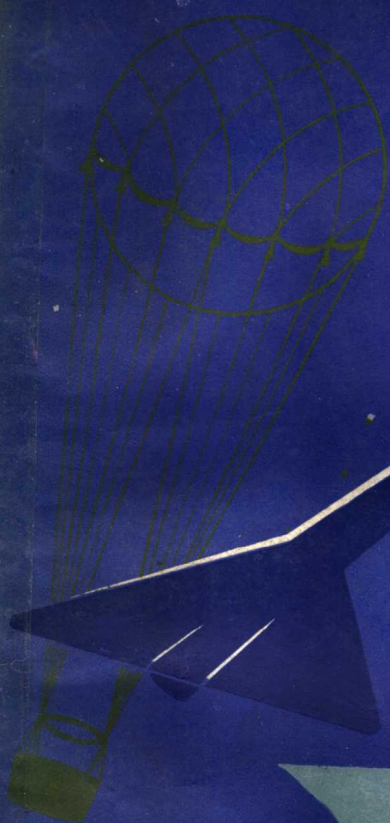


科学发 明趣闻



LES OF SCIENTIFIC INVENTIONS

王永富 何吉申译注 何立人审校 上海译文出版社

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编 选 说 明

为了适应理工科学生学习英语的需要，并为具有中等程度的英语自学者提供一些阅读材料，我们选编了这本《科学发明趣闻》。

本书的十五篇文章，全部选自新近出版的英、美书刊。这些文章生动地叙述了历史上一些有趣的科技发明故事，会给人以一定的教益。文章的语言规范化，适合学习英语之用。为了帮助读者阅读和理解，我们在每篇文章后面列出生词表，并对文中的习惯用语，较难的句子结构和语法现象，作了详尽的注释。在每篇文章后面还附有参考译文。

我们希望本书能对希望了解科技发明知识的英语学习者有一定的帮助。由于我们水平有限，书中难免有错误或不足之处，请读者批评指正。

编 者
一九八六年七月

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1 The History of Books

The first books were quite different from the books of today. They were made of¹ baked clay tablets. Some of these tablets have been found that were used in Mesopotamia about fifty-five hundred years ago.² The people of that time used symbols to represent their language. When the clay was soft, the symbols were written in the clay. After the tablets were baked, the clay hardened and the messages were permanently preserved. Most of the tablets that have been found are business records, such as deeds to certain lands in the area.

The Egyptians found a material that was more convenient to write on than clay. They used the bark of the papyrus, a grassy plant that grows wild in the Nile Valley. They pasted layers of this bark together to make long sheets—sometimes over a hundred feet long. A wooden roller was attached to each end of the sheet so that a small portion could be read, then the papyrus could be rolled up a little to reveal a new portion of writing. Because this method was employed, the Egyptian writing was done in columns, reading from top to bottom.

For centuries this type of book was used in Greece, Egypt, China, and Rome. The Romans made roll books of vellum, a soft parchment made from the skins of young animals such as lambs, kids or calves. About 300 A.D. a new type of book was developed: three or four sheets of vellum were folded and sewn together. Then the ends

were cut so that the pages could be turned.

The Chinese began printing books during the Middle Ages, long before the Europeans. Their printing type was made of baked clay and their books were made of paper—another Chinese invention. The Chinese books looked very much like our modern books. However, the Chinese had little or no contact with Europe at that time, so it is not clear whether or not the Europeans learned about printing from the Chinese³.

The first known inventor of printing in Europe was Johannes Gutenberg⁴ of Germany. The first book printed in his workshop was a Latin Bible. A few copies of this first book still exists. They are now over five hundred years old. The Gutenberg Bible was printed on a hand press with type made of lead. Most of the copies were printed on paper, but a few were printed on vellum. The books are about 12 inches wide and 16½ inches long.

Men who had been trained in Gutenberg's workshop soon established themselves as independent printers⁵. By 1500, about fifty years after the first Bible was printed, more than 30,000 books had been printed. The Bible was still the most popular book. Other church books were also printed, as were Greek and Latin classics, history books, and astronomy books.⁶

The tools of the first printers were simple and could be moved about easily. At the end of the fifteenth century there were more than a thousand printers in Europe. Since many people could not read Latin and Greek, books were soon printed in various languages. The printers also began to make the books smaller, so that they could be handled more easily. Furthermore, the printers began

to make their books more elaborate, adding pictures and ornamental letters at the beginning of chapters. Gradually the letters of the type were made smaller, finer and more delicate. The letters began to look less like manuscript letters, and, eventually, the form of the letters was simplified to the point where they were well-adapted to the metal of the type.

Sometimes books were illustrated with woodcuts. Blocks of wood were carved so that the white parts of the picture were below the surface of the wood. When the surface was inked and stamped onto paper, the dark part of the picture was reproduced. The first attempts, of course, were rather crude, but eventually the block printers were making meticulous and artistic illustrations. Florence, in Italy and Lyons, in France, became famous for their illustrated books.

In the seventeenth century, great numbers of religious pamphlets were printed. These pamphlets were not always neat or artistic because the writers were only interested in spreading their ideas quickly, and the readers did not consider the appearance of the book important. The art of metal engraving was developed about this time and enabled printers to illustrate their books with pictures of very fine, delicate lines. The use of an engraving on the first page of a book became popular. The quality of the paper improved too.⁸

By 1800, hand printers could not supply enough books to satisfy the demand. Books were not printed fast enough when hand-made paper and wooden hand presses were used. Fortunately, about this time, many machines were invented that aided in the mass production of such products

as cotton and woolen cloth⁹. The invention of new types of printing machines and paper machines followed on the heels of¹⁰ these inventions and helped to speed up the production of books. The paper machine produced paper in rolls instead of sheets; and the iron handpress enabled the printer to use larger pieces of paper on which more text could be printed in less time. Finally, the linotype was invented, a machine which could cast an entire line of type at one time¹¹.

In the twentieth century, many books have been produced in paperback editions. Although these books do not last as long as books with cloth or leather bindings, they are much¹² cheaper. Thus, many poor people, who could not afford books before, can now buy them. Today books are available to everyone because they are no longer expensive, they do not take long to produce,¹³ and, consequently, they are no longer rare. Because of this progress in book production, more and more people are learning to read. More and more people are now writing books, as well as reading them, so that the literature of the world is being constantly enriched.

New Words

clay [klei] *n.* 粘土

tablet ['tæblit] *n.* 片, 板

Mesopotamia [ˌmesəˈpəʊˈteɪmjə]

n. 美索不达米亚 (在小亚细亚底格里斯河及幼发拉底河之间的地区, 世界古文明发祥地之一)

symbol ['sɪmbəl] *n.* 符号

deeds [di:dz] *n.* [复] 证书

papyrus [pəˈpaɪərəs] *n.* 纸莎草

Nile Valley 尼罗河流域

vellum ['veləm] *n.* 皮纸

parchment ['pɑ:tʃmənt] *n.* 羊

皮纸
type [taip] *n.* 活字
elaborate [i'læbərit] *a.* 精巧的
ornamental [ɔ:nə'mentl] *a.* 装饰的
manuscript ['mænʃuskript] *a.* 手抄的
illustrate ['iləstreit] *v.* 配插图
woodcut ['wudkat] *n.* 木刻, 木版画
ink [ɪŋk] *v.* 涂油墨
stamp [stæmp] *v.* 压印于
meticulous [mi'tikjələs] *a.* 精

细的
Lyons ['laɪnz] *n.* 里昂(法国东南部一城市)
pamphlet ['pæmfli:t] *n.* 小册子
speed [spi:d] *v.* 加速
handpress ['hændpres] *n.* 人力印刷机
linotype ['lainətaip] *n.* 铸字排版机
cast [kɑ:st] *v.* 铸
paperback ['peipəbæk] *n.* 平装本
enrich [in'ritʃ] *v.* 使丰富

Notes

1. be made of (from): 由……制成, 原料被制成物品后仍具原质者用 of, 已失原质者用 from, 如:
 Cloth is made of cotton.
 Wine is made from grapes.
2. Some of these tablets have been found that were used ...
 = Some of these tablets that were used ... have been found.
3. so it is not clear whether or not the Europeans learned ... : 本句中 whether or not 引起的从句是主语从句。
4. Johannes Gutenberg: 约翰尼斯·谷登堡, 德国印刷家, 他发明了活字印刷, 第一批印行的拉丁文圣经就被称为谷登堡圣经。

5. to establish oneself as ... : 作为……而开业.
6. ... as were Greek and Latin classics, history books, and astronomy books: 本句中 as 引导一个倒装的从句以避免重复, 在正式文体中经常采用这种形式, 如:
David is tall, as are my brothers.
7. great numbers of: 修饰可数名词. 比较:
a great deal of 修饰不可数名词
a lot of 可修饰可数和不可数名词
8. The quality of the paper improved too: 本句中 improve 是不及物动词.
9. many machines were invented that aided ... = many machines that aided ... were invented.
10. on the heels of: 接踵(而来), 系一词组.
11. the linotype was invented, a machine which ...: 本句中 a machine 是 linotype 的同位语, 因为它后面还有一个定语从句, 所以就把它放在动词 was invented 后面.
12. much, far 等词可用来修饰比较级.
13. they do not take long to produce: 本句中 long 是名词.

【参考译文】

书 的 历 史

最初的书本与现今的书是截然不同的, 它们是由焙制过的土片制成的。在已发现的焙制土片中, 有一些在大约五千

五百年前在美索不达米亚被使用过。那时的人民语言文字是用符号来表达的。在土坯还柔软时就把符号写上，经过焙制以后土坯变得很坚硬，这些符号就被永远保存下来了。已经发现的土片中很多是业务记录，如这一地区的某些土地证书。

埃及人发现了一种比土坯更易于书写的材料。在尼罗河流域到处生长的一种草绿色植物叫纸莎草。埃及人就利用它的皮，把纸莎草皮粘连起来制成很长的纸莎草片，有时长度超过一百英尺。在纸莎草片的每一端都有一个木轴，这样就可先阅读一小部分，然后，纸莎草皮就可以被稍稍卷起一些而露出新的书写部分，因为用了这种方法，所以埃及的书写是直行的，是从上往下读的。

这种书在希腊、埃及、中国和罗马应用过数百年。罗马人曾用皮纸做可卷的书本，这种柔软的皮纸就是用幼小的动物，如小绵羊、小山羊或小牛的皮制成的。大约在公元三百年，一种新型的书本问世了，这就是把三、四张皮纸叠在一起并把它们缝起来，最后把它们的两端割开，这样书页就可翻动。

中国人在中世纪时就开始印刷书本，远远地早于欧洲人。他们的印刷活字是用焙制过的土坯制成的，而书则是用中国人的另一种发明——纸所制成。中国人的书看起来很象我们现在的书本。但是当时的中国人与欧洲的联系是微乎其微的，甚至可说几乎没有联系，所以欧洲人是否是从中国人那儿学习了印刷术，这一点就不太清楚了。

在欧洲，人所共知的第一个印刷术的发明者是德国的约翰尼斯·谷登堡。在他的工场里印刷的第一本书是一部拉丁文圣经。这第一本书的少量副本至今还在，它们到现在已经有五百多年之久了。谷登堡的圣经是用铅字在手摇印刷机上印成的，大多数的副本是印在纸上的，少量本子是在皮纸

上的，这些书的宽度约为12英寸，长度约为16.5英寸。

在谷登堡工场里曾经受到过训练的人不久就各自开办了印刷工厂。在十五世纪末叶时，大约在第一部圣经印刷后的50年左右，又有三万余本书被印行。圣经仍然是最畅销的书。此外也印了一些其他的宗教书籍及希腊和拉丁文的经典著作、历史书和天文学书。

最初的印刷者的工具很简单并易于搬动，到十五世纪末，欧洲已经有千余家印刷商，由于那时很多人不能阅读拉丁文和希腊文，因此就用各种语言来印书，印刷商们也开始把书本缩小以便人们易于阅读携带。此外，他们还开始进一步把书做得更精巧，添加插画并且在每章文字开始之处用美术字体，逐渐地活字字体也被制造得更小，更漂亮，更精美，字体开始看上去不象手写体，最后字体简化到能很好地适应浇铸金属活字的地步。

有时书上还用木刻插画，木块经过雕刻，以使画面的白色部分低于木头的表面，当表面涂上油墨后印在纸上时画面的黑色部分就显出来了。起初的尝试当然很粗糙，但是后来木刻印刷者就刻印出了精细并有艺术性的插图，意大利的弗洛伦斯和法国的里昂就是以它们带有插画的书而出名的。

在十七世纪印刷过数量众多的宗教小册子，这些小册子往往是粗糙的并缺乏艺术性，因为作者感兴趣的只是尽快地宣传他们的思想，而读者也不把书籍的外观看得很重要。在这前后，金属刻印艺术发展起来了，使印刷商能以很细致和线条清楚的图画来作为他们的书籍的插画，在书的封面上使用雕版画也就变得普遍起来，纸张的质量也改进了。

十八世纪末叶，手工印刷工场已经不能提供足够的书本来满足需求了，使用手工造纸和手工的木制印刷器印书速度

不够快。幸运的是大约也就是在这个时候发明了许多能帮助大批生产类如棉、毛织品等产品的机器。新型的印刷机和造纸机的发明也接踵而来，加速了书本的生产。造纸机造出的纸不是一张一张的而是一卷筒一卷筒的，铁制的人力印刷机使印刷厂可以使用较大的纸张，这样就可以花较少的时间来印刷更多的文字，最后发明了能同时浇铸整行活字的铸字排版机。

在二十世纪，许多平装书出版了，虽然这些书不如布面或皮面书那样耐久，但它们要便宜得多，所以许多以前买不起书的穷人现在都能够买了。今天，每个人都能得到书籍，因为它们不再是价格昂贵了，它们的生产不用花很多时间，因而它们也不再是稀有物品了。由于书本生产的这种进展，愈来愈多的人在学认字，愈来愈多的人在写书、读书，这样世界文学就日益丰富了。

2 Spectacles

The inventor of spectacles probably lived in the town of Pisa, Italy, around 1286, and was almost certainly a craftsman working in glass. But nobody knows his name. We only know this much¹ about him because Friar Giordano preached a sermon one Wednesday morning in February 1306 at a church in Florence. 'It is not yet twenty years since there was found the art of making eyeglasses² which make for³ good vision,' said the Friar, 'one of the best arts and most necessary that the world has. So short a time is it⁴ since there was invented a new art that never existed. I have seen the man who first invented and created it, and I have talked to him.' We know what Friar Giordano said because admirers copied his sermons down as he gave them.

The inventor of spectacles apparently kept the method of making them to himself⁵. Perhaps he thought this was the best way of getting money from his invention. But the idea soon got around⁶. As early as 1300, craftsmen in Venice, the centre of Europe's glass industry, were making the new 'disks for the eyes'. Spectacles at first were only shaped for far-sighted people. Concave lenses, for short-sighted people, were not developed until the late fifteenth century.

Spectacles allowed people to go on reading and studying long after bad eyesight would normally have forced them to give up. They were like a new pair of eyes. The inventor

of such a valuable thing should be honoured, everyone thought. But for centuries no one had any idea who the inventor really was. So all kinds of candidates were put forward: Dutch, English, German, Italians from rival cities. A fake memorial was erected last century in a church in Florence to honour a man as the true inventor of spectacles — but he never even existed!

Only recently have researchers dug back through the records,⁷ pushed away⁸ all the stories and legends, and found the man whose name they do not know and to whom Friar Giordano talked, probably in Pisa, nearly seven hundred years ago. 'The world has found lenses on its nose without knowing whom to thank,' wrote one researcher.

New Words

spectacles ['spektəklz] *n.* 眼镜

inventor [in'ventə] *n.* 发明家

Pisa ['pi:zə] *n.* 比萨 (意大利北部一都市, 有著名的比萨斜塔)

craftsman ['kra:ftsmən] *n.*

工匠

friar ['fraiə] *n.* 修士

preach [pri:tʃ] *v.* 宣讲

sermon ['sə:mən] *n.* 说教, 讲道

Florence ['florəns] *n.* 佛罗伦

斯 (意大利中部一城市)

disk [disk] *n.* 圆盘形物体

far-sighted ['fa:'saitid] *a.* 远视的

concave [kən'keiv] *a.* 凹的

short-sighted ['ʃɔ:t'saitid] *a.*

近视的

eyesight ['aisait] *n.* 视力

rival ['raivəl] *a.* 竞争的

fake [feik] *a.* 骗人的

researcher [ri:sə:tʃə] *n.* 研究人员