

高等学校试用教材

英 语

第三册

(工科各专业通用类)

上海交通大学外语教研室主编

人民教育出版社

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编者说明

本书系供高等工科院校使用的《英语》第三册（工科各专业通用类）。全书共 22 课，分为两部分。第一部分 1 至 12 课，每课 6 学时；第二部分 13 至 22 课，每课 3 学时。共约需 102 学时学完。

本册课文均选自近几年出版的英美科技原著，以工科方面的普通科技文章为主，题材广泛，内容浅近。课文内出现生词 1,299 个，短语和词组 344 个。

第一部分的重点仍放在打好语言基础上面。每课都安排有词汇学习；1 至 6 课安排了六个归纳性的语法专题；7 至 12 课有十讲科技文章英译汉的基本知识和方法。每课结合课文、词汇学习、语法和翻译配有大量练习和一篇阅读材料。第二部分重点是阅读和理解，每课后也附有练习。

由于我们水平有限，教材中一定存在不少缺点、错误，希望批评指正。

参加本书编写工作的有：上海交通大学张祖鎔（主编）、凌渭民（顾问）、周孝芳、冯仪民、奚兆炎、郑志祥，同济大学孔繁人，哈尔滨工业大学夏定雄，西南交通大学孟琪。

参加本书审阅的单位有：华南工学院（主审）、南京邮电学院（主审）、北京工业学院、南京航空学院、中国矿业学院。

编者

一九七九年六月

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Lesson One

Text: Radar

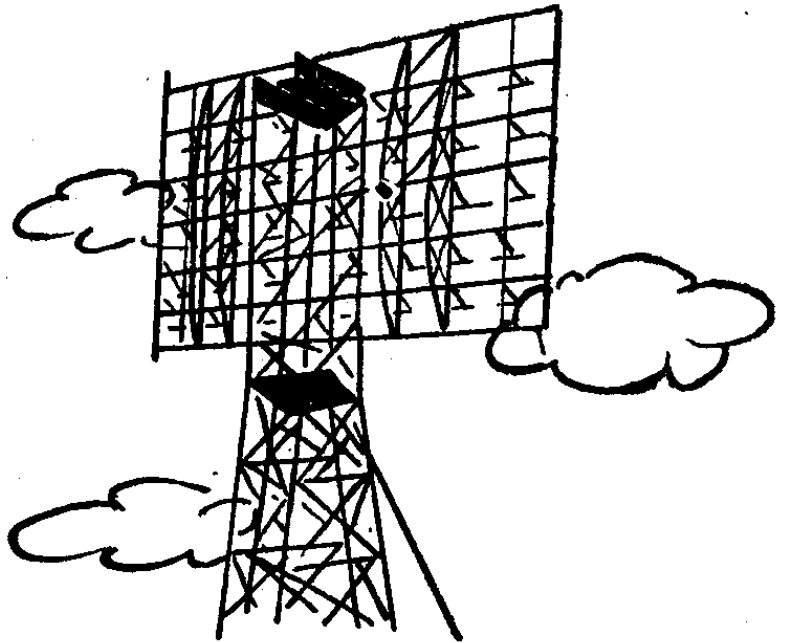
Word Study: refer; round; in addition, in addition to, besides, except

Grammar: Uses of "It"

Text

Radar

Television makes it possible for us to see a distant scene as a ^[transmitter] transmitter at the television studio telecasts the scene to our receiver. But by means of radar, the outlines of distant objects are shown on

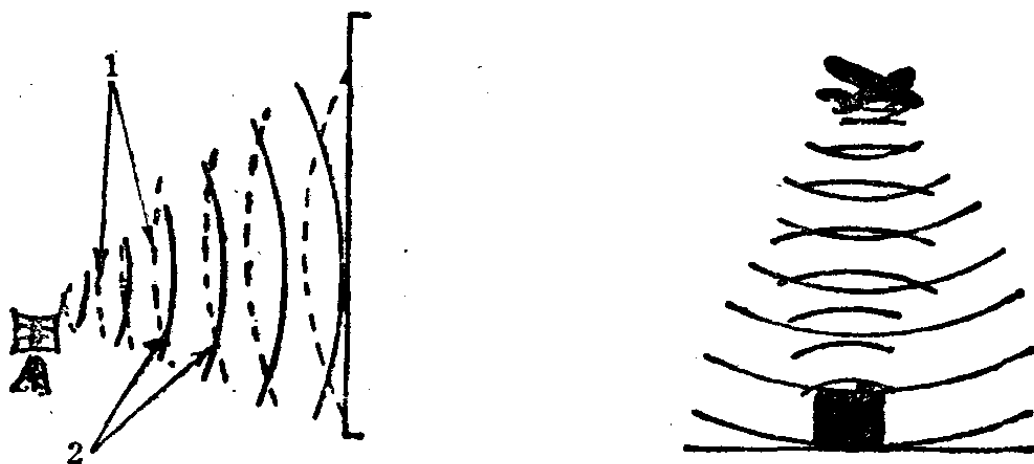


the viewing screen of the receiver, even though there is no distant transmitter to telecast the scene. Perhaps even more remarkable than that is radar's ability to "see" in the dark or through heavy clouds¹. In foggy weather, radar on ships at sea helps prevent collisions². The pilot in an airplane equipped with radar, flying at night, can see on the radar viewing screen distant buildings, or perhaps a dangerous

mountain peak that is miles ahead. At larger airports, the positions of all airplanes within a certain distance can be watched on a radar screen. Scientists also use radar to follow rockets during flight. And they can use radar to measure accurately the positions of the moon and planets.

The word radar stands for “radio detecting and ranging.” It is a system by means of which it is possible to detect the presence of objects and to determine their velocity, direction, and range (distance). In addition, some types of radar systems also make it possible to roughly analyze the composition of the detected objects.

Radar detection is most often accomplished by transmitting pulses of a relatively narrow beam of high-frequency electromagnetic waves over a region to be searched. A portion of the waves is then reflected from the object encountered, and forms what is referred to as the echo signal. This signal then returns to the radar system, where it is received and is usually indicated upon the screen of a cathode-ray type of tube known as the indicator. Since electromagnetic waves travel at the speed of light—about 186,000 miles a second, the



1. Radar sends out these waves; 2. and then waits for them to be reflected.

time period that elapses between the transmission of the signal and the reception of its echo can be used to determine the range of the target object. Suppose the waves take $1/1,000$ of a second³ to make a round trip to and from an object. They have travelled 186 miles. The distance to the object is half of this, or 93 miles.

New Words

1. radar	['reɪdə]	<i>n.</i>	雷达
2. distant	['dɪstənt]	<i>a.</i>	远的
3. scene	[si:n]	<i>n.</i>	景象; 场面
4. transmitter	[trænz'mɪtə]	<i>n.</i>	发射机
5. studio	['stju:diəu]	<i>n.</i>	播音室, 演播室
6. telecast	['telɪkɑ:st]	<i>vt.</i>	用电视播送
telecast 或 telecasted			
telecast 或 telecasted			
7. receiver	[ri'si:və]	<i>n.</i>	接收器
8. outline	['aʊt-lain]	<i>n.</i>	轮廓; 略图
		<i>vt.</i>	概括; 略述
9. screen	[skri:n]	<i>n.</i>	屏幕; 荧光屏
10. remarkable	[ri'mɑ:kəbl]	<i>a.</i>	异常的; 显著的
11. cloud	[klaʊd]	<i>n.</i>	云
12. foggy	['fɒgi]	<i>a.</i>	有雾的
13. weather	['weðə]	<i>n.</i>	天气
14. sea	[si:]	<i>n.</i>	海, 海洋
15. prevent	[pri'vent]	<i>vt.</i>	防止
16. collision	[kə'liʒən]	<i>n.</i>	碰撞
17. pilot	['pailət]	<i>n.</i>	飞行员

18. equip	[i'kwip]	vt.	装备
19. night	[nait]	n.	夜, 黑夜
20. mountain	['mauntin]	n.	山
21. peak	[pi:k]	n.	山峰; 顶端
		a.	最高的
22. ahead	[ə'hed]	a., ad.	在前
23. airport	['æə-pɔ:t]	n.	机场
24. range	[reindʒ]	n.	范围; 距离
		vt.	测距
25. presence	['prezns]	n.	存在
26. determine	[di'tə:min]	vt.	测定; 确定
27. velocity	[vi'lɔsiti]	n.	速度; 速率
28. addition	[ə'diʃən]	n.	加, 增加
29. roughly	['rʌfli]	ad.	粗略地
30. analyze, analyse	['ænləiz]	vt.	分析; 解析
31. detection	[di'tekʃən]	n.	探测, 检测; 检波
32. pulse	[pʌls]	n.	脉冲, 脉动
33. relatively	['relativli]	ad.	相对地; 比较地
34. region	['ri:dʒən]	n.	范围; 地区, 地带
35. search	[sə:tʃ]	vt., vi., n.	搜索; 探测; 研究
36. encounter	[in'kauntə]	vt.	遇到
37. refer	[ri'fə:]	vt.	指点
		vi.	提到; 涉及; 参考
38. echo	['ekəu]	n.	回波; 回声
39. indicate	['indikeit]	vt.	指出; 指示; 表明
40. cathode	['kæθəud]	n.	阴极
cathode-ray		n.	阴极射线
41. indicator	['indikeitə]	n.	指示器, 指示物

42. elapse	[i'læps]	vi.	(时间)过去, 消逝
43. target	['tɑ:git]	n.	目标; 对象
44. suppose	[sə'pəuz]	vt.	假定
45. trip	[trip]	n.	旅行; 旅程, 行程

Phrases and Expressions

1. by means of	用; 依靠
2. viewing screen	荧光屏
3. be equipped with	装备有
4. in addition	此外, 另外
5. be referred to as	称为; 被认为是
6. round trip	往返的旅程

Notes

1. Perhaps even more remarkable than that is radar's ability to "see" in the dark or through heavy clouds.

也许比这更令人惊奇的是雷达能在黑暗中或透过浓云“看到”东西。

这句的主语是 ability, 谓语是 is more remarkable, that 一词指的是上一句子的内容。

2. In foggy weather, radar on ships at sea helps prevent collisions.

船上的雷达可使船只在海上有雾的天气中避免碰撞。

help 后的不定式(做宾语)可省去 to。

3. 1/1,000 of a second 读作 one thousandth of a second.

Word Study

1. refer

- 1) *vt.* 把……归诸; 认为……起源于

The invention of gunpowder is referred to China.

火药是中国发明的。

- 2) *vt.* 指点; 使向……请教

He was referred to the information desk.

人家叫他到问讯处去问。

The teacher referred him to the appendix ([ə'pendiks]
附录).

教师叫他去查附录。

- 3) *vi.* 提到; 涉及; 查阅; 参考; 指

The book refers to electricity.

这本书讲有关电的问题。

Please refer to the vocabulary ([və'kæbjuləri] 词汇表).
请查阅总词汇表。

The numbers refer to pages.

数字系指页数。

- 4) refer to ... as 把……称为

Coal is usually referred to as a fossil fuel ([ˈfɒsl] [fjuəl]
矿物燃料).

煤通常被称为矿物燃料。

2. round

- 1) *a.* 来回的; 圆的

The electromagnetic waves took 1/1,000 of a second to
make a round trip to and from the object.

电磁波发射到该物体并返回花了千分之一秒时间。

Is the orbit round?

轨道是圆的吗?

2) *prep.* 围绕 (也可用 *around*)

The rocket is travelling round the earth.

火箭正在绕地球运行。

3) *ad.* 回转地; 循环地

The wheels are going round.

轮子在转着。

The machine runs all the year round.

这台机器全年运转。

8. *in addition, in addition to, besides, except*

1) *in addition (=besides)* 此外

By means of radar we can detect the presence of an object, and determine its direction and range.

In addition (besides), we can also identify ([ai'dentifai] 识别) its character.

我们可以用雷达探测物体的存在, 确定它的方向和距离。此外, 我们还能辨别它是什么。

2) *in addition to (=besides)* 除……之外, 又

In addition to (besides) learning English, he studies physics and other subjects.

他除了学英语外, 还学物理和其他课程。

3) *except prep.* 除……之外 (与 *besides* 不同)

We all went except him.

除他以外, 我们都去了。

试比较:

We all went besides him.

除他去以外, 我们大家也都去了。

Grammar

Uses of "It"

1. 用作代词

a) 代替上下文提到的事物

- 1) Laser-produced light is different from incoherent light. *It* is essentially of one frequency.

激光器产生的光与非相干光不同，它实质上只有一个频率。

- 2) When the term "engine" is used, *it* almost always means a heat engine.

使用“发动机”这一术语时，几乎总是指热机。

- 3) Before *it* can do any job for us, a computer must be given a program.

计算机必须先排列程序才能工作。

b) 代替上文提到的某件事，有时代替上面的一个句子

- 1) That object consists of silicon, but doesn't look *it*.
那物体由硅所组成，但看起来不象。

- 2) There is too much friction between these machine parts, and the operator knows *it*.

这些机器部件间摩擦太大，这一点操作者是清楚的。

- 3) Why are electrons more mobile than protons or neutrons? *It* is because they have lighter mass and less firm binding.

为什么电子比质子或中子活动性大？这是因为电子质量轻，结合力弱的缘故。

c) 表示时间、距离、天气等

- 1) What day is today? *It* is Monday.

今天星期几？今天星期一。

2) *It is only two miles to the broadcasting station.*

到广播电台只有两英里。

3) *It will snow* ([snəu] 下雪) *before long.*

很快就要下雪了。

d) 指心目中的人或事物

1) *Who is it? It's me.*

谁(敲门)啊？是我。

2) *That's it!*

就是这么回事！

3) *The vehicle could not even be started if it were not for the friction exerted between the tires and the road.*

若不是由于轮胎和路面之间有摩擦力，车辆甚至不能开动。

2. 用作引导词

a) 作形式主语 *it*在句中用作形式主语，而真正主语（通常为不定式短语、动名词短语或从句）放在谓语后面。

1) *It is easier to roll something over a surface than to slide it.*

在任一表面上滚动一个物体比滑动容易。（*it* 代替不定式短语）

2) *It will be useless learning a theory without practice.*

学习理论而不实践是没有用的。（*it* 代替动名词短语）

3) *It is known that rusting is a common example of corrosion.*

大家知道生锈是腐蚀的一个普通例子。（*it* 代替从句）

4) *It is required that the amount of waste energy in a machine should be reduced as much as possible.*