这么稠的液体，我对它感到失望，继续设想其它的东西。我们吸入氯仿的第一个晚上，邓肯博士、基思博士和我都同时吸入了，一两分钟之内就都倒在桌子底下。"

乔治·基思博士1891年写信给我说："米勒博士在这件事以后不久出版的关于他的外科学一书的附录中，对这一情景作了详细的记载。描述相当确切，不过他说我们都立刻吸入了氯仿。拿一种新的物质做试验，可能是愚蠢的。事实是，我比别人早几分钟开始吸入。他们两位看到药物对我起的作用，听到我在失去知觉之前表示同意后才吸入一剂。我相信我们大概是差不多同时倒在桌子下面的。当时你母亲在场觉得十分吃惊。"

米勒博士是他的邻居，每天早晨都来看看这些实验是否仍在继续搞。他说："这些实验是在一天的劳累之后，在深夜或

凌晨，当绝大部分的人正在鼾睡的时候进行的。”他描述到，经过一天劳累艰苦工作之后，这三个人怎样坐下来，吸入酒杯中各种不同的药物，这已是他们的习惯了。他们寻找氯仿，在一堆废纸下面找到了它；这些吸入者们重新斟满每一个人的酒杯以后，又开始干起他们的行当来。过了一会儿，是一片寂静，随后便是一阵摔倒的声音。

辛普森博士醒来的时候首先想到的是：“这种药比乙醚厉害得多，也好得多。”随后，他看到自己是躺在地板上，周围的朋友陷于慌乱、惊恐之中。他看到邓肯博士呼呼地打鼾，基思博士正猛烈地踢着在他上面的桌子。在那不平凡之夜，他们又做了几个试验，结果极其满意，为此，他们彻夜欢庆，直至凌晨3点方告结束。

当场目击者有我母亲和她的妹妹格林德莱伊小姐、她的侄女皮特里小姐和她妹夫皮特里上尉。虽然他们看惯了这些人做实验，但这个第一次吸入氯仿试验的结果，却使他们大为吃惊。我姨母经常谈起那回基思可怕的表情，说当他停止踢打以后，把头抬到桌子那么高，用那双失神的眼睛盯着他们。她对氯仿感到十分恐怖，从来拒绝试用。我父亲曾威胁着要让她尝尝滋味，她一跑，父亲就追。虽然在那些日子里，父亲步履轻快，但她总是逃掉，因为父亲发出阵阵大笑，就不能再去追赶她了。我父亲对于他的成功极为高兴，因为他有了这么有效的药物可以消除他每天看到人们忍受的痛苦。

使用氯仿还不到一个月，一位公爵夫人就写信发表她的感想：“亲爱的辛普森博士，对您的发现，我不能不修此短笺，谨祝阁下快乐。我想，您因不再目睹病人的痛苦而感到宽慰，您的一生必定是非常幸福的。亲爱的先生，您已发现给人们以这么大的好处，必然会使您由衷地高兴。”