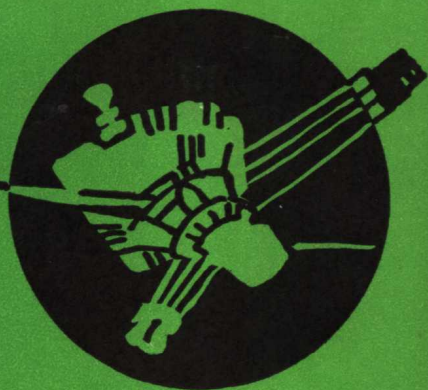


INTERMEDIATE ENGLISH READERS



# 英语科普小品选



中级英语读物丛书

中 级 英 语 读 物 丛 书

*Popular Science Readings*

**英 语 科 普 小 品 选**

许水耀 选注

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## 编者的话

为了帮助高中学生以及具有同等英语程度的读者较快地学好英语，我们编辑了中级英语读物丛书，由江苏人民出版社分辑出版。丛书包括：《世界优秀故事选》、《英语幽默及语言游戏》、《英美名诗选》、《英语现代散文选》、《国外英语课文选》、《外国寓言童话选》、《外国神话与传说》、《英语科普小品选》以及《英语国家概况》等。选材不求系统、全面，主要是向读者提供加注释的英语读物，作为学习英语的辅助材料。

本辑是科普小品集，文章选自英美两国新近出版的书刊，共二十九篇。全书题材比较广泛，上至天文，下至地理，各种学科门类以及外国科学家生平轶事等，都有所涉及；文章有较丰富的知识性，谈古论今，展望未来，观点新颖，材料丰富，饶有趣味。文章均出自英美作者手笔，语言规范，文字浅显生动，通俗易懂，有助于读者提高阅读科技文章的能力。为了便于读者学习，我们对选文中的难词难句作了比较详细的注释。

限于水平，所加注释可能有欠妥或错讹之处，敬希读者批评指正。

编者

一九八三年二月

# CONTENTS

## 目 次

1. Floating Bodies	
浮体.....	1
2. Expansion of Liquids and Gases	
液体和气体的膨胀现象.....	4
3. Sources of Energy	
能源.....	7
4. New Uses for Fly Ash	
飞灰的新用途.....	10
5. Making New Substances from Old	
化旧为新.....	13
6. Electricity: The Force That Transformed the World	
电——改造世界之动力.....	18
7. What Is Chemistry?	
什么叫化学? .....	22
8. The Search for New Drugs	
探索新药物.....	26
9. What People Don't Know about Air	
空气的趣闻.....	32

10. The Climate "Machine"	
"气候机器" .....	36
11. How Nature Breaks Rocks	
石头的风化 .....	39
12. Bees and Colour	
蜜蜂与颜色 .....	44
13. The Migration of Birds	
候鸟的移栖 .....	47
14. Dinosaurs—Their Discovery and Their World	
恐龙的发现和恐龙世界 .....	52
15. The Whale	
鲸鱼 .....	56
16. The Camel	
骆驼 .....	62
17. The Pole Star	
北斗星 .....	66
18. Our Place in Space	
地球在宇宙中的位置 .....	71
19. Walking in Space	
太空行走 .....	77
20. Flying Objects	
飞行物 .....	84
21. Volcanoes	
火山 .....	92
22. Mysteries of the Sea	
大海的奥秘 .....	97

23. New Light on the Past from below the Ocean Floor	
来自大海深处的新线索 .....	101
24. How Well Do You See?	
你的视力好吗?.....	106
25. How Do the Movies Do It?	
电影中的特技镜头 .....	112
26. How Computers Are Changing Our World	
计算机改变着世界面貌 .....	116
27. Sir Isaac Newton	
艾萨克·牛顿爵士 .....	123
28. Benjamin Franklin	
本杰明·富兰克林 .....	128
29. The Telephone and Its Inventor	
电话及其发明者 .....	135

## Floating Bodies

An important law was first discovered by Archimedes, who was a scientist who died over 2,000 years ago.<sup>1</sup> He watched and noticed that the water in his bath overflowed when he got in, and this made him think about water being pushed aside by solid bodies.<sup>2</sup>

Imagine a cube put into and covered with water.<sup>3</sup> The water pushes on all sides<sup>4</sup> of the cube. The cube pushes aside a certain volume of water, depending on how large it is.<sup>5</sup> Or we can say, a large cube pushes aside more water than a small one.

Archimedes' law can be explained here like this: When a cube is completely under water, if the weight of water which is pushed aside is greater than the weight of the cube, it will go up and stay on top of the water.<sup>6</sup> If it is less than the weight of the cube it will go down in the water. If it is the same as the weight of the cube,<sup>7</sup> it will neither stay on top nor go down. They have come to balance each other<sup>8</sup>

Let us take an example to show this: If we put into water a cube of lead which weighs 1 pound,<sup>9</sup> it goes down, because the weight of water which it pushes aside is much less than 1 pound. If, however, the same piece of lead is made into the



shape of a bowl<sup>10</sup> and placed on the water, its weight has not changed, but it stays on top, because now it pushes aside a volume of water which weighs more than 1 pound.

### 【注 释】

1. Archimedes, ...died over 2,000 years ago: 阿基米德是位科学家, 死于二千多年前。 阿基米德(前287—前212), 古代希腊著名学者。生于叙拉古。曾发现杠杆定律和阿基米德定律。阿基米德定律内容为: 浸在流体中的物体(全部或部分)其重量等于该物体所排开的流体的重量。who was a scientist ... years ago, 为非限制性定语从句, 修饰 Archimedes, 而该从句中又带有限制性定语从句 who died over 2,000 years ago, 用以修饰 scientist.
2. this made him think about ... by solid bodies: 由此他想起固体排开液体的事情来了。 文中的“this”指代上文提及的 He watched and noticed ... when he got in 这件事。“think”用在动词“make”之后, 故不带“to”。 water being pushed aside by solid bodies 为介词 about 的宾语; water 为“being pushed aside”的逻辑主语。
3. Imagine a cube put into and covered with water: 设想一下把一个立方体放入并让它浸没在水中的情形吧。 此句为祈使句。put into and covered with water 为过去分词短语, 作修饰 cube 的后置定语。
4. on all sides: 向各方面。
5. The cube ... depending on how large it is: 这个立方体排开一定体积的水量, 但这要视该立方体的大小而定。短语 depend on 作“取决于”解。文中的“it”指代“the cube”。
6. it will go up and stay on top of the water: 立方体就会浮起来, 漂在水面上。
7. If it is the same as the weight of the cube: 如果水的重量与立方体的重量相等。the same as: 与……一样。

8. They have come to balance each other: 它们处于平衡状态。
9. a cube of lead which weighs 1 pound: 一块重达 1 磅的铅立方体。
10. made into the shape of a bowl: 制成碗状。

## Expansion of Liquids and Gases

We made a hole in a cork and pushed into it a narrow glass tube.<sup>1</sup> Then we pushed this into the neck of a bottle which we had filled with coloured water. When we did this<sup>2</sup>, some of the coloured water went up into the tube. We marked the level of the coloured water in the tube.<sup>3</sup> Then we put the bottle into a pan of hot water.

Almost at once, the water level in the tube went down a little, but then it started to go up, until the water poured out over the top.<sup>4</sup>

The reason for this is that, when it gets hot, the volume of water increases.<sup>5</sup> The reason why the water level went down at first is that the bottle became hot first and so it became a little bigger. The water went up in the tube because, when the water became hot, its volume increased. Nearly all liquids and solids get bigger like this when they become hot.

Next we emptied the bottle and left a small amount of coloured water<sup>6</sup> in the tube. We put back the cork<sup>7</sup> and we put the bottle back into the hot water. The water in the tube was at once blown out at the top.<sup>8</sup> This is because, when the air in the bottle became hot, its volume increased a lot and very quickly. This shows that the volume of a gas

increases quickly when it gets hot.

Gases, liquids and solids do not increase in volume at the same speed.<sup>9</sup>The volume of a gas increases more quickly than the volume of a liquid, and the volume of a liquid increases more quickly than the volume of a solid. When they get hot, solids make the smallest increase in volume, liquids make a greater increase in volume, and gases make the greatest increase in volume.<sup>10</sup>

【注 释】

1. We made a hole ... a narrow glass tube: 我们在软木塞上打个洞, 把一根细玻璃管插入洞内。 a narrow glass tube 为 pushed into 的宾语。
2. When we did this: 在我们将玻璃管插入装满有色液体的瓶颈之后。 "this" 指代上文 we pushed this into the neck of a bottle which we had filled with coloured water 这件事。
3. We marked ... in the tube: 我们在玻璃管上标出色水在管内上升的高度。
4. the water poured out over the top: 色水从管口溢出。
5. when it gets hot, the volume of water increases: 瓶子一受热, 瓶内水的体积便膨胀。
6. a small amount of coloured water: 少量的色水。 an amount of: 通常后接不可数名词。
7. We put back the cork: 我们盖上瓶塞子。
8. The water in the tube was at once blown out at the top: 玻璃管内的色水便冲盖而出。
9. Gases, liquids and solids...at the same speed: 气体、液体和固体体积

膨胀的速度不一样。

10. When they get hot,...increase in volume:受热后,固体膨胀最少,液体稍大,气体则最大。

## Sources of Energy

Nearly all energy comes from the sun, either in a roundabout way or straight from it,<sup>1</sup> in the form of heat rays and light rays. The light from the moon, too, comes from the sun. The moon can be said to be like a large mirror<sup>2</sup> which throws back the sun's light to the earth.<sup>3</sup>

Electrical energy comes from the sun in a roundabout way; e.g.<sup>4</sup> it can come from the power of water falling down a mountainside. The water fell there as rain, and we know that rain is made by the sun's heat evaporating the water on the earth's surface.<sup>5</sup> This water vapour rises, condenses on cooling, and falls as rain.<sup>6</sup>

The light and heat energy from coal also comes from the sun in a roundabout way. Coal was made by the rocks pressing on trees and plants which died millions of years ago.<sup>7</sup> Those trees and plants grew with the aid of<sup>8</sup> sunlight, from which they made carbohydrates,<sup>9</sup> in this way changing the sun's energy into chemical energy.<sup>10</sup> When we burn coal, some of this energy is set free.<sup>11</sup>

Energy which we use to drive car engines comes from petrol, which also was made with the aid of the sun in a roundabout way. Plants, and animals which ate the plants, died millions

of years ago, and the parts of them that were left were pressed under the rocks in the earth. These parts left from dead animals and plants<sup>12</sup> made petroleum, from which petrol and oil are now obtained.

Thus we can say that the sun is the place where nearly all energy comes from, and that without the sun's heat and light, there could be no life on earth.<sup>13</sup>

### 【注 释】

1. Nearly all energy... from it: 所有的能(量)几乎都是直接或间接地来源于太阳。
2. The moon can be said to be like a large mirror: 月亮可以说象面大镜子。
3. which throws back the sun's light to the earth: 它将阳光反射至地面。 此系限制性定语从句, 修饰 mirror, which 为关系代词, 指代 mirror. 短语 throw back 作“反射”解。
4. e.g. : 例如。此为拉丁语 *exempli gratia* 的缩写。= for example.
5. we know that rain ... on the earth's surface: 我们知道, 雨是由太阳的热量使地球表面水分蒸发而形成的。 动名词短语 the sun's heat evaporating ... on the earth's surface 为介词 by 的宾语, 而 the sun's heat 为该动名词短语的逻辑主语。
6. This water vapour ... falls as rain: 水蒸气升入空中, 遇冷凝成雨滴而下降。
7. by the rocks ... years ago: 岩石挤压数百万年前枯死的树木和其他植物。
8. with the aid of: 借助于。
9. from which they made carbohydrates: 由此, 那些树木和植物变成碳水化合物。 此句为非限制性定语从句, 关系代词 which 指代前面整个句子所表达的意思。

10. in this way ... chemical energy: 就这样, 太阳能转化成了化学能。  
现在分词短语changing ... chemical energy 为状语。
11. set free: 此处作“释放”解。
12. left from dead animals and plants: 由死去的动植物残留下来的。  
此系过去分词短语, 作修饰 parts 的后置定语。
13. without the sun's ... on earth: 没有太阳的光和热, 地球上就没有生命可言。



## **New Uses for Fly Ash<sup>1</sup>**

In an age when waste today means a lack tomorrow, <sup>2</sup> making use of <sup>3</sup> every available resource becomes more and more important. As coal is being used in greater and greater amounts to produce electricity, larger amounts of ash, a by-product<sup>4</sup> of coal, are produced.

When coal is burned in a boiler, two kinds of ash by-product are produced: a heavy bottom ash and a fine-as-powder fly ash that is filtered and captured by precipitators.<sup>5</sup> About 10 to 15 percent of the coal by-product is bottom ash which is used like sand on icy streets and highways and also on highways as paving material.<sup>6</sup>

It is the fly ash, however, that is receiving the greater amount of attention.<sup>7</sup> Once considered a waste, fly ash is now classified as a natural resource in the U.S. by the state of Maryland.<sup>8</sup> In accordance with state and federal environmental restrictions, fly ash is placed in controlled landfills, where it is compacted and covered with soil.<sup>9</sup> The seeds of various grasses and plants are then placed in the soil to make the land productive and to provide permanent storage.<sup>10</sup>

Fly ash may be used as an additive to concrete in the