

● 新思路 ● 新设计 ● 新尝试

新科技英语阅读教程

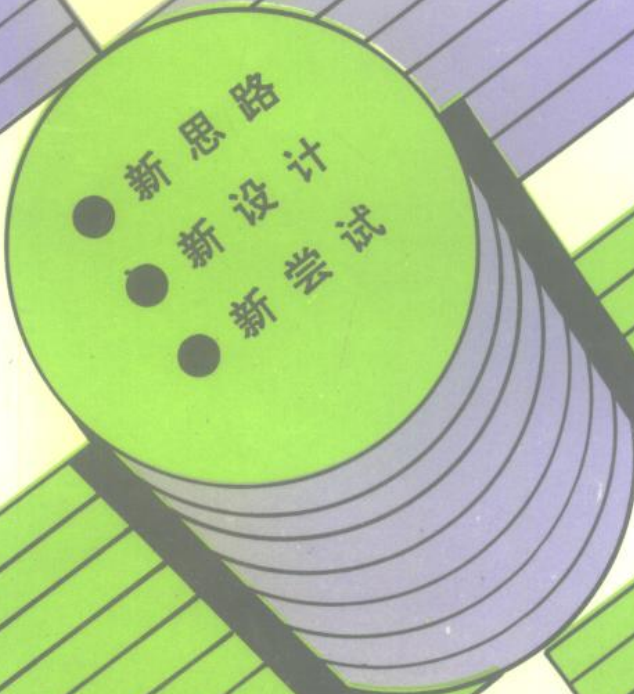
NEW EST READING COURSE

(修订版)

(上册)

主 编 孔庆炎 张 旭

大连理工大学出版社



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Preface to the Revised Edition

(修订版前言)

《新科技英语阅读教程》自 1991 年 8 月出版以来,已经过了 6 个年头,呈蒙广大读者厚爱,本教程曾重印 5 次,被不少兄弟院校及单位采用。根据使用情况和读者的建议,也为了更好地适应改革开放的需要,我们现决定对本教程进行全面修订。

修订的依据仍然是高等学校理工科《大学英语教学大纲》(以下简称《大纲》)有关大学英语专业阅读阶段的要求。修订版可供理工科院校本科第五至第七学期专业阅读阶段教学使用。

修订版从编写体例到具体素材都作了重大变动,更新量超过 80%。修订版与原版的主要区别如下:

一、编写体例有所改动,增加了实用科技文体范文

原版各单元第一部分(Part One)以科技英语篇章结构特点(Discourse Features)为主线,修订版以科技英语常见的篇章类型(Discourse Types)为主线。除保留原版有关科技书刊的前言和科技文摘两部分外,增加了科技论文、产品及厂家介绍、产品说明书、技术合同、专利、招标与投标、国际学术会议文献资料等不同类型的文章及文件。修订版保留了原版的科技英语篇章功能(Discourse Functions)部分,着重介绍相关的功能句式。我们这样做的目的是希望理工科学生于在校期间不仅能熟悉学术英语(Academic English),阅读英语学术书刊,还能学习、了解涉外科技活动中会实际遇到的一些实用英语业务文献资料,如查阅专利、熟悉合同等,以使这套教材能更好地为培养学生实际使用英语的能力服务。

二、更新了大部分科技专题阅读文章

修订版各单元的科技专题阅读部分；即第二部分的编写体例仍和原版相同，即每单元围绕一两个学科选择四篇文章，供学生阅读，并辅以阅读理解练习和词汇练习。这一部分的修订工作一是更新了科技内容变陈旧了的文章；二是增选了人工智能、材料科学、经贸管理、环境保护等新兴学科的内容；三是为照顾一些传统专业的需要，增选了化工、机械、建筑等有关专业的文章。

生词的处理原则仍和原版一样，只收《大纲》四级以外的生词。凡属《大纲》五、六级的词汇均在该词条之前标有△号以示区别。为了便于学生阅读和教师教学，各单元重复出现的生词，每次重复出现时，均作为生词收入，这种处理方法有助于教师根据自己的教学对象和需要，自行安排各单元的教学顺序或有选择地使用各篇选文。

童光燧、王汉明、卢琅华、沈宏书、俞可怀五位同志参加了原版的编写工作。

修订版仍是一种新的尝试，欢迎广大师生和读者批评指正。

编者

1997年5月

Preface to the First Edition

(第一版前言)

根据高等学校理工科本科《大学英语教学大纲》(以下简称《大纲》)的规定,高等学校理工科在本科生完成《大纲》所规定的大学英语基础阶段学习后,从第五学期到第七学期要开设必修的专业阅读课。考虑到高校理工科专业繁多,而且在第五学期大部分学生还没有完全接触到所学的专业课,学生从基础阶段立即转入阅读本专业的英语资料尚有一定困难,我们特编写了这本通用《新科技英语阅读教程》,供理工科各专业本科生在第五学期和第六两学期使用。

本教程在选材上着重考虑以下两点:一是所选英语材料所叙述的科技内容一般能为理工科三年级学生所理解,不过多过深地涉及具体专业知识,避免由于选材内容过专而影响阅读能力的培养;二是所选的语言材料均出自英文科技书刊,属科技文体,能体现英语科技文的篇章结构特点和词汇特点,以便学生在学完本教程之后能顺利阅读所学专业的英语资料。

本教程共九个单元,每单元分两大部。第一部分 Discourse Features 简要介绍英语科技文的篇章结构特点。每个单元着重介绍某一方面的篇章结构特点,如前言、定义、分类与比较、结构与系统、过程等。介绍之后辅以范文(Samples)。范文选自多种英文科技书刊,尽量体现本单元所介绍的篇章结构部分的特点,以便于学生根据这些特点来更好地阅读,在阅读具体语言材料的基础上进一步加深理解和掌握这些特点。第二部分 Readings on Scientific Topics 主要选材于《Science Fact》一书。每个单元围绕一个专题介绍当代重要科

技领域的新成果和发展动向。这一部分选材和第一部分所介绍的篇章结构特点无一定的对应关系。主要是为学生提供阅读素材。其目的是通过大量阅读提高学生阅读英语科技资料和获取信息的能力。

每篇范文和阅读选文后均列有生词和词组表,并附有难点注释。由于使用本教程的学生已修过《大纲》规定的四级,生词表只收四级词表以外的词。凡属于《大纲》五、六级的词在该词条前均标有△符号,以示区别。所收入的词组系四级以外的或虽属四级但估计学生掌握尚不巩固的词组。为了便于学生阅读,在本教程各单元中重复出现的生词,每次出现时都作为生词再次收入。生词一般只注在本篇文章中所出现的词义。这样处理生词也有助于教师根据自己的教学对象和需要,自行安排各单元的教学顺序或有选择地使用各篇选文。

各单元第一部分的每篇范文和第二部分的每篇阅读选文之后均附有练习。第一部分每篇范文之后的第一项练习为阅读理解练习。然后是词汇练习。最后一项为篇章结构练习。在布置篇章结构练习时,教师可稍加指点,明确做该项练习的目的和方法。第二部分每篇阅读选文后的练习为阅读理解练习,用以指导与检查学生的阅读。在第二部分的最后有词汇练习,对整个第二部分的词汇进行一定的复习、检查。

根据《大纲》的规定,专业阅读阶段的任务是:“指导学生阅读有关专业的英语书刊和文选,使其进一步提高阅读英语资料的能力,并能以英语为工具,获取专业所需要的信息。”因此编者建议:在组织教学时,每一单元的第一部分为必学部分,因为这一部分介绍的是英语科技文的篇章结构特点,是英语科技文的共性部分,任何专业的学生都有必要了解和掌握这些特点,这有助于提高学生的阅读技能。至于各单元的第二部分,教师可根据所教学生的专业特点,有选择地加以使用。但使用总量不应少于三分之二,否则难以保证必要的阅读量,不管教师对本教材作何处理,在整个教学过程中,必须突出以阅读为中心,要引导学生从语篇水平上进行阅读理解,避免在句子上花过多的功夫,更不能搞逐词逐句的分析翻译。编者主张多读、快读(教材中有些阅读选文可用来在课上进行快速阅读训练)。通过大量阅读掌握阅读技巧,提高阅读能力。在阅读过程中,既要注意对内容的准确理解,又要注意阅读速度与阅读总量(《大纲》规定三个学期的总阅读量为250 000词左右)。正确处理两者之间的关系,是专业阅读阶段能否达到预期目的的关键之一。

由于编写时间和编者水平的限制,本教材定有不少不足之处。欢迎外语界同行,尤其是使用本书的专业英语教师和学生提出批评和改进意见。

编者

1991年5月

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Unit One

Part One EST Discourse Types and Functions

I. EST Discourse Types Prefaces, Forewords and Introductions (I) (前言, 序和引言)

翻开一本英文专著或论文汇编,读者往往首先见到的是 Preface(前言),Foreword(序)或 Introduction(导言)。前言、序和导言部分是对专著或汇编的概括说明或评介。它们多半出现在目录(Contents)之前。

科技阅读的目的是获取信息,收集参考资料。在信息爆炸的今天,每年出版的专著和论文汇编越来越多。读者的信息源极为广泛,往往不可能也没有必要通读全书。恰当地利用前言、序和导言能帮助读者了解某一专著或论文汇编的主要内容,确定其参考价值。因此阅读这三种形式的文字能力十分重要。有了这种能力便可快捷地了解全书概貌,查找到所需要的文献资料。

前言、序和导言,除了前面提到的共同功用外,其所述内容和文体结构不尽相同。一般说来,前言和序的篇幅都比较短,内容概括性较强。导言篇幅较长,内容比较详细。从文体上看,前言和导言比较正式,多有一定的格式;序言的文体比较自由多样,无一定格式。本单元主要介绍前言和序言的特点。导言将在第二单元中介绍。

前言和序主要有以下几种:

1. 专著的前言(Preface):多由作者本人撰写。其中说明写作目的、经过、资料来源以及编写体例等。读者可以从中了解该专著的主要内容,确定该书是否和自己的学习或研究有关。

2. 专著的序(Foreword);多由作者请他人撰写。主要目的是请人对自己的著作进行评介,扩大影响,提高知名度。代人写序的人往往是有关专业或研究领域的权威或专家。通过他们的评介,读者不仅可以了解该著作的主要内容,还可以了解到该著作的水平和档

次。由于序和前言的作用不尽相同,有的专著既刊有请人写的序,又有作者本人所写的前言。

3. 学术会议论文汇编(Proceedings)的前言或序:这种前言或序或由会议组织者责成会议专职人员(如大会秘书)撰写,或邀请有关权威或专家撰写。这类前言或序往往对学术会议的发起单位和背景及中心议题加以概括说明,并对有代表性的论文进行综合评述。读者可根据这种说明和评述选择阅读自己感兴趣的论文。

4. 专题论文汇编的前言或序:这种汇编往往集中了近年来所发表的有关专题的不同流派或观点的代表性论文,信息来源广泛,可包括不同地区、不同国家的科学论文。其前言或序可由出版机构的编辑人员撰写(多用 Editor's Preface 或 Editor's Foreword 字样),也可请有关权威或专家撰写。不论谁撰写,一般都对不同流派的最新观点加以扼要说明和评论。读者可从中了解到该学科或专题的发展前沿和各家各派的不同观点。

5. 修订(再)版前言:一般均放在初版前言的前面,多由作者本人撰写。其内容可包括专著初版或前一版发行以来,本学科或研究领域的新发展以及修订时在内容或编写体例等方面所做的改动。读者要了解修订版的全貌,在读完修订(再)版前言之后还应阅读初版前言。

前言通常包括以下几项内容:

1. 编写目的、背景及材料来源:编著者先阐述有关学科或课题的成果、发展现状,或说明该学科或课题的重要性,概括说明作者在书中所提出的新见解和理论。

2. 编写对象及专著的用途:说明该专著是为行家,还是为一般读者或学习该学科的学生编写,因此其内容涉及面及深浅度也不同。

3. 与相关学科的关系,该学科或课题的发展前景。

4. 编写体例、章节的分布、内容与特点。

5. 使用方法介绍和指导,编著者预期达到的目的与愿望。

6. 欢迎读者指教。

7. 鸣谢(Acknowledgement):大多放在前言的最后。对写作或出版该专著给予帮助者、支持者、协作者表示谢意。有的鸣谢部分在专著中单独刊出(见 Sample C)

并非所有的前言都包括以上几项内容,其内容也不一定按上述顺序叙述。一般来说,短前言通常仅是内容提要,开宗明义说明著作的内容、用途、读者对象及简单的使用事项。每项内容语言简练,大多只用一、两个句子表述。

前言或序是介绍或评述一种专著的专门文章,因此也形成了一种独特的文体。

下面就前言中常用的语言特点作一简单描述。

1. 描述编写意图、目的、依据时常用的词语:

My object in writing this book was to provide....

(我写此书的目的是提供……)

We felt the need to bring out a book on....

(我们感到有必要出版一部关于……的书。)

I wrote this book because....

(我写作了此书是因为……)

I have attempted in this book to give. . . .

It was our (my) intention to include in this book. . . .

(我们打算在本书中介绍……。)

The book is predicated on the belief that. . . .

(本书是依据……这一信念而编写的。)

I never found any other book devoted to. . . .

(我尚未见到过专门论述……的任何其他书籍。)

2. 描述专著用途及使用对象时常用的词语:

The book is meant to. . . .

The book is intended as. . . .

The purpose of the book is to. . . .

(本书的目的是……; 本书的用途是……。)

The main function of this book is to. . . .

(本书的主要宗旨是……。)

The book is intended for. . . .

The book is designed for. . . .

(本书是为……而编写的。)

This book has been (was) written to provide (students). . . with. . . .

(编写本书是为……(学生)提供……。)

The book should be useful for those who. . . .

The book should be of use and interest to. . . .

The book is presented in a way that will be of interest to. . . .

(本书将适用于……)

3. 对读者提出要求或期望的常用词语:

The reader is (not) expected to do. . . .

(希望读者……, (不)……)

We expect that the book will have value to. . . .

(希望本书能对……有用。)

4. 表示鸣谢时的常用词语:

We would like to thank . . . for. . . .

I must express my grateful thanks to. . . .

I'm (We are) grateful to. . . .

I (We) owe thanks to. . . .

I'm very much indebted to. . . .

The author is indebted to. . . .

Thanks go to. . . for. . . .

Warm thanks are due to. . . .

Grateful acknowledgement is due to. . . .

5. 表示欢迎批评、指正时常用的词语:

Any suggestions for improvement are most welcome.

I welcome any additional suggestions for the improvement.

Readers are invited to send us their comments and suggestions for subsequent editions.

We (I) should be very glad to hear from readers who find mistakes, or have comments or suggestions of any kind.

The author(s) will be grateful for comments and suggestions from users of this book.

Please write to me (us) c/o. . . .

Sample A

Preface

"Scientifically Speaking" is a short introduction to the English written and spoken by scientists and engineers. The book shows the specialized English of science and technology in use, and gives examples of many words which are frequently found in a number of scientific and technological fields.

After a general introduction on technical English, there are twelve chapters, each of which deals with a particular technological subject by means of written texts, diagrams and conversations. The most useful vocabulary items from the chapters are studied in detail. There is also a general vocabulary at the end of the book. A special appendix comments on some of the grammatical structures and sentence patterns commonly used by scientists and engineers which occur throughout the book.

The reader is not expected to be an expert in the subject dealt with in the book. He needs to have a knowledge of elementary science and mathematics, but the technical subject matter of the book is presented in a way that will be of interest to the specialist and non-specialist alike. Since the technical and semi-technical words which occur in the English texts are studied in detail or appear in the general vocabulary, the book can be used without the help of a technical dictionary.

(From *Scientifically Speaking*)

New Words and Expressions

△ appendix [ə'pendiks] n. 附录

	*	*	*	*	*
vocabulary item					词条
comment on					评论
subject matter					学科内容, 题材
elementary science					基础科学
be of interest to					对来说……饶有兴趣

Exercise

Comprehension

1. "Scientifically Speaking" mainly presents _____.
 A. the spoken English used in science and technology
 B. the written English used in Science and technology
 C. the recent developments in some scientific and technological fields
 D. both A and B
2. Paragraph 2 mainly tells us about _____.
 A. the structure of the book
 B. the purpose the author bears in mind in writing the book
 C. the way in which the book should be used
 D. the special characteristics of the book
3. Apart from the main body, the book contains _____ supplementary parts.
 A. 1 B. 2 C. 3 D. 4
4. The book is written for _____.
 A. specialists only
 B. non-specialists only
 C. both specialists and non-specialists
 D. those who are familiar with the subject matter discussed in this book
5. Why don't the users of this book need to consult a technical dictionary?
 Because _____.
 A. the readers of the book are supposed to have mastered some basic technical and semi-technical words
 B. the technical and semi-technical words involved are discussed in detail in this book
 C. this book contains a general vocabulary which includes the technical and semi-technical words concerned
 D. both B and C

Sample B

Foreword

Researchers continue to be challenged by the demands required for the next generation of robots. An incredible diversity of technology is being brought to bear on solving some of the problems associated with robotics and, more generally, with manufacturing automation.

This volume contains the papers presented in the Robotics and Manufacturing Automation Symposium at the 1985 ASME Winter Annual Meeting. The Symposium is sponsored jointly by the Dynamic Systems and Control Division and the Production Engineering Division at ASME. This collaboration has made it possible to include strongly coherent papers in each session of the symposium and to eliminate the duplicative efforts in organizing similar sessions by the two divisions in the past. It represents the first collaborative effort on robotics activities by the two divisions, and we hope that the collaboration will be continued and fostered in the years to come.

A wide variety of topics on robotics are discussed in the Symposium as contained in this special volume. They include: dynamics, control, design, flexible arms, and effectors, sensors and actuators, simulation and off-line programming, and manufacturing applications. In addition to the editors of this volume, the various sessions of this Symposium were organized by:

Haruhiko Asada, Massachusetts Institute of Technology

Wayne J. Book, Georgia Institute of Technology

Imdad Iman, General Electric Corporate Research and Development

Dennis G. Manzer, IBM Thomas J. Watson Research Laboratories

Frank W. Paul, Clemson University

Jean-Jacques E. Slotine, Massachusetts Institute of Technology

We would like to extend our sincere thanks to the above organizers, the authors, and the anonymous reviewers whose time and efforts have made the Symposium a success. We also would like to thank the executive committees of both the Dynamic systems and Control Division and the Production Engineering Division for their encouragement and support in organizing this Symposium.

Without the organizational capabilities of Phyllis Novotny of the University of Minnesota and Carmen Marshall of the University of California, Berkeley, none of this would be possible. The results you see are a reflection of their attention to detail and their efforts above and beyond the call of duty.

Ming C. Leu, Cornell University

Max Donath, University of Minnesota

(From *Robotics and Manufacturing Automation*)

New Words and Expressions

	foreword	[ˈfɔːwəːd]	<i>n.</i> 序, 序言, 前言
	diversity	[daɪˈvəːsɪti]	<i>n.</i> 多样性, 差异, 变化
	robotics	[rəʊˈbɒtɪks]	<i>n.</i> 自动化技术, 机器人技术
Δ	symposium	[sɪmˈpəʊzjəm]	<i>n.</i> (复)symposia[sɪmˈpəʊzjə]或 symposiums 座谈会, 专题讨论会; 专题论文集
Δ	sponsor	[ˈspɒnsə]	<i>vt.</i> 发起, 倡议, 主办 <i>n.</i> 发起者, 倡议者
Δ	collaboration	[kələbəˈreɪʃən]	<i>n.</i> 合作, 协作
	collaborative	[kəˈləbəreɪtɪv]	<i>a.</i> 合作的
Δ	coherent	[kəʊˈhiərənt]	<i>a.</i> 相关的, 相互密合的, 协调的
Δ	duplicative	[ˈdʒuːplɪkeɪtɪv]	<i>a.</i> 重复的, 加倍的, 复制的
Δ	foster	[ˈfɒstə]	<i>vt.</i> 培养, 养育; 鼓励, 促进
	dynamics	[daɪˈnæmɪks]	<i>n.</i> (动)力学; (原)动力; 动态(特性)
	effector	[ɪˈfektə]	<i>n.</i> 操纵装置
Δ	sensor	[ˈsensə]	<i>n.</i> 传感器, 敏感装置
	actuator	[ˈæktʃueɪtə]	<i>n.</i> 传动装置, 操作装置, 致动器
Δ	simulation	[sɪmjʊˈleɪʃən]	<i>n.</i> 模拟, 仿造
	programming	[ˈprəʊgræmɪŋ]	<i>n.</i> 规划, 程序设计
	off-line	[ˈɒf-laɪn]	<i>a.</i> 脱机的, 外线的
Δ	anonymous	[əˈnɒnɪməs]	<i>a.</i> 无名的, 不知名的, 匿名的
Δ	capability	[keɪpəˈbɪləti]	<i>n.</i> 能力
	* *	* *	*
	bear on (upon)		与……有关系, 涉及, 对……有影响
	a wide variety of		种种……
	anonymous reviewer		无名氏书评作者
	above and beyond the call of duty		在职责范围之外的, 超出本职工作之外的

Notes

ASME (American Society of Mechanical Engineers)

美国机械工程师学会

IBM (International Business Machines Corporation)

(美)国际商业机器公司

Massachusetts Institute of Technology (MIT)

(美)麻省理工学院
Georgia Institute of Technology(GIT)
(美)佐治亚工学院
General Electric Corporate Research and Development
通用电气公司研究与开发部
Clemson University 克莱姆森大学

Exercise

Comprehension

1. From the Foreword we know the book is _____.
A. one volume of a set of books
B. a collection of papers presented at an academic conference
C. a collection of papers published in several journals
D. about the practical application of robotics
2. The Symposium on Robotics and Manufacturing Automation is sponsored by _____.
A. several companies producing robots
B. two divisions at ASME
C. ASME
D. Georgia Institute of Technology.
3. Novotny and Marshall were mentioned in this Foreword for their _____.
A. valuable papers
B. organizational work
C. work in reviewing the papers
D. work in editing the papers
4. How many topics does this special volume contain?
A. 7 B. 8 C. 9 D. 10
5. Which of the following statements is not true?
A. There is an incredible diversity of technology of manufacturing automation nowadays.
B. This collaboration is expected to be continued and fostered in the future
C. Various sessions of this symposium were organized by the editors.
D. The writers of this Foreword were also grateful to the executive committees of the two divisions at ASME.