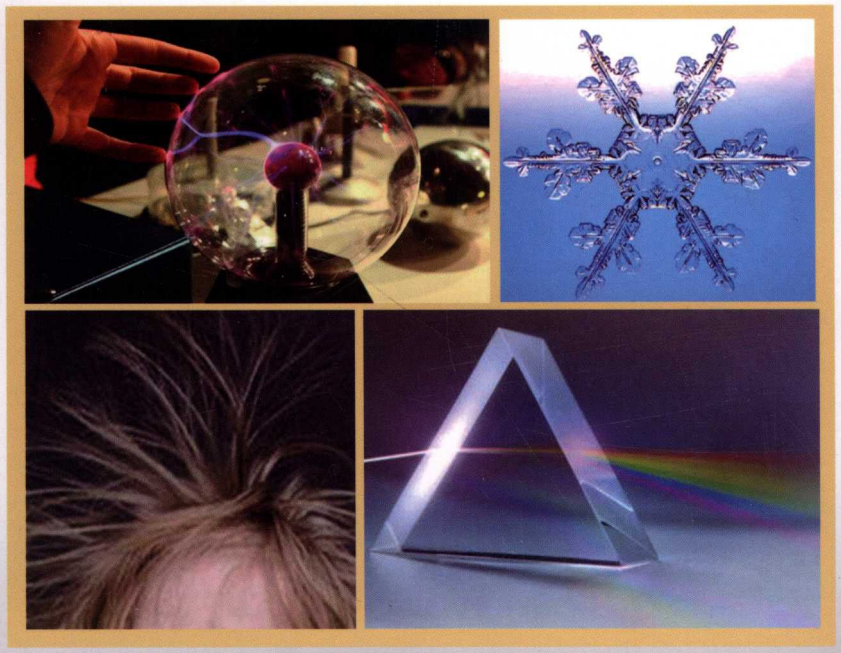
普通高等教育“十三五”规划教材

Physics in Our Life

物理与生活

刘玉颖 主编

吕洪凤 桑红毅 副主编



中国农业大学出版社

CHINA AGRICULTURAL UNIVERSITY PRESS

需要全本请访问 www.ertongbook.com

普通高等教育“十三五”规划教材

Physics in Our Life
物理与生活

刘玉颖　主　编
吕洪凤　桑红毅　副主编

中国农业大学出版社
·北京·

内 容 简 介

本书以清新自然的形式叙述了17个主题单元，内容涵盖经典物理和近代物理的重要概念和原理。每一主题单元始于问题的提出，生活中日常实验现象的演示和探究，实验现象的分析和相关物理概念、原理的讲述，最后是深层次的今日物理攫英(Physics today)。使学生既能掌握物理的基础知识，又能了解物理学的前沿课题及其在交叉学科中的应用。本书分6部分：力学、振动和波、电磁学、光学、热学、近代物理，共17个主题。本书精选每个主题单元的内容，图文并茂，力争做到新颖别致、实用性强、联系广泛，且可做深层次的探索与科学研究参考书。

本书可作为高等院校非物理专业的物理选修课教材，也可供有关教师和对物理感兴趣的人员使用。

图书在版编目(CIP)数据

物理与生活＝Physics in our life：英文/刘玉颖主编. —北京：中国农业大学出版社，2018.3
ISBN 978-7-5655-1946-8

Ⅰ.①物… Ⅱ.①刘… Ⅲ.①物理学-高等学校-教材-英文 Ⅳ.①O4

中国版本图书馆CIP数据核字(2017)第295391号

书　　名　Physics in Our Life 物理与生活
作　　者　刘玉颖　主编

策划编辑　潘晓丽　　责任编辑　洪重光　郑万萍
封面设计　郑　川
出版发行　中国农业大学出版社
社　　址　北京市海淀区圆明园西路2号　　邮政编码　100193
电　　话　发行部 010-62818525,8625　　读者服务部 010-62732336
　　编辑部 010-62732617,2618　　出　版　部 010-62733440
网　　址　http://www.caupress.cn　　E-mail cbsszs@cau.edu.cn
经　　销　新华书店
印　　刷　涿州市星河印刷有限公司
版　　次　2018年3月第1版　2018年3月第1次印刷
规　　格　787×1 092　16开本　15.75印张　380千字　彩插16
定　　价　58.00元

图书如有质量问题本社发行部负责调换

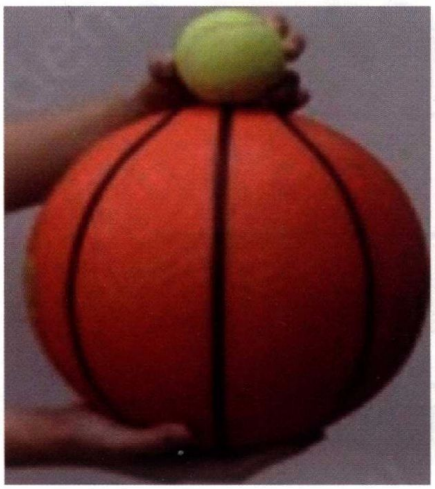


Figure 1-3 Releasing tennis ball and basket ball

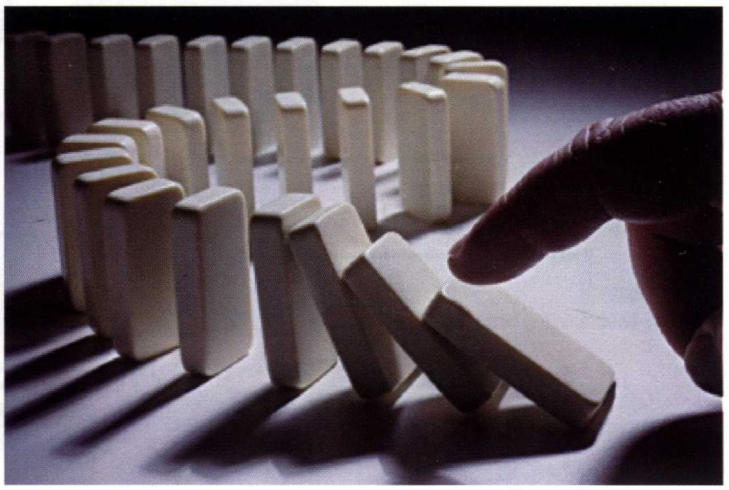


Figure 1-4 A chain of dominoes

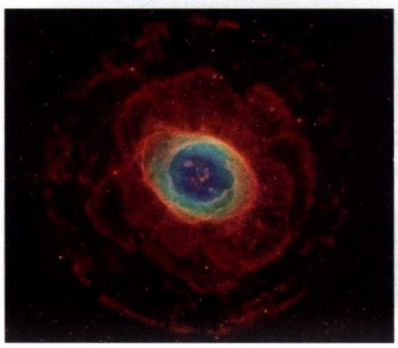
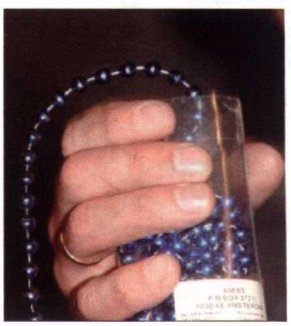






Figure 1-15 Bouncing cases



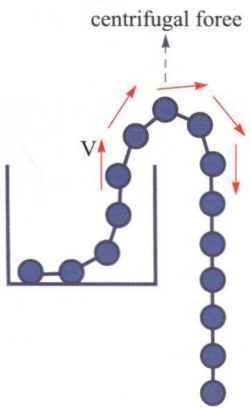


Figure 1-18 Newton's Inertia Beads

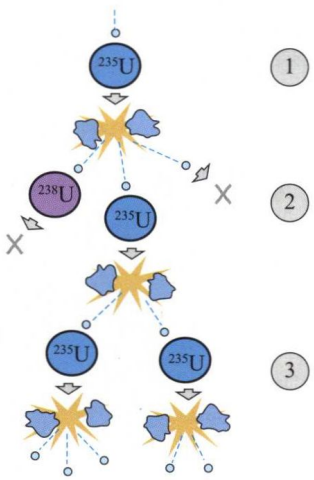


Figure 1-19 Neutron multiplication in uranium

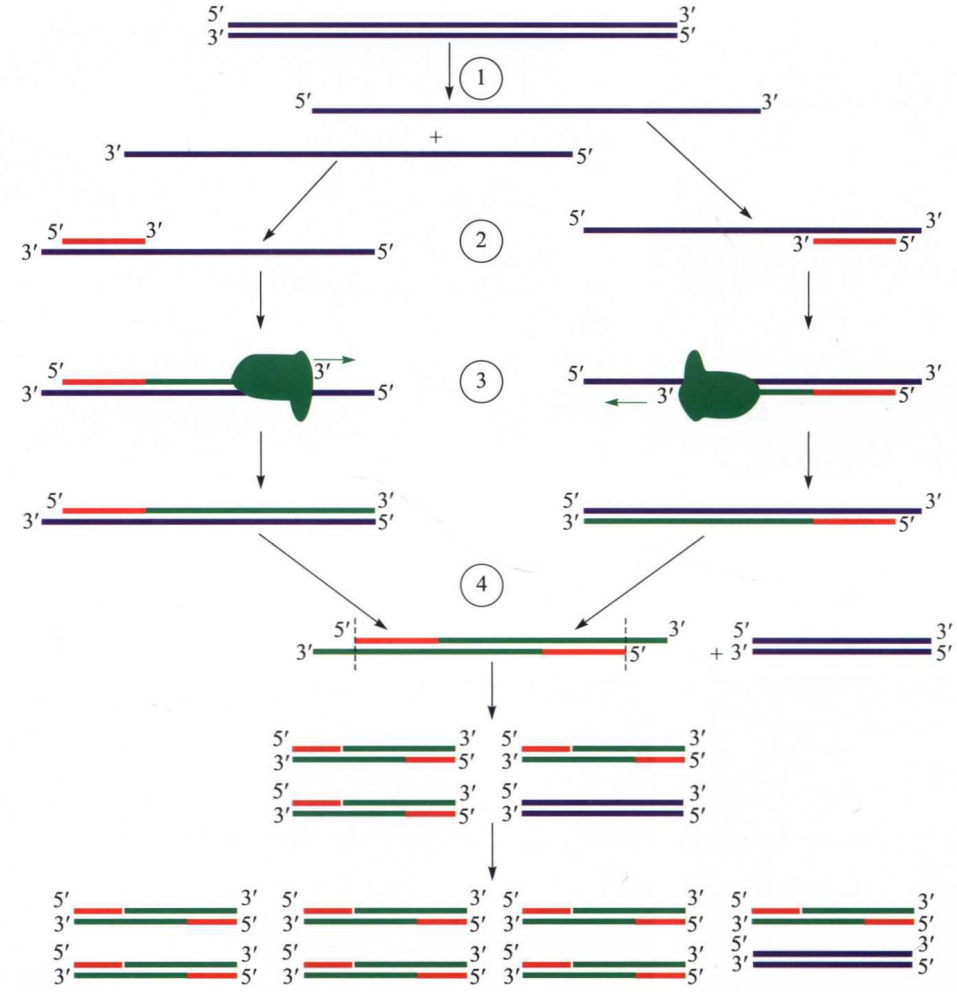


Figure 1-21 Polymerase chain reaction

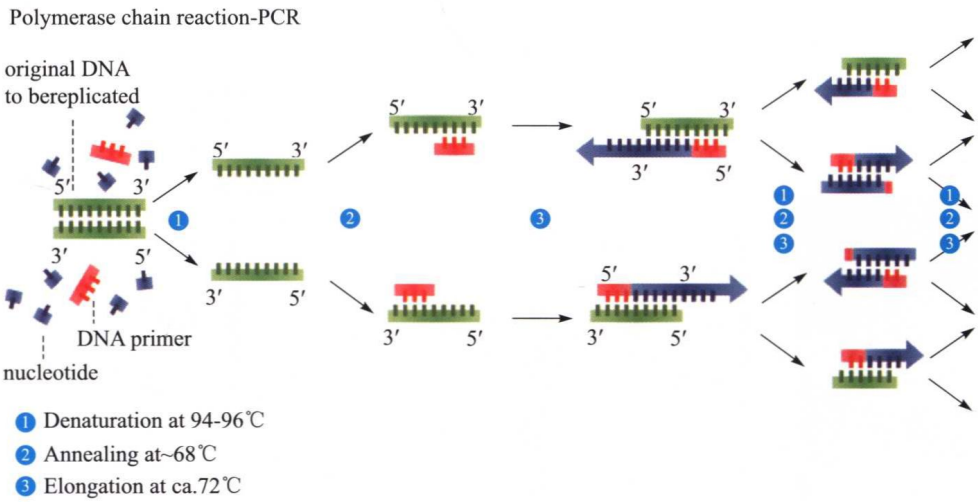


Figure 1-22 Polymerase chain reaction

需要全本请访问 www.ertongbook.com

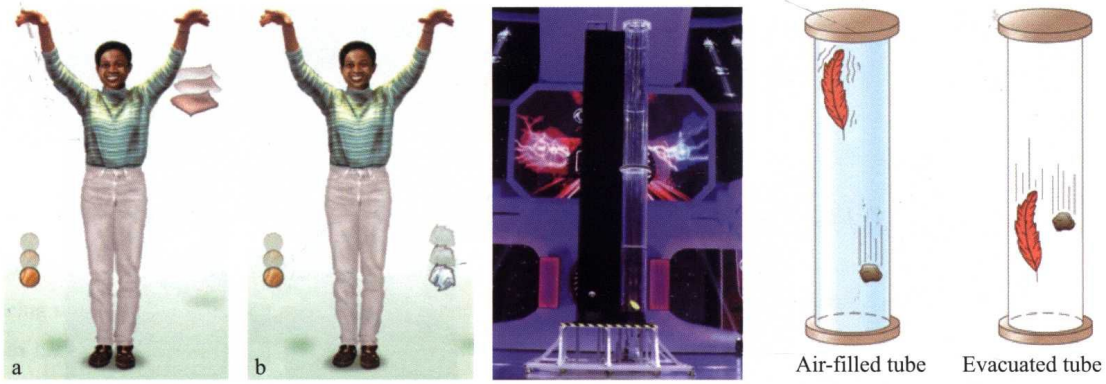


Figure 2-1 Drop the two different objects at the same time



Figure 2-3 Basketball star Michael Jordan

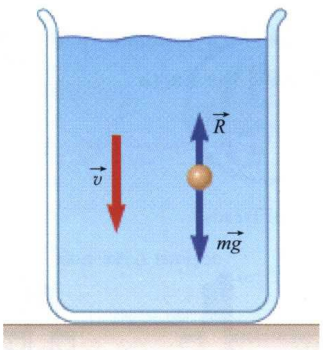


Figure 2-4 The ball is falling in the viscous liquid



Figure 2-14 The Shenzhou 10 manned spacecraft re-entry capsule successfully landed on the Earth



Figure 2-15 Jumping into a hole through the Earth

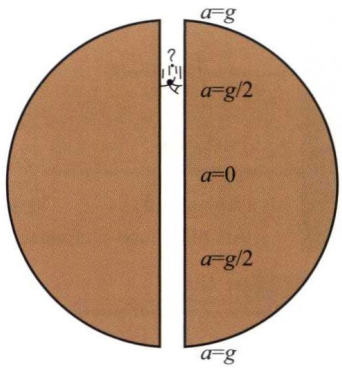


Figure 2-16 Gravitational field inside the Earth



Figure 2-17 The satellite orbits at high altitudes free of atmosphere

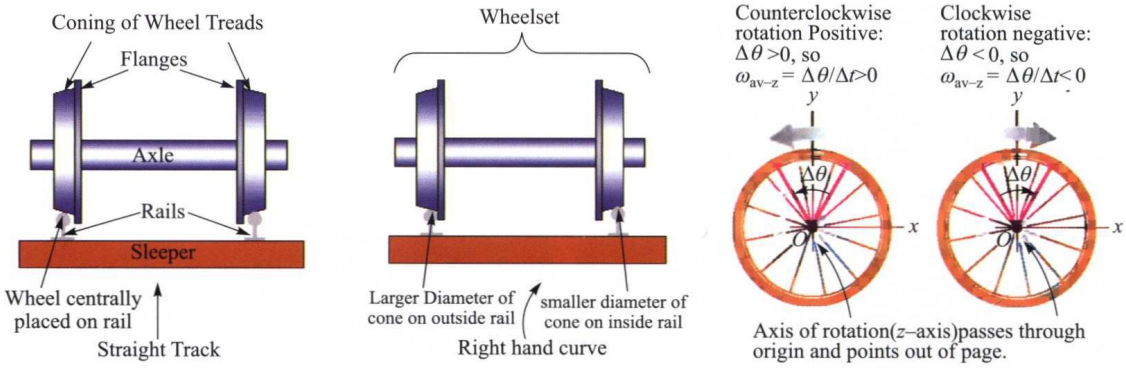


Figure 3-4 Railroad train wheels and rotation

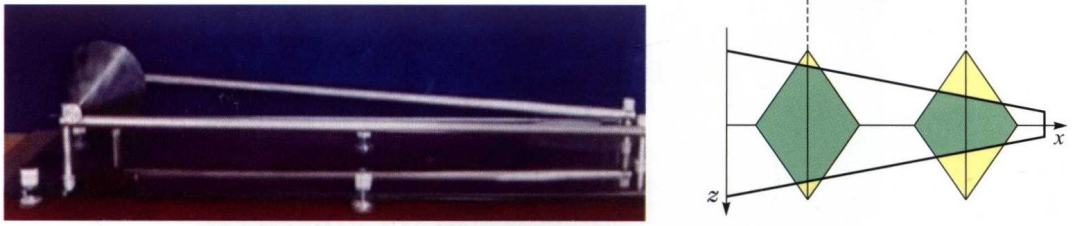


Figure 3-7 Double cones up rolling

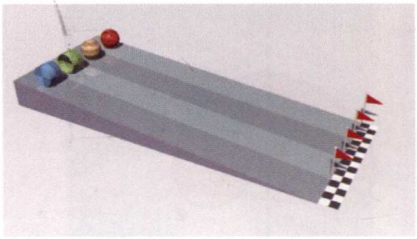


Figure 3-9 Four objects in pure rolling racing down a plane with no air drag. From back to front: spherical shell (red), solid sphere (orange), cylindrical ring (green) and solid cylinder (blue)



Figure 3-13 Angular momentum and a non-zero torque

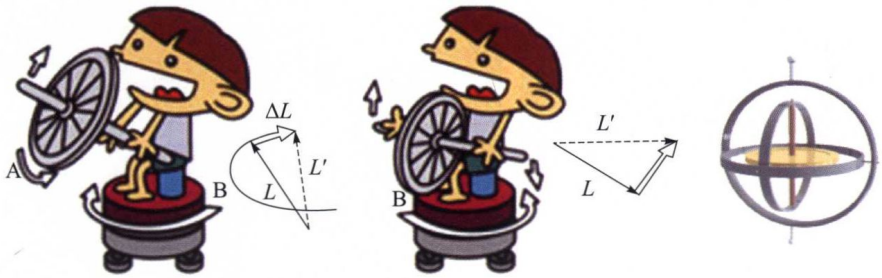


Figure 3-14 Spinning bicycle wheel and a non-zero torque

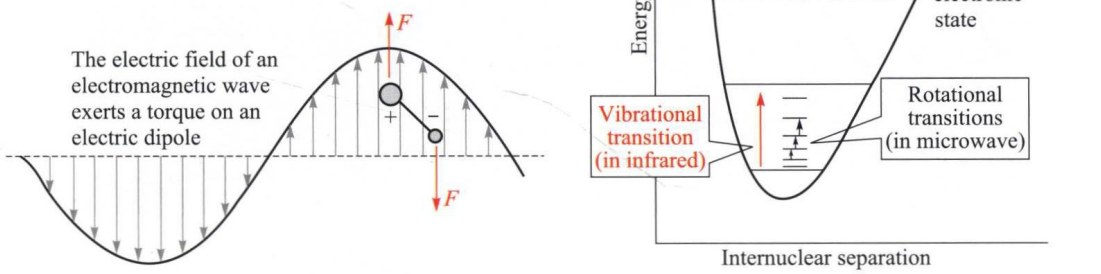


Figure 3-19 Rotation spectra excited by an external electromagnetic field

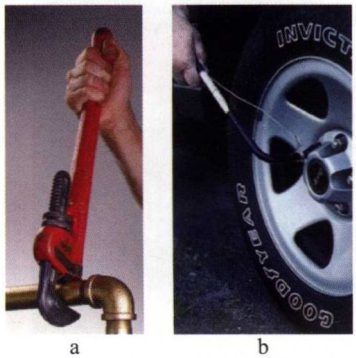


Figure 4-6 Exerting the torque makes the object rotate



Figure 4-7 Tightrope walker

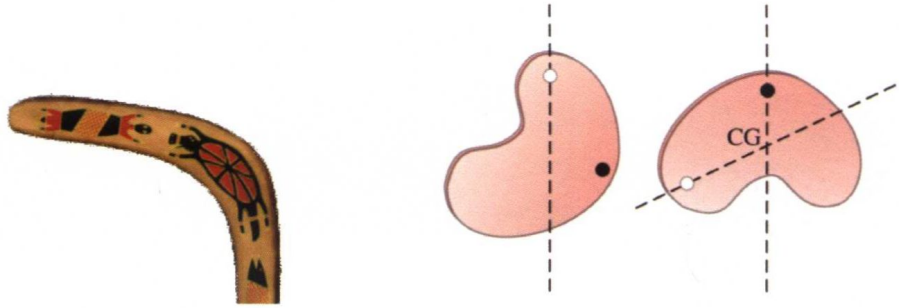


Figure 4-8 The center of mass of random shape object



Figure 4-9, 4-10 The objects are in stable equilibrium



Figure 4-11 A rotating wheel of bicycle has its angular momentum

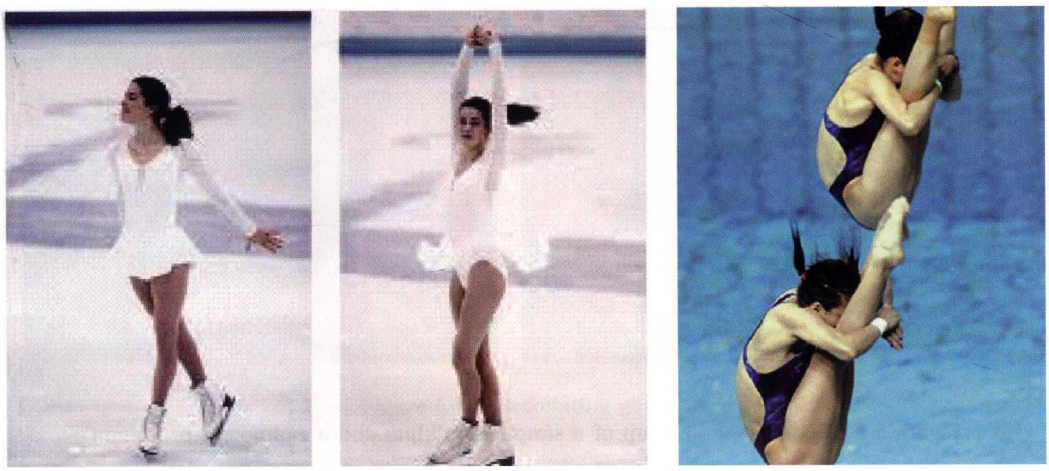


Figure 4-12 The rotation of skater or diver

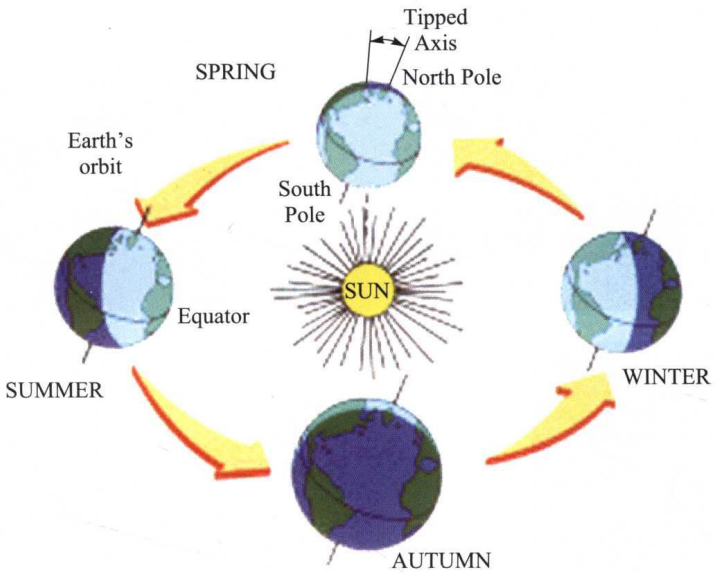


Figure 4-16 The regular progression of the seasons on the Earth

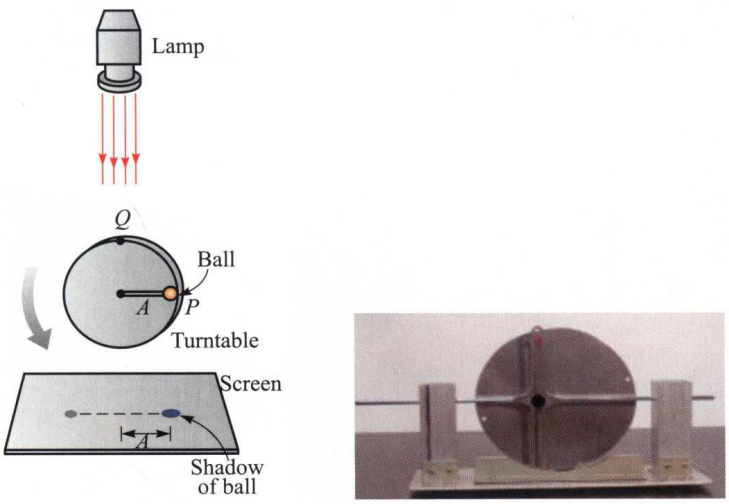


Figure 5-3 Experiment equipment of circumference drives the simple harmonic movement

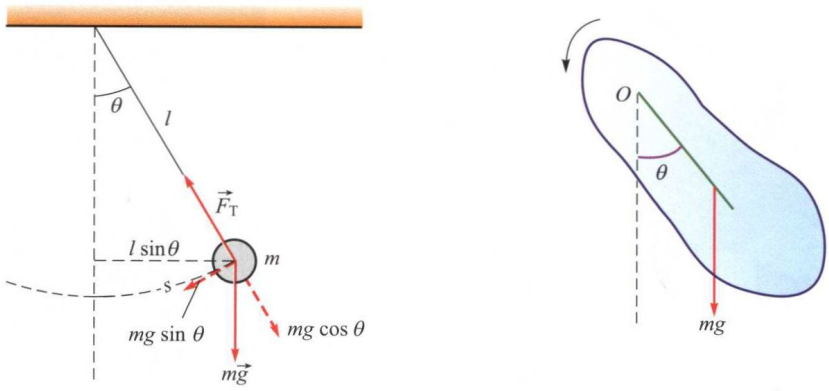


Figure 5-5 Experimental setup of a simple pendulum and a compound pendulum

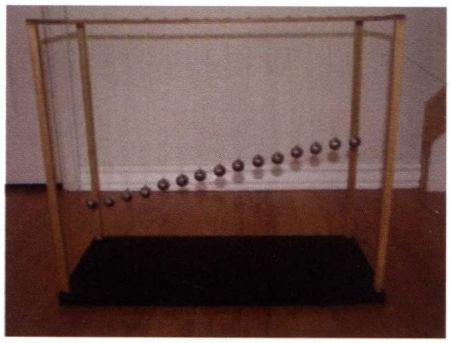


Figure 5-10 Pendulum wave

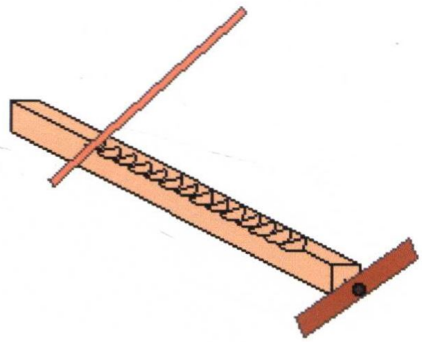


Figure 5-11 A gee-haw whammy diddle



Figure 5-14 JILA's strontium optical atomic clock based on neutral atoms

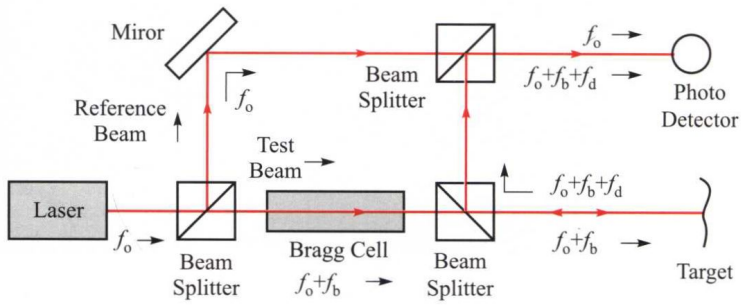


Figure 5-15 Basic components of a laser Doppler vibrometer

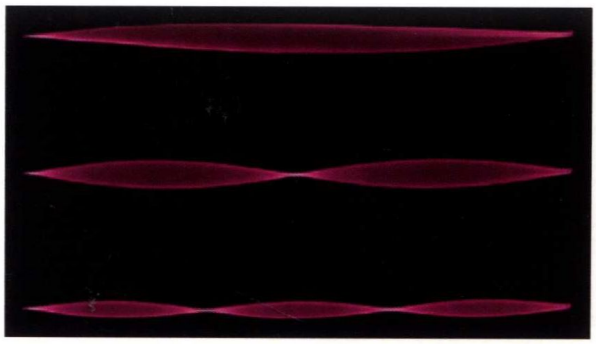


Figure 6-2 Standing wave

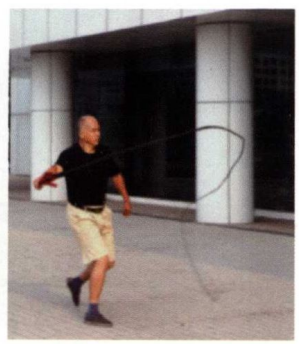


Figure 6-3 The whipping effect

需要全本请访问 www.ertongbook.com



Figure 6-5 Resonating glass

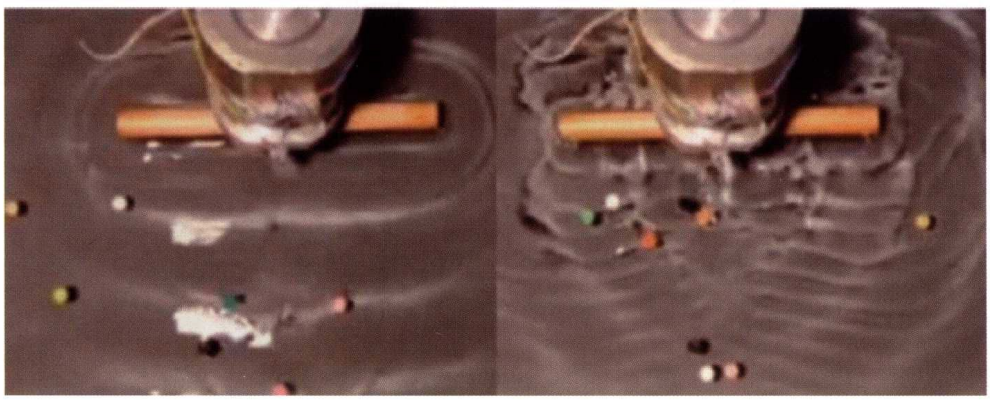


Figure 6-6 Wave resonance

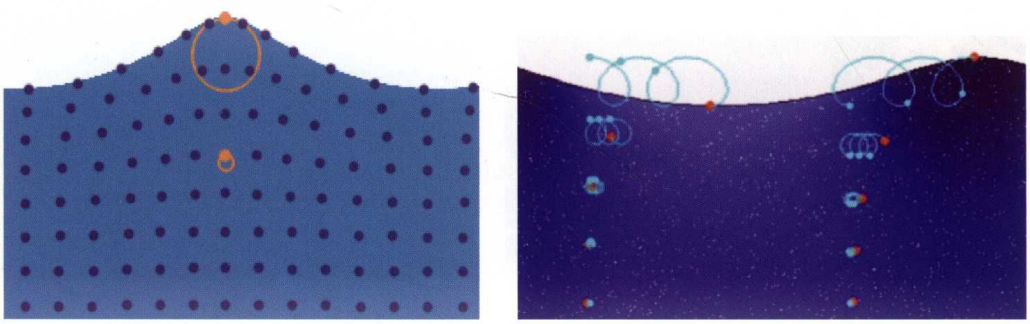


Figure 6-7 Water wave, combination of transverse and longitudinal wave



Figure 6-8 Beat

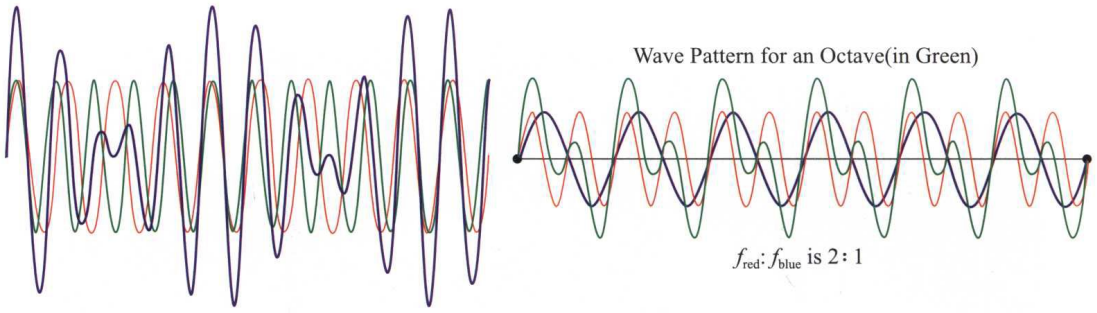


Figure 6-9 A simple sinusoidal plot of two sound waves with a 2 : 1 frequency ratio

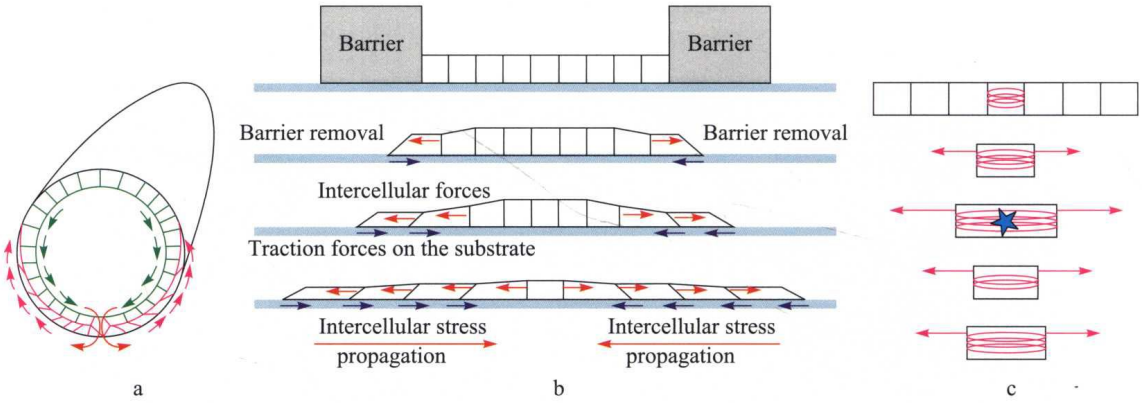


Figure 6-11 Multicellular migration mechanics

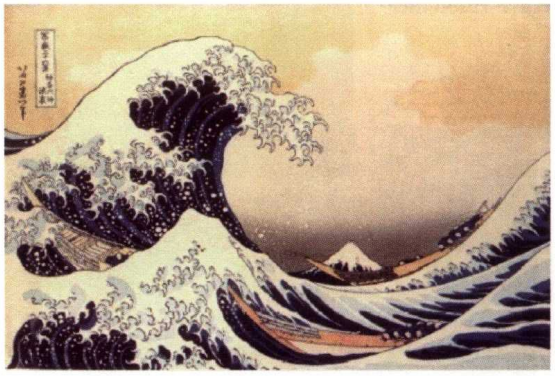


Figure 7-1 The water wave



Figure 7-2 Two water waves superpose at the surface of water

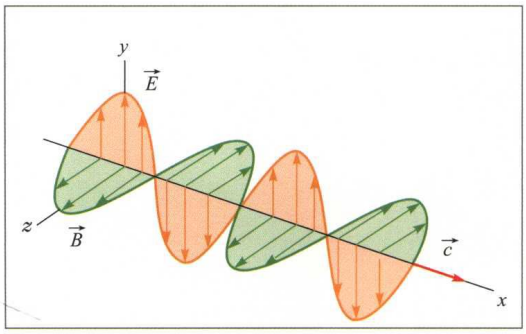


Figure 7-4 Light—transverse wave

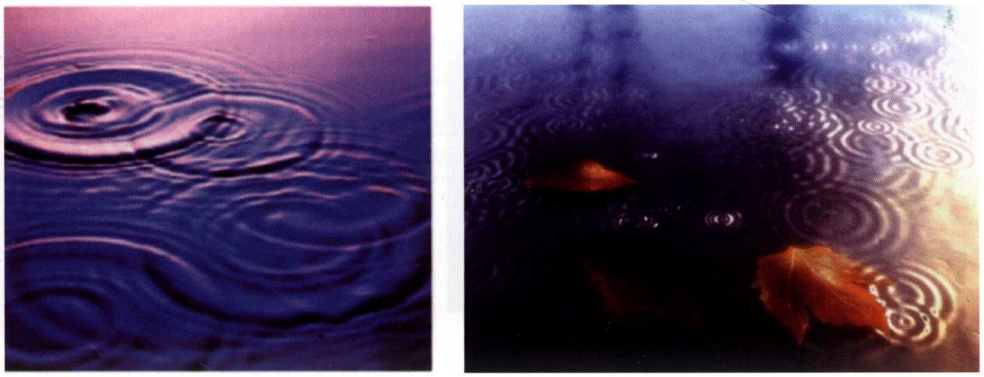


Figure 7-5 Water waves superpose at the surface of water

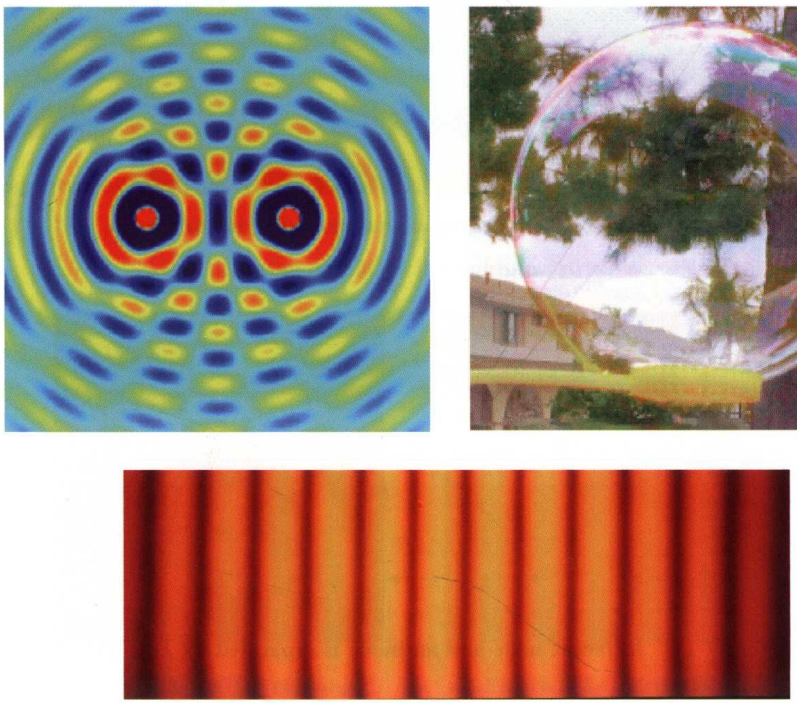


Figure 7-6 Interference of water wave and light wave

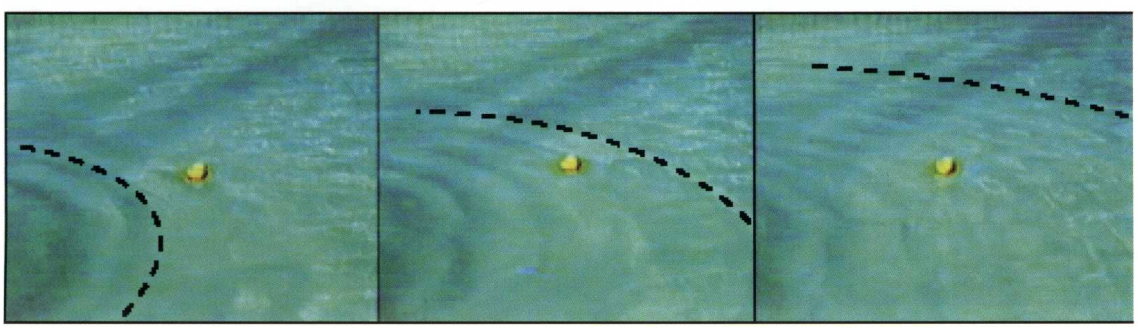


Figure 7-7 The duck bobs around its initial position, the water moves forward

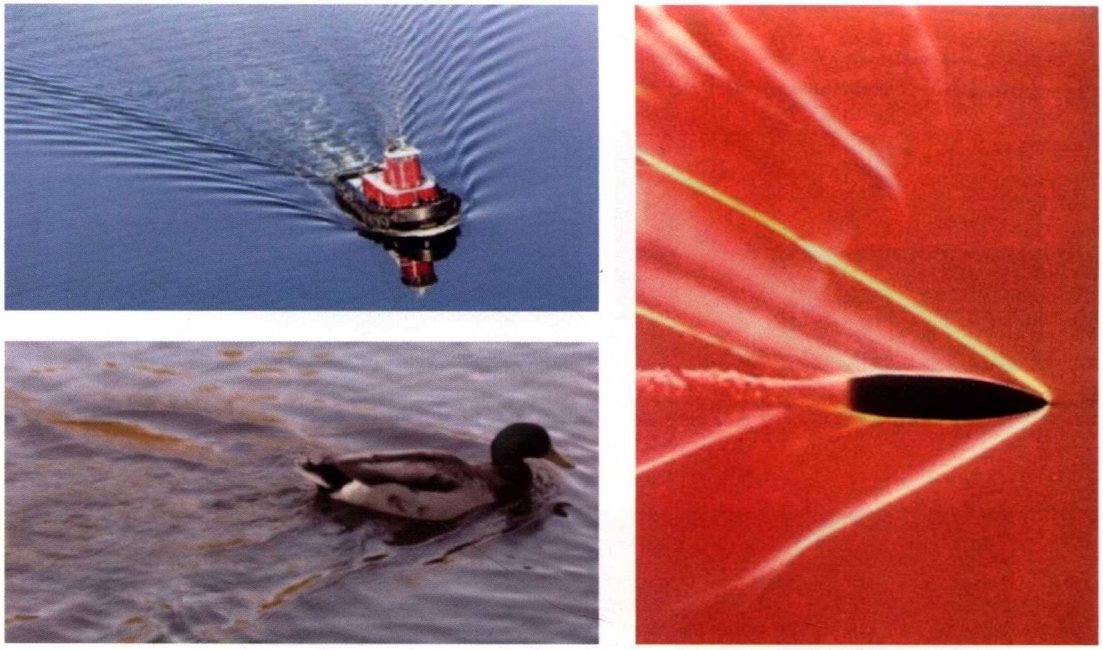


Figure 7-10 Left picture: bow waves produced by a boat and duck going faster than the wave speed in water. Right picture: Shock wave of an ultrasonic bullet in the air

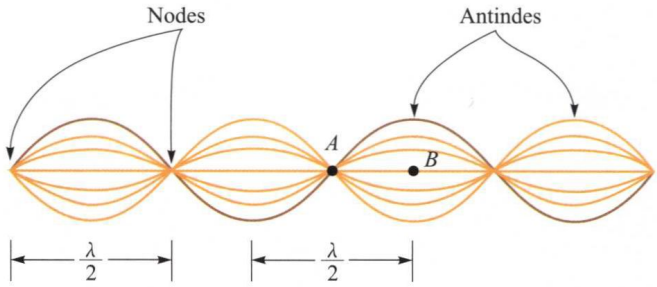


Figure 7-11 Adjacent node and antinode is separated by $\lambda/4$

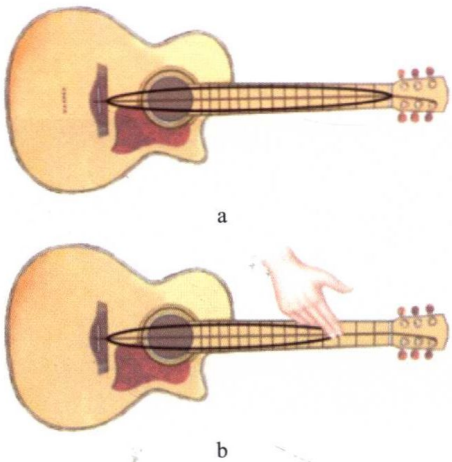




Figure 7-13 By changing the length of the string and the density of the string to make the different tone

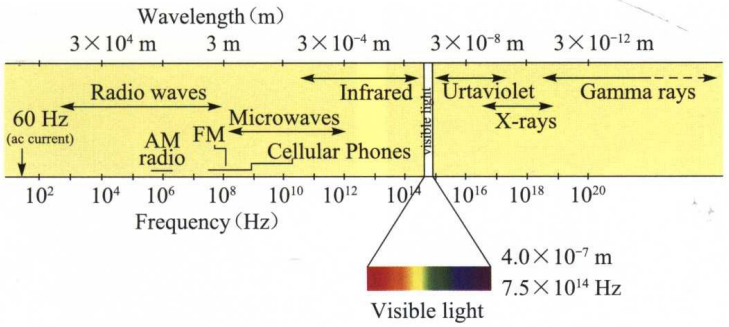


Figure 7-16 The electromagnetic wave spectrum



Figure 7-17 This picture shows the position of positively and negatively charged particles (ions) before, during and after the lightning strike occurs



Figure 8-1 After rubbing, the balloon attracts the hair

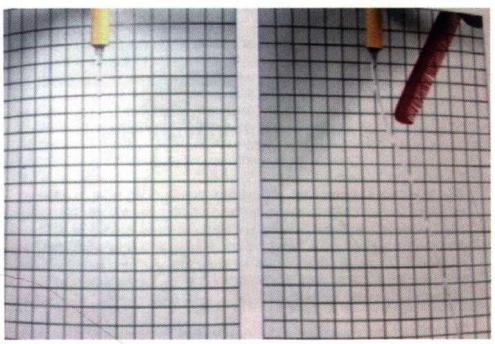


Figure 8-2 Electric force changes the path of the falling water

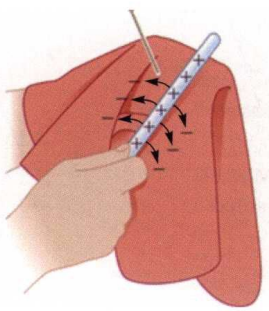


Figure 8-5 Glass is rubbed with silk; electrons are transferred from the glass to the silk

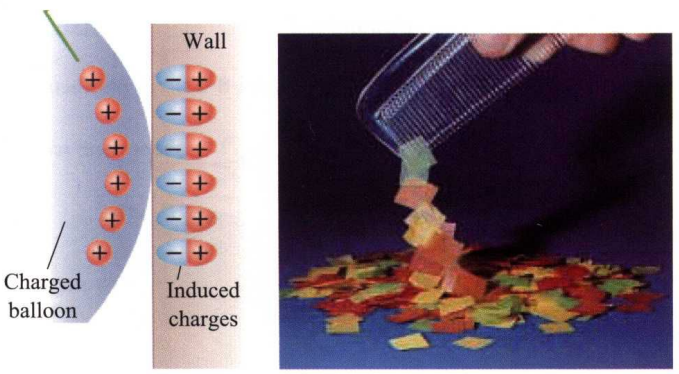


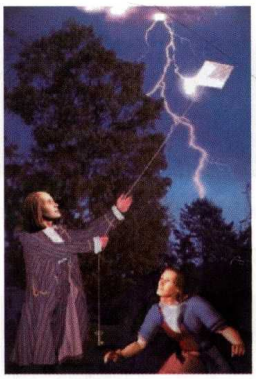
Figure 8-11 A charged balloon is brought near an insulating wall. A charged comb attracts bits of paper because charges in molecules in the paper are realigned



Figure 8-13 Left: A charged ball, the colorful lines emanating from the sphere give evidence of strong electric field. Right: The atmospheric pressure plasma jet can be produced



Figure 8-15 Benjamin Franklin drawing electricity from the sky



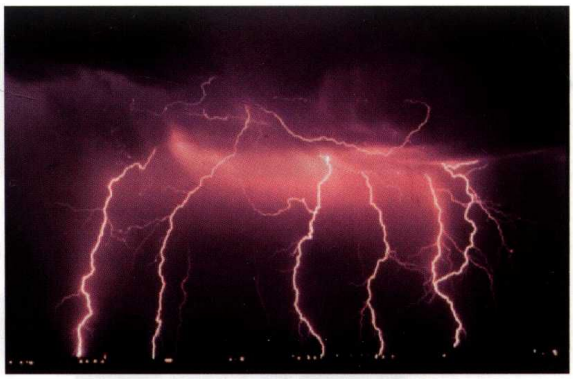


Figure 8-16 Lightning is associated with very strong electric fields in the atmosphere

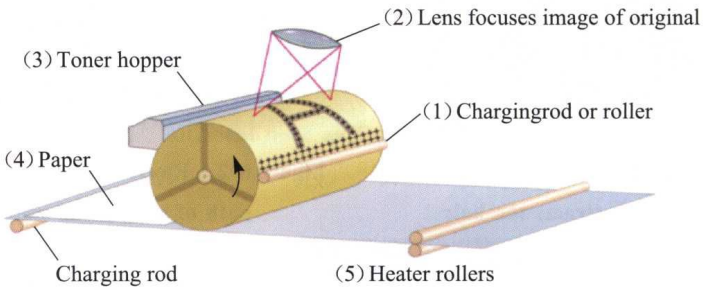


Figure 8-21 A photocopy machine

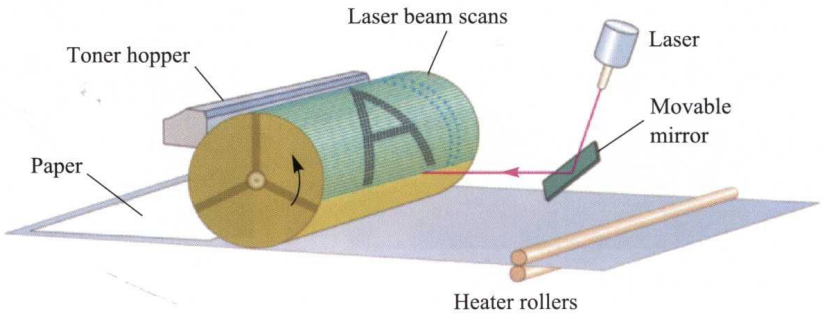


Figure 8-22 A laser printer

需要全本请访问 www.ertongbook.com