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顾建光 高拥霓 编著

科技英语自学课本

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(副教授)和高拥霓(讲师)均为同济大学外语系教师。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

Light

Light travels very fast. It moves at 300,000 kilometres a second. Light reaches us from the moon in less than a second and a half. The moon is about 382,000 kilometres away.

Light from the sun reaches us in $8\frac{1}{2}$ minutes. The sun is about 149,640,000 km from the earth.

The other stars are farther away than the sun. Light from the nearest star reaches us in about four years. When you look at a star, you do not see its present condition. You see it as it used to be. Light from some stars takes hundreds of years to reach us. We never see a star as it is now. We see it as it was long ago: perhaps hundreds or thousands of years ago.

Astronomers watch the stars through big telescopes. Some of these telescopes have glass lenses in them. A lens is a round piece of glass, but it is not flat. The side of a lens is curved. The middle part of some lenses is thicker than the

edge. In other lenses, the edge is thicker than the middle part.

Cameras have lenses at the front. A very good lens costs a lot of money; it costs more than any other part of the camera.

A ray of light usually travels in a straight line¹; but sometimes it bends. The light reaches the film of a camera through the lens. It leaves the air and goes into the glass; then it bends. The ray also bends when it leaves the glass. Light also bends when it reaches the lens of a telescope.

Some telescopes do not use a lens at the front. They use a curved mirror at the back. A curved mirror is better than a lens in some ways.²

The world's biggest telescope is in the Soviet Union³. The next biggest is on Mount Palomar⁴ in the US. Near it, on Mount Wilson⁵, there is another big telescope. All three of them use mirrors, not lenses at the front. With these great telescopes astronomers can see stars and other things very far away. Some of these things are not only stars. They are great groups of stars.

The sun and the earth are in a great group of stars. There are about 100,000,000,000 stars in it. We call this group the galaxy. Outside the galaxy⁶ there is empty space; but thousands of millions of kilometres away there is another galaxy. Light from this other galaxy reaches us after about 2 million years. There are millions of these galaxies; and they appear to be rushing away from us. The astronomers

at Mount Palomar and Mount Wilson and other observatories can see some of them well; but they cannot see one as it is now. The light takes millions of years to arrive here; so they see a distant galaxy as it used to be. The light left it millions of years ago. It travelled across space and then went into an astronomer's eye. Perhaps no men were living when it started.

New Words

farther ['fɑ:ðə] *a., ad.* (far 的比较级) 较远(的), 更远(的)

lens [lenz] *n.* 透镜

round [raund] *a.* 圆的

curved [kə:vɪd] *a.* 弯曲的, 曲面的

ray [rei] *n.* 光线, 射线

mirror ['mirə] *n.* 镜子

Soviet ['səuviet] *a.* 苏联的 *n.* 苏联人

union ['ju:njən] *n.* 联盟

galaxy ['gæləksi] *n.* 银河, 星系

the galaxy (or: the Galaxy) 银河系

observatory [əb'zə:vətri] *n.* 天文台

distant ['distənt] *a.* 远的, 远离的

Phrases and Expressions

farther away 更远, 在更远处

at the front 在前面

at the back 在后面

Notes:

1. in a straight line (in straight lines) 沿着直线方向
2. in some ways 在某些方面
3. the Soviet Union 苏联
4. Mount Palomar 帕洛马山(在美国加利福尼亚州)
5. Mount Wilson 威尔逊山(同上)
6. outside the galaxy 在银河系的外面。这里 outside 是介词，意即“在…外面”。

Exercises

Comprehension

1. How fast does light travel?
2. How far is the sun from the earth?
3. What work do astronomers do?
4. What is the distance between the moon and the earth?
5. Are most of the galaxies coming towards us?

Language

A. Translate the following phrases and expressions:

1. less than a minute
2. light from the sun
3. farther away than ...
4. present condition
5. watch ... through a telescope
6. a round piece of glass

7. travel in a straight line
8. empty space
9. a curved mirror
10. go into an astronomer's eye
11. 在某些方面
12. 巨大的星群
13. 急忙从我们这里跑开
14. 比太阳还要远

B. Put one of the given words in each space:

astronomer telescope lens mirror galaxy

1. The sun is a star in our _____.
2. Peter's camera has a _____ at the front.
3. The _____ watched the moon all night.
4. Mary combed (梳) her hair in front of the _____.
5. The world's next biggest _____ is on Mount Palomar.

C. Fill in the blanks with the prepositions listed below:

through in of at with

1. Some telescopes use a curved mirror _____ the back.
2. _____ these great telescopes astronomers can see stars very far away.
3. The light has travelled _____ space.
4. The light from that star reaches us _____ eighty years.
5. A galaxy is a very large group _____ stars.
6. We know that light travels _____ straight lines.
7. Radiant energy can leave its source and travel _____ empty space _____ the speed _____ about 186,000

miles a second.

8. Yesterday Peter looked _____ a big telescope.

D. Put one of the given words in each blank:

beaten broken coloured measured spoken

1. Put the _____ amount into the bottle.
2. A _____ bottle does not hold water.
3. The _____ army marched sadly across the desert.
4. _____ words are often forgotten.
5. We ought to use _____ ink here; red is best.

E. Put one of the given words in each blank:

unfinished untested unpicked unpacked unchanged

1. A lot of _____ work lay on the desk.
2. The _____ condition of the sick man made the doctor sad.
3. Peter saw a lot of _____ fruit on the trees.
4. There was a box in the middle of the floor; and the floor itself was covered with _____ books.
5. He did not want to fly in an _____ aircraft.

F. Translate the following sentences into English:

1. 太阳光到达我们这里要几分钟？
2. 被建筑物挡住的光就到达不了我们的眼睛。
3. 有的星星发出的光要用几千年的时间才能到达我们这里。
4. 装在照相机前面的镜头价钱是很贵的。
5. 我们知道光线是直线传播的。

READING MATERIALS

I

How Light Travels

We know that light is a variety of radiant energy. Radiant energy can leave its source and travel through empty space at the speed of about 186,000 miles a second.¹

The great speed of light explains why we think we see things happen at the exact moment they are happening.² When we turn on a lamp in a dark room, the lamp and everything else in the room seem to light up at once. Actually, it takes the light a tiny fraction of a second³ to reach our eyes.

Like other varieties of radiant energy, light radiates. That is, it spreads out from its source in straight lines, or rays. The fact that light travels in straight lines explains many things.⁴ For example, it explains why we cannot see around the corner of a building and it explains how shadows are formed.

Whether light comes from a luminous or a non-luminous object,⁵ it travels in straight lines. Rays of light that are stopped by a building never reach our eyes. Neither do rays that go past the corner but not toward us.⁶ So the only

objects we can see are those from which rays have a path to our eyes.⁷

An object casts a shadow because light travels past it in straight lines. The rays of light that hit the object are stopped or reflected by it. So there is a space beyond the object that the light rays cannot reach directly. We call the dark space a shadow.

New Words and Expressions

variety [və'raɪəti] *n.* 种类, 变化

a ~ of 一种...

radiant ['reɪdjənt] *a.* 辐射的, 放射的

light up 照亮

fraction ['frækʃən] *n.* 部分, 分数

radiate ['reɪdieɪt] *vt. vi.* 辐射, 放射

shadow ['ʃædəʊ] *n.* 阴影, 影子

luminous ['luːmɪnəs] *a.* 发光的

non-luminous ['nɒn-'luːmɪnəs] *a.* 不发光的

path [pɑːθ] *n.* 道路, 轨道

cast [kɑːst] *vt.* (cast) 投, 扔

reflect [rɪ'flekt] *vt.* 反射, 反映

Notes

1. ... at the speed of about 186,000 miles a second
以每秒约 186,000 英里的速度。 at the speed of ... 以...速度
2. The great speed of light explains why we think we see