

山东省高校统编教材

# 21世纪

# 高阶英语

| 理工类 |

● 山东省教育厅 主编 ●

石油大学出版社

# 21世纪 高阶英语

(理工类)



石油大学出版社

## 内 容 提 要

本书是大学三年级下半学期集约提高阶段理工类大学生使用的教材。本书共分为12个单元,内容涉及能源、环境保护、计算机科学、太空科学、经济、企业管理、社会科学、生物科学、土木工程、电子和机械工程、交通和通讯等方面。每单元分为3部分:第一部分为对话、问答、讨论、角色扮演等各种形式的口语活动。第二部分的阅读实践包括3篇文章。文章主要选自近几年的英语期刊杂志,体裁多样,有正式的书面语体的科技文章,也有口语体的专家讨论文章。其中第一篇为精读,文后配有理解练习和讨论题目。第二、三篇为泛读,各专业教师和学生可根据各自的特点确定阅读重点。第三部分为各种实用写作技巧的讲解与练习,先给出模仿的例子,再予以点评。此外,本教材中还配有翻译练习,便于学习者学习各种翻译技巧。

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# 序

随着知识经济和信息时代的到来,以及我国加入 WTO 的临近,外语作为一门重要的工具日益凸现出它的重要地位,外语教学改革已经引起广泛的社会关注,应当说,这方面大量广、学时多、周期长的重要基础课倾注了几代人的心血。特别是 20 世纪 80 年代中期,国家教委针对我国改革开放的新形势,对这门课程进行了大力度的调整,颁布了新的教学大纲,实行分级教学,举行全国四、六级统一考试。《大纲》实施十几年来,虽取得了突出的成绩,但与社会发展对人才的需求相比仍有不小的差距。无论从教学的现状还是从教学的结果来看,确实存有不少的问题亟待解决。我们注意到:1. 基础阶段的英语教学仍未能完全把提高学生的英语应用能力放在正确的位置。2. 基础阶段结束后,高年級的英语教学处于一种无序甚至中断的状态。其结果是既难于真正完成并巩固基础阶段的教学成果,也难以如期顺利地进入专业英语阶段的学习。显然,大学英语“上台阶”的困难较大,不利于教学改革的进一步深化。

我们认为,把大学英语这门课程整体向前推进的措施在于改革教学体制,对现有的大学英语教学体系进行调整,在大学三年级仍然要进行大学英语教学,设立三年级大学英语教学单位,设必修课,明确划归大学英语教学序列,开展基础和专业二者之间过渡阶段的英语教学。从实践中我们也发现基础英语和专业英语不能直接“对接”,二者之间必须建立“引桥”方可顺利地到达彼岸。于是,我们开展了



“大学英语三段式序列教学方案”的研究,即大学英语基础阶段(一、二年级)→大学英语提高阶段(三年级)→专业英语实践阶段(四年级)。应当说,三年级提高阶段的英语教学是大学英语教学序列中关键的一环,也是解决大学英语“四年不断线”的重要措施。

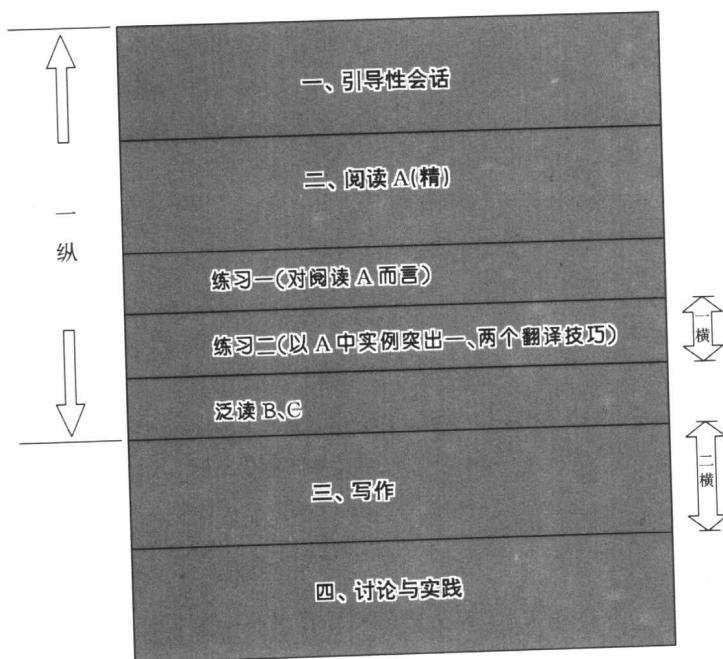
三年级的英语教学是承上启下的重要阶段。为帮助学生实现顺利过渡,我们把三年级提高阶段又细分为两个阶段:三年级上学期为粗放提高阶段,编写通用提高教材一部,供各专业学生共同使用,目的是巩固前期基础英语阶段的学习成果,并在下述三方面向前推进:1. 提高日常口语会话能力;2. 提高基础英语写作水平;3. 加强阅读能力培养。三年级下学期为集约提高阶段,编写分类教材四部,即人文类、经贸类、理工类、农水类各一部,供各专业及相近专业使用,目的是快速把学生带入各自专业的门坎内,并在下述四方面大强度进行训练:1. 英语情景会话;2. 高级英语写作;3. 翻译技巧;4. 准专业英语阅读。通过三年级的学习,以期使学生在有限的时间内,听、说、读、写、译等方面均获得较强的应用能力。

《21世纪高阶英语》就是为上述目的而编写的一套系列教材。教材编写的指导思想有三:1. 突出三个空间。教材给教师留有充分发挥的空间,避免教师照本宣科满堂灌;教材给学生留有充分思考的空间,避免学生沦为教材的奴隶;教材给学生留有充分实践的空间,希望学生动手查阅相关资料、积极主动地进行学习。2. 创立“特区”。教材的编写一切从实际出发,一切从效果出发,一切从提高学生应用能力出发。编写的教材力求有所突破。如写作三部曲:① 范文;② 点评;③ 摹写。翻译技巧则采取了实例归纳法。3. 指导教与学。编写的教材力图改变以教师为中心的教学模式,扭转学生“等、靠、要”的学习习惯。如引导性会话环节,教师课前必须充分进行设计,学生也必须查阅资料,认真准备,不然教学就难以进行。

集约提高阶段的四部教材结构相同,但内容各异。其单元结构示意图如下:



三年级提高教材单元结构示意图



每单元后都有“讨论与实践”，但这只是建议，不作具体设计，供教师根据各自教学及学生实际，结合内容自行处理。

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# Unit 1 Sources of Energy



Guided Speaking	Guided Reading	Translating Practice	Writing Practice
Dialogue: Old Classmates Meet	A. Petroleum B. Groundwater: the Invisible and Endangered Resource C. Coal	Translation of Conversion of Parts of Speech	Definition

## Part One Guided Speaking

### ◎ Dialogue

#### Old Classmates Meet

**Directions:** Jack (A) and John (B) were college classmates. They haven't seen each other for years. One day they ran into each other in the street.

Practice the dialogue with your partner.

A: Hi Jack, haven't seen you for long. How have you been these years?

B: Fine, thank you, and how nice to see you again!

A: Me too. What do you do now?

B: I work for CNPC, that is, China National Petroleum Corporation.

A: Oh, do you? What do you do exactly?

B: I'm a drilling engineer. And I'm in charge of the technical service of the drilling company.

A: Are you busy with your work?



- B: Yeah. You know, after a well has produced oil for several years, normally the oil production will drop off, so we are trying to find new oilfields in order to produce more oil.
- A: Do you think it will be good to your company for China to enter WTO?
- B: Yes. Although it is a challenge for us, I mean we'll face fierce competition with foreigners, we can learn the advanced technology and management from the foreigners. And we can go abroad to drill wells and tap the international market.
- A: That sounds great! By the way, I work for Standard Oil. I hope we can cooperate in the future.
- B: Good, I hope so. Look, I'd like to talk more with you, but I really have to run. I'm afraid I'm going to be late for an important meeting. Can I give you a call?
- A: Yeah, sure. Here is my new name card. Well, talk to you later then.
- B: So long.
- A: Bye.

## Part Two Guided Reading

### ◎ Passage A

#### Petroleum

By Isaac Asimov

1. Petroleum, like coal, is found in sedimentary rocks, and was probably formed from long-dead living organisms. The rocks in which it is found are almost always of ocean origin and the petroleum-forming organisms must have been ocean creatures rather than trees.
2. Instead of originating in accumulating woody matter, petroleum may be the product of the accumulating fatty matter of ocean organisms such as plankton, the myriads of single-celled creatures that float in the surface layers of the ocean.
3. The fat of living organisms consists of atom combinations that are chiefly made up of carbon and hydrogen atoms. It does not take much in the way of chemical change to turn that into petroleum. It is only necessary that the organisms settle down into the ooze underlying shallow arms of the ocean under conditions of oxygen shortage. Instead of decomposing and decaying, the fat accumulates, is trapped under further layers of ooze, undergoes minor rearrangements of atoms, and finally is petroleum.
4. Petroleum is lighter than water and, being liquid, tends to ooze upward through the porous rock that covers it. There are regions on Earth where some reaches the surface and the ancients spoke of pitch, bitumen, or asphalt. In ancient and medieval times, such petroleum seepages were more often looked on as medicines rather than as fuels.
5. Of course, the surface seepages are in very minor quantities. Petroleum stores, howev-



er, are sometimes overlain with nonporous rock. The petroleum seeping upward reaches that rock and then remains below it in a slowly accumulating pool. If a hole can be drilled through the rock overhead, the petroleum can move up through the hole. Sometimes the pressure on the pool is so great that the petroleum gushes high into the air. The first successful drilling was carried through in 1859 in Titusville, Pennsylvania, by Edwin Drake.

6. If one found the right spot (and prospectors eventually learned to recognize the kind of geologic formations that made it likely for a pool of trapped petroleum to exist underground) then it was easy to bring up the liquid material. It was much easier to do that than to send men underground to chip out chunks of solid coal. Once the petroleum was obtained, it could be moved overland through pipes, rather than in freight trains that had to be laboriously loaded and unloaded, as was the case with coal.

7. The convenience of obtaining and transporting petroleum encouraged its use. The petroleum could be distilled into separate fractions, each made up of molecules of a particular size. The smaller the molecules, the easier it was to evaporate the fraction.

8. Through the latter half of the nineteenth century, the most important fraction of petroleum was "kerosene," made up of middle-sized molecules that did not easily evaporate. Kerosene was used in lamps to give light.

9. Toward the end of the nineteenth century, however, engines were developed which were powered by the explosions of mixtures of air and inflammable vapors within their cylinders. The most convenient inflammable vapor was that derived from "gasoline," a petroleum fraction made up of small molecules and one that therefore vaporized easily.

10. Such "internal combustion engines" are more compact than earlier steam engines and can be made to start at a moment's notice, whereas steam engines require a waiting period while the water reserve warms to the boiling point.

11. As automobiles, trucks, buses, and aircraft of all sorts came into use, each with internal combustion engines, the demand for petroleum zoomed upward. Houses began to be heated by burning fuel oil rather than coal. Ships began to use oil; electricity began to be formed from the energy of burning oil.

12. In 1900, the energy derived from burning petroleum was only 4 percent that of coal. After World War II, the energy derived from burning the various fractions of petroleum exceeded that of coal, and petroleum is now the chief fuel powering the world's technology.

13. The greater convenience of petroleum as compared with coal is, however, balanced by the fact that petroleum exists on Earth in far smaller quantities than coal does. (This is not surprising, since the fatty substances from which petroleum was formed are far less common on Earth than the woody substances from which coal was formed.)

14. The total quantity of petroleum now thought to exist on Earth is about 14 trillion gallons. In weight that is only one-ninth as much as the total existing quantity of coal and, at the present moment, petroleum is being used up much more quickly. At the present rate of

use, the world's supply of petroleum may last for only thirty years or so.

15. There is another complication in the fact that petroleum is not nearly so evenly distributed as coal is. The major consumers of energy have enough local coal to keep going but are, however, seriously short of petroleum. The United States has 10 percent of the total petroleum reserves of the world in its own territory, and has been a major producer for decades. It still is, but its enormous consumption of petroleum products is now making it an oil importer, so that it is increasingly dependent on foreign nations for this vital resource. The Soviet Union has about as much petroleum as the United States, but it uses less, so it can be an exporter.

16. Nearly three-fifths of all known petroleum reserves on Earth is to be found in the territory of the various Arabic-speaking countries. Kuwait, for instance, which is a small nation at the head of the Persian Gulf, with an area only three-fourths that of Massachusetts and a population of about half a million, possesses about one-fifth of all the known petroleum reserves in the world.

17. The political problems this creates are already becoming crucial.

(From *The Beginning and the End*, 1977)

### New Words

sedimentary [ˌsedi'mentəri] *a.* 沉积的

long-dead [ˈlɒŋ-'ded] *a.* 长期死亡的, 死亡已久的

originate<sup>▲</sup> [ə'ridʒineit] *vt.* 发源, 发起

woody ['wudi] *a.* 木质的

fatty ['fæti] *a.* 脂肪质的, 多脂的

plankton ['plæŋktən] *n.* 浮游生物

myriad<sup>◆</sup> ['miriəd] *n. & a.* 极大数量(的), 无数的(的)

single-celled [ˈsiŋgl'seld] *a.* 单细胞的

ooze [u:z] *n.* (河底的)软泥, 淤泥 *vt.* 渗出, 慢慢流出

underlying<sup>▲</sup> [ˌʌndə'laɪɪŋ] *a.* 在下的

decompose [ˌdi:kəm'pəuz] *v.* 分解

rearrangement [ˌri:ə'reɪŋdʒmənt] *n.* 重新安排, 重新排列

porous ['pɔ:rəs] *a.* 多孔的, 有气孔的

bitumen ['bitjumin] *n.* 沥青

asphalt [ˈæsfælt] *n.* 沥青, 柏油

medieval<sup>▲</sup> [medi'i:vəl] *a.* 中世纪的, 古老的

seepage ['si:pɪdʒ] *n.* 渗出, 渗漏; 油苗

overlie [ˌəʊvə'laɪ] *v.* 覆盖在上面

nonporous [nɒn'pɔ:rəs] *a.* 无孔的

seep [si:p] *vi.* 渗出, 渗漏

gush<sup>◆</sup> [gʌʃ] *v.* 涌出, 喷出; 滔滔不绝地说

prospector [prəs'pektə] *n.* 勘探人员, 探矿者

geologic(al) [dʒiə'lɒdʒɪk(əl)] *a.* 地质学上的

chunk<sup>▲</sup> [tʃʌŋk] *n.* 大块, 厚片; 相当大的部分

overland [ˌəʊvə'lænd, ˌəʊvə'læne] *ad.* 陆上; 通过陆路; 横越大陆地

laboriously [lə'bɔ:riəsli] *ad.* 辛苦地, 费力地

distill<sup>▲</sup> [dis'tɪl] *vt.* 蒸馏, 用蒸馏法提取; 吸取, 提炼

evaporate<sup>▲</sup> [i'væpəreit] *v.* 蒸发, 挥发; 消失, 不存在

kerosene ['kerəsi:n] *n.* 煤油

cylinder<sup>▲</sup> ['silində] *n.* 圆桶, 圆柱体; 汽缸

vaporize [ˈveɪpəraɪz] *v.* 蒸发, 汽化

combustion [kəm'bʌstʃən] <i>n.</i> 燃烧	增
compact <sup>^</sup> [kəm'pækt] <i>a.</i> 紧密的, 坚实的; 紧凑的, 小巧的	trillion ['trɪljən] <i>num.</i> (美, 法) 万亿; (英, 德) 百万兆
zoom <sup>♦</sup> [zu:m] <i>v.</i> (价格、费用等) 陡直上升, 激增	complication <sup>^</sup> [ˌkɒmplɪ'keɪʃən] <i>n.</i> 复杂(情况)

### Expressions

settle down 沉积下来; 定居	internal combustion engine 内燃机
shallow arms 浅湾	at a moment's notice 一会儿, 顷刻
carry through 进行到底, 完成	boiling point 沸点
chip out 削出, 铲出	not nearly 远远不, 根本不

### Proper Nouns

Edwin Drake ['edwin dreɪk] (人名) 埃德温·德雷克	the Persian Gulf [ðə'pɜːʃən'gʌlf] (地名) 波斯湾
The Soviet Union [ðə'səʊviət'juːnjən] (国名) 苏联	Massachusetts [ˌmæsə'truːsɪts] (美国) 马萨诸塞州, 麻省
Kuwait [kə'weɪt] (国名) 科威特	

### Exercises

**Ex. 1 Directions:** Read the text and then answer the following questions in English briefly.

- How is petroleum formed from long-dead living organisms?
- Where can petroleum be found?
- Compared with coal, what advantage(s) does petroleum have?
- Since the end of the 19th century petroleum has been more and more widely used. Please explain the reason(s) for this.
- Compared with coal, what disadvantages does petroleum have?
- What problems will be created because of the disadvantages that petroleum has?

**Ex. 2 Directions:** Please go to the library or surf the Internet to get the information or materials on the following topics:

- The prospect of petroleum industry
- What chief fuel powering the world technology will be
- Other sources of energy



**◎ Passage B****Groundwater: The Invisible and Endangered Resource**

1. More than half of the water used for drinking, washing and irrigating crops comes from under the ground. This subterranean water is known as groundwater.
2. It is generally taken for granted that the groundwater drawn from wells is omnipresent and will always be available and clean and safe to drink. But experts are reporting that groundwater sources can dry up through overuse, or become contaminated as a result of pollution, poor sanitation or salt water intrusion.
3. This “invisible resource” —as groundwater was described by the United Nations for its 1998 observance of World Day for Water—is slowly emerging in political, economic and personal affairs.
4. With demand growing and supply presenting greater difficulties, groundwater is on the way to becoming a boom business. The World Bank estimates that the developing countries will require investments totaling \$ 600 billion to repair and improve water systems. Of the investments that are actually made, a substantial amount will be devoted to extracting and piping groundwater, primarily for agricultural use and secondarily for industry and household consumption. With a trend towards privatization of public services, it can be expected that a growing portion of investments in water will come from the private sector; requirements that governments privatize water utilities are already being written into the terms of multilateral loans. One consequence of growing privatization may be that access to water will not be regarded as a right, but as a function of economic markets.
5. Groundwater, which in its natural state is more protected than surface water, is the preferred source of drinking water for cities. But pressure is being placed on groundwater resources lying close to urban areas by exploding populations, as the portion of the world’s people residing in cities balloons from 31 per cent in 1955 to a projected 50 per cent in 2005. And there is also the pressure of pollution. Cities in the industrialized world are spending hundreds of millions of dollars to purchase land lying above groundwater sources and to keep it in a natural state, in order to protect aquifers from contamination. In the developing countries, where urban population growth is outstripping sewage systems, the biggest problem is untreated human waste.
6. Alongside the problems of public groundwater sources is the increased consumption of privately bottled water, most of which is designated as spring water, i. e. groundwater. Consumption of bottled water in the United States, for instance, has risen from virtually nil in the 1950s to 843 million gallons in 1984 and 2.95 billion gallons in 1997. But drinking bottled water is not just a health fad for the middle classes. In developing countries, water pipes rarely extend to the poorer neighbourhoods, and residents have no choice but to pay

