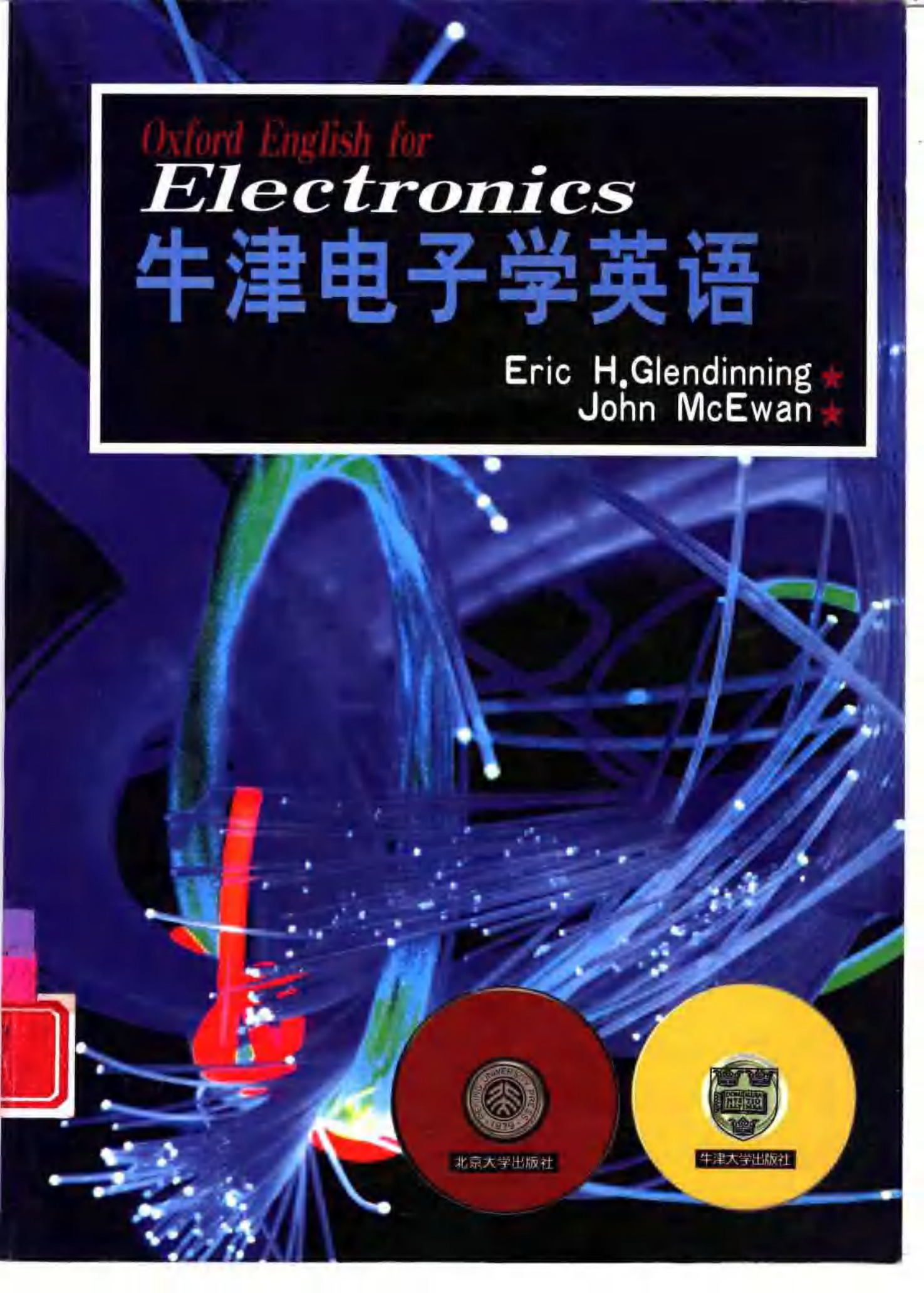
Oxford English for
Electronics
牛津电子学英语
Eric H.Glendinning
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〔英〕 Eric H. Glendinning
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童玉珍 译

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Introduction

1 Readership

Oxford English for Electronics is intended for:

- students of electronics in technical colleges and universities
- technicians
- engineers

who want to improve their knowledge of English

- for study
- because they need to use English-language manuals, textbooks, and reference works
- because they plan to work in an English-speaking country

2 Objectives

Oxford English for Electronics aims at all-round skills improvement:

- listening – to understand native speakers, professionals, and students, talking about their work and study
  – to understand experts talking informally about aspects of electronics
- speaking – to communicate about electronic topics
- reading – to understand a wide variety of text including diagrams, circuits, tables, graphs, course brochures, and job advertisements
  – to compare different sources of information, written and spoken
- writing – to write simple descriptions and explanations of components, circuits, and processes
  – to write study- and work-related letters

3 Authors

This book has two authors, an experienced ESP teacher and an expert in electronics. This partnership should ensure that the book is methodologically sound, and at the same time that the technical content is correct and up-to-date. Care has been taken to ensure that recent important developments in electronics are included.

4 Design

Oxford English for Electronics is designed to meet the requirements of both teachers and students. The authors recognize that very few English teachers have a specialist knowledge of electronics. They believe, however, that most ESP teachers have a general interest in their students' specialist field. The materials used in this book for presenting language items are authentic texts, diagrams, and listening passages, produced for the interested lay person. The register is popular science and should not pose problems for teachers.

The authors also recognize that the students who use this book want some exposure to the kind of texts used by their fellows in English-speaking countries. Hence, the materials used for language practice and production have more specialist content. Tasks at the practice and production stages encourage students to combine knowledge of English and knowledge of their subject. Homework or self-study tasks have the most specialist content.

The diagram shows the relationship between activity, teacher–student focus, and text register in this book.

Activity	Teacher–Student focus	Register of text
Presentation	Teacher-led	Popular science
Practice	Student-centred Teacher-guided	Semi-technical
Production	Student-centred Teacher-monitored	Technical

5 Grading

The grading of *Oxford English for Electronics* is three-fold:

1 In terms of language, the book progresses from relatively simple language items, such as *Comparison and contrast*, to more complex, such as *Cause and effect*.

2 In terms of electronics, the book starts with simple components and moves to digital electronics. Care has been taken to ensure that the progression matches the normal teaching sequence of the subject.

3 In terms of the reader's career development, the listening texts progress from an interview with a student to one with a young professional, while the reading-based units start with texts on *Choosing a course* (Unit 2) and end with *Job ads* (Unit 30).

6 Organization

The Student's Book contains 30 units, each providing a minimum of 2 hours of work, and in some cases much more. Most units focus on how common electronic items work. The items chosen are well-known to both teachers and students – for example, music centres and video recorders. Typically, these units start with a general explanation and end with a more technical explanation of how a key component operates.

Some units are more broadly focused. They deal with a range of items, such as *Test and repair instruments* (Unit 19), or cover recent developments in one field of electronics such as *Audio recording systems* (Unit 16).

Although all units contain a mix of skills, Units 3, 7, 14, 22, and 25 are based on interviews. These units place more emphasis on developing listening skills. Those interviewed are students and young professionals from a range of occupations in the field of electronics.*

*Note: You may make photocopies of tapescripts for distribution to students, but copyright law does not normally allow multiple copying of published material.

Oxford English for Electronics also includes two appendices. Appendix 1, *Glossary of electronic terms and abbreviations*, consists of brief definitions of all important technical terms in this book together with abbreviations commonly used in electronics. It forms a mini-dictionary of electronics. Appendix 2, *Circuit symbols*, will help the reader decipher the diagrams used. Although these aids should provide almost all the technical information you may require, the authors strongly advise that you form links with your colleagues in the electronics department of your institute, as their advice and support could prove most valuable.

7 Sections

Tuning-in

This section contains starter activities intended to put students in the right mood for learning and to get them used to working in a group.

It is also designed to start them thinking about the topic of the unit and to encourage them to share both relevant language and knowledge of the topic.

The texts used in this section, written and spoken, are always accompanied by a graphic. These texts plus graphics are the main vehicle for teacher-led presentation activities.

Language study

This section highlights a key structure, function, or notion from the English of electronics. The context for presentation may be an extract from a *Tuning-in* text, a diagram or a set of examples from which the student can infer the rule. Presentation is followed by comment, then practice activities. These activities focus on accuracy of language use.

Reading

Most units contain *Reading* sections. These sections introduce key reading skills, for example making inferences – *Linking what you read with what you know* (Unit 12).

Word study

This section is designed to help students deal with unfamiliar words and to cope with their growing specialist vocabulary.

Speaking practice

These activities are for fluency practice, not accuracy. Most of them are information-gap; some are opinion-gap.

By exchanging information, students are able to complete a diagram or table or solve a problem. While this product is a means of gauging how successful the exchange has been, the real importance of these activities lies in the communicative process. Often students will not understand each other at first. It is important that they develop strategies for coping with not understanding and not being understood. For example, they should be encouraged to ask for clarification when they do not understand and to try rephrasing when they are not understood.

Technical reading

These texts contain more specialist content and are intended for individual study. They may be set for homework. The accompanying tasks check that the reader has understood the electronics concepts.

Writing

Writing is used as a means of reinforcing language. This section focuses on common ways to link facts and ideas. It also gives advice and practice in writing work-related letters, setting out a CV, and writing a job application.

8 Spelling

As the texts in *Oxford English for Electronics* are authentic and come from a variety of sources, some inconsistencies in the spelling and hyphenation of words will be found. The publishers have not attempted to standardize these, since students will be exposed to such inconsistencies in their professional lives. Certain words deserve special mention. In British texts on electronics *analogue* is almost always used, whereas in British texts on computing the American spelling *analog* is fast becoming standard. The spelling of *disc/disk* varies widely. The usual forms are: *compact disc; hard/floppy disk, disk drive*, etc.

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Part 1 Text

第一部分 课文

1 Electronics in the home

Tuning-in

Task 1

Make a list of things in your house which use electronics. Compare your list with that of another group.

Task 2

Find out the meaning of these abbreviations. You can use Appendix 1 on page 188 to help you.

1 IC 2 CD 3 hi-fi

Reading *Reading for a purpose*

In your study and work, it is important to have a clear purpose when you read. At the start of most units in this book, you will find tasks to give you that purpose.

Task 3

Read quickly through the text on the next page. Tick [✓] any items mentioned in the list you made in Task 1.

Electronics in the home

Electronics began at the start of the twentieth century with the invention of the vacuum tube. The first devices for everyday use were radios, followed by televisions, record players, and tape recorders. These devices were large and used a lot of power.

The invention of the transistor in 1947 meant that much smaller, low-powered devices could be developed. A wide variety of electronic devices such as hi-fi units and portable radios became common in the home.

It was not until 1958 that microelectronics began with the development of ICs (integrated circuits) on silicon chips. This led to a great increase in the use of electronics in everyday items. The introduction of the microprocessor allowed electronics to be used for the control of many common processes.

Microprocessors are now used to control many household items such as automatic washing-machines, dishwashers, central heating systems, sewing machines, and food processors. Electronic timers are found in digital alarm clocks, water heaters, electric cookers, and microwave ovens. Telephones use electronics to provide automatic dialling and answerphone facilities. New entertainment devices have been developed, such as video recorders and CD (compact disc) players.

In the future, electronics are likely to become even more common in the home as multimedia entertainment systems and computer-controlled robots are developed.

Task 4

Fill in the gaps in this table with the help of the text.

Date	Invention	Applications in the home
early 20th century	_____	_____
_____	transistor	_____
1958	_____	automatic washing-machines.
future	_____	_____

Task 5

Use the space below to make a list of ways in which you think electronics may be used in the home in the future.

Reading *Understanding diagrams*

In electronics, you have to read not only texts, but also diagrams. You have to be able to combine information from both diagram and text. This text introduces two kinds of diagrams often used in electronics.

Task 6

Read the text below to find the answers to these questions:

1 What do we call the two types of diagrams shown in the text?
2 What do we call the approach to electronics which focuses on the function of units?

Understanding electronic diagrams

Although electronic devices may look complicated, they are made up of common basic units ('building blocks') connected together. The function of each of these units and the path of the signals between them can be shown in a block diagram. For example, the block diagram of a simple radio is shown in Fig. 1.

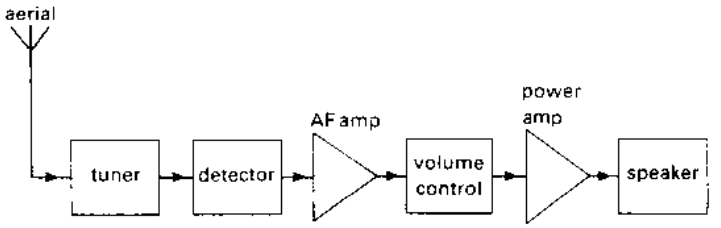

Fig. 1

To understand how the radio works, it is more important to understand the function of each unit than to know what components are used. This is known as a systems approach to electronics. For example, in Fig. 1 the tuner selects the required signal, the detector then separates off the audio part of the signal, and the AF amplifier (amp) amplifies it.

The connections and values of the components inside these basic units can be shown in a circuit diagram using standard electronic symbols. Fig. 2 shows the circuit diagram for the simple radio.

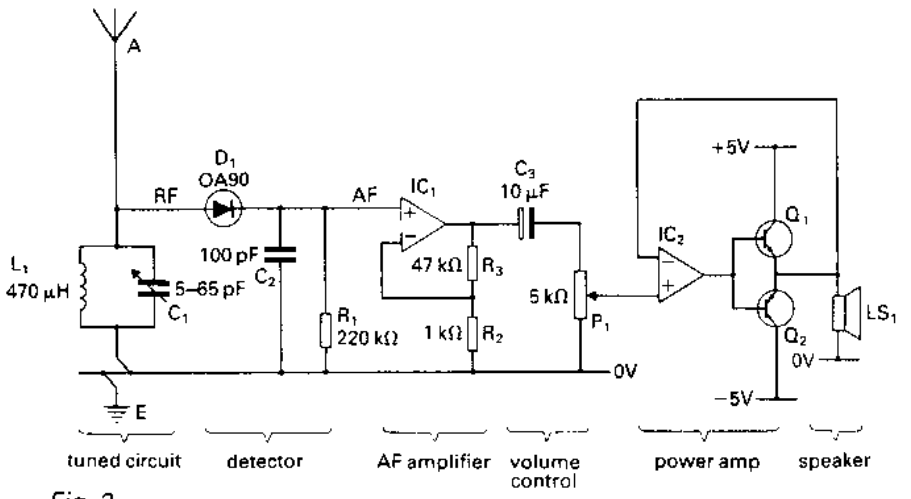

Fig. 2

Task 7

How many of the circuit symbols in Fig. 2 can you identify? Use Appendix 2 on page 206 to help you.

Language study *Describing block diagrams and circuits*

Look again at Fig. 1 above. We can describe it like this:

The radio | ***consists of*** / ***is composed of*** | *a tuner, a detector, and an AF amplifier.*

Using *comprise*, we can start our description with the blocks:

A tuner, a detector, and an AF amplifier ' ***comprise*** (*the radio.*

We can describe the links between each building block using these expressions:

The tuner | ***is connected to*** / ***is linked to*** | *the detector.*

Look again at Fig. 2. We can describe the values of the components like this:

R1 *a two-hundred-and-twenty-kilohm resistor*
C2 *a hundred-picofarad (puff) capacitor*

Task 8

Describe the value of these components:

1 R2
2 C1
3 R3
4 C3
5 P1
6 L1

This table provides the terms you need.

Prefix	Symbol	Multiple	Example
giga	G	10^9	GHz gigahertz
mega	M	10^6	MΩ megohms
kilo	k	10^3	kV kilovolts
deci	d	10^{-1}	dB decibels
milli	m	10^{-3}	mW milliwatts
micro	μ	10^{-6}	μH microhenries
nano	n	10^{-9}	nF nanofarads
pico	p	10^{-12}	pF picofarads

Looking now at the basic units of the circuit, we can describe the volume control like this:

The volume control consists of a ten-microfarad electrolytic capacitor connected in series with a five-kilohm potentiometer (pot). The positive terminal of the capacitor is connected to the output of the AF amplifier and the wiper of the pot is connected to the power amp. The third terminal of the pot is connected to the zero voltage supply rail, which is earthed.

Task 9

Fill in the gaps in this description of the tuned circuit shown in Fig. 2. Each gap represents one word.

The circuit [1]_____ of a four hundred and seventy [2]_____ inductor which is connected in parallel with a [3]_____ capacitor. The [4]_____ can be varied between five and sixty-five [5]_____. The aerial is [6]_____ to the top end of the tuner. It is also connected to the positive terminal of the [7]_____ in the detector. The bottom end of the tuner is connected to earth via the zero voltage [8]_____ rail.

Speaking practice

Task 10

Work in pairs, **A** and **B**. Complete your circuit diagram with help from your partner.

Ask questions like these:

What kind of component is P1?
What's the value of C1?
What is connected between the collector of Q2 and the positive side of the battery?

If you don't understand your partner, say:

I'm sorry, I don't understand. Could you say that again, please?
Could you speak more slowly?

If your partner doesn't understand you at first, try phrasing your answer in a different way. For example:

It's a variable resistor. It's a resistor which you can vary or change by turning the control. It's called a variable resistor.

Student A: Your circuit diagram is on page 174.
Student B: Your circuit diagram is on page 181.

Writing *Describing diagrams*

Task 11

With the help of the diagram, fill in the gaps in the description on page 12. Each gap represents one word. The description should answer these questions:

1 What is the diagram of?
2 What does it consist of in terms of blocks?
3 How are the blocks connected?
4 What is the function of each block?

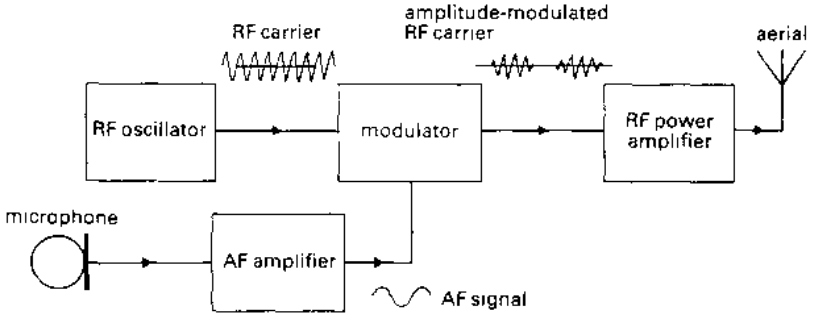

Fig. 3