




BOOK 5

# 科技英语

第五册

建筑专业



广东科技出版社

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初、中级技术人员培训教材

# 科技英语

第五册 (建筑专业)

English for Science and Technology  
Book 5

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宋兆鸿 许锡勤

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粤新登字04号

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广东科技出版社出版发行  
广东省新华书店经销  
广东第二新华印刷厂印刷

787×1092毫米 32开本 9.75印张 210,000字

1992年3月第1版 1992年3月第1次印刷

印数1—1,200册

ISBN 7—5359—0535—8

H·14 定价：4.50元

## 内 容 简 介

《科技英语》是为科技人员学习英语而编写的系列教材,分为五册。

本书是《科技英语》第五册(建筑专业)。本书有针对性地选用近年国外建筑业的书刊原文作课文,内容涉及建筑物的组成部分、结构设计、建筑荷载、土力学、构件变形、高强材料等,还包括了高层建筑的新发展、造价估算、建筑规范、合同文件等。每课均有课文注释、语法分析、练习和翻译等,旨在帮助读者掌握和提高建筑专业英语的阅读、理解和翻译能力。

本书既可作为建筑专业中级科技英语培训班的培训教材,也适合于大专院校建筑专业学生以及建筑工程技术人员和工人自学之用。

## 前 言

《科技英语》共五册。第一、二册分别为基础部分和提高部分，内容包括了科技人员必须掌握的基本知识；第三、四、五册为专业部分，分为化工类、电类和建筑类英语，供对口专业选用。

本书是《科技英语》第五册（建筑专业英语），是继基础部分和提高部分而编写的。目的是使学完《科技英语》第一、二册或相应教材的建筑专业科技人员能在较短时间内掌握本专业英语知识，提高翻译和阅读专业英文书刊、资料的能力。全书课文和阅读材料均取自近年国外有关书刊和杂志原文。选材上突出建筑技术英语的特点，同时注意实用性，内容广泛，涉及建筑物各主要部分，如基础、墙、梁、柱、楼板、门窗、天花和屋顶等；还介绍建筑物的结构设计、建筑荷载、土力学、构件变形、高强材料、预应力原理、钢筋混凝土结构、木框架结构、高层建筑的新发展、建筑造价估算、建筑规范和建筑合同文件，等等。

本书共20课，每课的内容编排是：课文、单词和词组、课文注释，课文练习，阅读材料及其注释。

为了进一步提高阅读理解和翻译能力，从第15课开始，增加Structure Study，结合课文介绍科技英语中某些常见的语言结构；练习中增加与课文内容和语言深浅程度相仿的英译中部分；阅读材料后面还增加阅读理解练习。

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# Lesson One

## Text

### Main Parts of Buildings

Nearly all buildings are constructed of certain basic elements. For illustrative purposes, several of these are indicated on the cross section of a simple, one-story building, with basement, shown in Fig.1<sup>1</sup>.

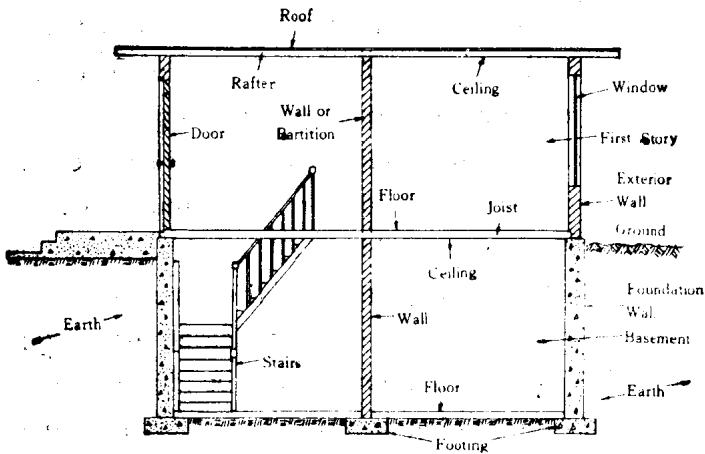


Fig.1. Vertical cross section of a one-story building with basement.

## STRUCTURE

To provide a flat, horizontal surface on which desired human activities can take place, all buildings contain at least one floor. In primitive buildings, the ground may be used as the floor. In better buildings, the floor may be a deck laid on the ground or supported above ground on structural members, such as the joist indicated in Fig.1.

To shelter the uppermost floor, buildings are topped with a roof, usually waterproofed to exclude precipitation<sup>2</sup>. Often, it is necessary to support the roof over the top floor on structural members, such as the rafter shown in Fig.1. For further protection against wind, rain, snow and extreme temperatures, the outer perimeter of the floors are enclosed with an exterior wall extending from ground to roof (see Fig. 1). If the building extends below the ground surface, for example, to provide a basement as does the structure in Fig. 1<sup>3</sup>, foundation walls must be furnished to carry the exterior walls and to keep the earth outside from collapsing into the basement. Unless the foundation walls can be seated on strong rock, some sort of support must be furnished to keep them from sinking into the soil. For this purpose, spread footings, such as those shown in Fig.1, are often used. These distribute the load of the walls over a large enough area that settlement of

the soil under the walls is inconsequential<sup>4</sup>.

In most buildings, spaces for various activities are enclosed, to separate them from each other, to form rooms. The enclosures are called interior walls or partitions.

## CIRCULATION

At least one partition or wall around a room has an opening to permit entry to or exit from the room. Such openings usually are equipped with a door, a panel that can be moved to fill the opening, to bar passage, or to clear the opening. Exterior walls also have openings equipped with doors, to permit entry to and exit from the building interior.

In multistory buildings, because there is one floor above another, stairs are provided, for normal or emergency use, to permit movement from one floor to the next. Sometimes, stairways with moving steps, driven by electric power, called escalators<sup>5</sup>, are installed to move people from floor to floor. In buildings with many floors, elevators, powered lifting devices, are provided for vertical transportation. In some buildings, such as parking garages and stadiums, sloping floors, or ramps, are used for movement between floors.

## New Words

1. illustrative[*'iləstrətɪv*]

a. 说明的, 能解明的

2. basement(ˈbeismənt)  
n. 底层, 地下室
3. primitive(ˈprɪmɪtɪv)  
a. 原始的, 旧式的
4. deck(dɛk) n. 覆盖物,  
平房盖, 地台
5. joist(dʒɔɪst) n. 梁,  
托梁
6. shelter(ˈʃeltə) n. 遮蔽  
物, 屏障; vt. & vi.  
遮蔽
7. waterproof(ˈwɔ:tə-  
pru:f) a. 防水的; vt.  
使不透水
8. exclude(ɪksˈklu:d) vt.  
排除, 隔断
9. precipitation(priˌsɪpɪ-  
teɪʃən) n. 雨量
10. enclosure(ɪnˈkloʊzə)  
n. 围墙, 围栏
11. partition(pɑːˈtɪʃən) n.  
隔板(墙), 间壁, 间墙
12. circulation(səˈkjʊˈleɪ-  
ʃən) n. 循环, 流通
13. entry(ˈentri) n. 入口,  
通路
14. exit(ˈeksɪt) n. 出口, 太  
平门
15. panel(ˈpænl) n. 嵌板,

## 区间

16. bar(bɑː) vt. 阻挡, 闭上,  
n. 钢筋, 杆
17. passage(ˈpæsiʒ) n. 通  
路, 出入口, 通过
18. ramp(ræmp) n. 斜坡
19. rafter(ˈra:ftə) n. 椽, 桷
20. perimeter(pəˈrɪmɪtə) n.  
周边, 周长
21. enclose(ɪnˈkloʊz) vt.  
(用墙) 围起, 包围
22. furnish(ˈfɜ:nɪʃ)  
vt. & vi. 装备
23. collapse(kəˈlæps) vi.  
倒塌, 塌陷
24. distribute(dɪsˈtrɪbjʊ:t)  
vt. 分配, 分派
25. footing(ˈfʊtɪŋ) n.  
基础, 墙脚
26. settlement(ˈsetlmənt)  
n. 下沉
27. inconsequential  
(ɪnkɒnsɪˈkwɛnʃəl)  
a. 微不足道的, 无关紧  
要的
28. multistory(ˈmʌltiˈstɔ:ri)  
a. 多层楼的
29. emergency  
(ɪˈmɛ:dʒənsi) n.  
紧急, 意外

- |                               |                                                    |
|-------------------------------|----------------------------------------------------|
| 30. stairway( 'steɪweɪ) n.    | 楼梯, 升降机                                            |
| 楼梯, 楼梯间                       |                                                    |
| 31. escalator( 'eskəleɪtə) n. | 升降梯, 自动扶梯                                          |
| 32. install( in' stɔ: l) vt.  | 安装, 装配                                             |
| 33. elevator( 'elɪveɪtə) n.   |                                                    |
|                               | 34. transportation<br>[træns'pɔ: 'teɪʃən]<br>n. 运输 |
|                               | 35. stadium( 'steɪdiəm)<br>n. 运动场, 赛跑场             |

## Phrases and Expressions

- |                                       |                                       |
|---------------------------------------|---------------------------------------|
| 1. cross section<br>断面, 断面图           | 6. be equipped with...<br>装备有...      |
| 2. one-story building<br>单层建筑         | 7. extreme temperatures<br>最大寒暑; 极限温度 |
| 3. multistory building<br>多层建筑        | 8. spread footing<br>扩展式基脚            |
| 4. structural member<br>结构构件          | 9. parking garage<br>停车库              |
| 5. be topped with...<br>盖有..., 以...盖顶 |                                       |

## Notes

- For illustrative purposes, ... shown in Fig. 1.  
    shown in Fig. 1 后置定语, 修饰 one-story building, 与 basement 无关, 故 with basement 前后有逗号。
- ..., usually waterproofed to exclude precipitation.  
    usually ... precipitation 过去分词短语, 是非限

制性后置定语，说明 roof，可改写成非限制性定语从句：

which is usually waterproofed to exclude precipitation.

3. ... to provide a basement as does the structure in Fig. 1, ...

连词 as 引出方式状语从句(象...那样...),说明 to provide, 此从句用倒装语序。动词不定式短语 to provide ... 是状语,说明 if 从句中的谓语动词 extends; to carry ... 和 to keep ... 是目的状语,说明主句中谓语动词 must be furnished。

4. These distribute the load of the walls over a large enough area that settlement of the soil under the walls is inconsequential. 这种扩展基脚把墙的荷载分布在足够大的面积上,墙下土壤的下沉就非常微小。

these 指上文 spread footings, 连词 that 引出结果状语从句,等于 so that ... 。从属连词 so that (以致,因此,从而)引出的结果状语从句,有时 so 可省去。例如:

- (1) Transistors are small in size and light in weight, so that they find wide application in the radio industry. 或 Transistors ... in weight that they find ... (注意 that 前不用逗号。)
- (2) The product contains little impurity that it is impossible to measure it by an ordinary

method.

- (3) The compressive stress of the beam is high enough that it is able to carry a heavy weight.
5. Sometimes, stairways with moving steps, driven by electric power, called escalators, are installed ... .  
driven by electric power (which are driven by ...) 和 called escalators (which are called escalators) 两个过去分词短语均为非限制性定语, 从不同角度来修饰 moving steps。课文中出现许多现在分词和过去分词(或其短语), 用作定语或状语, 例如:  
desired human activities; a desk laid on the ground or supported above ground on ...; such as the joist indicated in Fig.1; openings equipped with doors; moving steps; driven by electric power; powered lifting devices; sloping floors.  
(注意现在分词和过去分词在语态意义和用法上的区别。)

## Exercises

1. Answer the following questions according to the text:
- (1) What is the difference between the floor in primitive buildings and that in better buildings?
  - (2) What purpose are spread footings often used for?

- (3) What is the function of a door?
  - (4) What is the difference between escalators and elevators?
2. Choose the appropriate word or expression:
- (1) To provide a flat, horizontal surface (which, on which) desired human activities can take place, all buildings contain at least one floor.
  - (2) Unless the foundation walls can be seated on strong rock, some sort of support must be furnished (to keep them from sinking, to keep them sinking) into the soil.
  - (3) Exterior walls also have openings (installed with doors, equipped with doors).
  - (4) In multistory buildings, because there is (one floor above another, one floor after another), stairs are provided, for normal or emergency use, to permit movement from one floor to the next.
  - (5) A temporary partition is installed so that it may be easily moved to another location (when desire, when desired).
  - (6) Escalators are useful for moving large numbers of people between floors of a multistory building, with (little or not waiting time, little or no waiting time) for transportation.
3. Insert words that have been omitted:
- (1) In better buildings, the floor may be a deck



laid on the ground or supported \_\_\_\_\_ on structural members.

- (2) Often, it is necessary \_\_\_\_\_ the roof over the top floor on structural members, such as the rafter shown in Fig.1.
  - (3) At least one partition or wall around a room has an opening entry \_\_\_\_\_ or exit \_\_\_\_\_ the room.
  - (4) For further protection against wind, rain, snow and extreme temperatures, the out perimeter of the floors are enclosed with an exterior wall extending \_\_\_\_\_ ground \_\_\_\_\_ roof.
  - (5) For both roofs and walls, wind loads are an important design concern, but roofs usually also have to be designed \_\_\_\_\_, because people may have to walk on them.
  - (6) In general, a building requires basically a floor, or horizontal deck on which activities can be performed to serve the purpose of the building, and a roof to shelter the floor from \_\_\_\_\_.
4. Replace the words underlined with the words or phrases that are the nearest in meaning to them:

provided	serve	keep them apart
shown	vertical transportation	