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生命科学

Plant Power

植物的力量

KATE BOEHM NYQUIST (美) 著

外语教学与研究出版社

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鲜瑜注

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这套丛书以英文注释形式出版，注释由国内重点中学教学经验丰富的英语教师完成。特别值得推荐的是本套丛书在提高青少年读者英语阅读能力的同时，还注重培养他们的科学探索精神、动手能力、逻辑思维能力和沟通能力。

本丛书既适合学生自学，又可用于课堂教学。丛书各个系列均配有一本教师用书，内容包括背景知识介绍、技能训练提示、评估测试、多项选择题及答案等详尽的教学指导，是对课堂教学的极好补充。

本套丛书是适合中学生及英语爱好者的知识读物。



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Contents 目 录

Introduction 4

引言

Plants to the Rescue

救命的植物

Chapter 1 6

第一章

Function and Form:

Green Machines

作用与形式：绿色机器

Chapter 2 12

第二章

Growth and Survival:

Ready, Set, Grow

生长与生存：生长过程

Chapter 3 20

第三章

Products from Plants:

The Sky's the Limit

植物的产物：天空无极限

Garden sculpture, Cornwall, England





Picture This 24

读图地带

Nature's Medicine Chest

大自然药箱

Thinking Like a Scientist 26

像科学家一样思考

Hands-on Science 28

亲身实践

How Plants Respond to Light

植物如何对光做出反应

Science Notebook 30

科学备忘录

Index 31

索引

Plants to the Rescue

救命的植物

1. Appalachian Mountains

阿巴拉契亚山脉

2. North Carolina

北卡罗来纳州

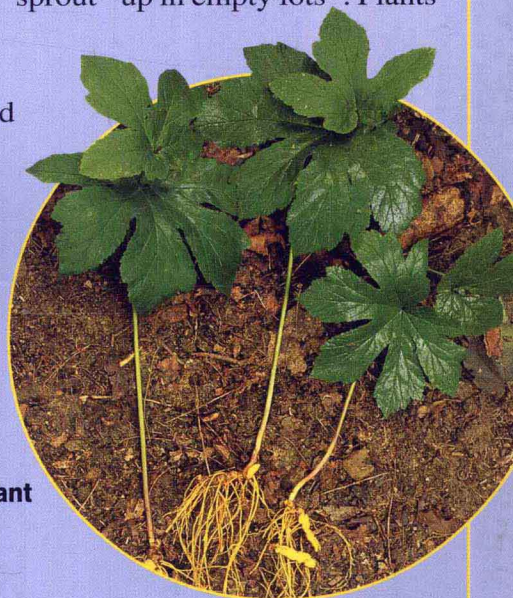
Appalachian Mountains,
North Carolina

It was spring 1810, deep in the southern Appalachians. A Cherokee¹ girl held her aching² stomach and cried in pain. What could she do?

Cherokee tradition³ provided the answer. Native Americans⁴ knew how to use the forest as their pharmacy⁵. The knowledge of how to use plants to cure⁶ illness was passed down⁷ from generation⁸ to generation. For stomachaches, the Cherokee made a medicine from the roots of the goldenseal⁹ plant. The girl took her medicine and began to feel better.

Without plants, humans would not survive¹⁰. We depend on¹¹ plants for food, medicine, clothing, and even the oxygen¹² we breathe¹³. Think of the plants all around you. Tree limbs¹⁴ sway¹⁵ in the breeze¹⁶. Colorful flowers line paths in the park. Weeds¹⁷ sprout¹⁸ up in empty lots¹⁹. Plants are everywhere.

This is a book about the green world that grows silently around us. We have learned how to use plants in many ways. We are beginning to understand that there are many more possibilities. So dig into the world of plants, where dirt is good and green is golden.



Goldenseal plant

1. Cherokee	<i>n.</i>	彻罗基人(北美印第安人)	12. oxygen	<i>n.</i>	氧; 氧气
2. aching	<i>adj.</i>	疼的	13. breathe	<i>v.</i>	呼吸
3. tradition	<i>n.</i>	传统	14. limb	<i>n.</i>	树枝
4. Native American		印第安人	15. sway	<i>v.</i>	摇摆; 摇动
5. pharmacy	<i>n.</i>	药房; 备用药品	16. breeze	<i>n.</i>	微风
6. cure	<i>v.</i>	治疗; 治愈	17. weed	<i>n.</i>	杂草; 野草
7. pass down		传下去	18. sprout	<i>v.</i>	发芽
8. generation	<i>n.</i>	一代	19. lot	<i>n.</i>	一块地
9. goldenseal	<i>n.</i>	白毛茛			
10. survive	<i>v.</i>	活下来, 继续存在			
11. depend on		依靠; 依赖			

Function and Form:

Green Machines

作用与形式：绿色机器



Horsetail' plants
(注释见第 7 页)

In the foothills² of the Appalachians, a settler's³ family enjoyed a hearty⁴ meal. Soon the children headed⁵ down to a nearby stream⁶. But they weren't going for a swim.

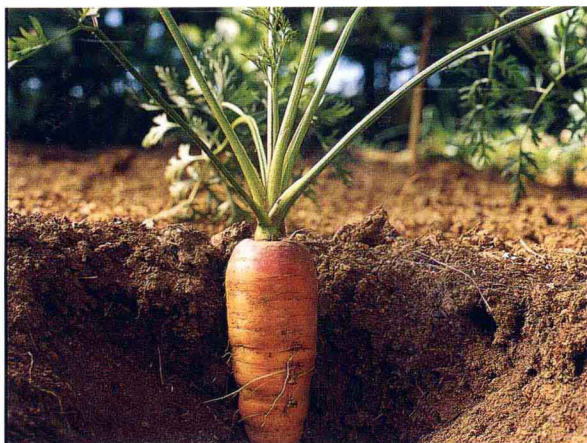
They were on their way to pick horsetail plants. Their mother needed tough⁷ scrubbing⁸ brushes to clean the cooking pot, and there was a good supply⁹ at the edge¹⁰ of the stream. Horsetails, which are among the most ancient¹¹ plants, probably were used as cleaning brushes by many people. These plants have been around for millions of years. Giant horsetails once stood in vast¹² forests that covered much of Earth's land surface¹³.

From the tough brush of a horsetail to the soft petals¹⁴ of a rose, plants come in many different shapes and sizes. Plants grow almost everywhere—from low country rivers to high mountain slopes¹⁵. Even though they can be very different, plants all require¹⁶ light, water, nutrients¹⁷, and carbon dioxide¹⁸. They share many of the same parts that help them meet these needs.

1. horsetail	<i>n.</i>	木贼
2. foothill	<i>n.</i>	山麓
3. settler	<i>n.</i>	移居者
4. hearty	<i>adj.</i>	丰盛的
5. head	<i>v.</i>	(向特定方向)出发
6. stream	<i>n.</i>	溪流
7. tough	<i>adj.</i>	坚硬的
8. scrub	<i>v.</i>	擦洗
9. supply	<i>n.</i>	供给
10. edge	<i>n.</i>	边沿; 边缘
11. ancient	<i>adj.</i>	古老的
12. vast	<i>adj.</i>	辽阔的; 广阔的
13. surface	<i>n.</i>	表面
14. petal	<i>n.</i>	花瓣
15. slope	<i>n.</i>	斜坡
16. require	<i>v.</i>	需要
17. nutrient	<i>n.</i>	营养物
18. carbon dioxide		二氧化碳
19. antique	<i>adj.</i>	古时的; 古式的



Antique¹⁹ iron pot



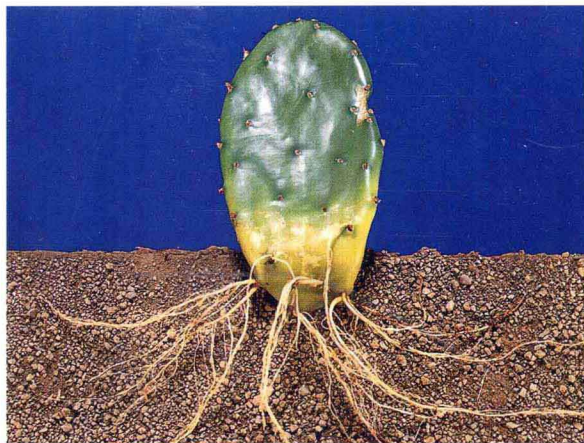
The orange part of a carrot is a taproot.

Roots Anchor¹ and Absorb²

What parts of a plant do you like to eat? If you like to chomp³ on a carrot or gobble⁴ down forkfuls⁵ of sweet potatoes, then you're a root-eating kid⁶. Roots are important structures⁷ that do many things for a plant.

There are two main types of root systems⁸. A taproot⁹ system has one main root that is thicker than the others. This taproot grows straight down into the soil. A carrot is a good example of a plant that has a taproot. The other type of system is a fibrous¹⁰ root system. Plants with this kind of root system, such as grasses, have several roots of about the same size. These roots spread out¹¹ in many directions.

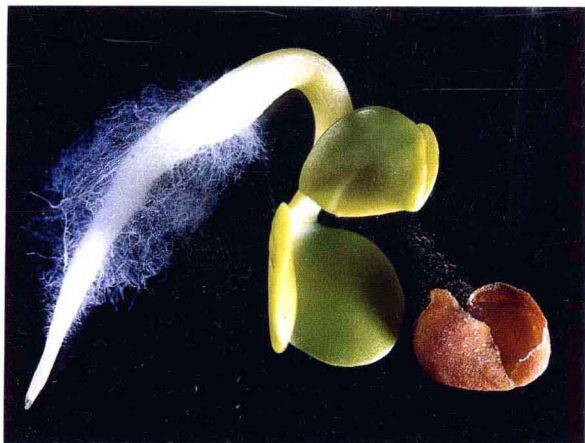
No matter what kind of roots a plant has, every root does certain things. Roots anchor a plant in place. When the wind blows hard and a plant bends and sways, but doesn't fall over, you know the roots are doing their job. Roots also can store food for a plant. When you eat a carrot, you are eating the plant's stored food.



A prickly pear cactus¹⁷ has a fibrous root system.

Another important job of roots is to absorb, or take in, water and minerals¹² from the soil. Look at the seedling¹³ pictured on the next page. The threadlike¹⁴ hairs coming off the main root are called root hairs. These hairy extensions¹⁵ increase¹⁶ the surface area of the root. This allows it to take in more water and minerals.

1. anchor	v.	固定
2. absorb	v.	吸收
3. chomp	v.	使劲地嚼
4. gobble	v.	狼吞虎咽
5. forkful	n.	一叉的量
6. kid	n.	孩子
7. structure	n.	结构
8. root system		根系
9. taproot	n.	主根; 直根
10. fibrous	adj.	纤维状的
11. spread out		展开; 伸展
12. mineral	n.	矿物
13. seedling	n.	秧苗
14. threadlike	adj.	线状的
15. extension	n.	延长
16. increase	v.	增大
17. prickly pear cactus		刺梨仙人掌



Root hairs sprout from a radish¹⁶ seedling.

Stems¹ Support and Carry

A beaver² bites³, pulls and tears out⁴ pieces of wood. Finally, the tree begins to lean⁵. Timber⁶! After years of growing straight into the air, the tree slowly tips⁷ and falls to the ground. The beaver digs into the tasty⁸ bark⁹. This huge stem makes great meals for many days.

Trees and shrubs¹⁰ have woody stems. These stems grow strong and thick over many years in order to support big plants. Smaller plants have softer, more flexible¹¹ stems.

Stems provide¹² support to plants. In most plants, this means the stem holds the leaves up so they can get enough sunlight. The other important function of stems is to transport¹³ water and minerals from the roots to the leaves and to transport food from the leaves to other parts of the plant. Tubelike¹⁴ structures inside the stems carry these necessities¹⁵.

1. stem	<i>n.</i>	茎; (树)干
2. beaver	<i>n.</i>	海狸
3. bite	<i>v.</i>	咬
4. tear out		撕下; 扯下
5. lean	<i>v.</i>	倾斜
6. timber	<i>int.</i>	倒啦
7. tip	<i>v.</i>	倾斜
8. tasty	<i>adj.</i>	好吃的
9. bark	<i>n.</i>	树皮
10. shrub	<i>n.</i>	灌木
11. flexible	<i>adj.</i>	柔韧的; 易曲的
12. provide	<i>v.</i>	提供
13. transport	<i>v.</i>	传送; 运输
14. tubelike	<i>adj.</i>	管状的
15. necessity	<i>n.</i>	必需品
16. radish	<i>n.</i>	萝卜
17. gnaw	<i>v.</i>	咬; 啃
18. trunk	<i>n.</i>	树干



A beaver gnaws¹⁷ on a tree trunk¹⁸.

Leaves Produce Food

You may already know that almost all plants make their own food. Some plants, like the cactus, can make food in their stems. But most plants use their leaves to do this job. The substance¹ in leaves that gives them their green color is called chlorophyll². Chlorophyll traps³ energy⁴ from sunlight. Then the important food-making process⁵ of photosynthesis⁶ can begin.

What's so important about photosynthesis? It not only provides plants with food but also provides us with oxygen. There are two main steps in photosynthesis. In the first step, chlorophyll traps light energy from the sun. The light energy is used to split⁷ water into oxygen and hydrogen⁸. The oxygen goes into the air.

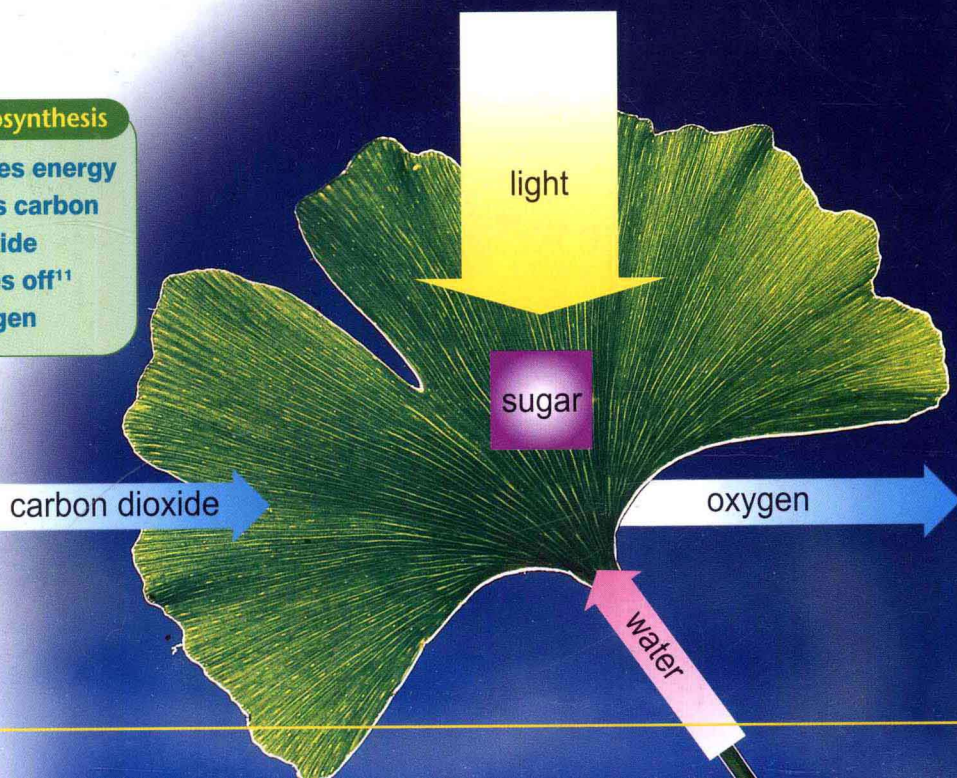
In the second step of photosynthesis, the hydrogen is combined with⁹ carbon dioxide to make sugar¹⁰. The sugar is stored as food for the plant.

1. substance	<i>n.</i>	物质
2. chlorophyll	<i>n.</i>	叶绿素
3. trap	<i>v.</i>	留住; 聚集
4. energy	<i>n.</i>	能量
5. process	<i>n.</i>	过程
6. photosynthesis	<i>n.</i>	光合作用
7. split	<i>v.</i>	分解
8. hydrogen	<i>n.</i>	氢
9. combine with		与……结合
10. sugar	<i>n.</i>	糖
11. give off		放出

What Is Photosynthesis?

Photosynthesis

- Stores energy
- Uses carbon dioxide
- Gives off¹¹ oxygen



Remember, plant cells¹ are alive². So, just like animals, plants need food for energy. When a plant needs its stored food, its cells may use oxygen to break apart the sugars. This gives off energy in a process called respiration³. This energy-releasing⁴ process can happen day or night.

Respiration

- Releases energy
- Uses oxygen
- Gives off carbon dioxide

Thinking Like a Scientist: observing⁵

Some of the most important breakthroughs⁶ in science are made because of careful observations. To find out about an object⁷, or observe it, you can touch it, smell it, look at it, and even listen to it.

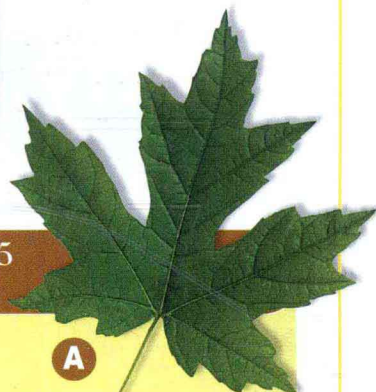
Look at the leaves pictured on this page. Although you can't really touch them, you can learn a lot by observing them closely. Try to match the description⁸ with the picture.

Types of Leaves

Leaf	Description
Ash ⁹	a compound ¹⁰ leaf with many small leaflets ¹¹
Maple ¹²	a simple leaf with only one flat blade ¹³
Douglas fir ¹⁴	many needlelike ¹⁵ leaves

1. cell	<i>n.</i>	细胞
2. alive	<i>adj.</i>	活着的
3. respiration	<i>n.</i>	呼吸(作用)
4. energy-releasing		能量释放
5. observe	<i>v.</i>	观察
6. breakthrough	<i>n.</i>	突破
7. object	<i>n.</i>	物体
8. description	<i>n.</i>	描述
9. ash	<i>n.</i>	桤树
10. compound	<i>adj.</i>	复合的
11. leaflet	<i>n.</i>	小叶

How are these types of leaves alike¹⁶? How are they different?



12. maple	<i>n.</i>	枫树
13. blade	<i>n.</i>	叶片
14. Douglas fir		花旗松
15. needlelike	<i>adj.</i>	针状的
16. alike	<i>adj.</i>	相同的; 相似的

Growth and Survival:

Ready, Set, Grow

生长与生存：生长过程

Giant sequoia¹
(注释见第 13 页)



How “giant” is a giant sequoia? It could shade² a jumbo jet³. It would take a classroom of kids holding hands to encircle⁴ its trunk. It can grow taller than the Statue of Liberty⁵.

Giant sequoias are among the largest and oldest living things on Earth. The trunks of these amazing⁶ trees can grow to be more than 9 meters (30 feet) across. Because of its enormous⁷ size, the giant sequoia is also known as the mammoth⁸ tree. Giant sequoias are found only in California⁹, and most are protected in national parks¹⁰. The trees can live for more than 3,000 years.

It’s hard to believe that a tree as large as a sequoia can grow from a tiny¹¹ seed, but that’s exactly what happens. However, not all plants make seeds. For example, ferns¹² and mosses¹³ grow from tiny structures called spores¹⁴. But most plants are seed plants. So how do seed plants grow? How do they make seeds to form new plants?



The sequoia tree was named for a Cherokee Native American leader called Sequoyah, who created symbols¹⁵ to represent¹⁶ the Cherokee language.

1. sequoia	<i>n.</i>	美洲杉
2. shade	<i>v.</i>	遮蔽
3. jumbo jet		大型喷气式飞机
4. encircle	<i>v.</i>	环绕；围绕
5. Statue of Liberty		自由女神像
6. amazing	<i>adj.</i>	令人惊异的
7. enormous	<i>adj.</i>	巨大的
8. mammoth	<i>adj.</i>	巨大的
9. California		加利福尼亚州
10. national park		国家公园
11. tiny	<i>adj.</i>	极小的；微小的
12. fern	<i>n.</i>	蕨类植物
13. moss	<i>n.</i>	苔藓；地衣
14. spore	<i>n.</i>	孢子
15. symbol	<i>n.</i>	符号
16. represent	<i>v.</i>	体现；表示
17. cluster	<i>n.</i>	一束；一簇

Clusters¹⁷ of red spores on a fern leaf



Going to Seed

Have you ever picked up a pinecone¹? Such cones contain² seeds for one group of seed plants, called conifers³. The giant sequoias are conifers. Most conifers, such as pines⁴, firs⁵, and spruces⁶, are also called evergreens⁷. These trees don't lose their leaves in the winter. They stay green year-round. That's why we call them evergreens.

Another big group of seed plants is flowering plants. Flowering plants need flowers to make seeds.

Most flowers have four main parts. Let's start by thinking about a flower bud⁸. The bud is covered with green, leaflike⁹ parts. These are called sepals¹⁰, and they protect the bud. As the bud grows, the sepals are forced apart.

The most obvious¹¹ part of a flower is usually its petals¹². The petals have scents¹³, colors, and shapes that attract¹⁴ birds, bees, butterflies¹⁵, and other animals to the flower. These creatures¹⁶ help in the seed-making process.

If you look in the center of the ring of petals, you'll usually see a pistil¹⁷. This part of the flower produces eggs, which will be needed to make seeds.

Before seeds can be made, the eggs must combine with sperm¹⁸, which is produced by pollen¹⁹. The part of the plant that makes the pollen is called the stamen²⁰.

1. pinecone	<i>n.</i>	松球; 松果
2. contain	<i>v.</i>	包含
3. conifer	<i>n.</i>	针叶树(如松、柏等)
4. pine	<i>n.</i>	松树
5. fir	<i>n.</i>	冷杉
6. spruce	<i>n.</i>	云杉
7. evergreen	<i>n.</i>	常绿树; 常绿植物
8. bud	<i>n.</i>	蓓蕾
9. leaflike	<i>adj.</i>	像叶子的; 成薄片的
10. sepal	<i>n.</i>	萼片
11. obvious	<i>adj.</i>	明显的; 显而易见的
12. petal	<i>n.</i>	花瓣
13. scent	<i>n.</i>	气味; 香味
14. attract	<i>v.</i>	吸引
15. butterfly	<i>n.</i>	蝴蝶
16. creature	<i>n.</i>	动物
17. pistil	<i>n.</i>	雌蕊
18. sperm	<i>n.</i>	精子
19. pollen	<i>n.</i>	花粉
20. stamen	<i>n.</i>	雄蕊

Parts of a Flower

- | | |
|----------|----------|
| 1 Petal | 3 Stamen |
| 2 Pistil | 4 Sepal |

