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前　言

本书《趣味科技英语》是英汉对照科普读物，是为我国优秀的高中学生和大学生增进科技知识，提高英语阅读能力，培养对科技的爱好，促进对大自然的热爱和环保意识而设计的。它是集知识性、科学性、趣味性和可读性于一体的。

本书汇集的28篇课文和译文是作者从中、外报纸、刊物、电视节目、教科书等提供的最新科技信息中挑选出来的、饶有趣味又适合我国学生科技知识水平的资料，经过整理，用通俗易懂、流利、规范的英语和汉语写/译成的。读者可以读到许多有趣的、引人入胜的科技文章，增长科技知识，还可以学到英语（词汇、词组、句型、表达方式）和英译汉的技巧。本书还可以作为为多种专业开设的"科技英语"课程的适用教材。

我们热切地盼望广大读者、学生和教师对本书不吝赐教，使之日趋完善。

作者与编者

1997年9月

CONTENTS

目　　录

Lesson One

Electronic Publication　电子出版物 …… (1)

Lesson Two

Optical Fibre Technology　光纤技术…… (11)

Lesson Three

Cosmic Catastrophe that Killed Dinosaurs　使恐龙灭绝的宇宙灾变 …… (19)

Lesson Four

Greenhouse Effect　温室效应…… (32)

Lesson Five

Abundant Resources for Making Foods　丰富的食物资源 …… (47)

Lesson Six

Garbage—Potential Resources　垃圾——潜在的资源 …… (58)

Lesson Seven

New Fuels—New Engines—New Cars　新燃料—

新发动机—新汽车 …… (71)
Lesson Eight
Computer Codes and Their Applications 计算机码及其应用 …… (85)
Lesson Nine
Precision Guided Weapons 精确制导的武器 …… (106)
Lesson Ten
Peep into the Future Arsenals 窥探未来的武库 … (120)
Lesson Eleven
Toward the Mars 飞向火星 …… (145)
Lesson Twelve
Earthquakes and Earthquake Prediction 地震与地震预报 …… (160)
Lesson Thirteen
Human Mind versus Computer 人脑大战计算机 ……
…… (180)
Lesson Fourteen
Computer-aided Weather Forecast 计算机辅助的天气预报…… (196)
Lesson Fifteen
Science and Technology in the News 科技新闻 … (210)
Lesson Sixteen
A Drowning City—Venice 溺水的城市——威尼斯 ……
…… (227)

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Lesson Seventeen
A Brief Explanation of Darwinism 进化论浅释 …… (239)
Lesson Eighteen
Coevolution of the Cuckoo and Its Hosts 杜鹃鸟与它的宿主的共同进化…… (249)
Lesson Nineteen
A Master of Camouflage and Mimicry 保护色与拟态的大师…… (270)
Lesson Twenty
Hard Problems that Puzzle Computers 难住计算机的难题…… (285)
Lesson Twenty-one
Life in Antiquity 古代的生活…… (302)
Lesson Twenty-two
Mystery and Superstition 神秘与迷信 …… (323)
Lesson Twenty-three
Learning as a Subject of Psychology 学习是心理学的一个课题…… (344)
Lesson Twenty-four
Intelligent Life in the Universe 宇宙中的智慧生命
…… (361)
Lesson Twenty-five
Observatories on the Moon 月球上的天文台 …… (378)

Lesson Twenty-six
Debates on the Origin of Mankind 关于人类起源的争论…… (395)
Lesson Twenty-seven
More and Better Foods and Medicines from Biotechnology 生物技术带来更多更好的食品和药品…… (423)
Lesson Twenty-eight
The Heart, Heart Disease and Heart Surgery 心脏，心脏病和心脏手术…… (442)

Lesson One
Electronic Publication

1 With the rapid development of computer and network technology, the mode of publication is now undergoing fundamental changes. For a long period in history, paper was the major carrier of spiritual treasure, but it is now facing intense challenge from a newly developed one, the electronic publication. The advent and growth of electronic publication has inflicted unprecedented impacts on the publishing industry and even on the society as a whole.

2 As is common sense, electronic publication refers to the mass medium that carries textual, audio, video and graphic information stored in magnetic, photographic and electronic media, in a digital form, and can be copied to produce replicas for various purposes. At present, the popular electronic publication falls in two categories: the one of packaging mode and the other of network mode.

3 The packaging mode electronic publication comes out as a combination of computer and multimedium technology with the publishing industry. It incorporates texts, images, graphs, sounds, cartoons and video into one and its interactive reading mode brings great changes to people's reading habit. This category includes floppy discs (FD), read-only compact discs (CD-ROM), interactive compact discs (CD-I), graphic compact discs (CD-G), photographic compact discs (PHOTO-CD), video compact discs (VCD) and integrated circuit cards (IC-

CARD). Videodisc is the backbone of all these discs. In computer systems, CD-ROM is a peripheral read-only memory disc for storage of texts, graphs and sounds. A piece of 3½" CD-ROM has a capacity of about 650 Mb, an amount equivalent to the total content of 10 books added together. CD-ROM is also widely used to make electronic manuals, encyclopedias, year books, software, game discs because of its great capacity, low cost, easy use, long endurability and incorporation of textual, graphic, video and audio information.

4 At the moment, videodiscs continue to develop in capacity, and in density of storage. As reported, Japanese lately developed SP-ROM with a capacity of 18 Gb each, an amount equivalent to 18 pieces of CD-ROM. Another new product known as DVD (Digital Video Disc) came to the market recently. It looks just like a standard CD, but it is able to hold a phenomenal amount of information: 4.7, 8.5, 9.4 or even 17 Gb. Current CD-ROM are 1.2 mm thick. The DVD disc uses two bonded 0.6 mm substrates, reducing the amount of distance between the surfaces of the disc and the physical pits on the disc that hold information. The laser doesn't have to penetrate as much plastic, so it can be focused on a smaller area. Therefore, the pits can be made smaller and packed more tightly together, increasing capacity.

5 As related statistics show, the variety of packaging mode electronic publication in the world numbered over 8 000 in 1993, 10 000 in 1994, and 15 000 in 1995. Experts reckon the world market for electronic publication will increase each year by 30% to 40%.

6 With the explosive expansion of INTERNET across the world, the network mode electronic publication burgeoned and

grows rapidly. This mode of electronic publication has not been strictly defined and it does not assume a fixed material form. Transmitted in networks today are mainly news bulletins (electronic newspapers and magazines) among users in the networks through computerized servers. News bulletin is actually newspapers edited on, transmitted through and read on network terminals. The user needs a PC, a modem and telephone line to read what he/she is interested in and makes a copy of them if he/she likes. Electronic bulletin provides information in an unprecedentedly great proportions and rapid speeds, much to the satisfaction of modern man. At the moment, more than 800 daily newspapers and magazines join the news bulletin provided by INTERNET, including worldwide famous *Times*, *Wall Street Journal*, *Observor*. Many news agencies in the world open electronic versions of news service on INTERNET, including Reuters, Associated Press, United Press International.

7 Data bases on networks (local and worldwide) open to users who can browse data, books, magazines, catalogs, directories, all of which have been digitized and stored on discs, using a PC connected to the network. For example, in the Beijing Library, Library in the Academy of Science of China, library in the Beijing University, readers can access the catalog simply by keying some keywords on the keyboard, ranging from selection of newspapers in hundreds, to digests of medical theses. More advanced libraries in the world are now engaged in "digitizing" their stocks for joining INTERNET. The Congress Library in Washington, D. C. announced as early as in Oct. 1994 that it planned to convert all its books, paintings, manuscripts and photos into digital information to be transmitted through INTERNET, to readers throughout the world. By now, 210 000

pieces of files have been digitized, more than half of them are chronicle files, maps, films, photos and files about Presidents and celebrities in American history. INTERNET has brought revolutionary changes to libraries. International Federation of Library Associations is now carrying out a global plan to incorporate its headquarters, local offices and libraries across the world into a worldwide system through INTERNET. At present, ten thousand pieces of files are transmitted through this system to 4 500 users in about 90 countries and regions.

8 Compared with conventional books and magazines, electronic publication is unrivalled. Firstly, elctronic publication has unlimited capacity; secondly, it can be easily and quickly accessed; thirdly, it incorporates texts, images, sounds, cartoons and other media in an animated way; fourthly, the reader can easily make copies and even edit the content in his/her own way; fifthly, treasure of human civilization can be shared worldwide at low cost, for various purposes: education, academic study, cultural exchange, engineering discussion, exhibitions in museum and gallery, commerce, advertisement, entertainment and even games.

Words and Phrases

mass medium [mæs 'mi:djəm] *n*. *phr*. 大众媒介
mode [məud] *n*. 模式,样式,形式
textual ['tekstjuəl] *a*. 文本的,文章的,文字的
audio ['ɔ:diəu] *a*. 声音的,音频的,听觉的
video ['vi:diəu] *a*. 影像的,视频的,电视的
graphic ['græfik] *a*. 图像(学)的
digital ['di:dʒitl] *a*. 数字(式)的

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replica ['replikə] *n*. 复制品,复印件
multimedium ['mʌlti'mi:djəm] *n*. 多媒体
image ['imidʒ] *n*. 图像,像,形象
graph [grɑ:f] *n*. 图,图形
cartoon [kɑ:'tu:n] *n*. 动画
interactive [ˌintə'æktiv] *a*. 交互式的
floppy disc ['flɔpi disk] *n*. *phr*. 软(磁)盘
compact disc ['kɔmpækt disk] *n*. *phr*. 高密度(激)光盘
integrated circuit ['intigreitid 'sə:kit] *n*. *phr*. 集成电路
videodisc ['vi:diəuˌdisk] *n*. (激)光盘,影碟,视盘
peripheral [pə'rifərəl] *a*. 外围的,附设的
capacity [kə'pæsiti] *n*. 容量
Mb = Megabit ['megəbit] *n*. 兆位(1 兆 = 10^6)
equivalent (to) [i'kwivələnt] *a*. 等效的,相当的
manual ['mænjuəl] *n*. 手册
encyclopedia [enˌsaikləu'pi:djə] *n*. 百科全书
year book ['jiə buk] *n*. *phr*. 年鉴
endurability [inˌdjurə'biliti] *n*. 耐久(性、力)
density of storage ['densiti] *n*. *phr*. 储存密度
Gb = Gigabit ['dʒigəbit] *a*. 千兆位
phenomenal [fi'nɔminl] *a*. 非凡的,非同小可的
substrate ['sʌbstreit] *n*. 基底,基体
pit [pit] *n*. 坑
reckon ['rekən] *vt*. (粗略地)估计
burgeon ['bə:dʒən] *vi*. 发芽,发展,展开
assume [ə'sju:m] *vt*. 采取,呈现(形态)
bulletin ['bu:litin] *n*. 公告板
server ['sə:və] *n*. 服务器
terminal ['tə:minl] *n*. (计算机系统等的)终端(机)
modem ['məudəm] *n*. 调制解调器

unprecedentedly [ʌn'presidəntidli] *adv*. 无前例地
in great proportions [prə'pɔ:ʃən] *prep*. *phr*. 大量地
news agency ['eidʒənsi] *n*. *phr*. 新闻社,通讯社
version ['və:ʃən] *n*. 形式,样式,版式
Reuters ['rɔitəz] *n*. [英国]路透(通讯)社
Associated Press [ə'səuʃieitid pres] *a*. [美国]美联社
United Press International *n*. [美国]合众(国际)社
browse [brauz] *vi*. *vt*. 浏览
catalog ['kætələg] *n*. 目录,目录册
directory [di'rektəri] *n*. (文件)目录,通讯录
digitize ['didʒitaiz] *vt*. (使)数字化
the Academy of Science of China *n*. *phr*. 中国科学院
access ['ækses] *vt*. 进入,访问
keyword ['ki:wəd] *n*. 关键字
digest ['daidʒest] *n*. 摘要,文摘
thesis ['θi:sis] *a*. 论文, theses['θi:si:z][复]
Congress Library *n*. *phr*. [美国]国会图书馆
convert…into… [kən'və:t] *vt*. 把……转换为……
manuscript ['mænjuskript] *n*. 手稿,打字稿
file [fail] *n*. 文件
chronicle ['krɔnikl] *n*. 编年史,记事
celebrity [si'lebriti] *n*. 名人
conventional [kən'venʃənl] *a*. 常规的
unrivalled [ʌn'raivəlt] *a*. 无与伦比的
animated ['ænimeitid] *a*. 栩栩如生的

Comprehension Questions

1. What does the word "electronic" in "electronic publication" mean? Why?
2. What kinds of information can be put in the electronic publication?
3. What is the videodisc? What of the videodisc impresses you? and why?
4. What do you know about INTERNET?
5. What services can you expect for in a modern library using electronic publication?
6. What does digitization mean? Why is it the first step for electronic publication?
7. Explain how unrivalled the electronic publication is, compared with conventional books and magazines.

电子出版物

1　随着计算机和网络技术的迅速发展，出版物的形式现在正发生根本的变化。历史上很长的一段时期内，纸是精神财富的主要载体，而现在却面临着最近发展起来的一种新载体——电子出版物的激烈地挑战。电子出版物的出现和发展已对出版界，以至对整个社会造成了前所未有的冲击。

2　大家都知道，电子出版物指的是运载文字、声音、影像和图像信息的一种大众媒介；这些信息以数字的形式储存在磁的、光的和电子的媒体上，可以为了各种目的进行复制，产生各式复制品。现在流行的电子出版物可以分为两类：一类称

为封装型，另一类称为联网型。

3　封装型电子出版物是计算机技术和多媒体技术与出版业结合的成果。它把文本、图像、图形、声音、卡通与影像合为一体，而且，它的交互式阅读方式使人们的阅读习惯发生了巨大的变化。这类电子出版物包括软(磁)盘(FD)，只读光盘(CD-ROM)，交互式光盘(CD-I)，图像光盘(CD-G)，照片光盘(PHOTO-CD)，影视光盘(VCD)，集成电路卡(IC-CARD)。(激光)光盘是所有这些电子出版物的中坚。在计算机系统中，只读光盘 CD-ROM 是用来储存文字、图像和声音的外围只读储存器。一张 3½ 英寸的 CD-ROM 的容量大约是 650Mb，可以容纳 10 册书的全部内容。CD-ROM 也广泛地用来制作电子手册、电子百科全书、电子年鉴、计算机软件、游戏碟等等，这是因为它的容量大、成本低、使用方便、耐用，又能把文字、图像、影视和声音信息合为一体。

4　目前，光盘继续在容量和储存密度上发展。据报导，日本人最近开发成功的 SP-ROM 容量达 18 Gb，相当于 18 张 CD-ROM 的容量。另一种新产品 DVD(数字影像光盘)最近出现在市场上。它的外观很像标准光盘，但它可以储存数量甚大的信息：4.7 Gb，8.5 Gb，9.4 Gb，甚至 17 Gb。现在的 CD-ROM 厚度是 1.2 mm，DVD 用 2 张 0.6 mm 厚的基片结合在一起，减少了盘的表面与盘面上储存信息的物理坑之间的距离。激光不必穿透那么多的塑料，因此可以聚集在较小的面积上，于是，这些坑可以做得更小，互相之间排列更近，使容量增大。

5　据有关统计数字，1993 年全世界的封装型电子出版物的种类有 8 000 种以上，1994 年，10 000 种，1995 年，15 000

种。全世界电子出版物市场每年将增加30%～40%。

6　随着INTERNET在全世界急剧地扩展，网络型的电子出版物萌芽并迅速发展。这一类型的电子出版物至今尚未得到严格定义，它也不以固定的物质形式出现。现在这主要是以新闻简报的形式（电子报纸和电子刊物）在网络上、在用户之间通过计算机化的服务器传输。新闻简报事实上就是在网络终端机上编辑、传输和阅读的报纸。用户需要一台个人计算机、一套调制解调器、电话线方可阅读他/她感兴趣的东西；如果愿意，还可以把它复制下来。电子新闻简报以前所未有的大容量和高速度提供信息，使现代的人们深感满意。目前，800多家日报和刊物参加了INTERNET，提供新闻简报，包括世界闻名的《泰晤士报》，《华尔街时报》，《观察家报》。世界上许多新闻机构在INTERNET上开设了电子新闻服务，包括路透社、美联社、合众国际社。

7　网上数据库（本地的和世界范围的）向用户开放；用户利用一台联网的个人计算机就可以浏览那些已数字化了的、并储存在盘上的一切数据、书籍、刊物、目录册、通讯录。例如，在北京图书馆、中国科学院图书馆、北京大学图书馆，读者只要在键盘上键入一些关键字就可以访问目录册，从数以百计的报纸选篇到医学论文摘要，应有尽有。世界上一些更先进的图书馆正在把它们的藏书“数字化”，以便参加INTERNET。华盛顿特区国会图书馆早在1994年10月就宣称它要把它的全部图书、绘画、手稿和照片转变成数字化信息，以通过INTERNET向全世界的读者传送。到目前为止，21万件文件已完成数字化（处理），其中半数以上是历史文件、地图、电影、照片和有关总统和美国历史名流的文件。INTERNET

已给图书馆带来了革命性的变化。图书馆协会国际联合会正在实施一项全球性的计划，要通过 INTERNET 把它在全世界各地的总部、地方办事处和图书馆联成一个覆盖全世界的系统。目前，1 万件文件通过这一系统向约 90 个国家和地区的4 500名用户传输。

8　与常规的书籍和刊物比较，电子刊物是无比伦比的：第一，电子刊物的容量是无限量的；第二，它可以方便、迅速地访问；第三，它包罗文字、图像、声音、图画和其他媒介，以生动、逼真的形式表现出来；第四，读者很容易就可以复制甚至以自己的方式编辑其内容；第五，人类文明的财富可以在全世界以低代价为各种目的而分享：教育、学术研究、文化交流、工程研讨、博物馆和画廊展览、商业广告、娱乐甚至游戏。

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