

科技英语文摘

出 版 说 明

本书的三十篇文章涉及金属、光、电、行星、地震、气体、疾病、电讯、万有引力等许多方面的普通常识，并提及古今很多著名学者和科学家，对其中有些作了重点介绍。文章的文字浅显易懂，内容颇为有趣，涉及知识面广，词汇、语言现象重复率高，对学习外语很有助益，可供高中、大学低年级学生及具有相当水平的读者阅读。为了方便读者，我们对每篇作了翻译，并对其中的难词、句型、语法现象都作了详细的注释，有些还举例加以说明。对有些重要的人物和事件作了知识性注释。本书练习全部保留。同时，我们对所有练习提供了答案，附在书后，以供参考。

由于我们水平有限，书中难免有不妥之处，望读者批评指正。

参加本书注释工作的有西安外国语学院英语系的姚福生、谭志明同志；参加本书参考译文及练习参考答案工作的有西安交大的金福庆、赵光烈、张锦文、陈璇夫、张鹤立、贺广贤、田平同志。

Contents 目 录

- 1 Hot Metal 受热的金属 (1)
- 2 Sir Walter Raleigh 沃尔特·雷利爵士 (7)
- 3 Electric Wire 电线 (13)
- 4 Light 光 (18)
- 5 Flying 飞行 (23)
- 6 In a Balloon 乘气球飞行 (28)
- 7 The Nine Planets 九大行星 (34)
- 8 Eclipses 日食和月食 (40)
- 9 Switches and Fuses 开关和保险丝 (46)
- 10 Magnets 磁铁 (51)
- 11 Otto von Guericke and the Vacuum 奥托·冯·古埃里凯和真空 (56)
- 12 Galileo 伽利略 (61)
- 13 Pendulums 摆 (67)
- 14 Earthquakes 地震 (72)
- 15 Thomas Alva Edison 汤姆斯·阿尔瓦·爱迪生 (78)
- 16 Some of the Gases 某些气体 (84)
- 17 Some Arab Scientists 几位阿拉伯科学家 (90)
- 18 Drills and Derricks 钻机和井架 (96)
- 19 Mineral Oil 矿物油 (102)
- 20 The Soil 土壤 (108)

- | | | |
|----|---------------------------|-------------------|
| 21 | Irrigation | 灌溉 (114) |
| 22 | A Ship's propeller | 船用螺旋桨 (120) |
| 23 | Faraday and his Generator | 法拉第和他的发电机 (126) |
| 24 | Voltage and Current | 电压和电流 (132) |
| 25 | Sir Robert Watson Watt | 罗伯特·沃森·瓦特爵士 (138) |
| 26 | The Use of Radar | 雷达的应用 (144) |
| 27 | Malaria | 疟疾 (150) |
| 28 | The Air Brake | 空气制动器 (157) |
| 29 | The Atlantic Cable | 大西洋电缆 (163) |
| 30 | Gravitation | 引力 (169) |

参考译文

练习参考答案

1. Hot Metal¹

WHEN we heat anything, it expands². It grows bigger than it was before. This fact is important. Metals expand a lot.

How do we find the temperature of anything? When a boy is ill, a doctor usually takes his temperature³. She puts a thermometer in the boy's mouth. The boy has to keep the thermometer under his tongue⁴. A minute later, the doctor takes it out and looks at it. Why does she do this?

The temperature of the boy's body usually rises⁵ when he is ill. The thermometer measures this temperature. Sometimes the temperature is quite high. This shows the doctor that the boy is very ill.

A doctor's thermometer is made of glass⁶. There are some figures⁷ on the glass. The glass itself is a tube and there is some mercury⁸ in the tube. The boy's tongue makes the mercury warm, so it expands. The top of the mercury runs up the tube⁹. It reaches a place near one of the figures, and stops there. The doctor can see the top of the

mercury, and she can see the figure near it. This figure shows her the boy's temperature.

Some thermometers are not made of glass. These measure higher temperatures. We can measure the temperature of a fire which is heating some metal, but we cannot use a glass thermometer. We have to use something which will not melt.

When the mercury is heated, it expands. Other things also expand when they are heated. The rails on a railway expand on a hot day. Sometimes you may notice spaces between the ends of the rails⁸. The wheels of the train make noises when they cross these spaces. On a cold day the ends of the two rails do not meet, but on a hot day each rail expands. Then the two ends get nearer together.

Telegraph wires expand in the summer. They get longer. Then the wire between two posts gets lower in the middle.

Very often a machine is made in different pieces⁹. Then we have to fit the pieces together¹⁰. Perhaps there is a metal ring, and the ring has to go on a tube. It is not bigger and so it does not easily go on. But we can heat the ring first. Then it will expand. Then we can easily put it in its proper place on the tube. When it cools, it will con-

mercury

very small

tract. It will return to its old size¹¹, and then it will be tight on the tube. So we have only to wait until it cools, then the work is done.

Some people once tried to drive a ring on a tube¹². They hit it hard, and so, of course, it broke. They got another ring and hit that harder than the other. It also broke. "Very bad metal!" they cried angrily. Another person saw them throwing the pieces away¹³. He came to look, and heated another ring. It expanded, and easily went into its place on the tube¹⁴. Then it contracted and held the tube tightly

收缩

contract

Notes

1) metal [ˈmetl] n. 金属。2) expand [iksˈpænd] v. 膨胀, 其反义词是 contract [kənˈtrækt] 收缩。3) temperature [ˈtempəriːtʃə] n. 温度; 体温。4) to keep the thermometer under his tongue——把体温表含在他的舌头底下。under是前置词, 意为“在……下面, 在……底下”。5) is made of glass——用玻璃制的。句型to be made of...意为“用……制造的”。例如: The desk is made of wood. (这张桌子是木制的。) This chair is made of plastic. (这张椅子是塑料做的。) 6) mercury [ˈmɜːkjuri] n. 水银。7) The top of the mercury runs up the tube.——水银面沿玻璃管上升。动词run可以表示液体的流动, 例如: The river runs through the village. (小河穿过村庄流去。) up是前置词, 意为“向上, 向(高处)”。例如: to climb up a rope (爬绳)。8)

rail [reil] n. 铁轨。9) Very often a machine is made in different pieces. —— 一台机器通常是分部件制造出来的。这句中前置词短语 in (different) pieces 是固定搭配，表示不是整体（制造），而是分部件（制造）的，又如：They cut the metal in pieces. （他们把金属切割成小块。） They like to buy meat in big pieces. （他们喜欢大块买肉。） 10) to fit the pieces together —— 把这些部件装配在一起。 11) It will return to its old size. —— 它会恢复到原来的尺寸。 12) to drive a ring on a tube —— 把金属环硬套在管子上。动词 drive 经常用在机械加工等方面，表示“使劲（敲打或拧动）使就位”。例如：to drive a nail/a screw/a bolt, etc. home （把钉子敲下去，/把螺丝拧紧，/把销子上紧）。 13) saw them throwing the pieces away —— 看见他们把破坏扔掉。them 和 throwing the pieces away 一起构成 saw 的复合宾语。throwing the pieces away 也可称为“宾语补足语”，对宾语 (them) 进行补充说明。 14) easily went into its place on the tube —— 很容易就套在管子上了。to go into its place 意为“到它应该到的位置上了”，类似的用法如：Everything is in its place. （什么东西都放得井井有条。）

EXERCISES

Put a word in each space.

expands, temperature, thermometer, wire, contract

(a) "What is the ² of the ice?" the teacher asked.

(b) Most metals ³ when they get cooler.

(c) The picture was hanging on a piece of ⁴.

(d) If the ring ⁵, it will go on.

(e) The doctor put a ⁶ under the girl's tongue.

2. Notice, *The temperature rises when he is ill.*

Complete these sentences:

- (a) The temperature falls when (better)
- (b) We know the temperature when (thermometer)
- (c) The rails expand when they (hot)
- (d) The rails contract when
- (e) When he hit the metal, it

3. Notice, *Another man saw them throwing the pieces away.*

We can also say, I heard him singing.

He watched them running.

Complete these sentences:

- (a) Peter saw the soldiers...
- (b) All the people heard the bell...
- (c) I watched the insects...
- (d) He did not see the car...
- (e) I have never heard a bird...

4. Notice, *If we try to push it on, we cannot.*

Complete these sentences properly,

- (a) If a boy tries to fly, he...
- (b) If Peter heats that tube tomorrow, it...
- (c) If you give him a bicycle, he...
- (d) Peter will be angry if...
- (e) The doctor will know the boy's temperature if...

5. Notice, *The boy has to keep the thermometer under his tongue.*

Put the right form of *have to* in the spaces. Note
Have to = must

- (a) Tomorrow I — go to the garage.

- (b) Yesterday Peter — repair his bicycle.
- (c) We always—stick stamps on our letters.
- (d) He always—stick stamps on his letters.
- (e) They—put the ring in the fire in order to heat it.

2. Sir Walter Raleigh¹

DOCTORS tell us not to smoke, but a lot of people smoke tobacco every day. Long ago, no one in Europe smoked; the tobacco plant was unknown there. It grew in America², and Christopher Columbus³ found it there. Later, he returned to Europe and told everyone about tobacco. He said that the American Indians⁴ often smoked it.

One way of smoking was this. The American Indians threw some tobacco leaves on a fire. Then they put long tubes in their mouths. The other ends of the tubes were over the fire, so they were able to draw the smoke into their mouths.

About the year 1560 a Frenchman, Jean Nicot⁵, was living in Lisbon⁶, Portugal⁷. He was very interested in all American plants; some of them were very different from the plants of Europe. He (and other men too) used the leaves of the tobacco plant to cure pain⁸. Perhaps a man had a bad pain in a leg or an arm. Nicot put tobacco leaves on the painful place, and tried to cure the pain in that way. We say now that tobacco contains nicotine⁹.

The word *nicotine* comes from this man's name.

Tobacco was used as a cure¹⁰ in many ways. Sometimes a horse was so ill that it could not walk properly¹¹. Then a man blew some tobacco smoke into the horse's nose. He believed that this made the horse better! Poor horse! Nobody blows smoke at horses now.

Sir Walter Raleigh was a famous man in the days of Queen Elizabeth the First¹². He travelled widely and learnt to smoke. Then he returned to England, but he did not stop smoking. He used to smoke two pipes every day secretly in his room¹³. When anyone came in, he quickly hid his pipe; but one day—the story is told¹⁴—he was not quick enough. A man came in and found clouds of smoke in the room. More smoke was coming from Raleigh's mouth, so the man got some water and threw it over Raleigh. He believed that Raleigh was burning. He ran out of the house and told everybody about it.

After this, smoking was not a secret. Raleigh told Queen Elizabeth about it. He added that he could weigh his smoke. She did not believe this, and she asked him to explain.

"First," he said, "I shall weigh the tobacco. Then I shall put it in my pipe and smoke it. Then

I shall weigh the ashes which remain. I can take them out of the pipe and weigh them on a balance. There will be a great difference¹⁵ between the two weights. The tobacco must be heavier than the ashes. The difference between them must be the weight of the smoke."

It was a good plan, but Raleigh was wrong. When anything burns, it needs oxygen¹⁶. It usually gets the oxygen from the air. When Raleigh's tobacco burned, it did this, but the oxygen was not in the tobacco at the beginning. It was added when Raleigh smoked his pipe. So the smoke was heavier than the difference between the two weights. The weight of the oxygen was added.

Raleigh had a sad life and died in 1618. He died bravely and quietly. He smoked a pipe just before his end¹⁷.

Notes

1) Sir Walter Raleigh ['rɔ:lɪ] 沃尔特·雷利爵士 (1552—1618), 英国历史学家及航海家。2) America [ə'merikə] 美洲。3) Christopher Columbus ['krɪstəfə kə'lʌbəs] 哥伦布 (1451—1506), 意大利航海家, 1492年他从西班牙出发横渡大西洋, 到达巴哈马群岛和古巴、海地等岛, 是第一个到达美洲的欧洲人, 故欧洲历史上有哥伦布发现新大陆之说。4) American Indian — (美洲)印第安人。哥伦布初次抵达美洲, 误认为已经到

了印度，把当地居民称为Indians（印度人），译为汉语时译为“印第安人”，以资区别。5) Jean Nicot 让·尼科，法国人，死于1600年。据说，烟草从美洲传入欧洲后，当时驻里斯本的法国大使尼科给法国皇后进献了一包种籽，使之在欧洲广泛种植。烟草的学名(nicotiana)和烟碱(nicotine)都来自他的名字。6) Lisbon ['lɪzbən] 里斯本(葡萄牙首都)。7) Portugal ['pɔ:tʃuɡəl] 葡萄牙，欧洲国家，位于欧洲西南伊比利亚半岛西部。8) to cure pain——止痛，驱痛。动词cure可以表示“治愈(病人、疾病等)”，也可以表示“驱除(痛苦、恶习)”。例如：to cure him of his illness(治好了他的病)；to cure the inflammation(消除了炎症)。9) nicotine ['nikətiːn] n. 尼古丁(即烟碱)。10) cure n. (能治愈某种疾病的)药或治疗方法。11) Sometimes a horse was so ill that it could not walk properly.——有时马病的连路都走不稳。句型so...that... (如此……以致于……) 用来表示结果。例如：she was so sleepy that she couldn't open her eyes. (她瞌睡得连眼睛都睁不开。) He walked so quickly that I couldn't follow him. (他走的很快，我都跟不上。) 12) Elizabeth (i'li:zəbəθ) 伊丽莎白(女子名)。Queen Elizabeth the First——(英国)伊丽莎白女王一世(1533—1603)，1558—1603年为英女王。13) He used to smoke two pipes every day secretly in his room.——他每天都要在他的房间偷偷抽两袋烟。used to表示过去的习惯，后跟动词原形，在意义上相当于“often + 一般过去时”。例如：I used to smoke a lot. (我过去烟抽得很凶。) She used to take a walk after supper every day. (她过去常常在每天晚饭后散步。) 表示“抽一袋烟”说“to smoke a pipe”，“抽两袋烟”说“to smoke two pipes”。14) the story is told——有个故事说；据说。这是讲故事时用的一句插入语，和as the story goes(据说)类似。15) difference n. (数学用语)差，差额。16) oxygen ['ɒksɪdʒən]

n. 氧, 氧气。17) before his end — 在他死之前, 在他临终之前。

EXERCISES

1. Put one of the words in each space.

cured; pain; weight; ashes; oxygen

(a) After the great fire, only ^{ashes} remained.

(b) I shall have to go to the doctor. I have a ^{pain} in my arm.

(c) When we breathe, we use the ^{oxygen} of the air

(d) When Peter was ^{cured} he got up

(e) The ^{weight} of the lorry was so great that the bridge broke.

2. Answer these questions:

(a) Where was Nicot living in 1560?

(b) Where did Columbus find the tobacco plant?

(c) Where did Sir Walter Raleigh smoke secretly?

(d) Why did the man throw some water over Raleigh?

(e) What mistake did Raleigh make when he was weighing the ashes?

3. Put the proper words in the spaces. The piece will help you:

(a) Nobody—Europe smoked at that time.

(b) He can easily draw the smoke — his mouth.

(c) We found Peter—his room.

(d) They are going to tell the pilot—the aircraft.

(e) Galileo died—1642.

4. Notice, Tobacco was used as a cure. Form A.
This means, They used tobacco as a cure. Form B.
These sentences are in Form B. Put them into Form A.

- (a) They never use tobacco as a cure now.
- (b) They will repair the bicycle immediately.
- (c) They have spent all the money.
- (d) He has cured the pain.
- (e) They weighed the ashes.

5. Notice, A horse was so ill that it could not walk.
(This shows the result of being ill.)

Complete these sentences;

- (a) He smoked so much that he... (ill)
- (b) The salt was so heavy that the balance...
- (c) The pain was so terrible that...
- (d) Newton worked—hard—he forgot his friends.
- (e) The horse's legs were so weak...

3. Electric Wire

ELECTRIC wire is usually made of copper². Copper lets the electric current flow easily through it³. We say that it has a low resistance. Some other metals also have a low resistance⁴, but copper is the most useful. There are copper wires in millions of houses in the world.

These wires carry the current to our lamps⁵. There is a thin wire inside an electric lamp, you can see it if you look carefully. A thin wire has a higher resistance than a thick one⁶. It tries to stop the flow of current. Then it gets very hot.

The thin wire is not made of copper; it is made of tungsten⁷. All metals melt when they get hot (Mercury melts at a lower temperature than our usual ones). Tungsten does not melt easily. It has to be very hot indeed before it melts.

When the tungsten gets hot, it also gets bright. It shines and gives a good light. It also lasts a long time without breaking.

An American, Edison⁸, invented the first small electric lamp. He wanted a thin wire for his lamp,