

# 基础科技英语教程

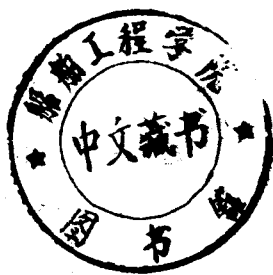


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林永福 郝品珠 译注



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## 译 注 者 的 话

本书是根据英国朗曼公司出版的《基础科技英语教程》(A Course in Basic Scientific English, 1976 年版) 进行汉译注释的。该教程是由智利大学英语系和工学院的两位教师 J. R. Ewer、G. Latorre 合编的。据编者称经查阅美英科技资料约三百万字, 按词汇、内容出现频率编成。书中精读课文新颖, 连贯性强, 语言地道, 文体多样, 题材广泛。课文材料与语法知识讲解配合比较紧密, 体现了科技英语的特点, 是一本值得推荐的国外教材。不失为学习科技英语的一本较好的基础读本。然而, 文中观点, 则请读者取其精华, 去其糟粕。本教材在部分理科系快班和研究生班试用过一、二期, 颇受欢迎。考虑到读者自学的需要, 我们对精读课文中的难点作了注释, 并附有课文的参考译文和部分练习的答案; 删去了原书的补充课文及附录的部分内容。

限于我们的水平以及时间仓促, 错误和不妥之处在所难免, 欢迎批评指正。

译 注 者

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## Unit 1

### THE SCIENTIFIC ATTITUDE

What is the nature of the scientific attitude, the attitude of the man or woman who studies and applies physics, biology, chemistry, geology, engineering, medicine or any other science?

We all know that science plays an important role in the societies in which we live. Many people believe, however, that our progress depends on two different aspects of science. The first of these is the application of the machines, products and systems of applied knowledge that scientists and technologists develop. Through technology, science improves the structure of society and helps man to gain increasing control over his environment. New fibres and drugs, faster and safer means of transport, new systems of applied knowledge (psychiatry, operational research, etc.) are some examples of this aspect of science.

The second aspect is the application by all members of society, from the government official to the ordinary citizen, of the special methods of thought and action that

scientists use in their work.

What are these special methods of thinking and acting? First of all, it seems that a successful scientist is full of curiosity—he wants to find out how and why the universe works. He usually directs his attention towards problems which he notices have no satisfactory explanation, and his curiosity makes him look for underlying relationships even if the data available seem to be unconnected. Moreover, he thinks he can improve the existing conditions, whether of pure or applied knowledge, and enjoys trying to solve the problems which this involves.

He is a good observer, accurate, patient and objective and applies persistent and logical thought to the observations he makes. He utilizes the facts he observes to the fullest extent. For example, trained observers obtain a very large amount of information about a star (e. g. distance, mass, velocity, size, etc.) mainly from the accurate analysis of the simple lines that appear in a spectrum.

He is sceptical—he does not accept statements which are not based on the most complete evidence available—and therefore rejects authority as the sole basis for truth. Scientists always check statements and make experiments carefully and objectively to verify them.

Furthermore, he is not only critical of the work of others, but also of his own, since he knows that man is



the least reliable of scientific instruments and that a number of factors tend to disturb impartial and objective investigation (see Unit 8).

Lastly, he is highly imaginative since he often has to look for relationships in data which are not only complex but also frequently incomplete. Furthermore, he needs imagination if he wants to make hypotheses of how processes work and how events take place.

These seem to be some of the ways in which a successful scientist or technologist thinks and acts.

### **Comprehension**

- 1 Name some sciences.
- 2 Name two ways in which science can help society to develop.
- 3 Give some examples of the ways in which science influences everyday life.
- 4 What elements of science can the ordinary citizen use in order to help his society to develop?
- 5 How can you describe a person who wants to find out how and why the universe works?
- 6 What is the role of curiosity in the work of a scientist?

- 7 Name some of the qualities of a good observer.
- 8 Give an example of how observed facts are utilized to the fullest.
- 9 How does a sceptical person act?
- 10 How does the scientist act towards (a) evidence presented by other people, (b) evidence which he presents in his own work?
- 11 What do you know about the data which the scientist often has to use? How does this affect his way of thinking?
- 12 For what other purposes does a scientist need imagination?

### Word Study (WORD-BUILDING)

A common way of making new words in English is by adding standard combinations of letters to existing words, either at the beginning (prefixes) or at the end (suffixes). By noting these carefully, you will find it is easy to make large increases in your recognition vocabulary.

#### 1 The suffix *-ist*

A person who studies

{	geology is a geologist
{	biology is a biologist
{	sociology is a.....
{	.....is a chemist

and applies

anthropology is a.....

.....is a *psychologist*

archaeology is a.....

.....is a *ecologist*

agronomy is a.....

## 2 The suffix *-(i)an*

A person who studies  
and applies

[mathematics is a *mathematician*

statistics is a.....

.....is an *obstetrician*

But

A person who applies  
the study of

economics is an *economist*

engineering is an *engineer*

architecture is an *architect*

medicine is a *doctor*①

## 3 The suffix *-ion*

This suffix converts a verb into the corresponding noun.

The following are some examples which occur in  
our first passage:

VERB

NOUN

to act

*action*

to apply

*application*

to observe

*observation*

More examples of this suffix are given in the Word  
study section of Unit 2.

① Usually *physician* in U. S. A.

## EXERCISE

( a )

Form nouns from the following verbs:

to imagine; to attract; to direct; to construct; to connect;  
to relate; to fluctuate.

( b )

Form verbs from the following nouns:

Conversion; suggestion; production; definition; operation;  
reduction; population.

NOTE: to join—junction; to destroy—destruction; to  
query—question; to transmit—transmission.

4 The prefixes *in-* and *un-*

These prefixes are used to make an adjective negative,  
e.g. '*incomplete*' means 'not complete'; '*unconnected*'  
means 'not connected'.

## EXERCISE

( a )

Using *in-*, make the following negative;  
accurate; capable; direct; essential; frequent.

( b )

Using *un-*, make the following negative:

able; stable; usual; critical; reliable; successful; imaginative; true.

### Structure Study SIMPLE PRESENT TENSE

The main structure in the passage is the Simple Present Tense. Remember that this tense is used:

- (i) for actions in the present which happen usually, habitually or generally, e.g. 'He usually *directs* his attention towards problems which he notices have no satisfactory explanation'
- (ii) for stating general truths, e.g. 'science *plays* an important role in the societies in which we live, or for stating scientific laws, e.g. Water *freezes* at 0°C.;
- (iii) for describing processes in a general way, e.g. A scientist *observes* carefully, *applies* logical thought to his observations, *tries* to find relationships in data, etc.

### EXERCISE

( a )

Fill in the blanks in the following and repeat aloud several times:

I make		...check	
They...			
She...		...check	
The scientist...	accurate	...checks	the validity of
Scientists...	experiments	...check	statements
We...		...check	
You...			
I think		...observes	
He...		...observe	
They...	logically	...observes	accurately
We...		...observe	
She...		...observes	
You...			

( b )

Add as many verbs and appropriate complements as possible, chosen from the passage and the Word Study section, to the following subjects: the scientist, scientists, we,

e.g. The scientist	USES	
Scientists	USE	reliable instruments
We	USE	

( c )

Repeat Exercise (b) above using the same set of verbs and complements, but using new subjects chosen from

the passage or the Word Study section, e.g. *Physicists* use reliable instruments.

### *The Negative*

The Simple Present Tense forms the negative by the use of *do not* or *does not* before the main verb, e.g.

I, you *do not*

He, she *does not*

We, they *do not*

KNOW the importance of science.

### EXERCISE

( d )

Fill in the blanks in the following and repeat aloud:

I do not accept

You...not accept

We...not accept

A scientist...not accept

They...not accept

incomplete evidence

unreliable information

inaccurate statements

authority in science

( e )

Repeat Exercise (a) above, using the negative.

### *The Interrogative*

The Simple Present Tense forms questions by the use of *do* or *does* before the subject of the main verb, e.g.

<i>Do</i>	$\left( \begin{array}{c} I \\ you \\ he \\ she \\ we \\ they \end{array} \right)$	KNOW the importance of science?
<i>Does</i>		
<i>Do</i>		

## EXERCISE

( f )

Repeat Exercise (d) above, using the question form.

( g )

Put the verbs in brackets into their correct forms:

- 1 A statistician (apply) mathematics in his work.
- 2 You (accept) incomplete evidence?
- 3 The evidence (seem) incomplete.
- 4 The government official (use) objective methods?
- 5 Trained observers usually (utilize) data to the fullest.
- 6 He always (try) to look for underlying relationships in collections of data.
- 7 A scientist always (think) logically?

## SUBSTITUTION TABLES      Simple Present

### Active

### A Affirmatives



1	2	3	4	5	6	7
A scientist						
A technologist		uses	mathematics			
A researcher		employs	complex instruments		his	
An investigator	often	needs	imagination	in		work
They		use	statistical		their	
Scientists		employ	methods			
You		need	new apparatus			
Researchers						

### B Negatives

1	2	3	4
A physicist			
A biologist			
He			
An engineer	does not	use	unreliable instruments
		employ	inaccurate observation
Scientific workers	do not	apply	unsuccessful techniques
I			
We			
Biochemists			

### C Questions

1	2	3	4	5	6
	a specialist				
	an agronomist		develop		instruments?
Does	he				
	a medical		require		techniques?