高级英语教程

《研究生系列英语》之一

ADVANCED ENGLISH TEXT

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序　　言

《高级英语教程》是《研究考系列英语》之一，是一本适合我国理工科研究生使用的高级英语教科书。它是中国科技大学研究生院(中国科学院研究生院)中外教师多年来教学研究工作的结晶。作为中国科学院京区各所研究生的主要教材，此书从1978年以来的八年中，曾经在大约5500名研究生中使用，并经过多次修改、补充，才成为现在的教材。

编写本教材的指导思想是在我国传统精读课本的基础上吸收国外一些先进的英语教学思想，力图编写出适合我国研究生使用的教材。本书的主要特点是：

一、课文材料比较新，题材比较广泛。

本教程共包括课文14篇，绝大部分教材均选自当代的报刊。科学、技术与社会是主要选择的题材。因为这些文章的内容不囿于某一狭窄的专业领域，而引人兴趣，发人深思，对开拓理工科研究生思路，使自然科学、技术与社会科学联系有很大好处。另一个原因是这些文章具有一定深度与难度，对提高研究生英语阅读的实际能力是极为重要的。本书的编者一向认为无论理、工、农、医或社会科学方面的研究生，如欲真正学一门外语，必需跳出自己专业的狭小天地，广泛涉猎多种题材的读物，扩大自己的知识面及对背景材料的了解，从而最终达到外语的习得。

二、本书的练习有一定的数量，又有一定的难度。

本教材既包括了我国传统精读教材的词汇练习，又包括了阅读技能的训练练习。每篇课文除附有注释，向读者提供文章及作者的背景材料外，还包括：

1.阅读理解练习：目的在于加深对文章及作者观点的理解。

2.词汇练习：形式多种多样。除了进一步巩固、深化教育部公布的大学英语教学大纲中规定的5180基础词汇外，重点为以5000以上的次常用词汇的练习为主，力图做到既与大学的英语教学大纲衔接，又起到巩固、加深、扩大词汇的作用。

3.综合填空练习：目的在于提高实际运用语法及词汇的能力。

4.阅读技能练习：包括抓住中心思想，掌握主要论点，摄取信息，略读扫描，思维联贯，猜词，预见等等，其目的在于熟练掌握阅读的策略和技能。

5.写作练习：包括写提纲、摘要、大意等写作练习。

三、本书另附练习答案(已经编写较详尽的教师手册)，仅供教师备课时参考。

四、本书是《研究生系列英语》之一。该系列英语还包括《英语结构习题集》、《英语词汇习题集》、《研究生英语资格试题集》、《英语阅读技巧训练》等，每种教材均另附答案。以上各书将在今年内陆续出版。

本书由于编写时间比较短，更由于编者的水平有限，错误是难免的，欢迎广大读者及教师们批评指正。

本书编者特别感谢在科技大学研究生院任教多年的杜根博士。杜根博士不仅为本书推荐了优秀的课文，提供了背景材料，而且还对不少课的阅读理解练习进行了修改、润色。

曾在本校任教的美国教师范雅卿、周西蒙以及本院教师吴桂林等同志都参加了本书的部分工作。本书的编者对这些同志也致以谢意。

编　　者　1985.12.

再 版 前 言

《研究生高级英语教程》自 1986 年 5 月发行以来，由於需要量较大，第一版已经供不应求。此次利用再版机会，对原书不足之处进行了部分修改和增删。主要改动包括：

一、修改了原教材中经使用后发现的错误或不够准确的地方；

二、删改了词汇练习中一些过份细微的同义词；

三、对课文中出现的词组增加了适量的练习；

四、按由易到难、由浅入深的原则重新编排了课文次序；

五、为了使课文题材更广泛，并使教师在使用中有选择余地，特增加了两篇新课文。一篇是介绍动物的特异功能的文章(第六课：On Clever Animals)，另一篇是美国获奖并被评为最佳的短篇小说(第十课：A Worn Path)；

六、删掉了原书某些课文中晦涩难懂的哲理部份，使课文更易於为理工科学生接受；

新版适当增大了字体，以便于教师和学生使用。此外，本书另编有较详尽的教师手册，供教师辅助教学之用。教师手册中包括本书编写的理论及指导原则，较详细的课时安排，课文背景，每课应处理的词汇及词组，语言难点，可供教师使用的提问或讨论题，学生对课文的反映，对练习的进一步解释，每课课文的段落大意，难句的中文参考译文等。凡需要此教师手册者可与北京市玉泉路甲 19 号科大研究生院外语部联系函购。

本书虽经初步修改，时间仍较急促，再加上编者水平有限，错误仍在所难免。欢迎使用本书的教师、研究生以及广大读者批评指正。

于振中　李　佩

1987 年春节前夕

CONTENTS

Lesson One

Basic Research and Graduate Education

Basic research is the cutting of paths through the unknown. As most of us know today, it is the pacesetter for technology and the raw material of invention.

Because basic research is aimed at understanding rather than at practical results, the layman sometimes assumes that it is entirely abstract and theoretical, and that only when it becomes a matter of industrial development does it "come down to earth." This is a false notion, and its falsity becomes increasingly clear with time. Indeed, one striking characteristic of our scientific age has been the disappearance of the barriers between pure and applied science. Not only are we finding important technological application for mathematical and scientific knowledge which was formerly thought of as abstract and "useless," but the advance of technology has both generated new problems in pure science and provided new tools with which such science can be advanced more effectively. The development of the techniques and hardware for radar during the war, for example, gave the physicist and the chemist a new and refined tool for investigating the properties of solids and of chemical compounds. Conversely, the extensive use of this tool in basic science has opened the way to entirely new techniques in electronics. Similarly, the development of large-scale electronic computers has led engineers to find practical uses for some of the most abstruse and "impractical" branches of higher mathematics, while the understanding of the techniques of using computers has, on the other hand, given us deeper insight into some aspects of the behavior of complex biological and social systems. Basic and applied science today are distinguished less by method and content than by motivation. Very often, indeed, the same man can be both "pure scientist" and "engineer," as he works on different problems or on different parts of one problem.

By the word scientist we mean someone who is fit to take part in basic research, to learn without a teacher, to discover and attack significant problems not yet solved, to show the nature of this process to others--someone, in short, who is equipped to spend a lifetime in the advancement of science, to the best of his ability.

The process of graduate education and the process of basic research belong together at every possible level. The two kinds of activity reinforce each other in a great variety of ways, and each is weakened when carried on without the other.

If graduate education aims at making scientists, and if inquiry into what is unknown is the moving principle of all science, it is not surprising that experience of this kind of inquiry should be essential in graduate education. Clearly such experience is best obtained in association with others who have had it or are having it themselves. The apprentice scientist learns best when he learns in an atmosphere of active research work. In all forms of scientific work a man's effectiveness is multiplied when he has that depth of understanding of his subject that comes only with the experience of working at a research problem.

The process of graduate education depends on "research," just as much as upon "teaching"--indeed, the two are essentially inseparable--and there is a radical error in trying to think of them as different or opposite forms of activity. From the point of view of the

graduate student, the teaching and the research of his professor are, at the crucial point which defines the whole, united. What he learns is not opposite from research; it is research. Of course many necessary parts of a scientist's education have little to do with research, and obviously, also, for many professors there must be a gap between teaching a standard graduate course and working at one's own problems. Moreover, many good teachers--men who keep up with the new work in their subject and communicate its meaning clearly to their students--are not themselves engaged in research. Yet we insist on the central point: the would-be scientist must learn what it is like to do science, and this, which is research, is the most important thing he can be "taught."

So far we have been arguing that graduate education requires the experience of basic research. What happens when we turn the matter around, and ask whether basic research must be carried on only in conjunction with graduate education? Here the answer cannot be so categorical. Though our general conviction is that a fundamentally reciprocal relation does exist, it is clear that research of outstanding quality is often carried on in isolation from teaching and indeed quite outside the universities. While the great teacher of graduate students is almost invariably a research man too, there are many notable scientists who have as little as possible to do with teaching. First-rate industrial and governmental laboratories with commitments to specific programs are necessarily separated in some measure from teaching of a conventional sort. Thus, basic research can be, and is, carried on without much connection to graduate education.

Yet in the long run it is dangerous to separate research in any field entirely from education. The pool of graduate students in our universities is the pool from which the scientist of the future must come. These young people do not easily study what is not taught; they do not often learn the meaning of research which does not exist in their environment. A scientific field which has no research life in the universities is at a grave disadvantage in recruiting new members. As learning and teaching require research, so research, in the end, cannot be sustained without teaching. Hence it is always important for research installations to maintain effective connections with students.

There is also the fact that in the wider sense all first-rate research laboratories are permeated by an atmosphere of learning. Successful research can be defined, indeed, as learning what has not been taught before, and a good scientist is constantly learning from others. We believe that research, learning, and teaching are deeply connected processes which should be kept together wherever possible.

Notes

This article is a section of the reports prepared by Dr. Glenn T.Seaborg, chairman of the Panel on Basic Research and Graduation of the President's Science Advisory Committee, published in SCIENCE (Vol. 132, No. 3442; Dec. 16, 1960), a weekly put out by the American Association for the Advancement of Science. Dr. Seaborg was then chancellor of the University of California, Berkeley.

Comprehension Exercises

A. Choose the best answer to complete the statements.

1. According to the author, basic research
   a. is aimed at understanding and, therefore, is basically abstract and theoretical.
   b. has opened the way to entirely new techniques in electronics.
   c. gives us deeper insight into some aspects of the behavior of complex biological and social systems.
   d. is sometimes hard to distinguish from applied science.
2. Our scientific age is characterized by
   a. the vanishing of barriers between pure and applied sciences.
   b. the disappearance of differences between pure and applied sciences.
   c. practical applications of some of the most abstract and impractical branches of science.
   d. the invention of new and refined tools for investigation and research.
3. According to the author, a scientist is one
   a. who is able to participate in basic research and work on the unsolved problems.
   b. who is able to develop his abilities in solving problems.
   c. who is competent to show the process of research to others.
   d. who is capable of doing all above-mentioned.
4. In discussing the relationship between research and graduate education the author holds
   a. that graduate education depends on research just as much as upon teaching.
   b. that graduate students learn better when they work at a research problem.
   c. that graduate education requires the experience of basic research.
   d. that graduate education and research are inseparable and depend on each other.
5. An apprentice scientist learns better in an atmosphere of research work because
   a. graduate education requires the experience of basic research.
   b. many professors are engaged in research and this is the most important thing they can teach.
   c. when a person is doing research he has a better understanding of the subject he is learning and thus, the effectiveness is increased.
   d. the process of graduate education and the process of basic research belong together at every possible level.
6. Which of the following statements is true?
   a. Basic research must be carried out only in conjunction with graduate education.
   b. The great teacher of graduate students is invariably a research man.
   c. Many scientists carry out their research in isolation from teaching.
   d. First-rate industrial and governmental laboratories are not separated from teaching.

B. Determining the meaning of the underlined words in the context.

7. In this context, a pacesetter is a ... (L. 2)
   a. person who decides how fast one should go.
   b. person who serves as a model for others to follow.
   c. person who takes the lead.
   d. a thing that paves the way.
8. ... a new and refined tool for investigating ... (L. 13)
   a. clean
   b. elegant
   c. delicate
   d. purified
9. ... some of the most abstruse and "impractical" ... (L. 16)
   a. abstract
   b. absolute
   c. absurd
   d. hard to comprehend
10. ... and there is a radical error ... (L. 37)
   a. fundamental
   b. severe, extreme
   c. revolutionary
   d. rapid
11. ... at the crucial point ... (L. 39)
   a. serious
   b. significant
   c. memorable
   d. critical
12. ... the answer cannot be so categorical. (L. 51)
   a. conditional
   b. dubious
   c. explicit
   d. vague
13. ... a fundamental reciprocal relation ... (L. 51)
   a. supplementary
   b. unilateral
   c. unconditional
   d. two-way
14. ... with commitments to specific programs ... (L. 56)
   a. responsibilities
   b. confinement
   c. agreement
   d. promise
15. The pool of graduate students ... (L. 60)
   a. pond, lake
   b. group, association
   c. resources, funds
   d. a supply of equipment, trained personnel

16. ... are permeated by an atmosphere ... (L. 68)
    a. permitted
    b. spread over
    c. affected every part of
    d. penetrated

Vocabulary Exercises

A. Fill in the blanks using your knowledge about prefix, suffix and stem.

1. If a person is a bilingual, he speaks _____.
2. If phon means sound, then euphonious means _____.
3. If toxin means poison, what is the word meaning something against poison? _____.
4. Change the word content to mean no longer happy. _____.
5. The opposite of include is _____.
6. If sect means to cut or divide, what does bisect mean? _____.
7. What is the opposite of approve? _____.
8. What is the opposite of dissent? _____.
9. What is the opposite of opponent? _____.
10. If gen refers to types or kinds, what does heterogeneous mean? _____.

B. For each word in column I, find a synonym or antonym in column II.

I		II	
11.	specialized	a.	forbidden
12.	prohibited	b.	critical
13.	restricted	c.	worry
14.	limits	d.	unilateral
15.	require	e.	compel
16.	anxiety	f.	obligation
17.	penalties	g.	general
18.	radical	h.	endure
19.	categorical	i.	rewards
20.	sustain	j.	boundaries
21.	commitment	k.	inessential
22.	reciprocal	l.	ambiguous
23.	crucial	m.	consistently
24.	inhabited	n.	open
25.	invariably	o.	peopled

C. In each item, select the answer that gives the best definition of the underlined word.

26. Raw sugar must be processed and refined before we can eat it.
a. cleaned
c. delicate
b. elegant
d. purified

27. He could explain an abstruse theory in very simple terms.
a. a puzzling
c. a hard to remember
b. a difficult to understand
d. an important

28. A pleasant fragrance of roses permeated her living room.
a. came out of
c. spread throughout
b. got into
d. kept from escaping

29. I can attest to his reliability, for I have known him for many years.
a. compete
c. test
b. adore
d. bear witness to

30. Many of his arguments have no pertinence to the subject under discussion.
a. importance
c. value
b. necessity
d. relevance

31. A four-day meeting was called to assess Washington's withdrawal from the United Nations Educational, Scientific and Cultural Organization.
a. discuss
c. appraise
b. evaluate
d. condemn

32. Mr.Haydon worked as a barber and spent seven years in the Air Force with combat experience in Germany in World War II.
a. fighting
c. unforgettable
b. terrible
d. complex

33. The stroke left him with serious difficulties in speaking and with an impaired memory for events.
a. forgotten
c. harmful
b. weakened
d. impartial

34. Henry, a retired subway motorman who moved into Riverton the year it was completed, commented, "This place is jammed."
a. beautiful
c. crowded
b. spacious
d. uncontaminated

35. The Prime Minister, ordering a fresh probe into charges that France was involved in mining the protest ship Rainbow Warrior, said it would be unacceptable if secret agents sank a ship with loss of life.
a. finding
c. investigation
b. engraving
d. excavation

D. Choose answer a, b, c, or d that best fills in the blank.

36. Since I am only a _____, I cannot presume to interpret this scholarly work.
a. votary
c. bigot
b. layman
d. egoist

37. Albert Einstein's theory of relativity is too _____ to follow.
a. abstruse
c. dull
b. puzzling
d. simple

38. Betty's _____ to become a lawyer does not seem to be very strong.
a. supposition
c. presumption
b. proposal
d. motivation

39. The businessman was only interested in the _____ news.
a. medical
c. crucial
b. financial
d. economic

40. Any culture, which, in the interests of efficiency or in the name of some political or religious dogma, seeks to standardize the human individual, _____ an outrage against man's biological nature.
a. commits
c. makes
b. performs
d. does

41. The cultural traditions of the invaders slowly _____ the practices of the island dwellers.
a. spread
c. permeated
b. perpetuated
d. kept from forgetting

42. They have been _____ with a serious crime.
a. accused
c. condemned
b. convicted
d. charged.

43. All too _____ it was time to go back to school after the glorious summer holidays.
a. often
c. soon
b. fast
d. late

44. Because of the strong sun Mrs. William's new dining-room curtains _____ from dark blue to grey within a year.
a. faded
c. paled
b. fainted
d. bleached

45. The curator of the Museum was most _____ and let me actually examine the ancient manuscript.
a. favourable
c. obliging
b. gratifying
d. pleasing

E. Complete each of the following sentences with an appropriate word form of one of the verbs below. Note there are more words than necessary.

appear	assume	generate
aim	inspire	dispose
addict	identify	obscure
heal	obtain	boost
fit	consume	apply

46. Susan _____ that it was a very cold day when she looked out the window and saw people wearing heavy coats, hats and gloves.
47. Mr. Peters _____ to become a bank president by the time he is 45.
48. I intend _____ for a driver's license soon.
49. His great height _____ him for team games.

50. These books can only be read when special permission is _____ from the head librarian.
51. A wound _____ when the injured place recovers its normal healthy condition and new skin forms over it and covers it.
52. The suspect tried to _____ the case against him.
53. She is _____ to reading detective stories.
54. The new assembly line _____ production by 20 percent.
55. The champion _____ of the other fighter by knocking him out in the second round.

F. Form a word from the word in capitals given at the end of each sentence to fill each space.

56. Your _____ that your history teacher gives you low marks because she dislikes you is unjustified. (ASSUME)
57. One feature of modern society is the rapid _____ of many conventions. (APPEAR)
58. We recognize Charlie Chaplin in films by his _____ behavioral patterns as well as by his physical _____. (CHARACTER)
59. Although the manufacturer claimed that the fabric was _____ by water, the rain soaked through it within a few minutes. (PERMEATE)
60. The lost child walked around _____ (AIM)
61. Use the _____ to put the iodine on your foot. (APPLY)
62. That man has several _____ marks on his arm from being burned. (IDENTIFY)
63. During a recession, the _____ of luxury items decreases. (CONSUME)
64. I hate to _____ you, but your chances of winning are nil. (ILLUSION)

Cloze Test

Directions: Fill each space in the following passage with only ONE word.

California's Giants (I)

Sequoia National Park in California is the home of the oldest and biggest living things. They are the famous "big trees", the giant sequoias.

At (1), reports of these (2) were thought to be tall (3). Imagine trees thirty feet thick (4) the bottom and three hundred feet (5)! And three thousand years old, maybe (6). It was unbelievable.

In (7), there are about seventy groves of (8) sequoias. Thirty-two different groves (9) within Sequoia National Park. The (10), the Giant Forest, contains the big trees in every (11) of growth, from tiny seedlings to sky-piercing (12).

The giant sequoia (13) seeds every year. It blooms (14) winter, when the ground is (15) with snow. The flowers give (16) to bright green cones (17) tiny seeds. Millions of these (18) fall to the ground (19) autumn. If they fall on a grass-or trash-covered forest (20), they cannot sprout. (21) if they fall on freshly turned (22) they will begin to grow the (23) spring. Many birds and animals like to (24) the tender green sprouts, so that (25) a few of the sequoia seedlings manage to live through the first year.

Reading Skills Practice

Finding Main Idea in a Passage

Passage One

Directions: Read the following passage and then think of a good title for it.

The welcome which a Kurdish tribe gives a guest is not only hearty, but it is a bloody affair as well. On the outskirts of the village a delegation of men hold a steer ready for the slaughter, and, as the guest approaches, one of the tribesmen stabs the animal in the throat. There is the last agonizing moment when the steer lets loose a bloody, gurgling bellow before it is dragged across the road, leaving a stream of blood in its wake. The guest then steps across the blood. The executioner saws vigorously on the neck of the beast until the head is severed and then heaves it to the side of the road. The khan, or other ranking host, turns to the guest, takes him by the hand, and says in a loud, ringing voice, "May that happen to the heads of all your enemies."

The new arrival is now a member of the tribe. He has special privileges, too. Each tribesman would give his life to defend him. Every man, woman, and child will cater to his needs and show him every courtesy. People of the Western world also want to receive their guests cordially, but the Western version of hospitality certainly seems far less extreme.

Passage Two

Directions: Skim the content by reading the first sentence of every paragraph and try to think of a title. Then read the whole passage to check whether the title you have given is a good one.

1. The moon shares the general east-to-west daily motion of the sun and stars. But the moon slips eastward against the background of the stars faster than the sun does. Each night the moon rises nearly an hour later. When the moon rises in the east at sunset (opposite the sun in the sky) it is bright and shows a full disk (full moon). Each day thereafter, it rises later and appears less round, waning finally to a thin crescent low in the dawn sky. After about fourteen days, when the moon is passing near the sun in the sky and rises with it, we cannot see the noon at all (New moon). After the new moon, we first see the moon as a thin crescent low in the western sky at sunset. As the moon rapidly moves further eastward from the sun, the moon's crescent, fattens to a half disk and then within another week goes on to full moon again. After each full moon the cycle repeats.

2. As early as 380 B.C. the Greek philosopher, Plato recognized that the phases of the moon could be explained by thinking of the moon as a globe reflecting sunlight and moving around the earth in about 29 days. Because the moon appears so big and moves so rapidly compared to the stars, people in early times assumed the moon to be quite close to the earth.

3. The moon's path around the sky is close to the yearly path of the sun; that is, the moon is always near the ecliptic. But the moon's path is tipped a bit with respect to the sun's path; if it were not, the moon would come exactly in front of the sun at every new moon (causing an eclipse of the

sun) and be exactly opposite the sun at every full moon, and move into the earth's shadow (causing an eclipse of the moon).

4. The motions of the moon have been studied with great care for centuries, partly because of interest in predicting eclipses, and have been found to be very complicated. The precise prediction of the moon's position is an exacting test for any theory of motion in the hevens, The best title for Passage Two is _____.

Writing Exercise

Directions: Write an outline of the main points based on Lesson One.

Lesson Two

Our Brain's Successor

Today man stands at the summit of creation on the earth. What does the future hold in store for this extraordinary animal? Perhaps he will become extinct, as Australopithecus did before him; more than 90 percent of all the forms of life that have existed on the earth have become extinct. Or he may survive unchanged into the distant future, a living fossil like the oyster. This fate may already be upon us, for the human body has changed very little in the past million years, and the human brain has not changed, at least in gross size, in the past 100,000 years. The organization of the brain may have improved in that period, but the amount of information and wiring that can be crammed into a cranium of fixed size is limited. The fact that the brain is no longer expanding, after a million years of explosive growth, suggests that the story of human evolution may be over.

This does not mean that the evolution of intelligence is over. It is reasonable to assume that human beings are not the last word in the evolution of intelligence on the earth, but only the rootstock out of which a new and higher form of life will evolve, to surpass our achievements as we have surpassed those of Australopithecus and Homo erectus. The history of life supports this conclusion, for it shows a seemingly inexorable trend toward greater intelligence in the higher animals. Apparently, among all traits of a living organism, none has greater survival value than the flexible, innovative response to changing conditions that we call intelligence. It seems unlikely that this trend in evolution, which has persisted for more than 100 million years, should suddenly stop at the particular level of mental achievement that we call "human." If the past is any guide to the future, mankind is destined to have a still more intelligent successor.

What form will our successor take? Judging by the history of man, the new form of life will resemble the old, but have a considerably larger brain. If this forecast is correct, the next species of intelligent life on the earth will be a creature like ourselves but with a very large cranium and puny muscles.

Certain trends in modern technology suggest a very different vision of the future. Powerful forces of evolution are at work—cultural rather than biological—that could lead to a more exotic form of intelligent life, evolved out of man, but the child of his brain rather than his loins.

According to this vision, the new form of life is being created today in the laboratory of the computer scientist. It is an artificial life, made out of silicon chips rather than neurons; yet it thinks, remembers, learns by experience and responds to stimuli. Its thinking is still simple; it is not very creative; but it is evolving at a lightning pace.

The suggestion seems absurd; how can the richness of human thought be compared to the mechanical thinking of a computer? It is true that the electronic brains of today are very primitive compared with the human brain; in fact, they have little going for them except a prodigious memory and some math skills. Yet the newest models can be wired up to follow an argument, ask pertinent questions, and write pleasing poetry and music. They can also carry