

# AN ENGLISH READER FOR SELF-STUDY

*Book Three*

*(On Petro-chemistry)*

石油化工类

## 英语自学读物

下 册

曹 杰  
唐 寰  
刘 化  
编 溶  
亭

# 英语自学读物

(石油化工类)

下 册

曹杰 唐寰溶 刘化亭 编

烃加工出版社

## 内 容 简 介

本书内容分为两部分：第一部分是在上、中册的基础上，选入了几篇英语科技书籍的前言、杂志文章以及专利说明书等。对每篇文章都作了较为详尽的注释和分析，并对每一类文章作了扼要的说明。第二部分为科技英语翻译技巧概论。

本书可供具有一定英语基础知识的广大科技人员自学英语之用，也可做大专院校学生课外阅读用书。

## 英语自学读物

(石油化工类)

下 册

曹杰 唐寰溶 刘化亭 编

经加工出版社出版

地质印刷厂排版

海丰印刷厂印刷

新华书店北京发行所发行

787×1092毫米 32开本 6<sup>13</sup>/<sub>16</sub> 印张160 千字 印1—6,000

1988年8月北京第1版 1988年9月北京第1次印刷

ISBN 7-80043-047-2/TQ·036 定价：1.85元

# CONTENTS

## 目 录

### Part One

1. Science and the Future ..... (1)  
科学与未来
2. The Scientific Attitude ..... (12)  
科学态度
3. Chemical Engineering ..... (22)  
化学工程
4. Development of Petrochemistry ..... (31)  
石油化学的发展
5. Ethylene from NGL Feedstocks—Energy  
Systems Optimization ..... (42)  
由液化天然气生产乙烯——能量系统的优化
6. Preface to “Catalysis Series” ..... (51)  
《催化丛书》前言
7. The Role of Chance in Scientific Discovery (61)  
偶然性在科学发现中的作用
8. China in the Big League ..... (73)  
中国进入石油大国行列
9. Mechanism of Vaporization ..... (86)  
蒸发机理
10. Patent Specification ..... (96)

# 专利说明书

## Part Two

### 科技文章英译汉技巧

1. 词义选择 .....	(116)
2. 词义引伸 .....	(118)
3. 词类转换和成分转换 .....	(119)
4. 省略 .....	(121)
5. 补充 .....	(124)
6. 否定 .....	(127)
7. 新专业术语的译法 .....	(134)
8. 被动语态译法 .....	(136)
9. 数量增减 .....	(139)
10. 长句处理 .....	(146)
11. 练习 .....	(158)
参考译文 .....	(166)
总词组表 .....	(193)
总词汇表 .....	(200)

## Part One

### 1. Science and the Future

We have examined briefly some of the characteristics, methods, effects and problems of present-day science. At this stage it may be worth<sup>1</sup> considering a few of the ways in which<sup>2</sup> it may develop in the near future, i. e. the next decade or so.

To begin with<sup>3</sup>, we can expect<sup>4</sup> applied science to produce a vast (huge, enormous) increase in entirely new synthetic products of all kinds. These will range from light-weight, high-strength materials for use in many specialized branches of engineering, to drugs and chemicals with a greatly-increased selectivity which can be used in medicine and agriculture. However, in this latter case in particular, it may be predicated that<sup>5</sup> the wide-spread application and combination of new and more complex products will give rise to unexpected interreactions or side-effects. For this reason, greatly intensified programmes of research will be required in order to discover and eliminate

the harmful results of such combinations.

Another point is that the rapid expansion of industrialization throughout the world must inevitably lead to a progressive exhaustion of natural resources. If we wish to counterbalance these losses to some extent, we shall have to follow two main courses of action: (a) much greater efforts will have to be applied (devoted) to conservation, particularly of such items as soil, water, fuels and minerals; (b) more efficient methods of exploitation and utilization will have to be developed.

In the more developed countries, the automatization of industry (automation) will lead to a high degree of efficiency in the production of manufactured goods, and is likely to have far-reaching social effects. For instance, workers will need to be more highly trained and more flexible — they will probably have to be capable of changing (shifting) from one skilled job to another — and they will also have more free time, as they will work fewer hours per day. This in turn will necessitate a considerable expansion and re-orientation of education. Another result of automation should be to accelerate (speed up) the accumulation of surplus capital, which could then be made available for the purpose of assisting the emerging countries to solve some of the problems of underdeve-

development. It should, however, be borne in mind that this process itself might involve a chain of difficulties, in this case of a political nature<sup>6</sup>.

In general, the application—or misapplication—of science and technology in all fields is certain<sup>7</sup> to affect the structure of society as a whole. This will remain true whether we are dealing with the application of psychology to advertising propaganda, or engineering to the mass media of communication, or of medical science to the problems of overpopulation or old age<sup>8</sup>. This could lead to the development of a special discipline, whose job would be to estimate (evaluate) the social consequences of all major research and development (R and D) projects before they are put into large-scale operation<sup>9</sup>. It should here be pointed out that one of the most powerful trends in present-day science is for separate branches to converge and form inter-related groups of studies. If this trend continues, it may in fact lead to the emergence of an entirely new type of scientist, i. e. the multi-disciplinary co-ordinator.

As we can see, international co-operation has become greatly intensified in recent years, and this tendency will doubtless become even more strongly marked in the future. It is therefore likely that the scientific efforts of individual countries will



tend to be unified and co-ordinated by supra-national entities, and the more this is done, the greater the probability that<sup>10</sup> far more remarkable successes in science and technology will certainly be achieved.

National governments, also, will be brought in- to closer and closer contact with science. The state will have to provide an increasingly large proportion of the money spent on scientific investigation; it can therefore be expected to play an increasingly important role (part) in the planning of R and D programmes. It will also tend to determine one of the fundamental questions affecting science in the future, viz. percentage of the funds which are made available for basic research, and the percentage allotted to development projects. All these factors, and many other related circumstances could bring about (cause) a historic revolution in all fields of science.

### New words

- |                                |               |
|--------------------------------|---------------|
| 1. briefly['bri:flɪ]ad.        | 简短地, 概要地      |
| 2. worth[wɜ:ə]a.               | 值...的, 值得...的 |
| 3. decade['dekeɪd]n.           | 十年            |
| 4. vast[vɑ:st]a.               | 巨大的, 大量的      |
| 5. specialized['speʃəlaɪzd]a.  | 专门的, 专科的      |
| 6. selectivity[sɪlek'tɪvɪti]n. | 选择性           |
| 7. latter['læte]a.             | 后面的, (两者中)后者的 |

8. predicate[ˈpredɪkət]vt. 断言
9. wide-spread[ˈwaɪdspred]a. 分布广的, 普遍的
10. side-effect[ˈsaɪd ɪˈfekt]n. 副作用
11. intensify[ɪnˈtensɪfaɪ]vt. 加强, 加剧
12. harmful[ˈhɑ:mful]a. 有害的
13. industrialization[ɪnˈdʌstriəlɪzaɪzən]n. 工业化
14. inevitably[ɪnˈevɪtəbli]ad. 不可避免地
15. progressive[prəˈɡresɪv]a. 进步的, 逐渐的
16. exhaustion[ɪɡˈzɔ:stʃən]n. 耗尽, 枯竭
17. counter-balance[ˈkaʊntəˈbæləns]vt. 使平衡
18. devote[diˈvəʊt]vt. 把...奉献给, 把...专注于
19. conservation[kənseɪˈveɪʃən]n. 保住, 保护
20. utilization[ˈju:tilaɪˈzeɪʃən]n. 利用
21. automatization(əˈtəmətaɪˈzeɪʃən)n. 自动化
22. automation[ˈɔ:təˈmeɪʃən]n. 自动化
23. far-reaching[fɑ:ˈri:tʃɪŋ]a. 深远的
24. shift[ʃɪft]vt. 转移, 改变
25. necessitate[nɪˈsesɪteɪt]vt. 使...成为必要
26. re-orientation[ˈri:ɔ:riənˈteɪʃən]n. 重定方向(方针, 方位)
27. assist[əˈsɪst]vt. 帮助, 援助
28. emerge[ɪˈmə:dʒ]vi. 浮现, 出现
29. misapplication[ˈmɪsˈæplɪˈkeɪʃən]n. 误用, 滥用
30. psychology[saɪˈkɒlədʒi]n. 心理学
31. propaganda[ˈprɒpəˈɡændə]n. 宣传
32. advertize[ˈædvətaɪz]vt. & vi. 为...登广告
33. overpopulation[ˈəʊvəˈpɒpjʊˈleɪʃən]n. 人口过剩

34. discipline[/'disiplin]n.	纪律, 学科
35. evaluate[i/'vælju:ei]vt.	评价
36. converge[kən/'vɜ:dʒ]vi.	集中, 会聚
37. inter-related(intəri/'leitid)a.	相互联系的
38. emergence[i/'mɜ:dʒəns]n.	出现, 浮现
39. multi-disciplinary[/'mʌlti-'disiplinəri]a.	多学科的
40. co-ordinator[kəu'ɔ:dineitə]n.	协调人
41. doubtless[/'daʊtlis]ad.	无疑地
42. marked[mɑ:kt]a.	显著的, 受人注目的
43. co-ordinate[kəu'ɔ:dineit]vt.	协同, 协调
44. entity[/'entiti]n.	实体, 统一的
45. probability[/'prəbə'biliti]n.	可能性
46. viz. (通常读作namely)	也就是说, 即
47. fund[fʌnd]n.	资金
48. supra-national[/'sju:prə-'næʃənel]a.	超国家的
49. allot[ə'lot]vt.	分配, 配给

## Phrases and Expressions

1. to begin with	首先
2. range from...to...	范围由...到...
3. in particular	特别, 尤其
4. ... or so	大约, 上下
5. give rise to	引起, 产生, 导致
6. lead to	导致
7. to some extent	在某种程度上
8. for instance	例如
9. (be) capable of (+V-ing)	能够...
10. in turn	依次, 又, 再
11. speed up	加速
12. It should be borne in mind that...	应当记住

13. a chain of	一系列的(的), 一连串
14. in general	通常, 一般来说
15. as a whole	整个来说, 作为整体来看
16. deal with	研究, 讨论, 涉及
17. mass media	有广泛影响的宣传工具
18. put...into operation	使...运转, 实施
19. It should be pointed out that...	应当指出
20. bring...into contact with	使...与...相接触
21. tend to (do)	倾向于, 有助于, 往往
22. point of view	观点
23. a great deal of	很多, 大量的
24. bring about	引起, 产生

### Notes

1. At this stage it may be worth considering a few of..., 句中it为形式主语, 主语为动名词短语 considering a few of...。worth一词的用法如下:
  - a. 作名词用, 词义为“价值”。使用时的搭配关系是: 钱数 + worth of + 物品。例如: Please give me ten dollars' worth of sugar. (请给我十元钱的糖。) They bought one pound's worth of wax. (他买了一英磅的蜡烛)。
  - b. worth (表语) + 名词 (动名词或钱数), 意为“值得..., 值.....钱”。例如: This machine is worth 500 dollars. (这台机器价值500美元。) This problem is worth notice. (这个问题值得注意。) The work is worth the trouble. (做这件工作麻烦一些也是值得的)。
  - c. worth + one's while, 意思是“.....(人)在.....上花了

精力是值得的”。例如：The research work is worth our while.（我们在这项研究工作上花了时间是值得的）。

还有一种句型It is worth while + 动词短语（或不定式短语），意思也是“值得……”。例如：It is worth while discussing (to discuss) the problem again.（这个问题值得再讨论一下）。

另有一个形容词 worthy，做表语用，词义也是“值得……”。搭配关系有两种：worthy of + 名词；worthy + 不定式短语。例如：The cause is worthy of support.

（这项事业值得支持。）His behaviour is worthy to be praised（或of praise）。（他的行为值得〔应受〕表扬〔称赞〕）。

2. ...a few of the ways in which it may develop..., 句中way这个词的词义为“方式，方法”时，后接定语从句一般由in which引导。在从句中in which为方式状语，可用that代替，也可以省略，口语中尤其如此。例如：From the way (in which, that) the story is written, we know that it is an adventure story.（从这个故事的写作方法我们知道，这是一个冒险故事。）The way (in which, that) you are studying now, you'll make much progress,（照这样学下去，你将取得很大进步）。

此外，在direction（方向），manner（方法），distance（距离），times（倍数）等后接定语从句中作状语用的that, which, 或in which, through which也可以省略。例如：The direction (in which) a force is act-

ing can be changed. (力的作用方向是可以改变的。)  
The distance (that, which或through which) light travels in one second is 300,000 kilometers. (光每秒钟传播的距离为300,000公里)。

另外, 在when引导的定语从句中, when为从句中的时间状语, 相当于on which, at which或in which; 在where引导的定语从句中, where为从句的地点状语, 相当于at which, in which, on which, 它们都可以省略。例如: Come any time(at which) you like. (你什么时候来都可以。)  
It is time (at which) we started. (我们该动身了。)  
Help never stopped coming from the day (on which) she fell ill. (从她生病的那一天起一直有人来帮忙。)  
In the ten days(in which) I was there I learned a lot. (我留在那里的十天中学到了不少东西。)  
This is the place(at which) we met two weeks ago. (这就是我们两个星期前相遇的地方)。

在why引导的修饰reason的定语从句中, why为从句中的原因状语, 相当于for which, 也可以省略。例如: This is the reason I did that experiment. (这就是我做那个实验的理由)。

3. To begin with是插入语, 不属于句中成分。动词不定式短语做插入语使用的还有: to start with=to begin with (首先); to tell the truth (老实说); to be frank with you (老实对你说); to conclude (最后); to summarize (概括地说); to be specific (说得明确些); to be sure (诚然, 无疑); and now to be serious (现在谈正经的)。

4. ...we can expect applied science to produce...句中, expect + 宾语 + 不定式宾语补足语结构对下列动词均可适用: like, wish, hope, tell, call on (号召), ask, teach, invite, order, help, advise, allow, permit, cause, force, persuade, promise, mean(有意), prefer (希望), warn, lead (使), beg, command (命令), compel (迫使), intend, leave (让), remind, get (劝说), determine (决意), encourage (鼓励, 促使), hate, instruct (指示, 命令), oblige (要求), urge (怂恿), request (请求, 要求), require (要求, 吩咐), tempt (引诱), trouble, challenge (挑战, 挑动), set (使, 叫……做……, 决心)。例如:  
I've set myself to finish the job by the end of July.

(我已决心于七月底以前完成这项工作。) They warned us not to be late. (他们告诫我们不要迟到)。I'll leave you to attend to the matter. (我将让你处理这件事情。) What led you to think so? (是什么事情使你那么想的?) Please remind me to answer the letter. (请提醒我写回信。) Get him to see a doctor. (劝他去看医生吧!) I must trouble you to be quiet. (劳驾安静一点)。

5. ...it may be predicated that the wide-spread application...中 that 引导的为主语从句, it 为形式主语, 可译为“可以断言(的是)……”。
6. ...involve a chain of difficulties, in this case of a political nature. 句中的介词短语 of a political nature 是 difficulties 的定语, 但被介词短语 in this case 隔开。

in this case在这里的意思是“在这种情况下，假如是这样”，但翻译中可以灵活处理。

7. ...the application—or misapplication—...of...is certain to affect..., 句中的certain(必然的, 一定的, 确信的)为形容词, 做表语用, 后接动词不定式。名词(代词)+be+形容词+不定式结构中常用的形容词有: glad(高兴的), willing(愿意的, 乐意的), ready(快要……的, 乐意……的), eager(渴望的), sorry(遗憾, 难过), afraid(怕, 害怕), pleased(高兴的), determined(有决心的), able(能够), happy(高兴的, 愉快的), hard(难对付的, 费力的), difficult(困难的), easy(容易的), sure(一定, 肯定), free(自由的, 无约束的)等。例如: Sunshine is no easy to collect or store. (阳光不容易收集和贮存。) He is always ready to help others. (他始终乐于帮助别人。) Don't be eager to succeed. (不要急于求成。) This sound is difficult to pronounce. (这个音难发。) You are free to go or stay as you please (去留悉听尊便)。
8. ...whether we are dealing with the application of psychology..., or engineering to..., or of medical science to...or old age. 句中有三个or。前二个or连接三个并列名词psychology, engineering与medical science。这三个名词都是the application of...中of的介词宾语, 但medical science由于在句中离application of太远, 为避免误解, 又重复使用了of这个介词。第三个or则连接 overpopulation与old age 这两个并列成分, 它



们都作the problems of 中of的介词宾语。

9. ...before they are put into large-scale operation. 句中put... into operation意思是“把……投入生产，使……运转，将……实施”。put...into + n“使……处于某种状态”的这种结构搭配很多，如：put...into action（使……实行，把……付诸实践）；put...into production（将……投入生产）；put...into use（利用……）；put...into force（实行，实施）；put (bring) ...into effect（使……生效，实施）；put...in(to)practice（实施，实行）等。其它动词的类似搭配有：bring...into contact with（使……与……接触），keep...in mind（记住，不忘），keep...in view（把……放在心里，记住），get...going（使……运转，开动），set...in order（把……整理好），set...in motion（开动）等。
10. ...the probability that far more ...句中that引导同位语从句，修饰the probability。

## 2. The Scientific Attitude

Many scientists, from their earlier work, are capable of making good guesses as to the solution of a scientific problem they are working on. In the course of making new discoveries, they may use the trial-and-error method, they may draw on past experiences, or they may try to find out what others have discovered. They may design