实用科技英语写作

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Practical

Writing

in

E·S·T

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内容简介

　　本书着重叙述科技英语文章中所涉及的有关诸如定义、分类、比较、时间、尺寸、形状、结构、性能和过程等事项以及摘要和技术报告的写作方法。

　　本书可供理工科高等院校学生、研究生作为科技英语写作课教材，也可供科技工作者写作科技英语文章时参考。

前　言

Introduction

　　随着我国对外交流的日益扩大，迅速提高科技工作者用英语进行科技交流的能力乃当前的迫切任务。一般说来，科技人员均有一定的英语基础，但实际运用英语的能力极需加强。本书编写的目的在于帮助科技工作者熟悉并掌握英语常用的一些表达方法，迅速有效地将已学到的英语知识运用到科技交流的实际中去。

　　本书根据科技英语的特点，扼要介绍科技英语写作的要点，着重叙述科技文章经常涉及的有关事项的写作方法，如定义、分类、比较、时间、形状、性能、结构、过程等的表达方法；从写单句开始，一直到段落和文章的组织结构，以及如何写摘要和技术报告等。本文内容由浅入深，简要明了，文句流畅，通俗实用。各章均附有典型范文和大量练习，对读者牢固掌握各章内容颇有裨益。

　　本书可供理工科高等院校学生、研究生、专业教师作科技英语写作课教材使用，也可作为科技人员写作科技文章的参考手册。

　　科学技术涉及的内容无限广阔，作者的水平及能力有限，书中不妥之处，恳请读者批评指正。

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科技英语特点

Particular to E.S.T.

　　当前，科学技术正在日新月异地发展，各国科学技术人员在各自领域中的相互学习、共同研讨和合作交流也日趋频繁，而进行科技交流使用最广泛的语言是英语。50年代后，英语如何在科学技术领域中使用的问题逐渐得到人们的重视。随着研究的深入与发展，也就出现了科技英语(English for Science and Technology)——这一新的英语语言分支。

　　任何事物都有其共性与特性，科技英语也不例外。语言是由语音、词汇、语法三个基本要素组成的。科技英语与日常英语在这三个方面的许多根本问题上是相同的，但因它是在科技领域中长期使用的产物，于是在词汇、语法等方面逐渐形成自己的特点。了解和掌握这些特点，可帮助科技工作者提高阅读英语科技文章的速度，正确理解文章的内容，加深对科技英语表达方式的认识，不断改善自身用英语进行科技交流的能力，同时也能在翻译时，使译文忠实、达理、通顺，符合本族语言的规范。

　　以下两篇短文的内容基本相同，但用不同的体裁表达。阅读并比较这两篇短文，可对科技英语有一大致的概念。

A

When a body is not held up, it falls because it is pulled towards the centre of the earth by the force of gravity.

Any object which is falling freely through the air speeds up each second by about 32 feet in every second. In other words, the speeding up which is made by the force of gravity is 32 feet per second per second.

When a thing is going very fast indeed, the push of the air against it slightly changes this speeding up. Really, there is a greatest speed at which any object may fall freely through air, no matter for how long it falls. This is known as its end speed, and it depends on the shape and relative compactness of the falling body. Air pushing against an object which is not very compact, like a football, makes it fall much more slowly than objects which are compact, like stones.

B

When a body is unsupported, it falls because it is attracted towards the centre of the earth by the force of gravity.

Any object falling freely through the air accelerates each second by approximately 32 feet per second. In other words, the acceleration produced by the force of gravity is 32 feet per second per

second.

At high velocities, the resistance of the air
modifies this acceleration. In fact, there is a
maximum velocity at which any object may fall
freely through air, regardless of the duration of
its fall. This is known as its terminal velocity,
and it depends on the shape and relative density
of the falling body. Air resistance to an object of
low density, such as a football, causes it to fall
much more slowly than objects of high density,
such as stones.

科技英语的特点

科学技术是研究自然界的客观规律及其实际应用。表达
科学技术内容的语言要求客观、准确、简明、易懂。从以上
两篇短文不难看出，科学技术所使用的英语与日常英语在词
汇、语法和修辞等方面均存在着差异。

一、科技英语在词汇上的特点

为了用词准确，科技英语多用词义专一且稳定的词，尽
量避免含糊不清或一词多义的现象；多用来源于拉丁语和希
腊语的词汇，如 automation, decompose, expectation,
multiplication, telephotograph, ventilate 等；常用意
义确切的单个动词代替含义复杂的动词短语，如 absorb——
take in, accelerate——speed up, support——hold up,
release——set free, discover——find out, emerge——
come out, survive——stay alive 等。

在上面两篇短文中，科技英语所使用的名词、动词不同

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于日常英语。不仅如此，其它如形容词、副词、介词，甚至语气词，科技英语均有自己的特点。如：

greatest——maximum

about——approximately

really——in fact

like——such as

no matter for——regardless of

compactness——density

二、科技英语在语法上的特点

1．科技英语是描述客观现象和自然界的规律。为了准确、清晰地反映事物间的内在联系或生产工艺过程，在句中必然大量使用各种短语、从句等，使句中各部分的关系明确，含义清楚、表达全面，因此长句是科技英语的特点之一。

例一

In fact, the generally accepted theory now is that the production of rain depends upon the presence of dust particles in the air, which serves as nuclei about which the drops may form.

例二

The determination of actual results by rigorous mathematics is often impossible because of the fact that the exact nature of certain hydraulic phenomena is either unknown, or if known, is so complex that it is not feasible to express it as a mathematical function.

2．为了客观地叙述自然界的各种现象及其内在的联

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系，避免主观成分，被动语态在科技英语中较在其它语体中使用得更为广泛。被动语态可使论证的对象更为突出醒目。

例一

The Bessemer Process uses a furnace called a 'converter'. The outside of the converter is made of steel plates. The inside is lined with bricks. The converter is tipped on to its side and the charge of molten iron is poured into the top. Then the converter is put upright again. A blast of air is blown through holes in the base of the converter. This is called the 'blow'.

例二

As oil is found deep in the ground, its presence cannot be determined by a study of the surface. Consequently, a geological survey of the underground rock structure must be carried out. If it is thought that the rocks in a certain area contain oil, a "drilling rig" is assembled. The most obvious part of a drilling rig is called "a derrick". It is used to lift sections of pipe, which are lowered into the hole made by the drill. As the hole is being drilled, a steel pipe is pushed down to prevent the sides from falling in. If oil is struck, a cover is firmly fixed to the top of the pipe, and the oil is allowed to escape through a series of valves.

3．科技文章中大量使用一般现在时态的动词，因为科

技文章大多描述不受时间限制的普遍规律。过去时态的动词主要描述过去进行过的研究、实验等活动。此外，在科技文章中使用较多的是现在完成时态，它强调过去动作的现存结果和影响。

例一

The sea is the largest unknown part of our world. It covers seventy-one per cent of the earth. There is still much to be discovered about this vast blanket of water.

Luckily, no single nation has the task of learning all we need to know about the ocean. The world sea is owned by no one; it surrounds the earth and belongs to us all. Scientists in many different countries are working to explain its mysteries.

例二

Within the lifespan of our oldest citizens new technologies have brought about many changes in everyday life. The motor-car and the aeroplane have revolutionised travel; the cinema, radio and television have provided completely new forms of entertainment for leisure hours; a worldwide telephone system has broken down the barriers to speech. Yet by many it is the advent of a relatively simple innovation, the electric lamp, that is particularly remembered.

三、科技英语在文体结构上的特点

1．科技文章要求表达准确，文章结构层次清楚，因此使用长句较多。但长句往往容易造成晦涩难懂，故在保证准确的前提下，尽量使句子简练，容易看懂。利用分词短语、动词不定式短语、动名词短语、介词短语、形容词短语及复合名词结构是简化长句的常用手段。如以上短文中用 At high velocities 介词短语代替从句 When a thing is going very fast；用 an object of low density 代替 an object which is not very compact，都是较好的例子。

2．为适应现代科学技术飞速发展的要求，文章中使用许多简化词。简化的手段有：

首字母连写词（initialism）

如：WHO＝World Health Organization
世界卫生组织

IBM＝International Business Machine
国际商用机器公司

ESP＝English for Special Purpose
特种用途英语

首字母拼音词（acronym）

如：UFO〔`ju:fəu〕＝unidentified flying object
不明飞行物

NASA〔na:sə〕＝National Aeronautics and
Space Administration
国家航空和宇宙航行局

SAM〔s&m〕＝surface-to-air missile
地对空导弹

缩写词（abbreviation）

如：lab＝laboratory 实验室

memo＝memorandum 备忘录

mt＝mountain 山

还有一些单位名称，如：

m＝meter 公尺

lb＝pound 磅

gal＝gallon 加仑

3．使用图表、公式、符号等也可以大大简化文字的叙述。

4．科技英语中不仅大量使用复合名词结构，同时还使用名词前置结构。

复合名词结构，即一名词和另一名词或几个名词结合，表示一个特定的意思，如：power station, test data, petrol engine 等。用词十分紧凑，但它实际表达的含义 远比一般定语丰富，故在科技英语中广泛使用。从以下例子中可以看到复合名词结构的精简效能。

· Engineers installed

  a system that is for the purification of water.

· Engineers installed

  a system for the purification of water.

· Engineers installed

  a system for water purification.

· Engineers installed

  a water-purification system.

复合名词结构可以表示形状、材料、位置、时间、用途

等含义。如：

horseshoe magnet=a magnet shaped like a
horseshoe
wire brush=a brush made from wire
field mouse=a mouse that lives in fields
night hawk=a hawk that hunts at night
air filter=a filter for cleaning air
acid-nitrate deposition=the deposition of acid
nitrates

科技英语往往用名词来表达句中重要的意思，而日常英语则多用动词表示。同时，为了突出重点，还把主要的名词放在谓语动词的前面，即所谓的名词前置结构。如：

- The increase in strength of steel is accompanied by a loss of ductility and an increase of hardness.
- An improvement of its performance can be achieved by the use of superheated steam.

4．科技文章结构比较严谨，逻辑性强，格式也比较规范。

以上简略介绍了科技英语的一般特点。但是科技英语只是英语的一个分支，它虽与日常英语不同，但共同点还是大量的。只有切实掌握好基础英语，才能更好地理解和运用科技英语。反之，掌握了科技英语的特点，也有利于在本专业范围内更有效地发挥已有的基础英语知识的作用。

Ex.1.1 Read the following passages and find out
whether there are any differences between

ordinary English and EST.

A

A glass which makes things look bigger is useful in many ways. Watchmakers, scientists and people who cannot see near things well use one. It is thicker in the middle than at the edges, and is known as a convex lens.

You can use a convex lens to collect the rays of the sun on to one spot and in this way burn a hole in a piece of paper. The spot where the sun's rays are collected by the lens is known as the focal point. The distance between the focal point and the lens is known as the focal length. Lenses of different thickness have different focal lengths.

Another kind of lens is thinner in the middle than at the edges, and is known as a concave lens. Because parallel light rays which are passing through a convex lens bend towards each other, this kind of lens is known as converging lens. Because parallel light rays which are passing through a concave lens bend away from each other, this kind of lens is known as a diverging lens.

If you hold a convex lens in front of a window and hold a white card at the focal point, you will see a picture of the window on the card. The picture will be upside down, because the

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