

科普英语注释读物  
《科学的演进》系列丛书

# 知识就是力量

Knowledge is Power

John Henry 著



重庆大学出版社

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书章

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卢敏 导读

阚朝红 审定

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## 序 言

美国政府在普及文化知识的过程中,曾实施了 RIF (Reading Is Fundamental), 即“阅读是最基本的”计划。阅读不仅让我们获得各种各样的知识,也是培养、巩固和提高语言技能,特别是阅读理解能力的重要手段。

在外语学习中,阅读也受到普遍的重视。著名应用语言学家克拉申 (Krashen) 曾提出输入假设 (Input Hypothesis): 认为第二语言的习得必须有可理解的输入 (Comprehensible Input); 同时,语言输入还需要达到足够的量 (Adequate Exposure)。在我国,阅读已成为绝大多数英语学习者学习英语的主要方式,教材是接触英语的主要媒介。众所周知,英语语言浩如烟海,要想把英语学好,光靠阅读教材是远远不够的,必须有足够的课外读物作为补充。目前,我国市场上的英语课外读物虽然琳琅满目,但科普读物较少,面向大学生和研究生的科普读物则更加匮乏,难以满足需求。《科学的演进》系列丛书正是在这种背景下引进的。

本系列丛书由在英国和新西兰著名大学讲授科学史的教师撰写,英国 ICON 公司 2002 年

出版,共 13 册,内容涉及天文、地理、数学、计算机、医学、生物学、哲学和历史学等领域。作者们通过讲述科学发展的历史,在让读者领略科学研究的乐趣、矛盾和斗争,增强人们战胜困难的信心和勇气的同时,也让读者学到了地道而实用的现代英语。

在保持原著原文不变的前提下,为帮助读者阅读和理解,本丛书以导读和注释的形式增添了三个部分内容:即 Guiding Questions(引导性问题),Footnotes(脚注)和 Reflection(反思)。Guiding Questions 置于一章之前,以调动读者的思维,激活读者大脑的认知图式(Cognitive Schemata),使读者在阅读过程中处于积极认知的状态;参照我国大学生的英语水平,Footnotes 为同页的生词注释了国际音标、词性和词义,并对相关的文化背景和语法难点作了简短的解释;章末的 Reflection 是对该章内容的小结,也是对 Guiding Questions 中部分问题的回答。读者可根据自己的需要,决定 Guiding Questions 和 Reflection 的阅读顺序。本系列丛书可作为大学生及研究生的英语课外读物,也是广大英语爱好者自学英语的理想材料。

最后需要说明的是,本丛书的内容仅仅是一家之言,如读者能由此而激起阅读的热情和对科学的兴趣,那就是我们最大的欣慰。另外,由于导读者水平有限,如有不妥之处,敬请批评、指正。

向朝红

2002 年 8 月

## List of Illustrations

- 1 Francis Bacon, Viscount St Alban (1561 – 1626) -philosopher, Lord Chancellor
- 2 The frontispiece to Bacon's *Great Instauration* (1620)
- 3 The Great Chain of Being, from the hand of God down to Mother Nature
- 4 The supposed correspondences between the microcosm, man, and the macrocosm, or world as a whole
- 5 The frontispiece to Thomas Sprat's *History of the Royal Society of London, for the Improving of Natural Knowledge* (London, 1667)

## Acknowledgements

My interest in Francis Bacon was first kindled many years ago by Graham Rees and Julian Martin, two real Bacon experts, and I've gratefully drawn upon their work, as well as their inspiration, in the writing of this. More recently, I've been very grateful for long conversations with Silvia Manzo, an Argentinian scholar whose interest in Bacon testifies to his international reputation; it was good to be reassured, by another real Bacon expert, that my slant on Bacon wasn't too awry. I owe thanks also to Jon Turney, editor of this series, Simon Flynn at Icon Books, and John McEvoy, for excellent advice on how to make improvements.

I'd also like to take this opportunity to thank, for general encouragement and friendship over the years, Stuart McLeod, Andy Pearson and Mike Wardman.

Francis Bacon saw a wife and children as hostages to fortune, but mine have done nothing but improve my fortune. I'd like to thank my wife, Rachel, and my daughters, Eilidh and Isla, for their love and support, not just during the writing of this book, but

always. Hoping there'll be future books that I can dedicate to my daughters, I dedicate this book to my wife, with especial thanks for everything, and with love.

## **Dedication**

 For Rachel



## 作者简介：

约翰·亨利是爱丁堡大学科学研究院的高级讲师。他对文艺复兴时期的科学、医学、巫术以及宗教之间相互关系的历史深感兴趣。

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## 内容简介：

英国著名的政治家及作家，弗朗西斯·培根，是科学史上一位重要人物。他和伟大的科学家如牛顿等相提并论。

培根是第一个描述应该如何去从事科学研究和第一个解释为什么应该这样进行科学研究的重要思想家。他最重要的贡献是推广了科学实验的方法并对该方法的步骤给出了严格的概述和定义，从而为现代科学的进步奠定了基石。

在这本引人入胜而又通俗易懂的书里，作者详细描述了培根革新的历史背景和他的观点的反传统性；解释了培根理论产生的根源以及为什么其改革的思想在今天还能引起共鸣。

## 《科学的演进》系列丛书简介

本系列丛书是以大学生和研究生为主要对象的科普英语读物。原书由在英国和新西兰著名大学讲授科学史的教师撰写，英国ICON公司2002年出版。参照我国大学生的英语水平，本丛书为生词作了注释，并对有关的文化背景和语法难点作了简短的说明；在每一章前用英文提问，促使读者有目的地阅读；在每一章后用中文给出内容摘要，帮助读者准确理解。

本系列丛书从历史的角度，分析探讨了有关学科的发展进程，可以帮助读者以史为鉴，了解科学演进中的有关情况和问题，懂得科学的发展总是充满了矛盾和斗争，从而学习科学研究的方法，增强克服困难的信心和勇气。本丛书还有助于大学英语专业和其他人文学科的学生扩展科技知识，提高阅读科技文章的能力；帮助理工学科的学生扩展知识面，提高英语阅读水平；对英语水平较高的高中学生和广大英语爱好者也是难得的课外阅读材料。

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# 1

## ‘Kindling a Light in Nature’

### Guiding questions

- 1 *Do you know anything about Francis Bacon?*
- 2 *As far as you know, is Francis Bacon a scientist or philosopher?*
- 3 *What is the aim of philosophy to Bacon?*
- 4 *What influence did Francis Bacon have on the later philosophers and scientists?*



Francis Bacon was a great genius who helped to shape the modern world. But many people would be hard put to say exactly why. He made no new discoveries, developed no technical innovations, uncovered no previously hidden laws of nature. His achieve-

ment was to offer an eloquent<sup>①</sup> account of a philosophy and a method for doing those things. And in that way he turned out to be as important as people famed for particular discoveries, like Galileo or Isaac Newton, in what historians now call the Scientific Revolution.

Essentially, Bacon (1561 – 1626) wanted to reinvent investigation of the natural world. He was dazzled<sup>②</sup> by a vision of progress whose ambition knew no bounds<sup>③</sup>, stemming from a conviction as strong as that of a later philosophical revolutionary, Karl Marx<sup>④</sup>, that the point of philosophy was not just to interpret the world, but to change it. As Bacon saw it in one of his soaring flights:

*[A]bove all, if a man could succeed, not in striking out some particular invention, however useful, but in kindling a light in nature – a light which should in its very rising touch and illuminate all the border-regions that confine upon the circle of our present knowledge; and so, spreading further*

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①eloquent/'eləkwənt/adj. (演说)动人的;有口才的;善辩的

②dazzle/dæzl/vt. 使眼花;使目眩

③no bounds 无止境

④Karl Marx 卡尔·马克思(1818 – 1883, 德国政治哲学家, 经济学家及社会主义者, 1848 年与恩格斯联合发表《共产党宣言》)

*and further should presently disclose and bring into sight all that is most hidden and secret in the world – that man (I thought) would be the benefactor indeed of the human race – the propagator<sup>①</sup> of man's empire over the universe, the champion of liberty, the conqueror and subduer<sup>②</sup> of necessities ('Proemium' (Preface), Of the Interpretation of Nature, 1603).*

In our terms, Bacon was a philosopher of science – perhaps the first one who really mattered. He was driven to combine three concerns: how knowledge was justified, how it could be expanded and how it could be made useful. His new method was designed to transform completely the knowledge of the natural world of his day, which he saw as both misconceived and sterile<sup>③</sup>. As he was also a great writer, he helped to inspire others to adopt a new attitude to natural philosophy, an influence that lasted long after his death in 1626.

Two hundred and fifty years later, for instance, Charles Darwin<sup>④</sup> described the meth-

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①propagator/'prɒpəgeɪtə/n. 传播者

②subduer/səb'dju:(r)/n. 征服者

③sterile/'sterail/adj. 无效果的

④Charles Darwin 查尔斯·达尔文(1809 - 1882, 英国博物学家, 进化论之创立者)

od of working that was to lead him to his theory of natural selection. It was, he said, perfectly Baconian.

*After I returned to England it appeared to me that... by collecting all facts which bore in any way on the variation of animals and plants under domestication and nature, some light might perhaps be thrown on the whole subject. My first notebook was opened in July 1837. I worked on true Baconian principles, and without any theory collected facts on a wholesale scale... (Autobiography, 1892, but written in 1876).*

Darwin didn't strictly work like this. Nor has any other successful scientist, because you cannot collect facts in this undirected way without disappearing beneath a mountain of irrelevancies. But the fact that the mild-mannered Victorian scientific revolutionary saw fit to invoke the Elizabethan statesman and philosopher is one index of Bacon's enduring fame. Another is the expectation we still hold, in a century when governments spend billions on research, that systematic experiment, conducted in a highly organised and institutionalised way, will yield useful answers to all kinds of problems - from



acquired immunodeficiency syndrome (AIDS)<sup>①</sup> to global warming. Our idea of science as the 'endless frontier', as the American Vannevar Bush<sup>②</sup> titled a report to the US government just after World War Two, is also Baconian in spirit.

More recently, though, as increasing numbers of people question the impact of science, Bacon has attracted as many critics as admirers. Some deny his influence or significance. Others who acknowledge his importance see his attitudes as baleful<sup>③</sup> or pernicious<sup>④</sup>, his writings as a call to seek the domination of nature, and male domination at that. But all this scholarly argument just makes it more important to get to know what he was about. The fact that Bacon was concerned not with making scientific discoveries but with the very nature of science itself – seeking to establish what its purposes should be, the optimal<sup>⑤</sup> methods for making discoveries, the best way to establish truth – has not only ensured his place in history but also ensured that it is controversial.

After all, while the value of a specific in-

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①AIDS(acquired immunodeficiency syndrome)/eidz/n. 艾滋病  
(后天免疫缺损综合症)

②Vannevar Bush 维尼瓦·布什(1890-1974,美国电机工程师)

③baleful/'beɪlfəl/adj. 凶恶的

④pernicious/pə'niʃəs/adj. 有害的;恶性的

⑤optimal/'ɒptɪməl/adj. 最佳的;最理想的