



牛顿

**ISAAC
NEWTON**

RICHARD S. WESTFALL

理查德·S.威斯特福尔 著 潘耀忠 王晓燕 译注



上海译文出版社

· 牛津名人传记丛书 ·
Very Interesting People

名人

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写在前面的话

阅读是一种猎取，通过阅读，人们可猎取到不可或缺的精神食粮。有了它，人才会健康成长；阅读是一种咀嚼，通过阅读，人们可咀嚼隐匿于文字中的苦辣酸甜。有了它，人才能学会坚强；阅读是一种倾听，通过阅读，人们可倾听到亘古至今的不同声音。有了它，人才不会迷失方向；阅读是一种欣赏，通过阅读，人们可欣赏到前所未见的旖旎风光。有了它，人的生活才会充满阳光……

英语阅读除具有上述功效外，还有独特的一面，那就是强化语言基础、提升英语水平。然而，在浩若烟海的英语阅读材料中，有哪些适合你或是你的首选呢？恐怕不同的人依据不同的需求会有不同的回答。不过，有一点是共同的，即每位读者都会选择自认为好的英语阅读材料。那么，何谓好的英语阅读材料呢？我们认为，就一般情况而言，好的英语阅读材料应具备以下特点：

广博性

广博性决定了阅读者获取的知识量。换言之，没有广博的语料，人们就无法获取广博的知识。因此，英语阅读材料应尽量涉及多种话题，涵盖各方面知识。

权威性

权威性有两层含义：一是信息准确，有证可查，有史可考，绝非道听途说；二是语言地道，原汁

原味，读者能充分享受到“原生态”阅读的乐趣。

简明性

简明性首先体现在语料方面，内容要简明，取舍得当，真正将有意义的一面充分展示给读者。其次，语言表达要简明，做到言简意赅，无拖泥带水之嫌。

趣味性

趣味性是语言使用的最高境界，它能使阅读文本生动、有趣，令人爱不释卷、百看不厌。趣味性带给读者的是阅读享受，如同在明媚的春光里呼吸清新空气。

有鉴于此，并经大量市场调研，上海译文出版社与牛津大学出版社联袂推出了“牛津名人传记丛书”，从莎士比亚到丘吉尔，从达尔文到牛顿，囊括了英国历史上最重要、最具影响力的非凡人物，可谓群星璀璨。

我们相信，该套丛书的推出是广大英语学习者的福音，是广大文学爱好者的福音，是广大史学研究者的福音，更是广大中学生、大学生的福音。该套丛书带给读者朋友的不仅是精准的知识点和多彩的文化点，更有数不清的意外惊喜！

主 编

2008年6月

缩略语

CUL 剑桥大学图书馆

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MIT Cam. 剑桥—麻省理工学院

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Beginnings in science

1

Sir Isaac Newton^① (1642–1727),

natural philosopher and mathematician, was born on 25 December 1642 in the manor house^② of Woolsthorpe, near Colsterworth, about 7 miles south of Grantham, Lincolnshire, the only and posthumous son^③ of Isaac Newton (1606–1642), yeoman^④ farmer, and his wife, Hannah (c.1610–1679), daughter of James Ayscough, gentleman, of Market Overton, Rutland. His family could trace its roots to John Newton of Westby, a village near Grantham; John Newton's grandfather Simon Newton was a husbandman^⑤ whose name appeared among taxpayers listed in Westby in 1524. The family clearly had industry^⑥ and ability, each generation inching up^⑦ the local hierarchy^⑧. Thus the son of John Newton of Westby styled himself yeoman in his will of 1562, a step above

① 艾萨克·牛顿爵士 (Sir 常冠于爵士或准男爵的名字前面) ② 大宅邸庄园 ③ 遗腹子 ④ 自耕农 ⑤ 〈旧〉农民 ⑥ 勤奋, 能干 ⑦ 缓慢上升 ⑧ 阶层

2 husbandman, and successive wills indicate that the family flourished until its members could be counted among the most prosperous farmers in the district. They were also prolific^①, so that the area south of Grantham came to be sprinkled with^② numerous thriving Newton families, descended from Simon Newton of Westby.

A scholarly child

Isaac Newton's own endowment was secure^③. One of his ancestors had purchased a farm in Woolsthorpe for a son, Richard; the manor of Woolsthorpe was added in 1623, and the combined estate was inherited by Newton's father in 1641. His mother, Hannah, brought a property worth £50 per annum^④ to the marriage—her brother William occupied the rectory^⑤ of Burton Coggles, two miles east of Woolsthorpe. As soon as the estate was settled Newton's parents married, in April 1642, but six months later, early in October, his father died, leaving a pregnant widow. For a yeoman, he also left a considerable estate, which would bear upon^⑥ the prospects of his unborn son. In addition to extensive lands, there were goods and chattels^⑦ valued at £459, including a flock of 235 sheep and 46 head of cattle, possessions in

① 生殖繁衍能力强的 ② 散布着 ③ 父辈留下的家业保证生活无虞 ④ 〈拉〉每年 ⑤ 教区长的住宅 ⑥ 与…有关系, 对…有影响 ⑦ 所有的杂物用品

excess of^① the average at that time. Although it is impossible to assess accurately, an annual value of £150 appears to be a reasonable estimate of the estate.

Isaac Newton was born on Christmas day, a tiny baby. He was not expected to survive but his mother delayed his baptism^② until 1 January 1643. The next recorded event in his life was more than three years later, when his mother married the Revd Barnabas Smith, left her first-born son with her parents in Woolsthorpe, and went off to the rectory of North Witham, 1½ miles south of Woolsthorpe, to raise a second family. The Revd Smith was wealthy, with an estate worth £500 per annum in addition to the rectory. There is some evidence that Newton, who never mentioned his stepfather, hated him, and he probably did not care for his grandparents either. He recorded no affectionate^③ recollection of his grandmother, and made no mention whatever of his grandfather. The animosity^④ was shared; grandfather Ayscough pointedly^⑤ omitted Isaac from his will. The unpleasant aspects of Newton's mature personality may have had their roots in this traumatic^⑥ period.

① 超过，超越 ② 洗礼 ③ 挚爱的，亲切的 ④ 憎恨 ⑤ 直截了当地 ⑥ 受创伤的，痛苦而难忘的

The family were reunited in 1653, when Smith died and Newton's mother returned to Woolsthorpe with his half-brother^① and two half-sisters. By this time Newton's education had begun in day schools in neighbouring villages, undoubtedly thanks to his Ayscough upbringing. At least in William Ayscough, who held an MA^② from Cambridge, and probably in other family members, the Ayscoughs had a history of education, whereas neither Newton's father nor his uncles on the paternal side were able to sign their names. His education continued when, less than two years after the return of his mother to Woolsthorpe, he was sent off to the free grammar school of King Edward VI in Grantham.

In Grantham, Newton lodged with^③ an apothecary^④, a Mr Clark. About his studies very little is known but it may be assumed that the master, a Mr Stokes, did what nearly every schoolmaster of the age did—that is, he concentrated on building a mastery of Latin. At any rate^⑤, about the middle of his undergraduate career, Newton began to compose as readily in Latin as in English. Although mathematics does not figure^⑥ in the Newton papers from this time, a recent discovery has indicated that Stokes had more than

① 同母异父兄弟 ② (=Master of Arts) 文学硕士 ③ 寄宿(某人家中) ④ 药剂师 ⑤ 无论如何 ⑥ 出现

ordinary mathematical competence, and he may have played some role in directing Newton down this path. However, the stories that survived in Grantham had to do with other things: building models, including a working model of a windmill^①, constructing sundials^②, and frightening the townspeople with a lantern attached to a kite. There was apparently a schoolboy romance with the stepdaughter of his landlord (though hers is the only account of it). Years later, the young woman, then Mrs Vincent, was one of two people from Grantham that Newton recalled with pleasure.

Late in 1659, as he neared the age of seventeen, Newton's mother called him home from school to take charge of her considerable estate. The experiment was a disaster. Newton wanted none of it. He had discovered the world of learning, and there his heart lay. Set to watch the sheep, he would, it was said, build models of water-wheels^③ while the sheep wandered into the neighbours' fields, leaving his mother to pay for the damage. Stokes had assessed his student's potential and offered to remit^④ the fee if Newton were to return, and the Revd William Ayscough likewise urged his sister to let the young man prepare for the university. In the autumn of 1660 she relented^⑤. Newton returned to Grantham,

① 风车 ② 日晷(仪) ③ 水车 ④ 免除, 减免 ⑤ 发慈悲, 动了怜悯心

6 and nine months later he departed for Cambridge University.

To Cambridge

Newton arrived in Cambridge on 4 June 1661 and the following day presented himself at Trinity College^①, where he was entered in the books as a sub-sizar. Sizars and sub-sizars^②—the college does not appear to have made a distinction between them—were poor students who earned their keep by performing menial tasks.^③ Although less segregated^④ in Trinity than in other colleges, they were nevertheless^⑤ a lower order who, for example, were not allowed to dine with their fellow students.

Newton's status as sizar raises questions. Heir to the lordship of a manor, son of a widow who can only be described as wealthy, he was used to being served, not to serving. Two explanations that are not mutually exclusive^⑥ present themselves. His mother had begrudged^⑦ him a full grammar school education, and she may have been unwilling to send him to the university on any other terms^⑧ (his patchy^⑨ undergraduate accounts that survive seem to suggest a stingy allowance^⑩). Alternatively^⑪ he may have gone to Trinity as the sizar

① (剑桥大学)三一学院 ② 减费生和获奖学金学生 ③ 像佣人那样干杂活来维持生计 ④ 隔离的 ⑤ 仍然 ⑥ 相互排斥的 ⑦ 嫉妒, 妒恨 ⑧ 照他人的意思 ⑨ 不完全的 ⑩ 吝啬的补助 ⑪ 或者

of Humphrey Babington, a fellow of the college who had Lincolnshire connections, whose sister was the wife of the apothecary in Grantham with whom Newton had stayed. Babington held the rectory of Boothby Pagnell, not far from Woolsthorpe; Newton stayed at Boothby Pagnell for part of the time he was home during the plague, and a number of other details connect the two men. Babington was resident in Trinity College only four or five weeks of the year and may have needed someone to watch over^① his affairs.

In any event it is safe to assume that Newton's lowly status as a sub-sizar served to magnify^② his isolation from other students. He formed a friendship with one, John Wickins, who became his chamber fellow^③ and, like Newton, stayed on as a fellow^④ of the college. Although a number of others who were students with Newton also became fellows and lived in the college with him for thirty-five years, there is no evidence from either side of any relationships between them. His independence as a student, extending a pattern already manifest in grammar school, formed the initial chapter of an isolation within the university that continued until he left. After his departure he never corresponded with^⑤ anyone he had known there.

① 照顾，照看 ② 夸大，放大 ③（同寝室）室友 ④（大学的）研究员 ⑤ 与…通信联系

8 Evidence of Newton's studies comes from the reading notes that he kept, especially those in one notebook. They show that his tutor, Benjamin Pulleyn, set him a curriculum the roots of which stretched back four centuries to the establishment of the medieval universities. Its focus was Aristotle: Newton read Aristotelian logic, Aristotelian ethics, and Aristotelian rhetoric^①, all preparations for the study of Aristotelian philosophy. Johannes Magirus's *Physiologiae peripateticae*^② furnished his first serious introduction to natural philosophy—Aristotelian natural philosophy, of course, as the name of the book implies.

In what became his characteristic style, Newton made notes from both ends of the notebook. It is significant that he did not finish reading any one of the texts he was set, and suddenly, apparently early in 1664, although nothing fixes the date with certainty, he broke off his reading in the established curriculum to pursue a different line of study^③. There is no hint of tutorial guidance^④. By every indication, Newton launched his new course alone. In the notebook some 200 pages in the middle remained empty. On one of them he entered a title, 'Questiones quaedam philosophicae' [*sic*]^⑤, and he set down forty-five

① 亚里士多德逻辑学、伦理学和修辞学 ② 亚里士多德自然哲学 ③ 研究领域 ④ 导师个别指导 ⑤ 一些哲学问题 [原文如此] (是牛顿早期在剑桥大学时所做的一些笔记, 是他感兴趣的一些自然哲学领域的问题)

headings under which to gather information from his new reading (CUL, Add. MS 3996, fols. 88–135). Later he copied a slogan under the title: ‘Amicus Plato amicus Aristoteles magis amica veritas^①’. Neither Plato nor Aristotle appeared again in the ‘Quaestiones’. What did appear, significantly, were notes from Descartes^②, then reported in Cambridge, as in Paris, as the leading exponent^③ of a revolutionary new philosophy. Newton digested Descartes’s writings in a way he had not done the readings prescribed by the curriculum. He also took notes from Walter Charleton’s English digest of Pierre Gassendi^④, from Galileo’s *Dialogue*^⑤, and from the writings of Robert Boyle, Thomas Hobbes, Kenelm Digby, Joseph Glanville, and Henry More, all in their way exponents of unauthorized philosophical positions^⑥, and interested in the new science.

The ‘Quaestiones quaedam’ launched Newton’s career in science. They set out his initial interest in a number of key phenomena, such as the cohesion^⑦ of bodies, capillary action^⑧, the expansion of gases, and surface tension, that continued to occupy central places in his ongoing speculations^⑨ on the nature of things. Also noted was his first concern with the question of colours, the problem

① 〈拉〉与柏拉图为友，与亚里士多德为友，更与真理为友（哈佛大学校训） ② 笛卡儿（1596—1690），法国哲学家、数学家 ③ 倡导者 ④ 皮埃尔·伽森狄的英语文摘（伽森狄，法国著名的唯物主义哲学家、物理学家和天文学家） ⑤ 伽利略的《对话》 ⑥ 未被认可的哲学命题的阐释者 ⑦ [物]内聚力 ⑧ [物]毛细现象 ⑨ 思索，推断