


英语注释读物



世界著名科学家小传



Science
Treasure

外语教学与研究出版社

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本书简介

本书选收美国布朗博士所著十九位世界著名科学家的小传，详加注释，供学习英语的理工科大学学生、科技工作者和具有中等英语水平的自学者阅读，也可以用作教材。

本书内容翔实，文字简练，是一本既能增加科学知识，又能学习地道英语的好书。

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1. Aristotle¹

(384—322 B. C.²)

Many of the great experiments of science can be repeated easily, and many of them are included in³ this book. Let us begin with⁴ an experiment that today is known to be⁵ unscientific, unsound, and untrue. Rather, it is an observation that made up a small part of a great man's adverse influence in physics, an influence that lasted fifteen hundred years!⁶

Aristotle was born in Stagira,⁷ Greece. His father, an educated man, was court physician to the grand-father of Alexander the Great,⁸ and saw to it that his son received a good education at home.⁹ At seventeen,¹⁰ Aristotle was sent to Athens¹¹ to study under Plato,¹² one of the great Greek philosophers.

Aristotle did not always agree with¹³ Plato. He chose to¹⁴ use his great ability to think, reason, inquire, and explore. Soon he began to investigate the wonderful world of biology, and in these investigations he employed the true scientific principle. He sent men to all parts of the known world to collect samples to classify, and to learn everything possible about the plants and animals.

He was tutor Alexander, the boy who became Alexander the Great, and it was this young leader who provided Aristotle with money¹⁵ to conduct his searches, researches, and experiments.

In physics Aristotle considered himself¹⁶ a great world authority, but he did not engage in any experimenting in this field. He sought to explain physical phenomena by reasoning power alone.¹⁷ For example when a green log of wood burned on a fire, he observed that water oozed, smoke came out, fire was produced, and ashes were left.

So, he reasoned, there must be five elements in the universe: fire, water, earth (the ashes), and air (the smoke) and a fifth, of which the heavens were made,¹⁸ an element unchanging and everlasting.¹⁹

The heavens traveled in a circular motion,²⁰ he said, therefore the circle was a perfect figure. Centuries later, when Johannes Kepler²¹ (1571—1630) found that the planets travel not in circles but in ellipses,²² he had great difficulty convincing the scientists of his day that his findings were correct.²³

In this, as in other teachings,²⁴ scientists could not believe that the great Aristotle could be wrong. This blind worship of Aristotle continued, in greater or less degree,²⁵ for a century and a half.

Aristotle wrote that the heavier a body is, the faster it falls.²⁶ He knew that a leaf falls more slowly than a stone. He did not take the trouble to find out by experi-

ment²⁷ whether two stones of different weights would fall at the same or different speeds.²⁸ He thought it reasonable that a heavier body falls faster,²⁹ and taught this fallacy to his pupils.

He made many such errors, and scientists believed his statements without question. Scientists who dared to suspect that Aristotle could be wrong were often open to ridicule.³⁰

Aristotle produced between four hundred and a thousand books. At one time he is said to have had a thousand men working for him, helping to compile his works on the biological sciences. It is not known how many of the books he himself wrote. Perhaps he wrote some and simply compiled the others from the writings of his scientific investigators, but in any case Aristotle deserves much credit.³¹ The writing was magnificent.

He was a great biological scientist. It is regrettable that his teachings on matters physical were not equally sound.³²

注 释

1. Aristotle (前 384—前 322): 亚里士多德。古希腊哲学家、科学家, 柏拉图的学生, 亚历山大大帝的教师。公元前 335 年在雅典办了一所叫吕克昂的学校。其学派被称为逍遥派。他是古希腊哲学家中最博学的人物。在哲学上他研究了辩证思维的最基本的形式, 但动摇于唯物主义和唯心主义之间。在政治上, 他主张由中等奴隶主来治理国家。在

教育上,认为理性的发展是教育的最终目的,主张国家应对奴隶主子弟进行公共教育,使他们的身体、德行和智慧得以“和谐”地发展。在生物学、生理学和医学等方面也有贡献,同时他还是形式逻辑的奠基人。主要著作有《工具论》、《形而上学》、《物理学》、《伦理学》、《诗学》等。

2. B. C. (=Before Christ): 公元前。
3. are included in: 包括在…中。
4. begin with: 从…开始。
5. is known to be: 被认为是。
6. Rather, it is an observation...years: 更确切地说,那是从观察得出的一个结论,它构成了一位伟人在物理学界的不良影响的一小部分,而其影响延续了一千五百年。
7. Stagira: 斯塔基拉(希腊城市名)。
8. Alexander the Great (前 356—前 323): 亚历山大大帝。巴尔干半岛中部的奴隶制国家马其顿王国的国王(前 336—前 323)。腓力二世之子。少时就学于哲学家亚里士多德,醉心于荷马史诗中的英雄人物。即位后大举侵略东方。公元前 334 年率军入小亚细亚,败波斯王大流士三世,南进叙利亚,攻占腓尼基,转入埃及。前 331 年灭波斯帝国,前 326 年南下印度。前 324 年返巴比伦。在广大地域内建立了亚历山大帝国,前 323 年亚历山大病死,帝国迅即瓦解。
9. and saw to it that... at home: 要使他们的儿子在家中受到良好的教育。(see [to it] that...: 要注意使…; 务必使…; 保证使…; 如: See to it that there is enough leeway. 要留有充分余地。)
10. At seventeen: 十七岁时。
11. Athens ('æθinz): 雅典(希腊首都)。
12. to study under Plato: 跟柏拉图学习。柏拉图(前 427—前 347): 古希腊客观主义哲学家。苏格拉底的学生。出身于贵族奴隶主家庭。约于公元前 387 年创办学园,在《理想国》、《法律篇》等著作中阐述了他的道德、政治和教育理论。竭力为贵族奴隶主统治下的社会秩序辩护。
13. agree with: 同意;与…一致。
14. chose to: 决意;选定;愿意。(chose 是 choose 的过去时形式,后接带 to 的不定式)。
15. it was...money: 向亚里士多德提供金钱的正是这位年轻的君主。(这是一个强调句型。)
16. considered himself: 自以为是;把自己看作。

17. He sought...alone: 他试图单凭推理来解释物理现象。
18. of which the heavens were made: 天空就是由它构成的。(这是由“介词+关系代词”引导的定语从句, which 指上文中的 a fifth, 在从句中作 make of 的宾语。)
19. an element...everlasting: 一种永恒不变的元素。(这是 a fifth 的同位语。)
20. circular motion: 圆周运动。
21. Johannes Kepler (1571--1630): 约汉尼斯·开普勒, 德国天文学家。他发现行星沿椭圆轨道运行, 提出行星运动三定律(开普勒定律), 为牛顿发现万有引力定律打下基础。他在天文学上的贡献还有恒星星表的编制和大气折射的计算。
22. the planets...in ellipses: 行星不是沿圆形而是沿椭圆形轨道运动。
23. he had...were correct: 他很难使当时的科学家们相信他的发现是正确的。(convince sb. that: 使某人相信; 使某人信服。)
24. In this, as in other teachings: 在这一点上, 正如其他学说一样。
25. in greater or less degree: 或多或少; 程度不同地。
26. the heavier a body is, the faster it falls: 物体越重, 它下落(的速度)越快。
27. He did not... by experiment: 他没有费点事去做个试验(以便弄清)。(take trouble: 费力; 费事; 费神; 不辞劳苦。)
28. whether... speeds: 两块不同重量的石头下落的速度是否相同。
29. He thought...faster: 他认为重的东西落得比较快是理所当然的。
30. Scientists who...ridicule: 那些敢于怀疑亚里士多德可能弄错的科学家往往被人嘲笑。(be open to: 易受...的; 可...的。)
31. but in any case...much credit: 但无论如何, 亚里士多德很值得称赞。
32. It is...sound: 可惜他在物理学方面的学说(与生物学方面的学说相比)不够完善。

2. Archimedes¹

(287—212 B. C.²)

Archimedes is sometimes called the first great inventor,³ and yet he did not want to be remembered for his inventions but rather for his mathematical discoveries.⁴

We are not certain⁵ about many details of his life.⁶ His birth date⁷ probably was 287 B.C. He may have been related to King Hiero⁸, we do know they were great friends.⁹ It is believed¹⁰ that he was sent to school at Alexandria, the intellectual capital of the world,¹¹ when he was eleven years old.

He was born at Syracuse, on the island of Sicily,¹² and what we know of his life is bound up with this city.¹³ He is thought to be the discoverer of the principles of levers and pulleys,¹⁴ and this is enough to give him everlasting fame.¹⁵ But he did much more.¹⁶

When he discovered the principle of the lever he boasted: "Give me a place to stand, and a fulcrum, and I can move the world."¹⁷ His friend the king challenged him to prove his boast¹⁸ by moving some great weight.¹⁹

It happened that King Hiero had built a ship for King

Ptolemy,²⁰ and all the efforts of all the men who worked on it failed to move it into the water.²¹

Here was just the kind of test that pleased the young genius.²² He built a system of pulleys and ropes, attached them to the ship,²³ then allowed the king himself to pull the end of the rope.²⁴ Without too much effort²⁵ the king pulled the ship into the water.

Then came another test of Archimedes' genius. The king had just received a new crown from his goldsmith²⁶ and wanted to be certain that the smith had not added some base metal to the gold.²⁷ He assigned to Archimedes the task of finding out,²⁸ but warned him that the crown must not be broken or bent.²⁹

This was a problem indeed!³⁰ Archimedes pondered for many days.³¹ One day at the baths³² he sank down into his tub³³ and noticed that the water overflowed and that his weight seemed to diminish to nothing.³⁴ Suddenly the solution to the riddle flashed into his mind.³⁵ According to legend³⁶ he forgot to dress,³⁷ and ran into the street shouting "*Eureka!*"³⁸—A Greek word that means "I've found it!"

He had made a great discovery. He could show the king³⁹ how much water would overflow from a vessel filled to the brim⁴⁰ when a piece of pure gold weighing exactly as much as the crown was submerged.⁴¹ He could then refill the vessel,⁴² submerge the crown, and if more water overflowed this time⁴³ it would prove that a baser, lighter,

metal had been combined with the gold in the making of the crown.⁴⁴

The test was made. It showed that a lighter metal had been added. The goldsmith confessed and was put to death.⁴⁵

The one device that bears his name today is the Archimedes pump or screw.⁴⁶ This he invented for pumping water out of a ship's hold.⁴⁷ It is a spiral-shaped tube which turns on a cylinder,⁴⁸ lifting the water as the turns appear to rise.⁴⁹ Two kinds of Archimedes' screws are attributed to him;⁵⁰ we do not know which kind he actually used. The devices are still used for pumping water in some Asiatic countries.⁵¹

Archimedes discovered many truths of mathematics. He came very near discovering the calculus,⁵² and no doubt would have,⁵³ except that the Greeks did not have number characters such as we have today.⁵⁴ They had no cipher and knew nothing of decimals or algebra.⁵⁵

His most spectacular accomplishments⁵⁶ were his inventions of war machines. When Marcellus and the Romans besieged his city,⁵⁷ Syracuse, he devised catapults that hurled huge stones to wreck the enemy ships.⁵⁸ He built cranes with giant claws⁵⁹ that lifted the ships from the water and overturned them.⁶⁰

Legend has it⁶¹ that he built concave mirrors that focused the sun's rays on the ships,⁶² setting them afire,⁶³ but many do not believe this. However, he kept the Ro

mans at bay⁶⁴ for two years with his inventions. Marcellus gave up the fight,⁶⁵ concluding that the only way to take the city was to starve its people into surrender.⁶⁶ This he did. But he had great respect for⁶⁷ the man who had made his war tasks so difficult,⁶⁸ and gave orders that Archimedes, his home, and his relatives be spared.⁶⁹

But as the bloodthirsty soldiers sacked the fallen city⁷⁰ one of them came upon⁷¹ Archimedes, now quite elderly, engrossed in a mathematical problem,⁷² ordered to come to Marcellus,⁷³ Archimedes told the soldier to wait. The soldier, infuriated, thrust his sword into the body of the scholar.⁷⁴

Marcellus was grieved at the deed⁷⁵ and did what he could to comfort Archimedes' relatives.⁷⁶ He gave him an honorable burial,⁷⁷ and marked his grave with the emblem Archimedes had requested be used:⁷⁸ a cylinder circumscribing a sphere,⁷⁹ chosen because he had proved by elementary methods that the volume of a sphere inscribed in a cylinder⁸⁰ so that the sphere touched the sides and ends of the cylinder was just two thirds the volume of the cylinder.⁸¹ The formula for the volume of a cylinder was known,⁸² and thus he deduced the formula for the volume of a sphere.⁸³

He was justifiably proud of this mathematical accomplishment.⁸⁴

注 释

1. Archimedes (前 287—前 212): 阿基米得。古希腊学者。生于叙拉古。曾发现杠杆定律和阿基米得定律(浸在流体中的物体受到向上的浮力,其大小等于物体所排开流体的重量),确定许多物体表面积和体积的计算方法,并设计了多种机械和建筑物。罗马进犯叙拉古,他应用机械技术来帮助防御,城破时被害。
2. B.C.(=Before Christ): 公元前。
3. Archimedes...inventor: 阿基米得有时候被称作第一个伟大的发明家。(is called: 被称为。inventor 是主语补足语。)
4. and yet...discoveries: 但是他不愿人们因他的发明,而宁愿人们因他的数学方面的发现而把他铭记在心。意思是:他在学术上的贡献首先在于数学方面,其次才是机械技术方面的发明创造,人们应当记住这一点。(在这一句中 and yet 是连词。不定式短语 to be remembered 是 want 的宾语。but rather 连接两个表示原因的介词短语 for...for.... rather 用作连词,表示主观愿望的抉择。)
5. We are not certain: 我们不清楚。
6. details of his life: 他一生的详细情况。
7. birth date: 出生的年份(或年月日)。
8. He...Hiero: 他可能与国王海洛有亲戚关系。
9. we do...friends: 我们确实知道他们是好朋友。(do 用于加强语气,发强音,表示“的确”、“确实”之意。)
10. It is believed: 人们认为;人们相信。
11. the intellectual...world: 世界智慧之都。(这个词组是 Alexandria 的同位语,起进一步说明的作用。)
12. He was...Sicily: 他生于西西里岛的叙拉古城。
13. what we know...city: 我们所知道的他一生的事情都与这座城市有密切关系。(be bound up with: 与...有密切关系。)
14. He...pulleys: 他被公认是杠杆定律和滑轮原理的发现者。(to be the discoverer 是主语补足语。)
15. this is...fame: 这一发现足以使他享有不朽的声誉。
16. But he did much more: 但他做出的贡献远不止此。
17. He boasted...world: 他自豪地说:“给我一个立足点和一个支点,我

能够移动地球。”

18. His friend...boast: 他的朋友——国王要求他证明他的豪言壮语。
(king 是 friend 的同位语。to prove his boast 是宾语补足语。)
19. by...weight: 用移动很重的物体(来证明)。
20. It...Ptolemy: 碰巧海洛国王为托拉密国王造了一条船。
21. all the efforts...water: 所有在船上干活的人竭尽全力也不能把船推入水里。
22. Here was...genius: 恰好这是青年天才喜欢做的一种试验。(that 引导的定语从句修饰 the kind of test。)
23. attached them to the ship: 把它们(指滑轮装置和绳索)系在船上。
24. allowed...rope: 让国王亲自拉着绳子的一头。
25. without too much effort: 不用费多大劲儿。
26. The king...goldsmith: 国王刚收到金匠送来的新王冠。
27. the smith...gold: 金匠没有把某种贱金属掺到金子里去。
28. He...out: 指定阿基米得担任这项鉴别的任务。
29. warned...bent: 警告他不得损坏或弄弯王冠。
30. This was...indeed: 这的确是一个难题。
31. Archimedes...days: 阿基米得考虑了许多天。
32. at the baths: 在浴室里。
33. he sank...tub: 他浸在澡盆里。
34. noticed...nothing: 见水溢出来而他的体重仿佛减少到没有了。
35. Suddenly...mind: 突然想出这个谜的答案(或这个疑难问题的解决办法)。
36. According to legend: 传说。
37. forgot to dress: 忘记穿衣服。
38. Eureka: 我想出了;我找到(答案)了。(希腊语)
39. show the king: 给国王看了。
40. how...brim: 从一个装满水的器皿里将溢出多少水来。(filled to the brim 是过去分词短语作定语,修饰 vessel。)
41. when...submerged: 把一块重量与王冠完全一样的纯金浸入水中时。
42. refill the vessel: 再把器皿装满水。
43. this time: 这一次。
44. combined...crown: 在制作王冠时把...掺到金子里。
45. The goldsmith...death: 金匠招认了,并被处死。
46. The one...screw: 今天,用他的姓氏为名的器械是阿基米得水泵或叫阿基米得螺杆。

47. pumping ...hold: 把水从船的底舱抽出来。
48. It is... cylinder: 那是绕在一根圆柱上的螺旋形管子。
49. lifting...rise: 当管子似乎在旋转上升时,把水提上来。
50. attributed to him: 归功于他。
51. Asiatic countries: 亚洲国家。
52. He came...calculus: 他差一点发现了微积分。
53. no doubt would have: 他一定会(发现)。(would have [discovered] 是虚拟语气。)
54. except that the Greeks...today: 要不是希腊人当时还没有使用我们今天所使用的数字符号。(except that 引导条件状语从句, 这个从句本身是主从复合句, 其中 such as we have today 是定语从句, 修饰 characters。)
55. They...algebra: 他们没有阿拉伯数字, 对十进制算术或代数也一无所知。
56. spectacular accomplishments: 惊人的成就。
57. The Romans...city: 罗马人包围了他所在的城市。
58. He devised...ships: 他发明弩炮, 能投射巨大的石块砸毁敌舰。
59. cranes with giant claws: 有巨大爪形器械的吊车。
60. that lifted...them: 把船只从水中吊起, 使之倾覆。
61. Legend has it: 据传说。
62. He built...ships: 他制作凹面镜把阳光集中在敌舰上。
63. setting...afire: 使敌舰着火。
64. he kept...bay: 他把罗马人阻挡在海湾里。
65. Marcellus...fight: 马塞勒斯停止战斗。(give up: 中止; 放弃。)
66. concluding...surrender: 得出结论: 用饥饿迫使城里的人投降是占领这座城市的唯一途径。
67. respect for: 尊重。
68. the man...difficult: 使他在战争中遇到重大困难的人。
69. gave...spared: 下命令赦免阿基米得以及他的家属和亲戚。(be spared 前面省略了 should。)
70. But as...city: 但是当残忍好杀的士兵们洗劫这座陷落的城市时。
71. came upon: 突然来找。
72. now...problem: 当时已年迈的阿基米得正在钻研一个数学问题。
73. ordered...Marcellus: (这个士兵)勒令(阿基米得)去见马塞勒斯。短语作状语。)
74. The soldier,...scholar: 士兵大怒, 一剑刺入学者的身体。

75. Marcellus...deed: 为这件事马塞勒斯很难过。
76. did what...relatives: 尽力安慰阿基米得的亲属。(what he could 是 did 的宾语从句。)
77. honorable burial: 隆重的葬礼。
78. marked...used: 在他的坟墓上安放阿基米得要求用的标记。
79. a cylinder...sphere: 内接圆球的圆筒。
80. Chosen...cylinder: 因为他用初级方法证明了内接于圆筒的球体体积,所以才选择这个标记。
81. so that...cylinder: 一个内接于圆筒四周的球体的体积,等于圆筒体积的三分之二。
82. The formula...known: 求圆柱体积的公式是已知的。
83. thus he...a sphere: 因而他推算出圆球的体积的公式。
84. He was...accomplishment: 他当然因这一数学方面的成就而感到自豪。

3. Petrus Peregrinus¹

(date unknown)²

One man's search for a method³ of "perpetual motion"⁴ led to⁵ the scientific investigation of magnets,⁶ probably the first.⁷

Perpetual motion was the impossible dream⁸ of many men in the past.⁹ Clever machines were made,¹⁰ numerous ideas were spawned,¹¹ and much time and money were spent in this quest¹² before scientists finally learned¹³ that no machine, once started, could run forever without having energy added in some way.¹⁴