



英汉对照名人传记系列



新华传媒
XINHUA MEDIA



Stephen Hawking

斯蒂芬·霍金

【美】小伯纳德·赖安◎著

张曜◎译

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交大之星

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主要内容

斯蒂芬·霍金

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内 容 提 要

本书是“英汉对照名人传记系列”之一。斯蒂芬·霍金是至今在世的最著名的科学家,被称为另一个爱因斯坦。他从研究黑洞出发,探索了宇宙的起源和归宿。本书介绍了霍金的家庭、教育和婚姻,以及他战胜疾病的精神。本书采用英汉对照形式,既可作为大众读物,又是适合中学生的课外英语扩展读物。

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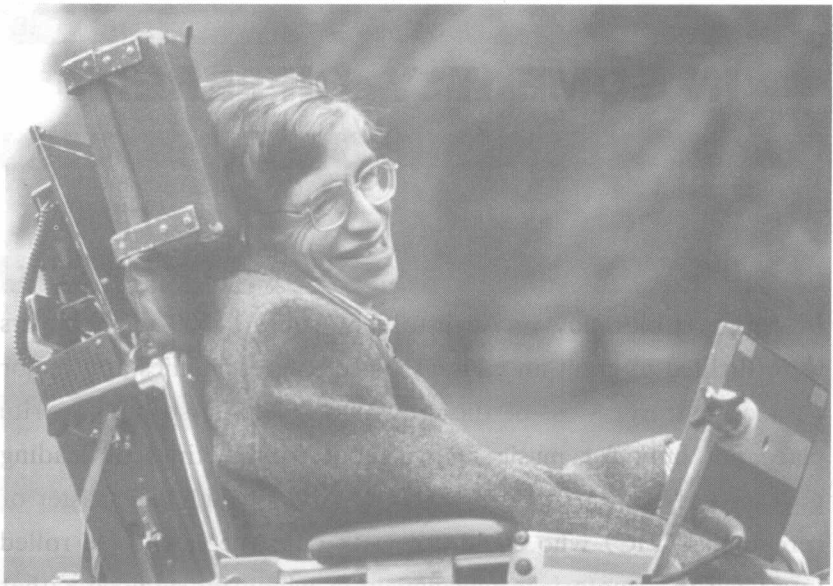
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1 IN SOME WAY DIFFERENT

In Aspen, Colorado, in August 1995, some 1,500 music lovers were thrilled to greet an unusual master of ceremonies at a major outdoor concert. Most of the crowd considered Aspen a favorite place not only for music festivals but for meetings of leading physicists. Now they were enthusiastically applauding a master of ceremonies (MC) who could not walk onto the stage. He rolled into view in a motorized wheelchair in which he slumped rather than sat. As their applause quieted, they knew the frail, motionless man in the wheelchair could not speak, yet he was being honored with the opportunity to introduce the musical numbers on the program.

The voice they heard was synthetic: sounds created by a computer attached to the arm of the MC's wheelchair. "This is the *Sigfried Idyll*," said the steady monotone, "which Wagner wrote in 1870 to be performed on Christmas morning outside the bedroom of his new wife. I am here with my fiancée, Elaine, and we will be married in September, so I think this piece is rather appropriate."

The MC was Stephen Hawking, the most famous scientist of his time. He was a man whose body had suffered for 53 years with ALS (amyotrophic lateral sclerosis), known as Lou Gehrig's



Stephen Hawking is the most famous scientist alive today. (Campix)

斯蒂芬·霍金是至今在世的最著名的科学家(Campix)

disease, but whose mind had provided answers to many of the questions about how our universe works. He was a leading physicist and the world's foremost expert in cosmology — the study of the origin, structure, and relationships to space and time of the Earth and everything beyond it.

Son of a Doctor

Stephen William Hawking was born in Oxford, England, on January 8, 1942, the 300th anniversary of the death of Italian astronomer and physicist Galileo Galilei. Stephen's father, Frank Hawking, was a doctor who had specialized in tropical diseases in East Africa. The outbreak of World War II in 1939 had drawn

Frank Hawking home expecting military service, but authorities valued him more as a medical researcher. In that job, he met and married a medical secretary who became Isobel Hawking. Stephen was the first of their four children.

Following the war, Frank Hawking became head of the division of parasitology at England's National Institute of Medical Research. When Stephen was eight, his family moved to St. Albans, a prosperous middle-class town. There in 1952 Stephen passed entrance exams for the local private school, St. Albans School. Like other students, he wore a school

uniform and cap. He appeared to be the kind of skinny little kid who was often teased and sometimes bullied. He had an awkward, unclear manner of speaking that his few friends dubbed Hawkingese.

Within three years, teachers at St. Albans knew that Stephen was bright, but his marks stayed only just above average. With friends who were also known as smart kids, Stephen listened to classical music programs on BBC radio and attended concerts at



Dr. Frank Hawking and his son, Stephen, in 1942 (Campix)

弗兰克·霍金医生和他的儿子斯蒂芬，1942年 (Campix)

the Royal Albert Hall. They rode their bicycles far into the countryside, and they spent long hours playing complex board games for which Stephen invented the rules.

“Awkward questions I can’t answer”

By the time Stephen was 12, one of his friends later recalled, “I realized for the first time that he was in some way different and not just bright, not just clever, not just original, but exceptional.” Another friend remembered that Stephen was always taking things apart — clocks, radios, anything mechanical or electronic — to see how they worked. This friend recalled that 14-year-old Stephen seldom spent much time on homework, yet “while I



As a boy, Stephen lived and attended school in St. Albans. (Campix)

童年斯蒂芬,在圣奥尔本斯居住和就学(Campix)

would be worrying away at a complicated mathematical solution to a problem, he just knew the answer — he didn't have to think about it."

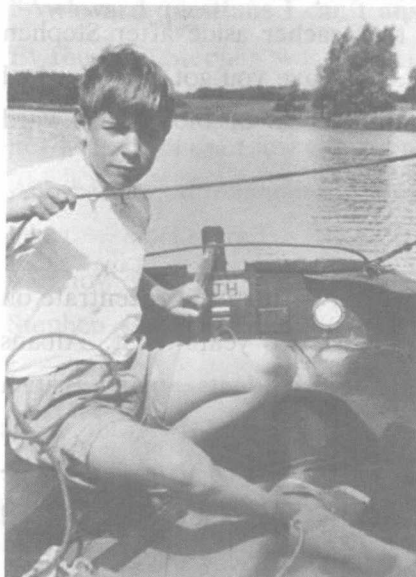
Stephen and his classmates were taken on field trips to museums and factories. At one chemical plant, a scientist who had been conducting their tour took the teacher aside after Stephen had asked some questions. "Who . . . have you got here?" asked the scientist. "They're asking me all sorts of bloody awkward questions I can't answer!"

Planning His Future

Looking ahead toward college, Stephen decided to concentrate on mathematics and physics during his last two years in St. Albans School. (Unlike American high school students, many British students decide on a college major while in the 11th grade.) His father assured him the only future in math was in teaching. He thought his son should plan a career in medicine, which would require more chemistry courses than Stephen wanted to take. After many arguments, Stephen agreed to study some chemistry as well as math and physics in St. Albans, but not to make any commitment to medicine.

By the time he was 16, Stephen and his friends were rounding up parts from clocks and a telephone switchboard to build their own computer. Stephen's mind worked out the design, while his pals, whose hands were better coordinated than his, took care of assembling the machine. They named it the Logical Uniselecto Computing Engine (LUCE) and proved — as a local newspaper, the *Herts Advertiser*, reported — that it could answer certain

mathematical questions. (The LUCE would be a valuable museum item today if only a computer teacher at St. Albans School had not tossed into the trash a box marked *LUCE*. It contained what he thought was just a mess of old wires and transistors.)



Before the onset of his illness, Stephen was as physically active as any other boy. (Campix)

得病之前,斯蒂芬和别的男孩儿一样活泼好动(Campix)

Stephen wanted to follow in his father's college footsteps by going to University College, one of 35 colleges within Oxford University. To get in, he had to pass two days of entrance tests; two exams in physics, two in math, and one in world issues and current affairs. Each exam lasted two and a half hours. Then came two sets of interviews. The first was with four deans and tutors who mainly wanted to find out what kind of person the applicant was. The second was with a specialist who wanted to find out how much he knew about physics.

Within two weeks, Stephen was accepted for entrance at Oxford in October 1959. He did not know that he had received a 95 percent grade on both physics tests and only slightly lower marks on the other three exams. He did know, however, he was offered a scholarship.

第 1 章 有点与众不同

1995年8月，在科罗拉多州的阿斯彭，大约1500名音乐爱好者激动地向当时大型露天音乐会一位不寻常的主持人欢呼致意。他们中的大部分喜欢阿斯彭，不只因为那里是举办音乐节的胜地，更因为那里是杰出物理学家聚会的地点。这时，他们正热烈地为无法走上舞台的主持人鼓掌喝彩。他坐在电动轮椅上，缓缓驶进人们的视野——与其说“坐在轮椅上”，还不如说他是“陷在轮椅里”。掌声和喝彩声静下来，人们知道轮椅上这个虚弱的、一动不动的人没法开口说话，可现场还是把介绍曲目的机会留给他，以表示对他的尊敬。

他们听到的声音是人工合成的：一台电脑安装在主持人轮椅扶手上，正是通过它才发出声音来。

“这是《齐格弗里德田园曲》，”一个平稳而单调的声音说，“1870年瓦格纳写给他新婚妻子的——那年圣诞节一大早，他还在妻子的卧室门口演奏了这支曲子。我的未婚妻伊莱恩也在这儿，我们将在9月结婚，所以我觉得这支曲子很合适。”

这位主持人就是斯蒂芬·霍金，他那个时代最有名的科学家。他身患一种称为ALS（肌肉萎缩性侧索硬化）的病，或者叫卢·贾里格症，前后有53年了，可他的头脑，对许多有关“我们的宇宙如何运行”的问题都给出了答案。他是杰出的物理学家，在宇宙学领域，也就是关于世界的起源、结构，宇宙和时空的关系等等深奥学问的领域，他是世界上最了不起的专家。

医生的儿子

1942年1月8日,斯蒂芬·威廉·霍金出生在英国牛津,他的生日正是意大利天文学家、物理学家伽利略逝世300周年纪念日。斯蒂芬的父亲弗兰克·霍金是一名医生,曾在东非从事热带病的研究工作。1939年第二次世界大战的爆发促使弗兰克·霍金回到英国,希望能够服兵役,可主管部门认为他更适合做医学研究。在那份研究工作中,他遇到了当时在医学研究所当秘书的伊泽贝尔,也就是后来的霍金夫人。他们共有4个孩子,斯蒂芬是他们的长子。

战后,弗兰克·霍金成为英国国立医学研究院寄生虫部的主任。斯蒂芬8岁时,全家搬到圣奥尔本,一个繁荣的中产阶级小城。1952年,斯蒂芬通过了当地私立学校——圣奥尔本斯学校的入学考试。和其他学生一样,他身着校服,头戴帽子,不过看上去是那种瘦小的孩子,常常被人家取笑,有时甚至被欺负。再就是显得有点笨拙,说话口齿不清,几个朋友干脆管他的话叫“霍金语”,或者我们该理解成“放鹰话”。

三年里,圣奥尔本斯的老师们都知道,斯蒂芬是个聪明孩子,可论成绩他只是比平均分高一点儿。斯蒂芬的朋友们也都是聪明伶俐的孩子,大家一起听收音机里英国广播公司的古典音乐节目,一起跑到皇家艾伯特音乐厅听音乐会,还一块儿骑车,一直骑到老远的乡下,一块儿玩各种复杂的棋类游戏,玩个没完没了:游戏的规则是斯蒂芬制定的。

“我都答不上来的尴尬问题”

到斯蒂芬12岁头上,他的一个朋友后来回忆说:“我开始意识到他有点儿与众不同,不光是聪明,不光是思维敏捷,不光是有创造性,简直就是非凡。”还有一个朋友回忆说,斯蒂芬总是拆东西,钟表、收音机、机械的、电子的,什么都拆,看它们怎么工作。他还说,14岁的斯蒂芬从来没有把大量的时间花在家庭作业上,可“当我还绞尽脑汁对着数学题求解的时候,他早就知道答案了——他都不用想”。

斯蒂芬和同学们常常被带到博物馆和工厂进行一些实地考察和参观。有一回在化工厂，斯蒂芬问了一大堆问题之后，领着他们参观的科学家把带队老师拉到一边儿问道：“你给我弄到这儿来的是些什么人？净问些我都答不上来的尴尬问题！”

计划他的未来

眼看就要上大学了，斯蒂芬决定最后两年集中精力学习数学和物理。父亲对他说学数学唯一的出路就是教书。他认为他的儿子应该把职业规划定在医学上，可那需要学更多的化学课程，而这不是斯蒂芬愿意上的。经过好几番争论，斯蒂芬终于同意在学数学和物理学的同时也学一些化学，这是在圣奥尔本斯的权宜之计，至于学医，他始终不同意。

16岁那年，斯蒂芬和朋友们把钟表和电话交换机上的零件拆下来，装了一台他们自己的计算机。斯蒂芬脑子好，负责设计，朋友们手比他灵巧，负责装机。他们管它叫“逻辑单选择计算机引擎”，或者缩写成 LUCE，正好是“白斑狗鱼”的意思：最后做出来这家伙可是能回答一些数学问题呢，当地的一家报纸，《赫特福德广告报》对此还作了报道。（要是圣奥尔本斯学校的计算机老师没把一个写着 LUCE 的盒子扔进垃圾箱，“白斑狗鱼”会是今天博物馆里一个珍贵馆藏。在那位老师看来，盒子里装的不过是一堆破导线和晶体管。）

斯蒂芬想进“大学学院”，牛津大学的 35 所学院之一，也是他父亲当年就读的学院。进大学学院要通过两天的入学考试：两门物理，两门数学，还有一门国际问题和时事，每门考试两个半小时。然后是两项面试。第一项由学院的系主任和导师一共 4 个人作主考，主要是看申请者的气质性格，第二项由专家任主考，考他的物理学知识。

没过两周，斯蒂芬就收到了通知，他将于 1959 年 10 月入学。他不知道他的两门物理学都考了 95 分，另外三门也只是稍微低一点儿，他只知道自己拿了奖学金。

2 LIFE AT OXFORD

At 17, Stephen Hawking was one of the youngest students at University College, Oxford University's oldest college, which dates from 1249. No friends from St. Albans went with him. Many other students at Oxford had performed military service before college and were several years older than he was, so Stephen's college social life was lonely; college work, as far as he was concerned, was a bore.

Each week in the Oxford curriculum, students were expected to attend several lectures as well as one tutorial — a small group of students led by a young professor or graduate student in a discussion of problems assigned the week before. One week, Dr. Robert Berman, who was Stephen's adviser, assigned 13 problems to his four physics students. On the morning of the tutorial a week later, the other three students told Stephen that two of them had managed to do one and a half problems, while the third student had completed just one. Hawking said he had not yet looked at the problems. The others went off to lectures while Stephen, skipping the morning's lectures, went to his room to tackle the physics problems. At lunchtime, just before the tutorial, one of the friends asked Stephen how many he had done. "I've only had time," he replied, "to do the first nine."

“I think at that point,” said one of the other students a few years later, “we realized that it was not just that we weren’t in the same street [as Stephen], we weren’t on the same planet.”

Another tutor, Patrick Sanders, assigned some problems from a textbook. Stephen returned the next week to say that he had done none of the problems but had marked all the errors in the textbook. He then spent 20 minutes of the tutorial explaining the errors, convincing the awestruck Sanders that the student knew far more about the subject than the teacher knew.

Hawking’s mentor and adviser, Dr. Berman, summed up his analysis of Stephen’s aptitude: “Undergraduate physics was simply not a challenge for him. He did very little work, really, because anything that was do-able he could do. It was only necessary for him to know something could be done, and he could do it without looking to see how other people did it.”

Physics: The Big and the Little

When Stephen Hawking entered college, he knew that the field of physics consisted of two distinct areas of study: general relativity and quantum physics.

General relativity explained what went on in the vast cosmos beyond our sky. Basically, it was Albert Einstein’s brainchild. Einstein had started in 1905 by declaring that physicists should think of space and time not as two separate things but as two parts of a whole, which he called spacetime.

After more than 10 years’ work, Einstein published his general theory in 1916. It said that as beams of light move through spacetime and pass close to the sun, they are bent because the

presence of any object in space distorts the spacetime around it. Thus, the pull of the sun's gravity bends the light coming to us from a star and changes the way we see the position of the star. Einstein was proved right three years later, in 1919, when photographs taken during a total eclipse — with the sun's brilliant light hidden — revealed just what he had described. In a word, Einstein was saying that what we see in space is relative to certain facts about space and time.

At about the same time as Einstein was expressing his theory of relativity, astronomer Edwin Hubble used an extremely powerful new telescope to make a surprising discovery: The countless galaxies beyond our own Milky Way Galaxy are all moving away from one another. Within our Milky Way or any other single galaxy, however, the stars are not moving farther apart, but entire galaxies are.

Reviewing Hubble's findings, some physicists who specialized in the cosmos agreed that if the galaxies were moving apart, at some time eons ago they must have been close together, perhaps so close they touched or were a single something in space. To explain what started everything moving apart, physicists came up with the idea that there must have been a super-explosion of that original something. Not all physicists agreed, however. One such physicist, named Fred Hoyle, thought he was poking fun as he called that explosion a *Big Bang*. The name stuck.

While some physicists were all wrapped up in questions of general relativity, others were looking into the tiniest of the tiny particles that make up all matter. Their thinking involved what they called the *quantum theory*, and their discoveries became