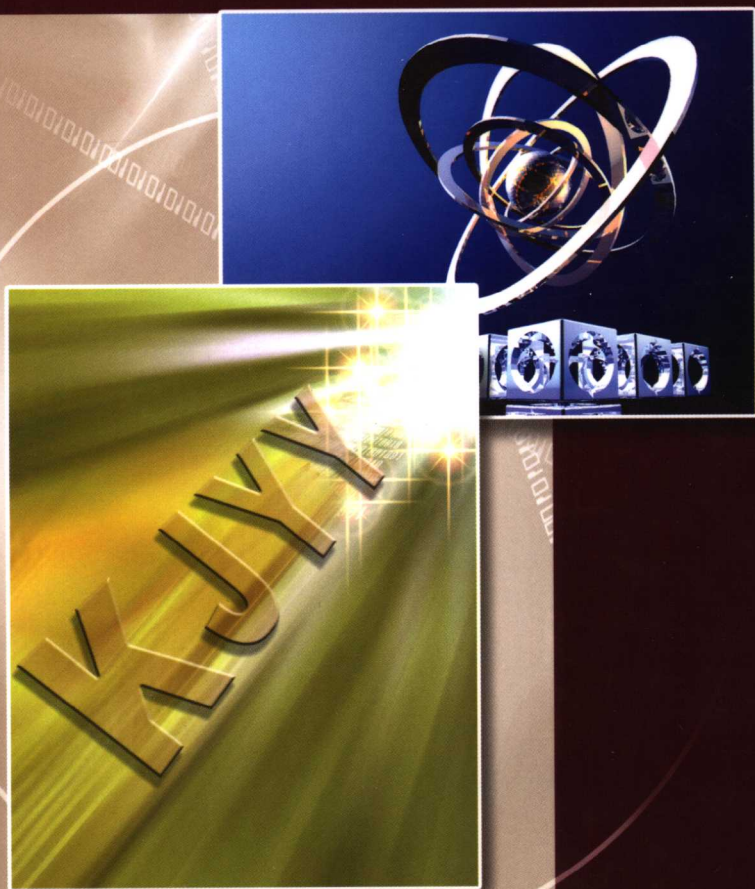




普通高等学校土木工程专业新编系列教材

# 科技英语

陈 权 王丽娟 编



中国铁道出版社  
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中 国 铁 道 出 版 社

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## 内 容 简 介

本教材内容丰富,包括科技英语的特点、英文科技文献检索、阅读、翻译、写作五个方面的内容,突破了以往大多数教材只有阅读和翻译内容的局限性,具有较高的实用性。

双语编写,汉语部分便于学生自学,英语部分与汉语相对应,又自成体系,突出了重点。文中包含了大量的例子,且具有较好的代表性。阅读材料选题广泛,其内容涉及土木工程、铁路、轨道、隧道、桥梁、建筑材料、环境工程等许多工程学科,侧重于土木工程和铁路方面。每篇后附有简单的词汇解释,各篇之间相对独立,读者、教师可以有选择地进行阅读、教学。

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## 第 1 章

# 概 述

### 1.1 什么是科技英语

通常,对把英语作为外国语的学习者而言,英语可以分为普通英语、科技英语和专业英语等。普通英语(General English, GE),又称日常英语,是传统意义上的英语。科技英语(English for Science and Technology, EST)分离于普通英语,是专业英语发展初期的重要表现形式,但其专业色彩并不浓厚。专业英语(English for Special Purposes, ESP),又称专门用途英语,是随着新学科的不断涌现和专业分工的日益细化,在科技英语的基础上逐步形成的。专业英语隶属于科技英语,要学好专业英语就需要有良好的科技英语基础。

### 1.2 科技英语的基本特点

科技英语与普通英语、文学英语相比,有许多独特之处,除了往往包含一些数据、公式、符号、图表和程序之外,在语法、修辞、词汇和文献体裁等方面都有其特点。下面从语言、语法、词汇和结构方面对科技英语的基本特点进行简要介绍。

#### 1.2.1 语言特点

##### 1. 语言简练,表达明确,不重虚文润饰

从下面一段关于材料强度(力学)的文字,可以看出科技英语的一般风格。

**【例 1】** Strength of materials is a branch of applied mechanics concerned with the behavior of materials under load, relationships between externally applied loads and internal resisting forces, and associated deformation. Knowledge of the properties of materials and analysis of the forces involved are fundamental to the investigation and design of structures and machine elements.

##### 2. 逻辑严谨,概念清楚,段落章节分明

下面一段文字的特点常见于理论的描述和公式的推导。

**【例 2】** The analysis is based on the following total probability result

...

which is valid for  $I > 0$  and  $n \geq 0$ . It is now straightforward to show that

...

where  $a_i$  denotes the number of arrivals during the  $i$ th slot of the sojourn time of the tagged customer in the system. ...Taking into account..., we obtain..., After some algebra eqs. 1 and 2 then yield

...

Because, it is clear that ...

### 1.2.2 语法特点

#### 1. 非人称的语气和客观的态度,常使用 It...结构

科技英语所涉及的内容多为描述客观事物、现象和规律,这就决定了科技人员在撰写科技文献时采用客观和准确的手法陈述被描述对象的特性、规律、研究方法和研究成果等,而不需要突出人。因此科技英语常常使用非人称的语气作客观的陈述。

【例 3】 *It is easier to make changes in design and to correct errors during construction (and at less expense) if welding is used.*

#### 2. 较多使用被动语态

由于科技英语的客观性,决定了它非人称的表达方式。读者或者都知道动作的执行者是谁,或者是不需要关心谁是动作的执行者。因此,在科技英语中,较多地使用被动语态。

【例 4】 *Before any civil engineering project can be designed, survey at site must be made.*

#### 3. 大量使用非限定性动词,即不定式、动名词、现在分词和过去分词

科技英语中大量使用不定式、动名词和分词,多数情况下是为了使句子简洁和精练。

【例 5】 *The total weight being less, it is possible to build much taller building.*

【例 6】 *The demands for sophisticated analysis, coupled with some serious limitation on computational capability, led to a host of special techniques for solving a corresponding set of special problems.*

#### 4. 较多地使用祈使语句和公式化表达方式

在理论分析和公式推导中常采用 Assume that..., Suppose that..., Let... 等祈使语气表达方式。

【例 7】 *Suppose that  $P=0$  at  $x=y$ .*

#### 5. 条件语句较多

条件语句多用于条件论述、理论分析和公式推导中,最常用的是 if... 语句。

【例 8】 *The huge investment in the highway infrastructure will be erased quickly if proper maintenance and rehabilitation procedures are enforced and funded.*

【例 9】 *If substituting Eq. (1) into (7), we obtain  $F=xyz$ .*

#### 6. 长句较多,但一般比较简洁清晰

【例 10】 *It is important also that the designer be aware of the method of construction or erection to be employed since, in certain cases, the loading conditions to which a member is subjected during erection may induce a stress condition which exceeds that due to the service loads of the structure.*

#### 7. 省略句较多

为了简洁,有时省略掉句子中的一些成分,如状语从句中的主语和谓语,定语从句中的关联词 which 或 that,从句中的助动词等。

【例 11】 *If not well managed, the procedure for construction may be more expensive.*

常见的省略(状语从句中的主语和谓语的)句型有:

As already discussed 前已讨论	If possible 如果可能的话
As described above 如前所述	If so 倘若如此
As explained before 前已解释	When necessary 必要时
As indicated in Fig.1 如图1所示	When needed 需要时
As previously mentioned 前已述及	When feasible 在实际可行的场合
If necessary 如果必要的话	Where possible 在可能的情况下

### 1.2.3 词汇特点

#### 1. 专业词汇和半专业词汇

每个专业都有一定数量的专业词汇和术语。例如,对桥梁结构工程专业,有 abutment(桥台)、pier(桥墩)、deck(桥面)、caisson(沉井)、cofferdam(围堰)、box girder(箱梁)等;对建筑工程专业,有 floor board(楼面板)、gable(山墙)、roof(屋面)、bearing wall(承重墙)、cavity brick(空心砖)等;对道路工程专业,有 pavement(路面)、roadbed(路基)、state highway(国道)、yield sign(让路标志)、sight distance(视距)等。

一般来说,科技文献中的科技词汇有三类:第一类是纯专业词汇。它的意义很单纯,只有一种专业含义。有时候则是根据需要造出来的。如:T-beam(T形梁),fire-proof brick(耐火砖),cable-stayed bridge(斜拉桥)等。第二类是半专业词汇。半专业词汇大多是各个专业通用的,在不同的专业领域却可能有不同的含义。如 frame(框架、屋架、机座、体系、画面等),operation(操作、运行、运算、作业、效果等),load(负载、加载、装入、输入等)等。第三类是非专业词汇。这类词汇在科技英语中使用很多,但却严格属于非专业英语性质的词汇。这类词汇很多,如:application(应用、用途、作用、申请等),implementation(实现、执行、运行等),to yield(产生、得出、发出等)等。

#### 2. 词性转换

科技英语也较多使用了词性的转换。转换后词义往往与原来的词义相关。常见的词性转换类型有:名词→动词,形容词→动词,动词→名词,形容词→名词等。这里有两种情况:一种是词本身可以在句子中充当另一种词类;另一种是在译文中被转换成其他词类。

【例12】 standard (*n.* 标准)→ standardize (*v.* 标准化)

former (*adj.* 前面的)→ the former (*n.* 前者)

wide (*adj.* 宽的)→ widen (*v.* 加宽)

#### 3. 词缀(前缀和后缀)和词根

由于历史的原因,英语中的很多文字源于外来语,如希腊语、拉丁语、法语、德语、意大利语和西班牙语等。有些词是日常生活中常用的,例如 economical,immigrate,foreword 等;有的则用于某些专门的领域。例如在土木工程领域,有 hydraulics,infrastructure,reliability,specification 等。据有关专家统计,现代科技英语中,有50%以上的词汇源于希腊语、拉丁语等外来语,而这些外来语词汇构成的一个重要特征就是广泛使用词缀(Affix)和词根(Etyma)。因此,如果适当掌握一些词缀和词根,就有助于扩大词汇量。附录A列出了科技英语中常用的一些词缀和词根。

#### 4. 缩写、数学符号及其表达式

在阅读和撰写专业文献时,常常会遇到一些专有词汇或术语、物理量等单位的缩写,或一



些政府机构、学术团体、科技期刊和文献等的简称。例如

Fig. (Figure)——图	i. e. ([拉丁语] <i>id est</i> ) —— 也就是, 即
Eq. (Equation) —— 方程(式)	etc. ([拉丁语] <i>et cetera</i> ) —— 等等
m/s (meter/second) —— 米/秒	psi (pounds per square inch) —— 磅/英寸 <sup>2</sup>
in. (inch) —— 英寸	Sym. (Symmetry or Symmetrical) —— 对称
Eng. (Engineering) —— 工程	QC (Quality Control) —— 质量控制
CAD (Computer Aided Design) —— 计算机辅助设计	

IABSE (International Association for Bridge and Structural Engineering) —— 国际桥梁及结构工程协会

ITA (International Tunnel Association) —— 国际隧道协会

RILEM (International Union of Testing and Research Laboratories for Material and Structures) —— 国际材料与结构试验研究所联合会

CIB (International Council for Building Research Studies and Documentation) —— 国际建筑研究及文献委员会

FIDIC (International Federation of Consulting Engineers) —— 国际咨询工程师联合会

FIP (International Federation of Prestressing) —— 国际预应力混凝土联合会

FIB (International Federation for Structural Concrete) —— 国际结构混凝土联合会

ISO (International Organization for Standardization) —— 国际标准化组织

ECCS (European Convention of Constructional Steelworks) —— 欧洲钢结构学会

ASCE (American Society of Civil Engineers) —— 美国土木工程师协会

ICE (Institute of Civil Engineers) —— (英) 土木工程师协会

CSCE (Canadian Society for Civil Engineers) —— 加拿大土木工程师协会

ACI (American Concrete Institute) —— 美国混凝土协会

AREA (American Railway Engineering Association) —— 美国铁道工程协会

AISC (American Institute of Steel Construction) —— 美国钢结构协会

BSI (British Standards Institute) —— 英国标准协会

NIST (National Institute of Standards and Technology) —— (美) 国家标准与技术协会

CSA (Canadian Standards Association) —— 加拿大标准协会

ABCD (Association for Bridge Construction and Design) —— (美) 桥梁设计与施工协会

AAR (Associations of American Railroads) —— 美国铁道协会

ASTM (American Society for Testing & Materials) —— 美国材料与试验协会

AASHTO (American Association of State Highway and Transportation Officials) —— 美国各州公路和运输工作者协会

FHWA (Federal Highway Administration) —— (美) 联邦公路总署

Ei (Engineering Index) —— (美) 工程索引

## Reading Material 1

**EST—English for Science and Technology**

Our era is the age of machines, electronics and computers. Only by obtaining a good knowledge of science, can we live successfully in modern society.

With the development of science and technology, scientists and engineers strive to exchange their ideas, discoveries and inventions, collect information and data, interpret concepts and theories, comment on the latest scientific advances and write reports based on experimental procedures, etc. The need increases day by day for scientists and engineers to have a swift, economical, efficient, impersonal and sometimes international means of communication.

When language teachers first used the phrase “EST”, they were content to deal superficially with scientific discourse. Instead of investigating the authentic language of science, they relied on popularized accounts of technical subjects as are found in encyclopedias or books intended for general readers. Lately, however, textbooks have been appearing that attempt to reflect the nature of the language actually used by scientists and the function it serves.

However some people still ignore the existence of EST altogether, while others are quite indifferent to it. They draw a simple formula like this:

$$\text{EST} = \text{General English Grammar} + \text{Technical Words}$$

They thought that they would be able to understand EST by simply knowing grammatical rules in addition to some technical words. Unfortunately, this judgment gives no fruitful comprehension about the nature of EST. They do not seem to be aware that EST presents linguistic varieties with its own characteristic features.

Since scientists and engineers try to be impersonal in narrating the natural phenomena and facts, their processes, properties and characteristics, EST must be evidently precise, concise, clear and restricted and includes many mathematical equations, formulae, diagrams, tables, etc. Scientists also prefer some typical sentence patterns and a large number of technical and semi-technical terms which make EST different to a very wide extent from ordinary English.

Furthermore, we can categorize EST literature according to its form and content.

There are spoken and written forms.

Like many other natural unscripted speeches, EST in spoken form or spoken EST for short has many features (hesitation, pause, incomplete utterance, sudden changes of direction, encouraging noises from the listener and repetitions). The words and phrases used are to some extent informal and colloquial. In addition to all these, spoken EST consists obviously of a number of technical and semi-technical terms.

You may find EST in spoken form when you listen to a lecture, a radio or television program or film on a scientific or technical subject. Sometimes you'll have the chance to hear people “speaking scientifically” face to face.

EST in written form is used in technical books, journals or other kinds of written passages.

It is expressed in the most formal way, both in the choice of words and sentences, far more formal than spoken EST.

### New Words and Expressions

1. society *n.* 社会;协[学]会
2. strive *vi.* 努力,争取;斗争,奋斗  
strive to + *inf.* 争取[努力](做)
3. comment *n. & vi.* 评定,评论(述)(on, upon)
4. procedure *n.* 程序,步骤,过程
5. swift *a. & ad.* 快,快速,敏捷
6. impersonal *a.* 非人称的
7. content *a.* 满足的,愿意的  
be content to + *inf.* 愿意
8. superficially *ad.* 表面地
9. discourse *n.* 演说,讲义,论文
10. authentic *a.* 真实的,权威性的;真正的,正式的
11. popularize *v.* 推广,普及[通俗化]
12. account *n.* 说明,叙述
13. intend *vt.* 想(要),打算  
be intended for (打算)供……用
14. ignore *vt.* 不管[顾],忽略不计
15. indifferent *a.* 冷淡的,漠不关心的  
be indifferent to 对……不关心
16. unfortunately *ad.* 不幸,遗憾地
17. fruitful *a.* 有效(利)的,富有成果的
18. linguistic *a.* 语言(学,研究)的
19. variety *n.* 变化,多样(化,性)
20. narrate *vt.* 叙(陈)述,讲(述)
21. concise *a.* 简明(洁)的
22. diagram *n.* 图(表,解,形),简图
23. typical *a.* 典型的,(具有)代表(性)的
24. furthermore *ad.* 而且,此外
25. categorize *vt.* 分类,把……归类
26. unscripted *a.* 不用稿子的
27. hesitation *n.* 犹豫,迟疑
28. pause *n. & vi.* 暂停,犹豫
29. incomplete *a.* 不完全的
30. utterance *n.* 发言,说法

- 31. encouraging a. 鼓励的
- 32. repetition n. 重(反)复
- 33. informal a. 非正式的
- 34. colloquial a. 口语的, 通俗的
- 35. to a very wide extent 在很大程度上
- 36. for short 为简略起见, 简称
- 37. to some extent 在某种程度上, (多少)有点儿

## Reading Material 2

### Grammatical Features of EST: The Passive Voice in Impersonal Scientific Statements

EST differs from ordinary English in the use of tense, voice, mood, word order and sentence construction.

It is assumed that the readers of EST have already had a good deal of instruction in grammar. Therefore, the principal purpose here is to show readers how to comprehend the grammar which appears most commonly in EST writings.

Probably one third of the verbs in EST writings are in the passive voice. The tense of these passive verbs is the Present Simple or the verb is used with modals. Scientists and engineers use the passive much more frequently than other writers.

Why does the passive most frequently occur in EST?

1. It is clearer in meaning.

Since scientists are more interested in action and facts than the actors, many references to people are unnecessary and confusing. Look at this sentence:

"People heat the gas carefully."

Who are these people? The writer? The writer and his readers? All educated people? Everybody?

All these confusing questions can be avoided by using the passive:

"The gas is carefully heated."

2. It allows scientists to introduce the most important information at the Beginning.

As we all know, the subject is a very important part of the sentence. In passive sentence, the subject which contains a lot of information, comes first and catches immediately the reader's attention. Example:

"Electrons closer to the nucleus are held more tightly than those in the outer orbits."

3. Passive sentences are usually shorter and more concise than active ones.

Compare these two sentences:

"Mathematics is used in many different fields."

"People use mathematics in many different fields."

It may not be difficult to find that the first sentence is shorter and more concise than the second one.

The function of the passive:

1. Stating rules or general principles. Examples:

- a. The pressure that makes electrons flow along wires is called "voltage".
- b. All matter is made up of atoms.
- c. Many car engines are cooled by water.
- d. The door was opened with a key.

2. Describing procedures. Example:

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".

3. Passive infinitive is particularly used for reporting news and expressing simple statement of fact. Examples:

- a. Many pupils in school think of science as a subject containing more facts to be learnt.
- b. The new factory is said to be opened next month.

4. The passive with modals (should, must) is particularly common in written instructions, warnings and notices. Examples:

- a. All library books should be returned by the end of June.
- b. Attention must be paid to the function of the machine.

\* "By" is used with agents. It introduces what (or who) something is done by or the method by which it is done. "With" introduces the tool or instrument with which something is done. For example, "written exercises are often corrected by teachers with red pens". "The area of circle can be found by using the formula  $\pi r^2$ ". "The hole is made with a drill".

### New Words and Expressions

1. assume *vt.* 假定, 假想
2. principal *a.* 主要的, 首要的
3. comprehend *vt.* (充分)理解, 领悟
4. frequently *ad.* 常常, 频繁地
5. confuse *vt.* 使混乱(淆)
6. educated *a.* 受(过)教育的
7. catch (caught, caught) *v.* 捕, 捉; 赶上, 领会  
catch attention 引起注意
8. tightly *ad.* 紧(紧地, 密地)
9. Bessemer *n.* 酸性转炉钢  
Bessemer Process 酸性转炉法

10. converter *n.* 转炉, 吹(风)炉  
 11. line *v.* 衬砌, 镶炉衬  
     line [M] with N 给 M 衬以 N  
 12. brick *n.* 砖(块)  
 13. tip (tipped, tipping) *v.* (使)倾卸[斜]  
 14. molten *v.* melt 的过去分词;  
     *a.* 熔(化, 融)的  
     molten iron 铁水  
 15. pour *v. & n.* 倾注  
 16. upright *a. & ad.* (笔, 垂)直(的), 直立(的)  
 17. blast *n. & v.* 鼓[吹]风  
 18. warning *n. & a.* 警告[报]的  
 19. agent *n.* 代理人[商]; 动作执行者  
 20. a good [great] deal (of) 大量(的), 相当多(的)  
 21. pay attention to 注意

### Reading Material 3

## Grammatical Features of EST: Tense

### 1. The Simple Present Tense (Timeless Present)

#### (1) Introduction

You will probably use the Simple Present Tense in most of your scientific writings. This is because scientific textbooks often contain information about scientific knowledge with no scientific time reference. The Simple Present Tense is used for making generalizations. It is the most commonly used tense in EST. For example, "Carbon dioxide (CO<sub>2</sub>) consists of carbon and oxygen". It is a universal truth. It is true at any place on the earth, at any time (the past, the present or the future) and even at any point in outer space. Therefore, this universal statement is expressed in the Simple Present, that is, in the Timeless Present.

#### (2) The Usage of the Present Simple

a. It is used for regular actions and regular processes:

He studies physics six hours a week.

b. It is used for general statement:

Action and reaction are opposite and equal.

The earth rotates itself and around the sun.

c. It is used for factual statements and observations:

Put a straw in a glass of drinking water. Suck through the straw. The water goes up into your mouth.

The moon rotates rather slowly and so one day on the moon is as long as two weeks on the

earth.

On average, woman lives longer than man.

d. It can be used in descriptions of experiments:

Pucker up your lips and blow fast, and the air that passes over your hand feels cold.

The temperature rises until it reaches 100 °C, but after that it remains constant.

## 2. The Simple Past Tense and the Present Perfect Tense

The Simple Past Tense and the Present Perfect Tense are used in scientific statements to refer to the past. These past tenses are used frequently in histories of science and technology, some kinds of scientific and technical reports and scientific journalism (that is, news about science and scientists).

### (1) The Use of the Simple Past

a. It is normally used to describe actions which happened in the past and are now finished.

Consider this statement:

"Nobel cut his finger on a broken glass jar and had the answer to his problem of how to pack his explosive."

Because the Simple Past is used We know that the action is finished. We know that Nobel who died more than a hundred years ago, would never be possible to cut his finger any more.

Notice that the Simple Past is often used in conjunction with a time-phrase that refers to the complete past:

Solid layers of ice moulded the lakes and hills of Europe and North America millions of years ago.

b. It is usually used in writing technical reports.

Here are the "notes" of a simple technical report:

13/4/1970 Royal and Brown collected samples of cement type 143 from World Oil/purpose—analysis of failure to solidify.

14/4/1970 R and B analyzed the composition of the cement /no useful results. They heated the cement to 200 °C / nothing significant.

c. It is usually used to describe experiments. Example:

"By dawn, Nobel, still in his night clothes, had made a new explosive. He put together the nitroglycerin with the collodion. Now the explosive was waterproof and could be handled more safely."

d. It is also used in making statements about the history of science and technology. Example:

The discovery of explosives came late in man's history, long after the ship, the wheel and even atomic theory. Explosives were first written about only 600 years ago. Some explosives, shot from wooden tubes, were reported in Chinese history during the thirteen century.

### (2) The Use of the Present Perfect

The Present Perfect is used in certain historical and "news" statements. As its name suggests, the Present Perfect is only "half a past tense". It has been called the "pre-present". It is used to describe:

a. Activities carried out a little while before now or just before now. Examples:

This new generator has recently been produced.

That factory has just produced this new generator.

Therefore, in this case, the Present Perfect (or pre-present) is usually used with such adverbs as just, recently and lately.

But remember that the Simple Past is to be used if the statement describes "when" the activity took place. e.g., this new generator was produced last month.

b. Activities carried out at some unstated or unspecified time before now. Examples:

Scientists of University of California in Berkeley have made the first photograph showing electricity in liquid form.

Man has landed on the moon.

As the above examples suggest, the Present Perfect is used to describe facts. It is used when it seems more important to state the fact that something has been done, rather than when it was done.

c. Activities starting some time in the past, continuing until now, and possibly continuing for sometime in the future. Examples:

Scientists have studied the universe for many centuries.

Medicine has made great progress in the last twenty years.

Production of this new chemicals has not been started yet.

Production of this new chemicals has already been completed.

This has been known for forty years.

Since it was founded in 1943, F.A.O. (Food and Agriculture Organization) has carried out many projects designed to increase food production throughout the world.

From the above examples we can see that there are a number of adverbs of time that are commonly used with the Present Perfect, such as : not yet and already. Others are: never and still not. The Present Perfect is also frequently used with prepositional phrase beginning with since or for, which state the length of the period of time.

Compare the last two example sentences with:

This was first known forty years ago. (not for forty years ago)

This was first known in 1930.

Do not confuse the Present Perfect with the Past Simple.

### 3. Tense-Choice

So far as we know, there are sixteen tense in English. However the Simple Present, the Simple Past, the Simple Future, the Present Perfect and the Present Continuous are most often used in EST. What tense is to be chosen depends on the quality of being general. In other words, tense-choice in EST writing is made on the basis of the notional degree of generality. In order to give a better account of this, we have done some investigations on the small sample of the book "Understanding Science". The complete ranking-order of the tenses in the book is as follows:

Present Indefinite Active

60.28%



Present Indefinite passive	17.85 %
Past Indefinite Active	5 %
Past Indefinite Passive	1.44 %
Future Indefinite Active	3.9 %
Present Perfect Active	2.25 %
Present Progressive Active	1.57 %
Imperative	1.9 %
Subjunctive (Active)	2.89 %
...	...

It can be seen that Present Indefinite Active is, of course, the overwhelmingly predominant form.

As a result of this investigation, the following sequence will probably show the notional degree of generality in EST (from the most general to the least general): the Simple Present, the Simple Past and Future, the Present Perfect, the Present Continuous, the Present Perfect Continuous and the Past Future Perfect.

### New Words and Expressions

1. timeless *a.* 无时间限制的
2. generalization *n.* 普遍化; 归纳, 概括
3. universal *a.* 宇宙的; 普遍的
4. usage *n.* 使[应, 运]用; 用法, 用途
5. rotate *v.* (使) 旋转
6. factual *a.* 事实的, 确[真]实的
7. straw *n.* 禾秆, 稻草
8. suck *v. & n.* 吸
9. description *n.* 叙述, 描写; (使用) 说明(书)
10. pucker *v.* 折叠, (使) 缩拢(up)
11. lip *n.* 唇
12. refer (referred, referring) *v.* 谈及, 指(的是); 参考  
refer to 涉及, 关于, 指, 参考
13. journalism *n.* 杂志报纸(总称)
14. conjunction *n.* 连接, 结合  
in conjunction with 和……一起
15. mould *v.* (模) 塑, 铸造, 铸[造, 成]型
16. sample *n.* 样品[本], 试样, 试件
17. cement *n.* 水泥
18. solidify *v.* (使) 凝固[结], (使) 硬[固]化
19. significant *a.* 有(特殊)意义的; 重要[大]的