

高等学校试用教材

3

ENGLISH

上海交通大学科技外语系

吴银庚(主编) 张彦斌(副主编)

李汉卿 李荣辉 王士先 吴信强



人民教育出版社

138856

高等学校试用教材

英 语

3

上海交通大学科技外语系

吴银庚(主编) 张彦斌(副主编)

李汉卿 李荣辉 王士先 吴信强



人民教育出版社

本书系一套高等院校理工科通用的英语教材,共分四册(每册均配有教师参考书),供学过英语并掌握 700 左右单词和基本语法的学生使用。本教材仍以阅读为教学目标,同时进行一些听、说、写的训练。全书采用单元的编排形式,每册共有 12 个单元。本书选材新颖,题材较广,以科普性文章为主,内容有趣,语言规范,易于上口。

本册是基础阶段的最后一册,衔接提高阶段的第四册,起承上启下的作用。每单元包括课文、词汇学习、结构学习、有指导的会话、听力训练、有指导的写作和阅读材料等项目。

高等学校试用教材

英 语

3

上海交通大学科技外语系

吴银庚(主编) 张彦斌(副主编)

李汉卿 李荣辉 王士先 吴信强

*

人民教育出版社出版

新华书店北京发行所发行

陕西省印刷厂印装

*

开本 850×1168 1/32 印张 12 字数 330,000

1981 年 1 月第 1 版 1981 年 6 月第 1 次印刷

印数 00,001—71,000

书号 9012·087 定价 1.05 元

前 言

本书是高等学校理工科通用英语教材第三册。从整套教材——四册而言,第三册是基础阶段(一—三册)的最后一册,衔接提高阶段(第四册),起承上启下的作用。书中所选课文由科普文体逐步转向科技文体。结构学习基本结束,训练项目与第二册相同,但在读、写方面有所加强。

现将本册主要内容说明如下:

1. 课文 12 篇 每篇约 1,500~1,800 印刷符号,新单词 30—35 个。文章既反映现代科学技术,又不局限于某一专业,如“彩色电视”、“数学新领域”、“科学态度”等。练习形式与前两册基本相同,但难度有所提高。

2. 词汇学习 重点讲解常用动词 21 个,还介绍了科技书刊中出现率较高的一些半技术词汇和词缀。

3. 结构学习 本册教材中介绍 *V-ing* 的被动态和完成式、*n.* + *V-ing/V-ed₂* 的用法、现在完成进行时和将来进行时、*as* 引出的定语从句等内容,同时还结合科技英语特点,介绍省略、倒装、强调、割裂修饰、名词修饰名词和名词化等。

4. 有指导的会话 仍按表达功能安排。本册共有 30 个习用句。会话难度有所提高,长度亦略有增加。

5. 听力训练 听力材料密切结合课文,教学要求与前两册相同。

6. 有指导的写作 继续介绍科技英语中一些常用概念(如度量、位置等)的表达方式,教学内容(包括练习量)略有增加。

7. 阅读材料 本书中每一单元仍安排(A)、(B)两篇阅读材料。每篇约 1,500 印刷符号,新单词和新词组控制在 15—20 个。

8. 书后附有不规则动词表、总词组表与总词汇表。本册在新单

词的处理上有些变化: 1) 同一单元中出现的同根词列入同一个条目, 但按字母顺序分别列入总词汇表。2) 由旧词加上已学词缀构成的新单词, 词义无重大变化的, 本册一般不收入新单词表。

第三册教材共出现新单词 814 个, 新词组 210 个, 其中要求掌握的单词 568 个, 词组 143 个。

参加本册教材审稿会审稿的有南京大学张景桂(主审)、大连海运学院刘鸿章、上海工业大学戴浩中、复旦大学郁明亮、华南工学院郭杰克。华中工学院张义斌提出了书面意见。

上海外国语学院英籍教授 Margaret Wang(王珍珠)和 1980 年间曾在上海交通大学任教的美籍教师 Sandra Hagman 对本册提出了许多宝贵意见。

本书在编写过程中得到许多兄弟院校的热情支持, 收到了不少意见和建议。

对以上单位和个人的大力支持与帮助, 我们表示衷心的感谢。

由于我们水平有限, 经验不足, 所编教材一定存在不少缺点和错误, 欢迎使用者提出批评和建议。

编 者

1983 年 11 月

Table of

UNIT	PAGE	TEXT	WORD STUDY	STRUCTURE STUDY
1	1	Discovery by "Accident"	set break	I. Ellipsis in Adverbial Clauses II. Ellipsis in Coordinate Clauses
2	25	Hovercraft — A Flying Ship	Mean Require Verb Suffixes: -en, -ize, -fy	"with + n. + V-ed ₂ /V-ing, etc."
3	49	Colour Television	Base — Basis — Basic Vary	Attribute Clauses with "as" I. "as" as Relative Pronoun II. "as" as Relative Adverb
4	74	Using Weather Information	Suit — Suitable — Special — Speciality — Specialize Prepare Noun Suffixes: -ist, -ology, -ics -(i)an	"n. + V-ing/. V-ed ₂ " as Adverbial
REVISION EXERCISES				

Units

GUIDED CONVERSATION	LISTENING COMPREHENSION	GUIDED WRITING	READING MATERIAL
"Lucky" Discoverers	Natural and Syn- thetic Rubber	Measure- ment	(A) The Devel- opment of Rubber (B) The Story of Xero- graphy
A Trip by Hovercraft	Electric Loco- motives	Position	(A) Electric Trains (B) The Atom- ic Engine
Watching TV	Color Television	Certainty	(A) How Pic- tures Move (B) Color
Talking about the Weather	Rain-making	Plan	(A) Microcli- mates (B) Earthquake Control
(Unit 1 — Unit 4)			

Table of Units

UNIT	PAGE	TEXT	WORD STUDY	STRUCTURE STUDY
5	108	The New World of Mathematics	Apply Matter Dare	Inversion
6	133	Smokeless Fuels	Keep Ever Noun Suffixes: -th, -ence/ency, -ance/-ancy	Noun as Noun Modifier
7	157	Physics — Foundation of the Physical Sciences	Affect—Effect Involve While	I. Future Progressive Tense II. Present Perfect Progressive Tense
8	183	Miniaturization of Equipment	Result Process Negative Prefixes: dis-, de-, un-, non-	The Emphatic Pattern
Revision Exercises				

GUIDED CONVERSATION	LISTENING COMPREHENSION	GUIDED WRITING	READING MATERIAL
A Magic Figure	The Story of Time Measure- ment	Necessity	(A) Mathemat- ics in Our World (B) Statistics: Making Sense out of Data
Talking about Atmospheric Pollution	Poisonous Gases	Multiples	(A) The Ener- gy Gap (B) Fuels
Making Apolo- gies	Viewing the World from Both Sides	Definition	(A) The Classical Branches of Physics (B) Cultural Knowledge: The Tech- nical and Philosophi- cal Tradi- tions
Sending Kind Regards to Friends	Making Computer Smaller	Difference	(A) From Print- ed Circuits to Micro- miniature Circuits (B) Getting Smaller
(Unit 5—Unit 8)			

UNIT	PAGE	TEXT	WORD STUDY	STRUCTURE STUDY
9	215	How a Nuclear Power Station Works	Provide Prevent Protect	I. "being+ V-ed ₂ " II. "n. + V-ing" as Object III. "n. + being+ V-ed ₂ "
10	240	Noise and the Worker	Devise—Device Subject Analyse Prefixes of Degree and Size: super-, over- sub-, under-	Discontinuous Modification
11	266	Technical Sketching: A Universal Language	Serve—Service Present	"having+V-ed ₂ " "having+been+ V-ed ₂ "
12	290	The Scientific Attitude	Control Work Prefixes of Time and Order: pre-, post-, re-, fore-	Nominalization
Revision Exercises				

GUIDED CONVERSATION	LISTENING COMPREHENSION	GUIDED WRITING	READING MATERIAL
Making an Appointment	Radioactive Pollution	Concession	(A) Radio Isotopes (B) Atomic- power Reactors
Talking in the Noise	Is Noisy Always a Nuisance?	Increase and Decrease	(A) Noise Control (B) The Con- trol of Noise
Choosing Specialities	Technical English	Addition	(A) Science, Engineer- ing, and engineering Technology (B) Efficiency in Engineer- ing Opera- tion
Seeing Someone Off at the Airport	Galileo's Experiment	Suggestion	(A) The Meth- ods of Science (B) The Technical Revolution
(Unit 9 — Unit 12)			

Contents

Introduction

Table of Units

Unit 1	1
Unit 2	25
Unit 3	49
Unit 4	74
Revision Exercises (Unit 1 — Unit 4)	99
Unit 5	108
Unit 6	133
Unit 7	157
Unit 8	183
Revision Exercises (Unit 5 — Unit 8)	208
Unit 9	215
Unit 10	240
Unit 11	266
Unit 12	290
Revision Exercises (Unit 9 — Unit 12)	316
Appendix 1 Irregular Verbs	325
Appendix 2 Phrases and Expressions	326
Appendix 3 Vocabulary	333
Appendix 4 Proper Names	368
Acknowledgements	369

UNIT 1



TEXT

Discovery by "Accident"

In the long history of man's inventiveness, discoverers seem to fall into two classes. The first is the ingenious person who sets out to find the solution to a problem. The second is the "lucky" one who appears to stumble upon something by "accident".

But we should be clear about what we mean by "accident". For the "accidental" aspect of many great discoveries is that something unusual has happened when there is an observant person present who notices what has happened, and sets to work to find out why.

Following are some examples of this:

During the First World War, a well-known expert in metals was asked to investigate the problem of the "pitting" which spoiled gun barrels after they had been fired for a certain length of time. In his research, the first thing that

he did was to order a number of barrels to be made of new steel alloys. One of these alloys contained a high percentage of chromium.


A gun barrel was made of this new "chromium steel," but the first shot fired through it broke it into a dozen pieces. So the scraps were thrown on to the waste heap. A week or two afterwards, the expert noticed that among the now rusty scraps of metal, the broken pieces of the chromium steel barrel were as bright as they had been originally. From this "accidental" discovery developed the enormous benefits of "stainless steel".

Behind the great rubber industry of today lies a story of one man's search and of his discovery by "accident". Rubber in its natural state is hard when cold, and soft and sticky when heated. Goodyear, an American, had been trying to find a way in which rubber could be made hard, non-sticky, and yet elastic.

One day, by chance, he dropped a small piece of molded rubber on to a stove and at the same time a piece of sulphur slipped out of his hand. He scraped the bits of boiling rubber on to a plate. But when it had cooled down, what a different sort of rubber it was! It was cold, and yet elastic. He had invented — by "accident" — the basic method of preparing rubber for commercial use.

The list of discoveries by "accident" could fill a long book; and remember, most of them happened when somebody asked himself: "Why?"

New Words

- | | | |
|--------------------|---------------------------------|--|
| 1. inventiveness | [in'ventivnis] <i>n.</i> | 发明创造能力, 创造性 |
| 2. discoverer | [dis'kʌvərə] <i>n.</i> | 发现者 |
| 3. ingenious | [in'dʒi:njəs] <i>a.</i> | 有创造才能的; 机灵的; 精巧的 |
| 4. lucky | ['lʌki] <i>a.</i> | 幸运的 |
| 5. stumble | ['stʌmbəl] <i>vi., vt.</i> | 绊(跌), 绊倒 |
| 6. accidental | [æksi'dentl] <i>a.</i> | 偶然的, 意外的 |
| 7. observant | [əb'zə:vənt] <i>a.</i> | 观察力敏锐的 |
| 8. pitting | ['pitiŋ] <i>n.</i> | (生)锈斑 |
| 9. spoil | [spoil] <i>vt., vi.</i> | 损坏; 变坏 |
| 10. gun | [gʌn] <i>n.</i> | 炮; 枪 |
| 11. barrel | ['bærəl] <i>n.</i> | 炮筒; 枪管  |
| 12. percentage | [pə'sentidʒ] <i>n.</i> | 百分数, 百分率 |
| 13. chromium | ['kræʊmjəm] <i>n.</i> | 铬 |
| 14. shot | [ʃɒt] <i>n.</i> | 发射, 射击; [单、复同形]子弹 |
| 15. dozen | ['dʌzn] <i>n.</i> | 一打, 十二个 |
| (pl.) dozen/dozens | | |
| 16. scrap | [skræp] <i>n.</i>
<i>vt.</i> | 碎片; 废金属
敲碎; 拆毁 |
| 17. heap | [hi:p] <i>n.</i>
<i>vt.</i> | (一)堆; 大量, 许多
堆积; 装满 |
| 18. rusty | ['rʌsti] <i>a.</i> | (生)锈的 |
| 19. stainless | ['steɪnlis] <i>a.</i> | 不锈钢的; 没有污点的 |
| 20. rubber | ['rʌbə] <i>n.</i> | 橡胶(制品); 橡皮 |
| 21. state | [steɪt] <i>n.</i> | 状态; 国家; [美国等的]州 |
| 22. sticky | ['stɪki] <i>a.</i> | 粘性的, 胶粘的 |

non-sticky	['nɒn-'stɪki] <i>a.</i>	无粘性的
23. elastic	[i'ælɪstɪk] <i>a.</i>	弹性的; 有弹力的
24. mold [美]	[məʊld] <i>vt.</i>	(模)型; 模压, 铸造
	<i>n.</i>	模型, 模子; 模制品
mould [英]	[məʊld]	
25. sulphur	['sʌlfə] <i>n.</i>	硫
26. slip	[slɪp] <i>vi., vt.</i>	滑动; 滑脱
27. scrape	[skreɪp] <i>vt., vi.</i>	刮, 擦
	<i>n.</i>	刮(痕, 屑), 擦(痕)
28. bit	[bɪt] <i>n.</i>	一点点, 小量; 小片
29. boil	[boɪl] <i>vi., vt.</i>	沸腾, 汽化; 起泡
30. plate	[pleɪt] <i>n.</i>	(金属)板; 盘
31. sort	[sɔ:t] <i>n.</i>	种类; 类别
	<i>vt.</i>	把…分类; 拣选
32. commercial	[kə'mɜ:ʃəl] <i>a.</i>	商业的; 工业(用)的; (能)大批生产的
Goodyear	['ɡʊdʒə(:)]	古德伊尔

Phrases and Expressions

1. by accident	偶然, 无意中
2. fall into	分成; 进入; 落进
3. set out	开始; 动手; 打算, 企图
4. stumble upon/on	偶然碰见, 偶然发现
5. a number of	若干; 许多
6. set to work	开始工作
7. break into/to pieces	成为碎片
8. and yet	而, 然而
9. by chance	偶然, 碰巧
10. cool down	冷却

Notes

1. Following are some examples of this:

下面举几个这方面的例子:

本句为倒装句。形容词 following 为主语补足语, 主语是 some examples of this.

倒装句常用来更好地连接上下文, 如本句倒装是为了便于接续下文, 而本文第五段末 From this “accidental” discovery developed the enormous benefits of “stainless steel” 一句中, 主谓语倒装则是为了承接上文。(参阅 UNIT 5 的 STRUCTURE STUDY)

2. Goodyear, an American, *had been trying* for years to find a way in which rubber could be made hard, non-sticky, and yet elastic. 有一个叫古德伊尔美国人一直在努力寻找一种方法把橡胶做得硬而不粘, 但是却有弹性。

斜体部分为动词 try 的过去完成进行时形式。过去完成进行时由 “had + been + V-ing” 构成, 主要表示过去某一时刻以前一直在进行的一个动作。例:

At last he received the letter he *had been expecting*.
他终于收到了他一直盼望着的那封信。

Exercise 1 Choose the best answer according to the text.

- 1) In the long history of man's inventiveness, discoverers seem to fall into two classes. This means that _____.
 - a) discoverers have been very few in number in man's history
 - b) there seem to have been two kinds of discoverers in the long history of man's inventiveness
 - c) man has discovered that there are two varieties of inventiveness in history
- 2) The second class of discoverers are those who _____.
 - a) are always lucky enough to make new discoveries by chance