

高等学校教材

英语教程

(理工科用)

清华大学外语教研室 陆慈(主编) 王文佳 赵静鹏(副主编)

AN ENGLISH COURSE

FOR STUDENTS OF SCIENCE AND
ENGINEERING

BOOK

3

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for Students of Science and Engineering
Book 3

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第三册

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高等教育出版社

内 容 提 要

本书为高等院校理工科通用的基础阶段英语教科书，共分四册（每册配有教师参考书及录音磁带），适于已掌握初步语法知识和约450个基本词汇的学生使用。授课时数约需280学时。

本册共十二课及两个阶段练习。每课包括课文、词汇学习、语法、对话、阅读材料及练习等几项内容。从本册起增加了语法专题小结的内容。

本书曾在部分院校试用过，在此基础上进行了修改。

本书原由人民教育出版社出版。1983年3月9日，上级同意恢复“高等教育出版社”，本书今后改用高等教育出版社名义继续印行。

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高等教育出版社出版

新华书店北京发行所发行

北京新华印刷厂印装

开本850×1168 1/32 印张11 字数295,000

1981年12月第1版 1986年3月第6次印刷

印数 129,701—145,130

书号9010·0119 定价1.85元

前 言

本书为清华大学外语教研室英语教材编写组所编《英语教程》(理工科用)第三册。本册的编写原则及体例与第一、二册基本相同。全书共十二课及两个阶段练习。书中出现的新词约为 838 个(课文中 473 个),词组 160 个(课文中 106 个)。授课时数约为 70—76 学时。

每课包括课文、词汇学习、语法(第四、七两课未安排语法内容)、练习、对话、阅读材料及听力训练材料(附于教师参考书内)等几个部分内容。

课文及阅读材料 课文 12 篇,阅读材料 24 篇,多选自近年出版的英语科普读物及教科书等,文章体裁有科学小品、游记、传记、书信等;内容包括科技知识、科学幻想、科学家工作与生活等。每篇课文约 2,300 印刷符号,生词量 39 个左右,每课编有两篇阅读材料,每篇约 1,900 印刷符号,生词量 17 个左右。

词汇学习 讲解重点为本册出现的常用词及词组的用法,此外对学过的同义词、近义词也作了一定的比较和归纳。

语法 本册语法分为两部分:1—7 课的安排同一、二册,内容有现在完成进行时、非限定动词(动名词、分词、动词不定式)、同位语及同位语从句;第 8 课以后采用专题小结的形式,包括倒装语序(主谓倒装)及 *that, what, it, as* 的用法等。

对话 从本册起多与课文内容有关,篇幅略长于一、二册。

练习 仍有分课练习及阶段练习两种形式,要求及体例同第一、二册。

听力材料 每课编有 1—2 篇听力材料;供训练听力或听写用,附于教师参考书内。

本教材除课本外,还配有教师参考书和录音磁带各一套。

本册曾在部分院校试用过,在使用基础上又进行了修订。

参加第三册审稿的人员有:重庆大学韩其顺、何宗禄(主审)、北方交通大学李津、大连海运学院孔庆炎、浙江大学邵永真。上海交通大学凌渭民、山东大学金诗伯、北京大学杜秉正均对本书提出了书面意见。

来清华大学讲学的英国专家 Ms Margaret E. Garvie 对本书进行了审阅并提出了修改意见。美籍教师林伯那参加了本书第一稿的编写工作。本册插图绘制者为徐正。

本册教材编写过程中曾得到清华大学外语教研室一些同志的大力支持和协助,部分同志参加了部分编写工作,在此表示感谢。

由于时间紧迫,编者水平所限,书中缺点错误一定不少,欢迎批评指正。

1981年11月10日

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Lesson One

TEXT: Fresh Water Factories

WORD STUDY: I. cover

II. so, such

GRAMMAR: 动名词(2)

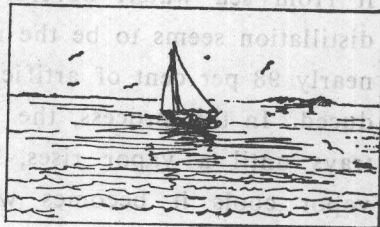
TEXT

Fresh Water Factories

Three-fourths¹ of the world is covered with water. But only about three per cent of this water is fresh. All the rest is salt water, and fills the oceans and seas.

Water, water everywhere

Nor² any drop to drink.



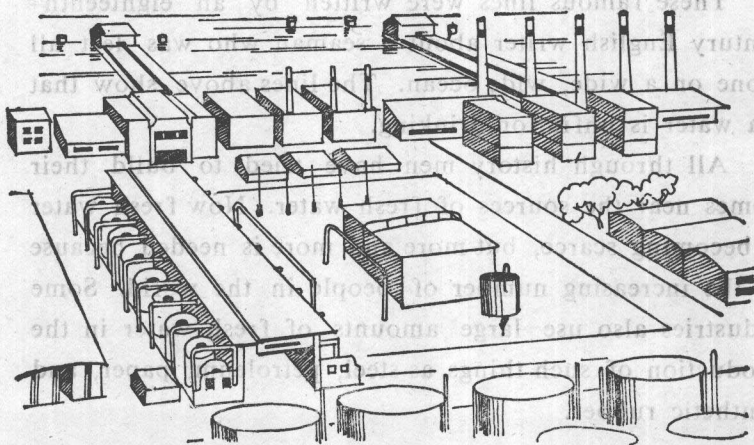
5

These famous lines were written by an eighteenth-century English writer about a seaman who was left all alone on a wide, wide ocean. The lines above show that sea water is unfit for drinking. 10

All through history men have tried to build their homes near the sources of fresh water. Now fresh water is becoming scarce, but more and more is needed because of the increasing number of people in the world. Some industries also use large amounts of fresh water in the production of such things as steel, petroleum, paper, and synthetic rubber. 15

Scientists estimate that the need for fresh water will
20 have doubled³ by the year 2000. If they are correct, we
must find new ways of saving it or producing it. Some
nations have worked on the problem and are already
sharing their information with others. They are trying
to keep their rivers from being polluted. Deep wells are
25 also being dug, and rain water is being collected in huge
artificial lakes. In one way or another, they hope to pro-
vide enough water to satisfy the needs of their people.

One important way to have fresh water is to make
it from sea water. Several processes can be used, but
30 distillation seems to be the most common one, by which
nearly 98 per cent of artificially desalted water is pro-
duced. In this process, the salty sea water is heated in
trays until a vapor rises, leaving the salt. When the
vapor cools it becomes water again, good enough to
35 drink.



After being desalted, sea water can be used not only for drinking but also for industry and irrigation. In places where the climate is dry, distillation factories are producing vast amounts of desalted water daily. And life has become easier for the people since the fresh water factories were built.

The great problem in desalting is not whether it works, but how much it costs. Building the plants is costly and so are the equipment and the fuel⁴ for the processes. Coal, petroleum, and electricity are the sources of heat now being used⁵, but scientists are looking for sources that will be cheaper. Nuclear energy is a possibility, and some factories get their heat from the sun.

One solution to the problem of fresh water may be plants with two purposes — making fresh water at the same time that⁶ they generate electricity. Power plants use oil, coal, or nuclear fuel to make the steam that runs the generators. As this steam finishes its work, there is still some heat left in it. In the dual-purpose plant this heat would be used for the distillation process. Perhaps such plants will provide man with ever-increasing amounts of fresh water at low cost.

NEW WORDS

1. fresh [freʃ] *a.* 新鲜的; (水)淡的
2. cover ['kʌvə] *vt.* 盖, 覆盖; 包括, 包含; 走过(路程)
n. 封面; 套子; 盖子
3. cent [sent] *n.* 分(货币单位); 分币; 百(percent 或 per cent 百分之..., ...%)

4. nor [nɔ:] *conj.* 也不; 不
5. seaman ['si:mən] ([复] seamen) *n.* 海员, 水手
6. wide [waɪd] *a.* 宽阔的; 广阔的, 广大的
7. scarce [skeəs] *a.* (一般作表语) 缺乏的, 不足的; 稀有的
8. increase [ɪn'kri:s] *v.* 增加, 增长
[ɪn'kri:s] *n.*
9. production [prə'dʌkʃən] *n.* 生产; 产量
10. petroleum [pi'trəʊljəm] *n.* 石油
11. rubber ['rʌbə] *n.* 橡胶; 橡皮
12. estimate ['estimeɪt] *vt.* 估计
13. double ['dʌbl] *a.* 两倍的
vi. 加倍, 增加一倍
14. correct [kə'rekt] *a.* 正确的
vt. 改正; 修改
15. save [seɪv] *vt.* 救; 节省; 储蓄
16. nation ['neɪʃən] *n.* 民族; 国家
17. share [ʃə] *vt.* 分享, 分担; 共同使用
18. well [wel] *n.* 井
19. dig [dɪg] *vt.* 挖, 掘; 发掘
vi. 挖掘; 发掘
(dug [dʌg], dug; digging)
20. collect [kə'lekt] *vt.* 收集; 搜集
21. lake [leɪk] *n.* 湖
22. provide [prə'vaɪd] *vt.* 提供; 装备; 供给 (*with*)
23. distillation [distɪ'leɪʃən] *n.* 蒸馏; 蒸馏法
~ factory 分馏厂
24. nearly ['niəli] *ad.* 差不多; 几乎
25. artificially [ɑ:ti'fɪʃəli] *ad.* 人工地
26. desalt [di'sɔ:lt] *vt.* 除去...的盐分; 脱盐
27. salty ['sɔ:lti] *a.* (含)盐的; 咸的
28. tray [treɪ] *n.* (浅)盘, 托盘

29. dry [drai] *a.* 干的, 干燥的
30. costly ['kɒstli] *a.* 昂贵的; 价值高的
31. coal [kəʊl] *n.* 煤
32. cheap [tʃi:p] *a.* 便宜的, 廉价的
33. nuclear ['nju:kliə] *a.* 原子核的; 原子能的
~ energy 核能
34. possibility [pəse'biliti] *n.* 可能, 可能性
35. solution [sə'lu:fən] *n.* 解决(办法); 解答 (*to*)
36. generate ['dʒenəreit] *vt.* 使发生, 产生(光、热、电等)
37. steam [sti:m] *n.* 蒸汽, 水蒸汽
38. generator ['dʒenəreitə] *n.* 发电机; 发生器
39. finish ['finiʃ] *vt.* 结束, 完毕; 完成
40. dual-purpose ['dju(:)əl'pə:pəs] *a.* 双重目的的, 两用的

PHRASES AND EXPRESSIONS

(be) covered with 为...所覆盖, 盖(充)满着

all alone 独个儿; 独立地

all through (指时间)从头到尾, 整个

more and more 越来越(多)

because of 因为, 由于

such ... as 象...这样的

share ... with 与...分享, 与...分担, 与...共用(共享)

keep ... from 使...免于

in one way or another 想方设法, 不管怎样

provide ... with 为...提供

1. three-fourths: “四分之三”。分数词是由基数词(代表分子)和序数词(代表分母)两部分合成的。当分子在二以上时, 代表分母的序数词要用复数。
如:

$\frac{1}{3}$ one-third

$\frac{1}{4}$ one-fourth (或 a (one) quarter)

$\frac{2}{3}$ two-thirds

$\frac{9}{10}$ nine-tenths

但是 $\frac{1}{2}$ 则为 a (one) half.

2. Nor ...: 这里 nor = and not.
3. will have doubled: “将增加一倍”。这是将来完成时, 由 “will (或 shall) + have + 过去分词” 构成, 表示将来某一时刻前将完成 (或发生) 的行为或动作。如:

How many lessons *will you have learned* by the end of this term?

到这学期末, 你们将学完多少课?

4. so are the equipment and the fuel ...: 这是一个由 so 开头的倒装句, 表示前面句中所说的那种情况也适用于本句。这种结构只用在肯定句中。可译为“(用于…) 的设备和燃料也是如此”。
5. ... now being used: 这是现在分词的被动形式, 由 “being + 过去分词” 构成, 在句中作 the sources of heat 的定语, 可译为“现正 (被) 利用的…”。
6. ... time that they generate electricity: that ... electricity 是定语从句, 修饰主句中的 time。在这里 that 相当于 at which 或 when, 可译为“在工厂发电的同时也制造了淡水。”

EXERCISES TO THE TEXT

A Answer the following questions:

1. How much of the earth's surface is covered with water?
2. What percentage (百分比) of this water is fresh water?
3. What do you understand by the famous lines you have read in the text?
4. Why is more and more fresh water needed year after year?
5. Name some industries which use large amounts of fresh water in their production.
6. How much more fresh water will be needed by the year

2000?

7. What information are some nations sharing with others?
8. Name the three ways in which some nations are trying to save or produce fresh water.
9. Which is the most common process for producing fresh water from sea water?
10. Describe the process of distillation.
11. Can desalted water be used for drinking? What else can it be used for?
12. How can people get fresh water from sea water at low cost?

B Translate the following phrases and expressions:

1. be covered with water
2. work on the problem all through his life
3. leave early because of the rain
4. such metals as iron and aluminum
5. share experiences with other technicians
6. keep the number of people from increasing
7. provide people with water fit for drinking
8. 增加大约三分之一
9. 在整个人类历史中
10. 收集越来越多的有关外层空间的资料
11. 由于地球的引力
12. 给工厂提供更多的电

C Choose among A, B, and C according to the text:

1. Most of the water covering the earth's surface is
 - A. salt water which can be used for drinking.
 - B. salt water which cannot be used for drinking.
 - C. fresh water which can be used for drinking.
2. Men have always tried to build their homes near sources of fresh water because
 - A. it is needed for generating electricity.

- B. it is necessary for life.
- C. it is not good enough to drink.
- 3. Scientists hope to provide more fresh water for people by
 - A. combining salt water with fresh water.
 - B. using salt water for irrigation.
 - C. not polluting it and producing more fresh water.
- 4. Distillation is a process by which
 - A. clean water is made from polluted water.
 - B. fresh water is made from sea water.
 - C. fresh water is desalted and made drinkable.
- 5. The great problem in desalting water is that
 - A. the equipment and fuel for the process cost too much.
 - B. the process doesn't work.
 - C. sea water is too scarce.
- 6. Fresh water can be produced at low cost
 - A. in any large plant.
 - B. in dual-purpose plants.
 - C. in plants using nuclear fuel only.

D Fill in the blanks with one of the words or phrases in the brackets:

1. Kuwait (科威特) is a very small country, but it is very rich
 ____ (because, because of, since) its oil wells.
2. No ____ a thing ____ (such ... as ..., such ... that ..., so ...
 that ...) a completely frictionless surface actually (确实) exists.
3. It is estimated that ____ (at, on, by) the year 2001 ninety per-
 cent of the world's population (人口) will be living in cities.
4. As population increases and industry grows, so does the need
 ____ (in, with, for) fresh water.
5. We have decided ____ (to go on, to work on, to turn on) the
 problem left by the earlier scientists.
6. Compared with the earth the moon is a small body, being a

little ____ (smaller than, less than, scarcer than) 2,200 miles in diameter (直径).

7. After ____ (distilling, being distilled, to distil), sea water is not salty at all and is good enough ____ (for drink, to drink, in drinking).
8. We must keep our rivers and lakes ____ (from polluting, from being polluted, to pollute).

E Fill in the blanks with "in", "with", "at" or "from" and translate the sentences into Chinese:

1. We can make fresh water out of salt water by separating the salt ____ the water.
2. We believe that ____ the future our scientists will make more and more progress ____ the direction of exploring unknown areas underwater.
3. Our knowledge of the facts of chemistry and physics, learnt ____ experiments, leaves no doubt that atoms and molecules do exist.
4. Heat is something which, if added (加) to a body, usually produces a rise ____ temperature.
5. It is a matter of common observation (观察) that satellites differ ____ appearance ____ stars.
6. The rain water collected ____ this way is stored ____ huge artificial lakes.
7. The distillation factory built nearly a year ago is not very far ____ the town.
8. People in mountainous regions try to save more fresh water ____ one way or another.
9. A plant ____ two purposes is called a dual-purpose plant.
10. This process of producing artificially desalted water will not be completed ____ a few hours.
11. We want to build some distillation factories producing fresh