

# ENGLISH READING COURSE

for Speed and Comprehension

## BOOK THREE

# 英语阅读教程

(修订本)

第三册

■ 原编著/吴景惠 ■ 修订者/刘希彦/吴景惠



吉林大学出版社

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## 前 言

在这个信息时代,存在着三大矛盾:一是无限的书籍和有限的阅读时间的矛盾;二是呈几何基数激增的信息和人们原有接收能力的矛盾;三是大量新知识和人们理解能力的矛盾。要解决这些矛盾,现代读者(包括政府工作人员,企事业管理人员,科技人员,大学生和研究生)都必须具备快速阅读能力和高度理解能力。为了培养他们的阅读能力,在过去的二十多年里,在全世界范围内掀起一个讲授阅读课的热潮,快速阅读法已成为不少国家的时髦课。我国讲授英语虽已有二百多年的历史,但是对英语阅读能力,尤其是对快速阅读能力的开发和训练还是在最近几年才开始的。

几年来,我国选派了大批本科生、研究生及进修生出国留学深造,他们大都必须通过某种形式的英语考试。在这些试题中,无论是 TOEFL, 还是 GRE, 阅读理解和词汇都占有相当大的比例。

在国外试题影响下,我国英语测试正发生深刻变革。英语专业四、六级统考,非专业英语四、六级统考,高等院校本科生、研究生入学英语考试,EPT, VST, 阅读理解都是不可缺少的内容,并占有相当大的比例。

为了训练学生的快速阅读能力,培养他们对各种测试手段的应试能力,阅读课已成为我国大专院校英语专业学生的骨干课,也是非专业英语学生提高阅读能力,扩大词汇量,增加文化背景知识的重要途径。特别是实行英语专业四、六级统考,非专业英语四、六级统考以来,阅读课倍受重视。主要原因就是在这些试卷中,阅读理解和词汇约占 65%(包括完形填空和综合改错)。

为适应大专院校英语教学的需要,我们于 1985 年编写了这套《英语阅读教程》。《教程》一问世就受到了读者的热烈欢迎,出版的当年,第一次印刷的二万套便销售一空。迄今,《教程》已重版了五次,总印数已突破五万大关。

为了使《教程》更加适应教学改革的需要,我们在原书的基础上进行了第一次修订。在修订过程中,我们特别注重科学性。为了防止在排序过程中的随意性和片面性,特意编制程序,用电脑进行了单词的选择和查频工作。根据文章的长短、文章中出现的不同单词数和低频词这三个参数来判断文章的难易。此外我们还考虑了语法现象、文化知识、语义、习语、俚语等诸多方面。这就使《教程》的排序更趋合理和科学。

修订后的《教程》,每册三十个单元。每个单元由课文(Passage for Comprehension)、生词和习语(Words and Expressions)、理解练习(Comprehension)、词汇练习(Vocabulary)、掠读和寻读(Skimming and Scanning)、完形填空(Cloze Test)和综合改错(Proofreading)共七部分组成。课文长 1,300—1,500 单词,生词量约为 2—3%,生词用中、英文双语注释,并注音标。每篇课文配有理解练习和词汇练习各十个。练习均为多项选择式。掠读和寻读练习短文长 300—500 词,生词量不超过 2%,并配有理解练习题二个。完形填空和综合改错系根据全国统考试卷设计,均配有练习 20 个。这样,每个单元有练习 62 个,每册有练习 1,860 个,全书(一、二、三、四册)共有练习 7,440 个。为了方便老师教学,书中各项练习的答案不再附在书后,而是以活页形式随书发出。

本书可作为大学英语专业泛读教材,也可作为理工科学生通过四、六级统考练习用书,还可供各类中、高级英语培训班及有一定英语基础的人使用。

本书由刘希彦同志主持修订,由吴景惠、刘希彦合作完成。

作 者

一九九五年八月

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## Unit 1

### PASSAGE FOR COMPREHENSION

# Unsolved Mystery—THE SEA

by Peter Freuchen

Starting Time: Minutes \_\_\_\_\_ Seconds \_\_\_\_\_

**I** really began to learn about the seven seas in Greenland, although I was born and raised in a little port, Nykobing Falster, in Denmark. I had known ships and sailors and stories about famous voyages all my life, but when I sat through the long, dark nights of the arctic winters at Thule for years, for many years indeed, I discovered the wondrous ocean in my imagination.

There was little enough of it that we could see, for all winter long the ice stretched out for interminable miles and miles in front of us, firm and solid.

As soon as the sun showed over the horizon in spring, we had a wide outlook; but it took months for the ice to break up, and during that time it was tantalizing to look out from the shore at huge icebergs drifting south in endless procession. When a fellow is sitting alone for months as I was, he lets his imagination fly freely. In my mind I followed those big fragments of icecap as they floated eternally to their doom. I thought of them sailing so majestically south until they were off Newfoundland; I knew they would turn east there and meet the warm waters of the Gulf Stream where they would die, swiftly and inevitably, for the Gulf Stream can finish off even a large berg in twenty-four hours.

Well, I wondered, where does the Gulf Stream originate, and why and how does it happen to be exactly where it is? On the sails of my imagination still, I followed this mighty current to where it is born in the Caribbean. That took me to the waters of other currents, and to studying the winds and tides that play such an important part in the mysterious movements of the sea. Why, I asked myself, do the winds blow so steadily in one place, and so capriciously in another, and not at all somewhere else: why should the tide rise as high as a house on one coast and hardly at all on another? Why twice a day in most of the world but in some places only once? And

where, after all, does all that water come from in the first place?

Little by little it dawned upon me that there is a logical connection between all the things that happen in that immense connected body of salted water that covers 71 per cent of the surface of the earth. The amazing fact is that the ripple from a pebble thrown by a child could actually be traced all over the seven seas if only we had scientific instruments delicate enough to record them. There is, indeed, a grand pattern in the wonderful phenomena of the ocean. This pattern regulates the ocean's storms and calms, deeps and shallows, the animals and plants that inhabit it, the birds flying over it, its myriad islands, volcanoes, and caves, and even the men and ships moving about on its surface.

Since those long, dark, lonely winters in Thule, I never have stopped wondering and learning about the seven seas. Why seven? This was one of the first questions I asked myself, since I could easily name seven times seven that are called seas on the maps. For every answer I found there were two new questions, because the majesty and the mystery of the seas are inexhaustible, and much lies beyond the comprehension of man. Immense in their extent, irresistible in their power, unconquerable in their precision, the seas have inspired men through all ages with feelings of awe and mysticism and fear. Man feels himself weak and impotent when he faces their might, for no one can halt the tides or fight the currents or control the waves. But everywhere men feel a compulsion to pit their strength against the sea, to explore it and wander about on it, to use it for their own ends and wrest its wealth from it.

Primitive people worshipped the sea out of fear of what it might do to them, and in gratitude for the treasures which it washed up for them on its beaches. Even in the days of Columbus, the sailors were deathly afraid of "monsters" in the sea that might rise at any moment from the mysterious depths and devour them. The Romans believed the sea to be a dark kingdom ruled by a god whom they called Neptune. Today we know a great deal more than was known in ancient times; yet we still stand on the shore, humble in our insignificance as we face the waves rolling in from a turbulent ocean.

When gales whip the trees and rattle our windows, or snow piles up outside so that no one wants to go for a walk, landlubbers snug and safe in warm rooms are likely to tell each other how sorry they feel for all the poor sailors on a night like this. But, underneath the sympathetic talk, they actually feel a little wistful envy of the men who brave the elements—winds, rain, snow, cold, and storms—upon the restless water. Then on a fine day the sight of foreign seamen, or of tall ships from far away, or of an exotic bit of merchandise from halfway round the world, or even an oddly shaped scrap of driftwood cast up on the beach gives any of us a pang of jealousy of the men who move about over the sea, viewing the wonders of the deep. And it must be confessed that these incredible wonders lose nothing in the seamen's telling



them, for their words seem to set fire to the imagination and give shore-bound people a sense of excitement that they can never find on land.

The fascinating stories these fellows bring us are the stuff our dreams are made of. Perhaps we may not believe the salty tales for a minute, but in our secret minds we live them, and we are all great heroes in these dreams. We experience countless exciting adventures, and we drift endlessly in hot dead calms while all on board except us are in despair. We baffle the most violent storms, conquer the bravest fighters, foil the most blood-thirsty pirates, bring home the richest cargoes from the most amazing voyages, wrestle with monsters, dive for sunken gold, see the strangest sights. Then, in the end, science takes over from imagination—and behold, there are even greater wonders than we dreamed.

Finishing Time: Minutes \_\_\_\_\_ Seconds \_\_\_\_\_

## WORDS AND EXPRESSIONS

1. Greenland ['gri:nlənd] *n.* the world's largest island 格陵兰岛 (属丹麦)
2. Denmark ['denma:k] *n.* a N. European country 丹麦
3. Thule ['θju:li] *n.* the north end of the world 极北地区, 世界尽头
4. wondrous ['wʌndrəs] *adj.* (*arch. or liter.*) wonderful (古, 文) 奇妙的; 壮观的; 令人惊叹的
5. little enough of *phr.* hardly anything 少之又少; 几乎没有
6. interminable [in'tə:minəbl] *adj.* endless; tedious because too long 漫长的; 无休止的; 没有尽头的
7. outlook ['autluk] *n.* view on which one looks out 景色; 视野
8. tantalizing ['tæntəlaɪzɪŋ] *adj.* raising hopes, keeping just out of reach sth. that sb. desires 逗惹人的; 撩拨人的; 让人心痒难耐的
9. iceberg ['aɪsbæg] *n.* mass of ice moving in the sea 冰山
10. fragment ['frægmənt] *n.* part broken off 断片; 碎块
11. icecap ['aɪskæp] *n.* permanent covering of ice sloping down on all sides from a high center 永久冰峰; (文中) 冰山露出水面的部分
12. eternally [i'tə:nəli] *adv.* throughout all time; for ever 永恒地; 不停地; 亘古不变地
13. doom [du:m] *n.* ruin; death 毁灭; 死亡; 劫数
14. majestically [mə'dʒestikəli] *adv.* with or showing majesty 高贵地; 庄严地
15. Newfoundland ['nju:fənd'lænd] *n.* an island off E. Canada, cap. St. John's 纽芬兰 (自一九四九成为加拿大一省)
16. capriciously [kə'prɪʃəsli] *adv.* often changing; irregularly 变化多端地; 靠不住
17. dawn upon sb. that *phr.* become gradually clear to sb. that 渐渐领悟到; 逐渐明白

18. logical ['lɒdʒikəl] *adj.* in accordance with the rules of logic 合乎逻辑的
19. ripple ['ripl] *n.* small movement on the surface of water 荡漾的微波; 涟漪; 波纹
20. pebble ['pebl] *n.* small stone made smooth and round by being rolled in water (in a stream, etc.) 鹅卵石
21. myriad ['miriəd] *n.* very great number (of) 极大量
22. inexhaustible [inɪg'zɔːstəbl] *adj.* that can not be exhausted 取之不竭的; 无穷无尽的
23. irresistible [iri'zɪstəbl] *adj.* too strong or too convincing, etc., to be resisted 无可抵挡的; 按捺不住的; 忍不住的
24. mysticism ['mɪstɪsɪzəm] *n.* beliefs, experiences, of a mystic 神秘主义; 神秘; 谜
25. impotent ['ɪmpətənt] *adj.* lacking sufficient strength, unable to act 软弱无能的; 无能为力的
26. might [maɪt] *n.* great power; strength 力量; 强大威力
27. compulsion [kəm 'pʌljən] *n.* compelling or being compelled or forced 被迫; 强迫; 身不由己
28. monster ['mɒnstə] *n.* abnormally misshapen animal; person or thing of extraordinary size, shape 大而畸形之动物; 怪物
29. devour [di'vaʊə] *v.* eat hungrily or greedily 吞掉
30. insignificance [ɪnsɪg 'nɪfɪkəns] *n.* valuelessness; unimportance 无足轻重; 渺小
31. turbulent ['tɜːbjʊlənt] *adj.* violent; disorderly; uncontrolled 狂烈的; 汹涌的
32. rattle ['rætl] *v.* (cause to) make short, sharp sounds quickly 砰啪作响
33. landlubber ['lændlʌbə] *n.* (used by sailors to describe a) person not accustomed to the sea and ships (海员语) “旱鸭子”
34. snug [snʌg] *adj.* sheltered from wind and cold; warm and comfortable 不受风寒侵袭的; 温暖舒适的
35. brave [breɪv] *v.* face, go into, meet, without showing fear 无畏地面对; 勇敢地搏斗
36. exotic [ɪg'zɒtɪk] *adj.* of foreign country; of strange form or characteristics 奇异的; 充满外国风情的
37. merchandise ['mɜːtʃəndaɪz] *n.* trade goods 货物; 商品
38. scrap [skræp] *n.* small piece (usu. unwanted) 碎屑; 零星物品
39. pang [pæŋ] *n.* sharp, sudden feeling of pain 突然的剧痛; 痛楚
40. incredible [ɪn 'kredəbl] *adj.* that cannot be believed; surprising 令人难以置信的
41. salty ['sɒltɪ] *adj.* containing, tasting of salt; sounding like sea life; piquant 咸的; 充满海洋气息的; 引人遐思的
42. foil [fɔɪl] *v.* baffle; defeat 挫败; 制服
43. pirate ['paɪərɪt] *n.* sea-robber 海上大盗
44. cargo ['kɑːɡəʊ] *n.* goods carried in a ship (船上所载) 货物

## COMPREHENSION

Here are ten questions or unfinished statements about the passage, each with four suggested ways of answering or finishing it. You are to choose the one you consider the most suitable without looking back at the passage. Give one answer only to each question.

1. This selection was probably taken from the beginning of a
  - a. reference book about weather.
  - b. sailor's handbook.
  - c. study of the seas.
  - d. patient's diary.
2. The author's main purpose was to
  - a. supply factual information.
  - b. trace the route of the icebergs in an imaginative way.
  - c. pass on to the reader his own feeling about the sea.
  - d. provide information for tourists.
3. The author has
  - a. great love and respect for the seas.
  - b. a dislike for the seas.
  - c. serious misunderstanding of the seas.
  - d. drunk a lot of sea water.
4. The author is a
  - a. sailor by profession.
  - b. land dweller who has never been to sea.
  - c. pirate.
  - d. man born in Denmark and interested in the sea.
5. The main point of this article is that the seas are
  - a. contrary to the pattern of nature.
  - b. wondrous.
  - c. unconquerable.
  - d. terrible.
6. The statement "all on board except us are in despair" is intended to show
  - a. how exaggerated sailors' tales can be.
  - b. what life on the open seas is like.
  - c. how sailors' stories fire the imagination.
  - d. in what weather the author wrote this article.
7. The author knows
  - a. many of the salty tales of the sea and tells them well.
  - b. none of such salty tales.
  - c. such salty tales are true.
  - d. there are no wonders in the seas.
8. The author believes
  - a. that the mysterious fascination of the sea is being destroyed by scientific investigation.
  - b. that scientific investigation will help to discover more wonders.

- c. that there is no logical connection between the things happened in the sea.
  - d. that the more you know about the sea, the more you will be afraid of it.
9. According to the text, the sailors in the days of Columbus were afraid of
- a. Russian submarines.
  - b. pirates.
  - c. monsters in the sea.
  - d. the Roman people.
10. According to the text, the primitive people worshipped the sea because
- a. they believed there was sunken gold in the sea.
  - b. they believed they could trace all the ripples.
  - c. of the great power of the sea upon people.
  - d. the pirates made them do so.

## VOCABULARY

In each of the following sentences, one word or phrase is underlined. You are to select the best meaning or synonym for the word or phrase among the choices given.

1. As soon as the sun showed over the horizon in spring, we had a wide outlook.
  - a. attitude
  - b. probable outcome
  - c. view
  - d. visit
2. It was tantalizing to look at huge icebergs drifting south in endless procession.
  - a. production
  - b. prohibition
  - c. line
  - d. possession
3. Why do the winds blow so steadily in one place?
  - a. constantly
  - b. irregularly
  - c. on and off
  - d. violently
4. The ripples could be traced all over the seven seas.
  - a. found the source of
  - b. outlined
  - c. followed
  - d. matched
5. If only we had scientific instruments delicate enough to record them.
  - a. weak
  - b. sensitive
  - c. dainty
  - d. slim and pretty
6. There is a grand pattern in the wonderful phenomena of the ocean.
  - a. flower
  - b. design
  - c. natural law
  - d. form
7. Man feels impotent when he faces the might of the sea.
  - a. power
  - b. possibility
  - c. mysticism
  - d. awe
8. The landlubbers will envy the men who brave the elements.
  - a. natural environment
  - b. natural forces
  - c. components
  - d. spare parts

9. Perhaps we may not believe the salty tales for a moment.

- a. stories                      b. gossip                      c. lies                      d. lectures

10. Even an oddly shaped scrap of driftwood cast up on the beach will give us a pang of jealousy.

- a. like a round number                      b. casually  
c. strangely                      d. with a long history

## SPEED READING

You are given only one minute to **SKIM** the following passage and then answer the questions by making your choices.

It was the height of chivalry during the Middle Ages for a knight to share his lady's plate. Far from being ill-mannered, as it might be considered today, the custom of knights and ladies sharing the same trencher—or platter—at dinner was an expression of great tenderness and affection. Husband and wife invariably ate from the same plate.

The knight and his lady probably did not mind sharing a common plate and the pleasure of each other's company. One of the old medieval romances describes a feasting scene with eight hundred knights at a long table: "and by each sat a lady to eat off his plate." This was evidently a matter of pure delight for everyone concerned.

The common folk practiced the same custom as the knights. For centuries European husbands and wives ate from the same big square platter. In England, where the custom seems to have endured longer than in other countries, old-fashioned married people in some rural places continued to eat from the same plate as recently as early nineteenth century.

1. This selection is mainly about

- a. an old custom.                      b. courtesy.  
c. medieval food.                      d. the way knights courted ladies.

2. This custom was practised by

- a. common folk.                      b. knights.  
c. European husbands and wives.                      d. all of the above.

## CLOZE TEST

There are 20 blanks in the following passage. For each blank there are four choices marked a. b. c. and d. on the right column. You are to choose the one that best fits into the blank.

1 we look, we see Americans run-

1. a. Where                      b. There  
c. When                      d. Everywhere

ning. They 2 every reason 3 could think 4. They run for health, for beauty, to lose weight, to feel fit, and because it is 5 they love to do. Every year, for example, thousands 6 thousands of people are running

7 one race, the Boston Marathon, the best known long distance race in the United States. In recent years, there 8 nearly 5,000 official competitors and it takes three 9 minutes for the crowd of runners 10 to cross the starting line. You may have heard the story of the Greek runner Pheidippides. He ran from Marathon to Athens to 11 the news of the great victory 2,500 years ago. No one knows 12 it took him to run this long distance. But the story tells us that he died 13 the effort. Today no one 14 in a Marathon race. But the effort is 15 enormous. Someone does come in first in this tiring long race, but at the finish line, we see 16 this race is 17 not being first, but finishing.

The real victory is not 18 one's fellow runners 19 one's own body. It's a victory of 20 power over fatigue. In the Boston Marathon each person who crosses that finish line is a winner.

- |                   |               |
|-------------------|---------------|
| 2. a. clash for   | b. run for    |
| c. run out        | d. run into   |
| 3. a. somebody    | b. nobody     |
| c. anybody        | d. everybody  |
| 4. a. of          | b. over       |
| c. out            | d. on         |
| 5. a. that        | b. which      |
| c. the thing      | d. something  |
| 6. a. upon        | b. of         |
| c. on             | d. over       |
| 7. a. on          | b. in         |
| c. for            | d. at         |
| 8. a. is          | b. are        |
| c. has been       | d. have been  |
| 9. a. fully       | b. inclusive  |
| c. wholly         | d. whole      |
| 10. a. lately     | b. just       |
| c. exactly        | d. actually   |
| 11. a. deliver    | b. enunciate  |
| c. put forth      | d. grant      |
| 12. a. how much   | b. how many   |
| c. how long       | d. what time  |
| 13. a. because of | b. of         |
| c. for            | d. in         |
| 14. a. dying      | b. dead       |
| c. dies           | d. killed     |
| 15. a. still      | b. even       |
| c. yet            | d. as         |
| 16. a. where      | b. which      |
| c. when           | d. what       |
| 17. a. on         | b. of         |
| c. at             | d. about      |
| 18. a. against    | b. to         |
| c. over           | d. at         |
| 19. a. nor        | b. but        |
| c. or             | d. except     |
| 20. a. will       | b. commitment |
| c. physical       | d. muscular   |

## PROOFREADING

Proofread the following passage and correct any errors as you find them in the numbered lines. Note that no line has more than one error while some are correct.

### Editing methods:

In case of a correct line, put a tick ( V ) in the blank following that line.

For an extra word: write a minus sign ( - ) and then the word to delete in the blank.

When a word is missing: write a plus sign ( + ) followed by the word to be added.

If it is a wrong word: write and cross ( x ) it out in the blank, then provide the correct one.

### EXAMPLE:

When art museum wants a new exhibit, it never buys things in finished form and hangs them on the wall. When a natural history museum wants an exhibition it must often build it.

1. +      an
2. -      never
3.      V
4. x      exhibit

The modern world of highly technology could not have come about except with the development of the computer. Different types and sizes of the computers find out uses throughout society in the storage and handling of data, from secretly governmental files to banking transactions to private household accounts. Computers have to opened up a new era in manufacturing throughout the techniques of automation, and they have had enhanced modern communication systems. They are essential tools almost every field of research and applied technique, from constructing models of the universe to produce tomorrow's weather reports, and their use has in itself opened new areas of conjecture. Database services and computer nets make available a great variety of information sources. The same advanced techniques also make it possible invasions of privacy and of restricted information sauces, but computer crime has become one of the many risks that society must face to if it would enjoy the benefits of modern technologies.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_
11. \_\_\_\_\_
12. \_\_\_\_\_
13. \_\_\_\_\_
14. \_\_\_\_\_
15. \_\_\_\_\_
16. \_\_\_\_\_
17. \_\_\_\_\_
18. \_\_\_\_\_
19. \_\_\_\_\_
20. \_\_\_\_\_

## Unit 2

### PASSAGE FOR COMPREHENSION

# Winter Comes to the Animal World

by Marstor Bates

Starting Time: Minutes \_\_\_\_\_ Seconds \_\_\_\_\_

**O**ften a season's acorn and hickory crop fails because a late spring frost kills the flowers before the nuts are formed. This creates a problem for the local squirrels, since they are unable to lay in adequate stores for the winter. The squirrels probably get along all right scrounging from the local citizens—people are useful sometimes—but it makes one wonder about the winter problems of animals out in the woods.

Most birds, of course, manage nicely by the simple process of flying to some region with a more sensible climate. Apparently this is not so much a matter of temperature as of food. After all, quite a few kinds of birds do live all year round even in the far north: grouse, for instance, by eating things like spruce buds, owls by continuing to harry the local mice and other rodents; crossbills by their expert dissection of pine cones. But the birds that live on seeds, berries, and insects face not only vanishing supplies but also a shortage of day-light hours in which to hunt the food that might still be around. So they leave.

Migration is out for any animal that cannot fly. To be sure, caribou move from the tundra into the forests, and mountain sheep move to lower slopes. They may cover quite a bit of territory in such travels, but this is far different from moving from New York to Florida, let alone the West Indies or South America. The pedestrian majority of the animal kingdom has to find some way of getting through the winter without moving from home. Quite a few mammals have chosen the squirrel's solution—stashing away winter food supplies. Squirrels, incidentally, often act as though they knew what they were doing. However, there is disagreement among the experts whether squirrels remember where they have hidden food or whether they locate their caches again with their keen noses. If they depend on memory, either they



often forget or they store more food than they need, because the nuts and acorns they fail to retrieve are numerous enough to be an important factor in the seeding of forests.

Animals such as rabbits and deer continue to be active all winter, finding food wherever they can. Summer's dried vegetation makes a sort of natural hay. Trouble comes when this is buried in snow—but then the deer takes to eating branches and twigs, and the rabbits to stripping bark from small trees. The latter is a source of great irritation to both farmers and foresters, since trees may be girdled and killed.

Squirrels are about the smallest mammals able to be active in cold weather because small size makes it hard to maintain body temperature. The smaller the animal, the greater the surface area in relation to body mass. Since heat is lost through the surface, a mouse, for example, simply cannot keep up its body temperature in a very cold environment. Small mammals that remain active all winter retreat under the snow. It is said that in the north even the squirrels dig into the snow when air temperature drops to twenty-five degrees below zero Fahrenheit. Snow is an excellent insulator. Temperatures at the ground surface under a snow cover rarely drop below about twenty degrees Fahrenheit, even in Siberia or Alaska where air temperatures fall to fifty degrees below zero.

Many mammals live through the winter by closing shop—hibernating. There is a nice problem of definition here. Most experts now agree that a mammal can be said to hibernate only if its body temperature drops greatly and its whole metabolism—including respiration and heart rate—is much reduced. This is the case with animals like the woodchucks, hamsters, and hedgehogs, which hibernate in their burrows, and bats, which congregate in caves. Bears, however, are not classed as hibernators. They pass most of the winter sleeping, but their body temperature drops only a few degrees, and they can become active without going through a slow process of warming up. Bears, counting on fat reserves to keep them going, even produce their young during this period.

Mammals and birds are warm-blooded—that is, they have a means of keeping the temperature of their bodies quite constant despite the normal temperature fluctuations of the outside world. Cold-blooded animals—fish, reptiles, insects, amphibians—also have a certain amount of control over their body temperature. They can warm up, if they are too cold, by sunning themselves or cool off by getting into the shade. But it is hard for cold-blooded animals to keep warm in the winter. For any animal to be active, its body temperature must be above freezing. This is because the chemistry of life depends on water in a liquid state. If the body actually freezes—if ice crystals form in the tissues—the whole system is disrupted, and the animal dies. So cold-blooded animals in the north must either find some place to spend the winter where temperatures do not reach the freezing point, or develop a special rest-