

科技英语基础教程(中)

Scientific English
Basic Course
Book Two

外语教学与研究出版社

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(中)
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BASIC COURSE

(Book Two)

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前 言

本书是《科技英语基础教程》中册，编写原则和布局与上册基本相同。全书共十二课和三个阶段复习，出现的生词（包括同族词和专有名词）共740个左右，其中要求复用式掌握的词语约80个，科技语体中常用的句子结构32个。三个阶段复习中所归纳的语言重点是：复习Ⅰ着重对介词，尤其对短语介词的组成规律加以小结；复习Ⅱ主要总结动词非谓语形式的用法，继续介绍上册未讲完的动词词组类型和名词词组类型；复习Ⅲ着重归纳 v-ing 形式的各种用法，并根据 v-ing 形式的双重性质，阐明其转化为形容词或名词的可能性。授课总时数约120学时。每课仍以课文为中心，编写了常用词语 (Useful Words and Expressions)、常用句型 (Useful Patterns)、阅读材料、听力材料和练习等。书末附有总词汇表，以资查阅。

考虑到学生已学完上册，英语水平有所提高，编写中册时，我们在下列方面作了一些变动。

为了适当增加词汇量，提高词汇的复现率，在控制一定数量新词语的前提下（每课单词约30—40个，同族词未计在内），课文和阅读材料的篇幅有所增加；每一课文平均约有800—1400个单词，阅读材料平均约有1400个单词。在内容上除了考虑到与上册保持一定的联系外，继续贯彻知识性和趣味性并重的原则，涉及面较广；有一般科学常识，科技发展规律，科学理论与实验的关系，生命科学，生态平衡，工程语言和杰出的科学家小传等；此外，还有一、二篇关于英语语言方面的文章。我们认为，在教学过程中，让学生扩大视野，增加他们一些语言方面的知识，对他

们端正学习态度，改进学习方法，都有一定的帮助。课文的材料来源，除一部分改写外，大都选自原文；其中少数是口语体的讲演稿、广播谈话和会话，大部分是书面语体的科技文章。阅读材料全部选自原版英语科普读物或教科书。

鉴于学生词汇量有所增加，为了培养他们使用词典的能力，每课之后，不再编分课词汇表；学生在预习时，可查阅书末总词汇表或词典。为了便于教师了解各课出现的生词，《教学辅导材料》中附有分课词汇表。

不断增加学生的英语构词知识，对于他们记忆单词，温故知新，扩大词汇量，提高独立阅读能力，都具有重要意义。为此，我们在每课之后，列有同族词表（表的左侧是本课的生词，右侧是已学过的同族词），供学生分析和辨认。同时，我们在构词法方面专门编写了下列两种练习：其一是供对比用的同族词练习，学生可根据上下文的情景，猜测同族词的词义，理解句子的内容；其二是结合每课的具体情况，有计划地归纳介绍一些生产型前后缀的意义，并配有相应的练习，使学生能根据这些前后缀和根词的意义，加深对派生词的理解和运用。这样，学生不必一遇到生词，便查词典，打断思路，从而有利于学生养成良好的阅读习惯，提高快速阅读的能力。

本书从第五课起，在练习中增加了一项“快速阅读”(Speed Reading)。选材的标准是：有助于巩固本课的重点词语和句子结构；有助于加深对课文内容的理解。其目的在于逐步培养学生快速阅读的能力和习惯。

语言教学是一门实践课，如何设计练习，也是我们编写本教程时着重考虑的一个方面。从中册起，我们将练习分为 Skills Development（熟巧的培养）、Comprehension（对课文的理解）和 Further Practice on Language（语言要点的巩固）三部分。第一部分主要结合本课的语言要点，对学生进行听力、朗

读、分析比较和快速阅读等训练，使他们较熟练地运用新学的语言知识，提高听、读和辨认词义及语法同形现象的能力。第二部分主要是针对课文内容，让学生回答问题、辨别正误，以加深对课文内容的理解，并增强思维和辨认等能力。第三部分主要是针对本课的积极词语和常用句子结构，进一步加以复习巩固。当然，这三部分的划分不是绝对的，它们互相关联，相辅相成，很难截然分开，教师可根据具体情况确定次序，灵活掌握。

本书与上册一样，配有《教学辅导材料》和录音磁带。每课听力材料附于《教学辅导材料》中。

参加本册审稿的有：北京大学赵珏，清华大学赵静鹏，北京化工学院唐寰溶，北京农业机械学院曹元寿，北京工业学院胡树声，北方交大唐剑同志不仅参加了审稿，还给我们提供了不少素材和许多宝贵意见；北京外国语学院顾问 David Crook 教授为我们提供了重要的讲演稿，而且为了切合本教程的需要，认真作了一些改动。对于他们给予我们的大力支持，在此深表谢意！

我们还衷心感谢北京外国语学院夏祖燧教授和北京工业学院五系李卫教授。他们在百忙中审阅了本书，提出了不少修改意见，进行了细致的加工润色。

由于编者水平有限，有些考虑尚不成熟，欢迎读者对本书的缺点错误提出批评指正。

编 者

1982年 10月

Contents

Lesson 1 1

Text: Difference Between Solids, Liquids, and Gases

Words and Expressions: in the least; as well as; in a (the) + way = adv. phr.; compared with, as compared with; regardless of; in contrast to (with); gain

Useful Patterns:

1.

... do so ...

2.

whatever-cl.

3.

twice (double, x times) + as + n. phr. (adj., adv.) twice (double, x times) + as + n. phr. (adj., adv.) + as + n.

Reading Material:

1. A simple Rule of Heat
2. States of Matter on Earth

Lesson 222

Text: How Does a Scientist Work out a Theory? (A Dialogue)

Words and Expressions: work out; turn out; come to light, come into being; if; by no means; at that

Useful Patterns:

1. main cl. + before + subordinate cl.

2. so far as (as far as) + S + be concerned

3. adv. + speaking

Reading Material:

1. Rules of Grammar and "Standard English"

2. Methods of Intelligence

Lesson 346

Text: The Use of Abbreviations in Scientific Literature

Words and Expressions: in place of, instead of, instead; because, because of; very; apart from; deal with; bear out, bear in mind

Useful Patterns:

1. S + to be + prep. + n.

2.

It is important ... +
that-cl.

Reading Material:

1. Punctuation Marks —
Clues to Clearer Meaning
2. Some Important Cells and
Their Work

Lesson 474

Text:

Random Thoughts on the
Studying and Teaching of Eng-
lish

Words and Expressions:

used to v.; avoid; hold; apply;
strike, striking; call for; need

Useful Patterns:

1.

It is no good + v-ing
2.

as-cl. ... so + clause
3.

v. + it + adj. (or prep.
phr.) + to v.

Reading Material:

Random Thoughts on the
Studying and Teaching of Eng-
lish (Continued)

Revision I101

Language Points:

1. Importance of Prepositions
2. Phrasal Prepositions
3. Syntactic Functions of Prepositional Phrases

Lesson 5115

Text: Bio-feedback

Words and Expressions succeed (in); stop; rest¹, at rest, rest²; get, get out of; prove; think, think about, think of, think of... as; result in

Useful Patterns:

1. vi. + n. (adj., prep. phr.)

2. vt. + (n.) + what (how, when...) + to v.

3. than + the 2nd member of a comparison

Reading Material:

1. The Influence of Smoking on the Breathing System
2. How the Nervous System Is Built
3. A Poem

Lesson 6148

Text: Certain Characteristics in Changing States of Matter

Words and Expressions: the like, etc., and so on (forth);

reduce; subject to; in question;
as such; have something (nothing) to do with; by way of

Useful Patterns:

1. v. + v-ing
2. Nor (Neither) + be (do, or other aux.) + S + ...
3. S + V + n. + to v.

Reading Material:

1. Molecules and Changes of State
2. What Are Reflexes?

Lesson 7178

Text:

Science and Making Measurement

Words and Expressions:

n. + prep. + n. (the same as the first n.) = adv. phr.; as to; next to; still less (much less); subject (vt.); whether; nothing but; assume

Useful Patterns:

1. to v. used as parenthesis
2. logical subject + v-ing (or v-ed)

Reading Material:

1. Scientific Notation
2. Significant Figures
3. The progress of microsurgery

Lesson 8209

Text:

Physics — a Science of Measurement

Words and Expressions:

precisely; lay down; in order that; point, in point; enter, enter into; choose; in terms of; provided (that), providing

Useful Patterns:

1.

fact + that-cl.

2.

have + n. + v-ed

Reading Material:

Measurement and Units in Science

Revision II238

Language Points:

1. Types of Verb Combinations (III)
2. Types of Noun Combinations (II)

Lesson 9250

Text:

How to Communicate a Law?

Words and Expressions:

approach; vary; so as to + v.; otherwise; include, including, included

Useful Patterns:

1.

Ways to express proportionality
2.

increase (change, vary...) by...
3.

adj. phr., S + V

Reading Material:

1. Position and Displacement - Along a Straight Line
2. Displacement from Velocity-Time Graphs

Lesson 10280

Text: Problems All Nations Are Facing

Words and Expressions: place limits on; agree to, agree with, agree on (upon or about); with; dispose of; free; from

Useful Patterns:

1.

Clause used as a comment
2.

what + incomplete clause + n.

3.

S + urge (demand) It is + urged (demanded)	}	+ that-cl.
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Reading Material:

1. A Debate Between Life and Death
2. How is a Habit Formed?
3. What is Happening to Natural Resources?

Lesson 11315

Text:

The Way Physics Evolves

Words and Expressions:

content (n.), content (adj);
in... manner; recognize; set
out; fresh; manage; little more
than, no more than, nothing
more than

Useful Patterns:

1.

be + S + C

2.

main cl. + when-cl.

Reading Material:

1. Frames of Reference
2. The Tools of Physics

Lesson 12349

Text:

Galileo, Newton, and the Uni-
verse

Words and Expressions: lay the foundation for (of),
lay the basis for (of); leave;
set; come to; as for; contrary
to

Useful Patterns:

1.

Expressing opinions,
viewpoints. . .
2.

the idea (word, law, con-
clusion, statement. . .) +
that-cl.
3.

having + v-ed, S + V

Reading Material:

1. Kepler and the Planetary
Orbits
2. The Nature of Scientific
Theories

Revision III384

Language Points:

1. A Summing-up of v-ing and v-ed Forms
2. Types of Adjective Combinations (II)

Lesson One

Text

Differences Between Solids, Liquids, and Gases

All substances in the world assume one of the three different states of matter, namely, solid, liquid, and gaseous.

Solids, liquids, and gases have many points in common. The same substance can, without changing its composition in the least, become a solid, a liquid, or a gas, depending on the circumstances. Still, they do not look or act much alike. Here are some of their differences.

Solids always offer resistance to deformation in one degree or another. They keep their own size as well as their own shape. They do not change their shape when they move from one place to another. Solids do not flow at all in the ordinary way, even over hundreds of years; they will do so only under enormous pressure. Solids are, on the whole, less compressible, though a very high pressure all round can squeeze them into somewhat less space.¹

Unlike solids, liquids have no fixed shape of their own. But they possess a free surface. When a liquid is put into a vessel, it lies evenly in that vessel with a level surface on top, and adapts itself to the shape of the vessel.² It is cylindrical

if the vessel is a cylinder; it is cubical if the vessel is a cube. Compared with solids, liquids are a bit more compressible. If a steel cylinder is full of water, we still can make a little more water go in under great pressure. Liquids flow too; but some flow much more easily than others. Whatever liquid we experiment with, however, we will find that it flows more easily when hot than when cold.

Gases are different from solids and liquids in many ways. They are, for instance, much lighter and thinner. They will not stay in a vessel, but stream about and mix with the air unless we keep them sealed up.³ Some gases have a smell, others do not. Some gases are lighter than air, others are heavier. They have no constant volume like liquids; neither do they retain any fixed form like solids.⁴ One of the most important properties of gases, however, is that each gas gains in volume and occupies more and more space in the process of expansion until it fills up the container regardless of shape or size of the latter. This tendency to expand holds true for all gases, both colored and colorless ones, heavy and light ones. It is true of those having a smell and those without, of those that dissolve readily in water and those that do not. This regularity is in marked contrast to what we find for liquids and solids. Another striking property that gases possess is that they can be easily compressed as compared with solids and liquids. Suppose a container is filled with three cubic metres of air. If you apply enough pressure, you can put in