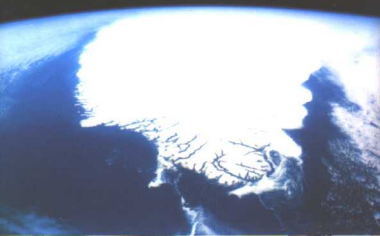




Water 水

L. Dickson (美)
Robert D. Doyle (美) 著
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序 言

英语学习，除了在课堂内下工夫外，课外的阅读也很重要。课外除了读文学类的文章，也要读一些非文学类的文章。这套“小书”就是非文学类的文章，涉及文学以外的许多领域和学科。每本书都由一两个相关的主题构成，图文并茂，融知识性和可读性于一体。这些“小书”谈到的很多东西都和我们的日常生活息息相关；更重要的是“小书”体现了人类要与自然和谐发展的思想，这与我们社会和时代的发展是吻合的。读一些这方面的书不仅有利于学生提高英语水平，拓宽自己的视野，也符合当今大学生要全面发展的要求。在“复合型”人才越来越受重视的今天，我很乐意向大学生朋友推荐这套“小书”。


(郑树棠)

《新视野大学英语》总主编
首届“国家级教学名师奖”获得者

Introduction

Although water covers more than 70 percent of the Earth's surface, only 3 percent of the planet's water is fresh. Freshwater resources, essential to the survival of all plant and animal life on a daily basis and consumed in large quantities in agriculture and industry, are renewable through the natural hydrologic cycle. Maintaining healthy sources of drinkable water is a public health responsibility of all local governments.

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词汇表




Water

水

Earth, unlike other planets in the solar system, is blessed with an abundant supply of water in liquid form. Life on planet Earth is linked completely to water. It is essential for life and essential for nearly every human activity. Water covers 75 percent of the earth's surface. It is the main component of living organisms,





making up 60 to 70 percent of total weight. Water plays key roles in photosynthesis and in regulating the earth's surface temperatures. The distribution of plant, animal, and human populations is determined mainly by the occurrence of water. Water is the common denominator of life. The importance of water is due to its unique physical and chemical properties.

地球不同于太阳系中的其他行星，它拥有大量的液态水。地球上的生命和水完全密不可分。生活和几乎所有人类活动都离不开水。水覆盖了地球表面的75%。它是生命有机体的主要构成部分，占其总重量的60%至70%。水在

光合作用和调节地球表面温度方面起着至关重要的作用。植物、动物和人口的分布主要由水的分布来决定。水是生命的共同特性。水的重要性源于其独特的物理和化学属性。



Properties of Water


水的属性



As compounds go, water's chemical makeup is rather simple. Two hydrogen atoms are bonded to one oxygen atom, forming an isosceles triangle. The chemist's shorthand for water is H_2O . Water molecules are attracted to each other by hydrogen bonds. This simple arrangement of atoms—and the resulting bonding and molecular structure—give special

chemical and physical properties to water. These properties make life possible on the earth. In fact, these properties are so unusual compared to other inorganic compounds that water may be referred to as nature's most fabulous freak. The arrangement of hydrogen and oxygen atoms results in what is called a polar molecule—it has an unequal distribution of electrical charges. This arrangement accounts for many of water's unusual properties.

作为一种化合物，水的化学构成相当简单。两个氢原子和一个氧原子结合，形成一个等腰三角形。化学家将水简写为 H_2O 。水分子通过氢键互相吸引。这种原子的简单



组合以及从而产生的键合和分子结构，赋予了水特殊的化学和物理属性。这些属性使生命得以在地球上存在。事实上，这些属性与其他无机化合物相比存在极大的差别，水可以被称为自然界中最不可思议的怪物。氢原子和氧原子的这种组合产生了所谓的极性分子——这种分子的电荷分布不均。正是这种组合造就了水与众不同的众多属性。


The properties of water can be divided into two classes. This division is based on whether the chemical bonds between the hydrogen and oxygen atoms are broken, or whether only the hydrogen

atoms connecting individual water molecules are broken. Life depends on both these arrangements. An example of a chemical reaction that shows the importance of water to life is photosynthesis. Photosynthesis is the process by which green plants use the sun's energy to convert carbon dioxide and water into carbohydrates and oxygen.

水的属性可以分为两类。这一划分的基础是氢、氧两种原子之间的化学键是否断裂，或者是否只有联接单个水分子的氢原子之间的键发生了断裂。这两种组合都是生命赖以存在的基础。有一个化学反应可以表明水对于生命的重要性，那就是光合作用。



光合作用是绿色植物利用太阳能将二氧化碳和水转化为碳水化合物和氧气的过程。




Molecules contribute their hydrogen atoms to form the carbohydrate. In the process their oxygen atoms are liberated. Carbohydrates are further converted into proteins and lipids by plants. These ultimately serve as energy sources for animals, including humans. The oxygen liberated from water molecules is the oxygen we breathe. Thus water is a critical part of photosynthesis, which makes life on earth possible.

水分子提供氢原子来形成碳水化合物。在这个过程中，水

的氧原子被释放出来。碳水化合物被植物进一步转化成蛋白质和脂类。这些物质最终成为动物的能量来源，人类亦不例外。水分子中释放出来的氧就是我们所呼吸的氧气。因此，水是光合作用中至为关键的一部分，而光合作用则使得生命在地球上的存在成为可能。

Water is present on earth in three forms: solid (ice), liquid (water itself), and gas (water vapor). Water changes form over a narrow range of temperatures relative to other substances—from 0°C to 100°C (32°F to 212°F). These different forms result from changes in the strength of the hydrogen bonding between water





molecules caused by heating or cooling. Only the hydrogen bonds between individual H_2O molecules are affected in the transition of water between its various forms. At 0°C (32°F), water freezes, going from a liquid form to a solid form. At 100°C (212°F), water boils, changing from a liquid to water vapor. When water freezes, it becomes less dense. This is in sharp contrast to most other compounds, which become more dense when they freeze. This property causes ice to float. Water has its greatest density at 3.94°C . If this were not the case, there would be no life in the oceans and lakes on earth. Since ice floats, it forms an insulating cover. This prevents bodies of water from

freezing completely. As a result, fish and other aquatic life remain below the ice in a relatively safe and moderate climate.

水在地球上的存在形态有 3 种：固态（冰）、液态（水本身）和气态（水蒸气）。相对于其他物质而言，水发生形态变化的温度范围很小——从 0 摄氏度至 100 摄氏度（32 华氏度至 212 华氏度）。这些不同的形态是由冷热变化所引起的水分子之间氢键键合力的变化造成的。在水于不同形态互相转化的过程中，受到影响的只是单个水分子之间的氢键。在 0 摄氏度（32 华氏度）时，水就会凝固，由液态变为固态。在 100 摄氏度（212 华氏

