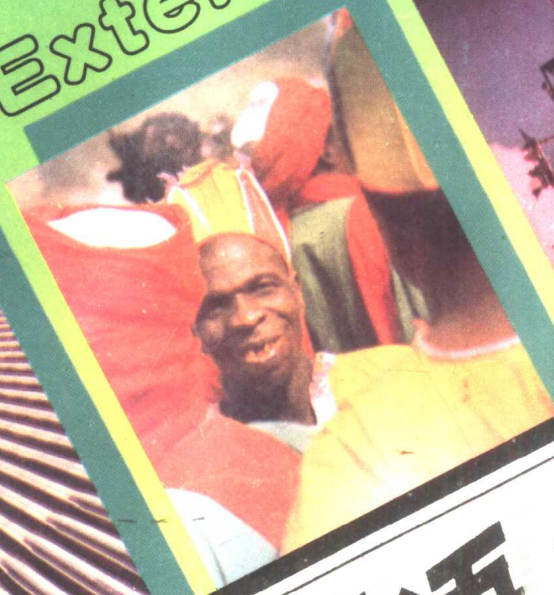


Level 4

Modern English

Extensive Reading



现代英语

(第二版) 第四级

泛读

《现代英语》修订组

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MODERN ENGLISH

for University Students

现代英语

(第2版)

Extensive Reading

泛 读

Student's Book

Level 4

Modern English Revising Team

(京)112号

本书共分12个单元，每单元的文章主题基本与《读与写》相匹配。

本书是经中英双方教师和专家共同努力修订而成。课文除保留了少部分第1版的阅读材料以外，大多更换成新的阅读材料。

本书突出语言共核，注重知识性和趣味性；练习安排合理、图文并茂、语言地道，文理工各科通用。

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现代英语(第2版)

泛 读

第4级

《现代英语》修订组

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再版前言

《现代英语》(Modern English)系国家教委批准,由中国高等教育出版社与英国麦克米伦出版公司合作编写出版的英语教材,主要供我国高等院校非英语专业的各科学学生学习英语使用。这是我国首次与国外合作编写出版大学教材,是英语国家的语言优势与国内大学英语教学经验的结合。这一中外文化交流项目,为国内外语言界、教育界和新闻界所瞩目。

《现代英语》的编写,以现行的《大学英语教学大纲》为指导原则,从国内大学英语教学情况出发,解放思想,在肯定和继承国内大学英语教学行之有效的经验的同时,积极借鉴和引进国外语言学 and 语言教学的新思想、新理论和新方法。这主要表现在三个方面:

第一, 阅读教学从 TALO 向 TAVI 转变

国外语言界提出了阅读教学中的两个重要概念,即文章作为语言实体 (Text as Linguistic Object, 简称 TALO) 与文章作为传递信息的载体 (Text as Vehicle of Information, 简称 TAVI)。前者表示,阅读材料是用以教授语言知识 (语音、词汇、语法等) 的形式,后者则表示,阅读材料是传递信息的媒介。因此,在教学实践中,如何处理这两者的关系,便直接影响着教学方法、教学目的和教学效果。在相当长的一个时期内,由于多方面的局限,国内的阅读教学在很大程度上停留在 TALO 的水平上,体现为以词汇、语法为主线,教师为中心,过多强调了语言知识的传授,却往往忽略了阅读文章所表达的信息。我国英语教学中,甚至在学生毕业后的工作实践中,阅读速度慢、阅读能力较弱这一普遍现象,是与上述的传统教学思想和方法有不可分隔的关系的。须知,人类当前所处的时代是“信息爆炸”的高科技时代,正是在这种情势下,产生了阅读教学从 TALO 向 TAVI 转变的观念。这就要求在教学中,不仅要重视语言形式,而且要十分重视通过语言形式所表达出的信息,进而培养学生通过阅读课文获取信息和表达信息的能力。《现代英语》的编写,正是基于英语阅读教学的这一变革,在选材上,打破以语法为纲的框框,选用多题材、多体裁的真实的 (authentic) 语言材料,使课文内容知识性强,信息量丰富,从而为学生接触真实的语言材料,获取信息创造良好的条件。

第二, 语言操练从 Usage 向 Use 转变

英国语言学家 H. G. Widdowson 区别了 Usage 和 Use 两个不同的概念,指出 Usage 是语言形式的一个成分,即“用法”,而 Use 则是语言交际体系中的一个成分,即“使用”。任何一种语言形式都具有这两种属性,也就是说,用作解释某一语言现象的例证和其自身在交际场合中的使用。语言教学应从 Usage 向 Use 转变。这一理论反映在教材中,突出的一点就是练习的设计。迄今国内的传统英语教材中,在练习设计上,较为注重语法。因此,对语言形式进行的操练,往往是孤立的、或缺乏语境的,多停留在 Usage 的水平上,不是对课文句子的简单模仿,便是机械性的套用,因而显得呆板单调,难以达到巩固、掌握和使用的目的。《现代英语》的编写,发挥中外专家、教师的各自优势,充分合作,在练习设计上既着眼于语言形式,又注重语言形式的具体运用,精心设计和安排了形式活泼的练习。例如课前阅读 (Before Reading), 在国内现行大学英语教材中,则是首次使用。即使是对一些传统语法项目的练习设计,也力求激发学生的兴趣和动力。使用过《现代英语》的师生几乎都有一个深刻感觉,认为这套教材的练习独具风格,不再是课文的陪衬,在某种程度上可以说是课文内涵的延伸,课文与练习两者自然而紧密地融为一体,相辅相成。

第三, 运用语言交际的原则, 培养学生的交际能力

语言是交际的工具,语言教学的最终目的是培养学生能以书面的或口头的方式进行交际的能力。现代的文理科和理工科两个《大纲》都明确地将这一原则定为教学宗旨。《现代英语》编写的

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指导思想植根于现代语言学对语言交际理论的研究,注重发展语言技能,大力培养学生的交际能力,即运用语言技能,获取和表达信息。同时,《现代英语》努力体现《大纲》的原则、规定和要求。在交际能力的培养方面,根据国内大学英语教学的现状,把培养学生具有“较强的阅读能力”作为首要目标,同时培养“一定的听和译的能力和初步的写和说的能力”。

《现代英语》为推广先进的教学理论和方法,推动我国大学英语教学的改革、提高教学质量,为促进国内大学英语教材的建设都起了积极的作用,并以其独特的内容和风貌受到了国内师生的喜爱。

然而,由于《现代英语》是中外首次合作编写出版的教材,难免会存在这样那样的问题,加之第一版主要采取“他编我审”的方式,因此具有较大的局限性。通过四年多的课堂实践,暴露出某些不足之处,主要是有些内容偏专偏难,超出了国内学生当前的接受能力,这突出地反映在《泛读》和《听与说》教材中,有的文章趣味性较欠缺,有的生词量过大;课序安排也不尽如人意,等等,加之配套辅助材料的编写和出版未能跟上等诸多因素,造成使用上的困难。但是,广大师生和读者对《现代英语》给予了客观的和应有的评价,认为尽管存在着若干缺陷,它仍不失为一套学习现代英语的较好教材,因而迫切希望能尽快修订,弥补存在的不足之处,使之为我国大学英语教学更好地发挥作用。

经过多方努力和两年多的准备,《现代英语》1-4级的修订工作已顺利完成。现在,第2版终于和大家见面了。这次修订总结了第1版的经验和教训,采纳了广大师生的意见,顾及中外文化的客观差异,完全立足于国内,着眼于国内大学英语教学的实际需要,由中外英语专家和教师共同参与。修订的宗旨是:注重能力的培养,体现语言共核,增强趣味性,加大信息量,力图使《现代英语》成为一套大学文、理、工各科均能适用的通用教材。具体各书的修订情况是:

《读与写》(Reading and Writing) 首先,对选材和课序分别进行了充实和调整,增加人文社科方面的一般性文章,较之第1版有了大幅度的变化。以第1、2级为例,第1级只保留了第1版的第2、3和4等3课,对第1版的第5、7和11等3课重新换了课文和练习,另外新选编了《交通灯的来历》、《手势语》、《埃米琳·潘克赫斯特(人物传记)》、《美国人》和《教育新方法》等5课,同时选入第1版第2级的《从牛到纸币》一课。第2级也仅保留了第1版的5课,即第1、2(改名为《母亲和孩子》)、3、4(改名为《土地和人口》)和12等课,对第1版的第7课更换了课文和练习,新选编了《世界上最富有的人》、《英国民族》、《记忆力:为什么我们记得...为什么我们忘记》、《地震与火山》(全新课文和练习)等4课,同时分别将第1版第3级《一个孩子眼中的世界》和第4级《空气船》两课选入。对于所保留下来的课文,在篇幅或内容上都进行了程序不同的增删和修改。如此调整和修改,不仅增强了文章的可读性和可接受性,而且使课与课之间、级与级之间的梯度更加科学合理,符合由浅入深、循序渐进的习惯。其次,用计算机对生词出现率和词汇量加以严格的控制,解决了生词量过大和超纲词汇较多的问题。这一点在《泛读》和《听与说》教材中尤为明显。最后,在练习设计上,本着继承第1版的成功之处和创新的原则,对每一项练习都审慎地予以考虑、改写,直至重新设计,加强了词汇(如动词短语、搭配等)和写作方面的练习,使写作练习成为有指导的写作,严格从句子水平开始,逐步过渡到段落水平上。

《泛读》(Extensive Reading) 每单元的内容主题基本上同《读与写》的相应课配合,以使词汇有一定的复现率。每单元分为三篇难易不同的文章,力求体现区分度,每篇均配以适量的练习,其中第三篇可供练习快速阅读之用。为了使用方便,第2版的《泛读》将A、B两册合为一册。

《听与说》(Listening and Speaking) 每单元的内容原则上也配合《读与写》,听力材料的生词出现率控制在最低限度,练习形式较之第1级更加生动活泼,注意安排了信息转换性质的练习。录音语速严格按照《大纲》的规定,由英美人士朗读,为学生熟悉不同的英美发音创造条件。

需要说明的是,根据广大师生的要求,在以上各教材中的练习设计上,适当注意与大学英语

考试 (College English Text) 挂钩。

《教参》(Teacher's Guide) 除提供练习答案之外, 还编写了《读与写》每单元课文的简介 (Introduction), 并尽可能提供背景资料、语音和语言难点、语篇分析、教学建议和教学方法等多项内容, 以有助于教师备课。

考虑到国内大学英语教学的实际需要, 而《现代英语》基本教材一时又尚难以满足这一情况, 高等教育出版社将另行组织国内力量编写和出版相应的配套辅助教材, 其中包括《教师教学用书》和《学生练习册》等。这样做无疑将为使用《现代英语》提供更大的方便。

尽管这次修订尽了很大努力, 但由于时间仓促, 仍难做到尽如人意。我们将不断进取, 不断提高, 有所创造, 有所前进。

《现代英语》这一中外文化合作项目, 得到了英国已故首相 Harold Macmillan 勋爵和中国国内有关部门各级领导的极大关怀。这里, 要特别提到英国麦克米伦出版公司 Adrian Soar 先生、Terrance Creed 先生、Yiu Hei Kan 先生、Kate Garratte 女士; 中国高等教育出版社社长祖振铨先生和总编辑杨陵康先生。由于他们的热情关心、大力支持和悉心指导, 保证了本书编写和修订工作的顺利进行。

我们感谢所有为《现代英语》的出版而付出辛勤劳动的中外各方面的人们。

《现代英语》在编写和修订过程中, 得到了许多院校、师生及其他方面人士的关心、支持和帮助。我们特别感谢北京外国语学院、东南大学、重庆大学、西安交通大学、湖北工学院、陕西机械学院、天津轻工业学院、哈尔滨建筑工程学院、南京邮电学院、中国药科大学和郑州粮食学院等院校的大力支持, 并要感谢杨惠中、周献桃、赵明瑜、王保清、徐承钟、唐启金、谢叔寒和王志纯等专家和教授的通力合作。我们尤其要感谢全国大学外语教材编审委员会理工科英语教材编审组副组长韩其顺教授的热心指导。正是这些单位和个人给予《现代英语》的积极支持, 无论是批评还是建议, 促成了这次修订。如果说《现代英语》第2版能得以问世并有所改进的话, 那么必然是与所有关心、爱护、支持这套教材的院校、单位和人士分不开的。值此新版问世之际, 我们谨向他们表示衷心的感谢, 并热诚希望广大读者继续对《现代英语》提出宝贵意见。

先后参加审稿会的还有: 包家珍、孙桂香、李五全、周建平、柳明淮、贾莉、谭荣璋等, 在此一并鸣谢。

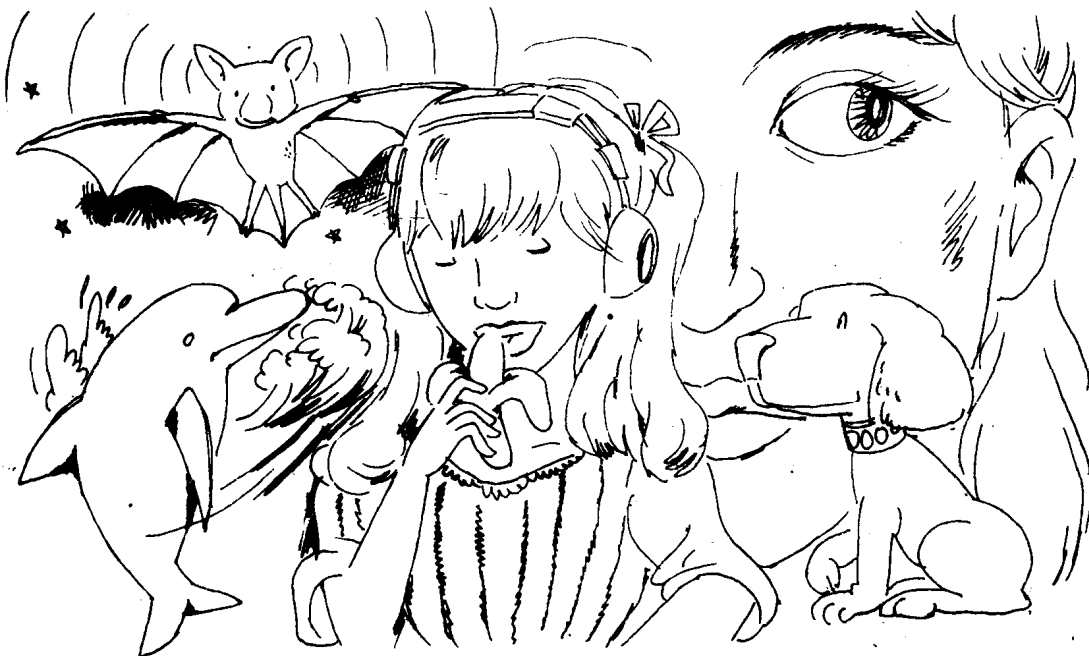
参加本书修订工作的, 英方有: Nicholas Sampson, John Owen, Deborah Veness, Patrick Goldsmith, Donald Watson; 中方有: 罗信群、曹根望、邹长征、李霄翔。

《现代英语》修订组

1990年4月于北京

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UNIT 1

BEFORE READING

- (a) The following words are important in this text. Look through the list and tick those words whose meanings you are familiar with. Do not look the others up yet in your dictionary. Wait until you come across them in the text. If you still do not understand them, read a little more and see if they are repeated. If by the time you have read the whole text through once you still do not understand them, or are unsure of their exact meaning, then look them up in your dictionary.

'apparatus	boom	shrill	hiss	anal
atrophied	gland	potent	mow (v)	mucus

- (b) Read the first paragraph of the text and answer the questions below.

- 1 How sensitive to sound is the human ear?
- 2 How sensitive to sound is an owl's ear?
- 3 How strong must a sound be in order for the human ear to be able to hear it?

- (c) Think about the following questions before you read any more of the text.

- 1 What is sound?
- 2 How is sound frequency measured?
- 3 What determines whether a sound is high-or low-pitched?

SECTION 1

SENSE AND SENSIBILITY

Para 1 Our ears are impressively sensitive pieces of apparatus. A human being can tell within three degrees the direction from which a sound is coming. Owls, which have one ear located slightly forward of the other, can locate sounds even more accurately — to within one degree. To make itself heard, a sound need only be strong enough to deflect our eardrum by 0.0000001 mm. Our ears can pick up a rich variety of sounds from the breathing of a baby to the deafening boom of a supersonic jet. But compared with some of our fellow animals, even those of us with perfect hearing are effectively half deaf.

Para 2 Sound is a vibration of the air and travels as a series of waves. The 'frequency' of the waves — the number of waves per second — determines whether the sound is high-pitched like a scream or low as a bass drum. The human ear by no means picks up all the sound vibrations in the outside world. It can register waves of between 20 and 20,000 vibrations a second (v/s) — the highest C on a piano is 4096 v/s, so 20,000 is just a shrill hiss. But dogs can hear ultrasonic whistles of 35,000 v/s, which are totally inaudible to human beings. Bats are even sharper of hearing: they respond to frequencies of up to 75,000 v/s.

Para 3 Yet no land animal can match the remarkable bottle-nosed dolphin. As dolphins communicate in their complex language of clicks and whistles, they can discriminate sounds from 20 up to a startling 150,000 v/s — nearly eight times the human limit. It is no use, however, wishing that dolphins could 'lend us their ears'. Extraordinarily, they hear through their jaws and throat, which pick up the high-frequency vibrations. Their ears are virtually atrophied.

SMELLS WONDERFUL

Para 4 Our sense of smell is remarkably potent. Freshly mown grass, Camembert cheese, burning rubber — even the memory of such smells can evoke powerful responses.

Para 5 High inside our noses sit two patches of cells that act as smell receptors. The two patches comprise millions of cells, each with minute hair-like projections waving in a sea of mucus, like a mat of wafting reeds in a riverbed. These hairy cells, called cilia, are incredibly sensitive. A single molecule of some substances is enough to excite them into sending a message to the brain. There are at least 14 different kinds of smell receptor cells, each of which is excited by a different type of smell molecule. This allows our brains to work

out not only that something smelly has gone up our noses, but exactly what it is. Most familiar smells — freshly made coffee, cigarette smoke, and delicate perfumes — are complex mixtures of odours.

Para 6 Some perfumes that we find highly desirable are made up of substances that on their own smell quite offensive. Civet, for example, which comes from the anal glands of a wild cat, has a disgusting smell in itself, yet it is a vital element in most expensive perfumes.

Para 7 Humans are able to distinguish between more than 10,000 complex odours. Surprisingly, we do not seem to put this ability to any very significant use. Some scientists now believe that smells play an important hidden role in the relations between people, creating unconscious bonds. Experiments have shown that babies can already distinguish between their mothers and strangers at the age of six days using their sense of smell.

EXERCISE 1

(a) Choose the most appropriate heading for each of the seven paragraphs of the text. Then put them in the correct order.

- A How humans hear
- B Perfumes and their ingredients
- C The sensitivity of the human ear
- D Smells and memory
- E Smell and human relationships
- F How dolphins hear
- G Sound and vibration

(b) Are the following sentences true or false? Find the sentences in the text which provide the necessary information.

- | | | |
|--|---|---|
| 1 Owls can locate sound to within two degrees of its source. | T | F |
| 2 The human ear can only detect sounds which deflect the eardrum by 0.0000001 mm or less. | T | F |
| 3 The hairs in the human nose are less sensitive than the hairs in the human ear. | T | F |
| 4 Humans can tell whether a person is a friend or a stranger simply by the scent the individual gives off. | T | F |

(c) Answer the following questions about specialist terms used in the text. Do not use your dictionary. You can work out all the answers from the text alone.

- 1 What name describes how sound is measured according to the number of waves per second a sound generates?

- 2 What phrase is given to sound with a high rate of vibration?
- 3 What name is given to sound with a low rate of vibration?
- 4 What name is given to the hairy sensory cells located inside the nose?

EXERCISE 2

Choose the most suitable completion for each of the following sentences.

- 1 Even people with perfect hearing
 - A cannot hear sounds that deflect the eardrum by less than 0.0000001 mm.
 - B are really almost deaf.
 - C cannot locate a sound to within a couple of degrees of its source.
 - D cannot hear the shrill hiss that is generated by sound waves of 20,000 vibrations a second.
- 2 Dolphins
 - A have ears situated in their jaws and throats.
 - B do not have ears.
 - C can hear frequencies up to four times beyond the range of bats.
 - D do not receive sound through their ears.
- 3 The human nose
 - A contains 14 patches of smell receptors.
 - B can evoke powerful memories.
 - C communicates with the brain by means of messages sent from millions of tiny hair-like cells.
 - D can distinguish between millions of complex smells.
- 4 It is thought that
 - A some perfumes contain smells which on their own people find horrible.
 - B expensive perfumes promote an unconscious bond between people.
 - C people's relationships to other people are due in part to the unconscious response to smell.
 - D people discriminate between one another on the basis of smell.

EXERCISE 3

Complete the table below with the relevant information.

ANIMAL	SENSITIVITY TO SOUND VIBRATIONS (v/s)
Man	
Dog	
Bat	
Dolphin	

BEFORE READING

The following words are important in the next text. Proceed in the same way as in the Before Reading exercise in Section 1 above, without using your dictionary, until you have exhausted all other possibilities.

compassion	register (v)	chamber	float	craze (n)
flotation	parapsychologist	deprivation	bulky	buoyant
induce (v)	padded	uncanny	plug (v)	mask (v)

SECTION 2

WINDOWS OF THE SOUL

Para 1 Our senses were once known as the 'windows of the soul' and are universally prized as one of our most precious possessions. Few misfortunes excite our compassion more readily than the loss of sight or hearing. But how many senses actually are there? The Greek philosopher Aristotle counted five — sight, hearing, smell, taste and touch — and this has remained the popular wisdom ever since. Scientists exploring the workings of the human nervous system, however, have uncovered a whole range of extra senses to add to this traditional list.

Para 2 All the senses depend on 'sense receptors', nerve endings that send back electrochemical messages to the brain. Every sense receptor is specialized to respond to a particular stimulus from the outside world — receptors in the eye respond to light, those in the nose respond to smells. Spread throughout the body, in the skin, the joints and even the digestive system, receptors have been identified that react to a whole range of specific stimuli. There are some receptors that respond to heat and others that react to cold, receptors that register pain, and receptors that respond to pressure. Each of these can properly be called a different 'sense'. Some scientists also believe there are separate senses of hunger and thirst.

Para 3 We talk of having a sense of balance — and this is quite correct. This sense is located in the ears; indeed, balance may be the ears' most important function. Deep inside the ear is a system of tiny chambers and canals containing fluid and lined with fine sensory hairs. When the head moves, these hairs are stimulated, firing messages to the brain telling it which position you are in and which way up you are. It is this mechanism that establishes your sense of balance.

Para 4 There may be even more senses beyond the current range of science.

25 Parapsychologists often talk of extrasensory perception (ESP) as a sense. There are people who claim to be clairvoyant, meaning that they can, for example, identify objects in a sealed envelope by 'seeing them'. Others say that they have the gift of precognition, the ability to 'see' events in the future. Despite much speculation and scientific research, no one has yet discovered any receptors in the human body that might correspond to these extrasensory senses.

30 **Para 5** One thing is certain. Even if the parapsychologists are right, we can no longer call any of these uncanny forms of perception a 'sixth sense' as we have in the past — by modern reckoning it will be more like the 14th or 15th.

COMPLETELY OUT OF TOUCH

35 **Para 6** Flotation therapy is one of the health crazes of the 1990s. People are shut in a dark sound-proof box where they float in a tank of salt water, relaxing from the stress of everyday life. With most input from their senses removed, floaters experience deep tranquillity and inner peace.

40 **Para 7** But in flotation therapy the senses are never entirely shut off — indeed, people often listen to music or watch videos inside their tanks. Total sensory deprivation has quite different effects, as psychologists at McGill University, Montreal, proved in the 1950s. In these experiments, student volunteers were placed in padded clothing and lowered into completely sound-proofed chambers of water maintained at body temperature. Their eyes were covered with goggles and their ears were plugged. They could not even hear their own breathing, and any feeling of body movement was masked by the bulky, clothing and buoyant mass of water. The students were told they could stay suspended for as long as they wished. Only a panic button linked them to the psychologists monitoring them in the outside world.

50 **Para 8** It turned out that being completely out of touch was anything but a recipe for relaxation. Most students pressed the panic button after a few hours and could not be induced to return to the isolation tanks for any amount of money. Lying in the tank they had been overwhelmed by vivid and bizarre hallucinations. One student held out for a whole day, but was temporarily a nervous wreck on his return to the normal world.

55 **Para 9** Why human beings should react with distress to sensory deprivation is not certain. Possibly the brain believes the body has gone to sleep and starts to dream. As the body is in fact wide awake, these dreams appear as hallucinations. We may sometimes crave peace and quiet, but as social animals we only truly function in a stimulating environment. Total sensory deprivation makes sane people live the experience of a mad world.

EXERCISE 1

Choose the most appropriate alternative to complete the following sentences.

1 Sense receptors

- A are located throughout the whole body.
- B respond to electrochemical messages sent from the brain.
- C react to a wide range of external and internal stimuli.
- D can accurately be referred to as senses.

2 Our sense of balance

- A is connected to the fine sensory hairs located on the outside of the ear.
- B tells us how and when we are in the correct upright position.
- C responds to messages from the tiny hairs surrounding the brain.
- D is governed by a system of fluids and hairs in our ears.

3 Flotation therapy

- A is used to cure people who are mad.
- B is used to make sane people mad.
- C deprives individuals of all external sensory stimuli.
- D is a technique that psychiatrists employ to test an individual's response to external stimuli.

4 If used as a relaxant, flotation therapy

- A entirely shuts off input from the individual's senses.
- B fools the brain into believing that the body has gone to sleep.
- C means the individual's reaction to sensory deprivation is recorded on video.
- D cuts down the individual's input from their senses.

5 Man is physically and mentally unsuited to life devoid of stimulation because he

- A only sometimes desires peace and quiet.
- B is incapable of living any other life.
- C is dependent upon external stimulation for his well being.
- D is unable to function in a world without dreams.

EXERCISE 2

The following are all quotations from the text. Scan the text quickly and find the relevant line reference. Then read a few lines before and/or after it and decide what it really means.

QUOTATION	LINE REFERENCE	MEANING
Our senses were once known as the 'windows of the soul' and are universally prized as one of our most precious possessions.		

(Continued on next page)

QUOTATION	LINE REFERENCE	MEANING
Few misfortunes excite our compassion more readily than the loss of sight or hearing.		
It turned out that being completely out of touch was anything but a recipe for relaxation.		
Most students pressed the panic button after a few hours and could not be induced to return to the isolation tanks for any amount of money.		
One student held out for a whole day, but was temporarily a nervous wreck on his return to the normal world.		

EXERCISE 3

Choose the alternative that is closest in meaning to the word or phrase underlined in each of the following sentences.

- Aristotle counted five — sight, hearing, smell, taste and touch — and this has remained the popular wisdom ever since.
 - common knowledge
 - ordinary opinion
 - commonly held to make good sense
 - generally believed to be true
- When the head moves, these hairs are stimulated, firing messages to the brain telling it which position you are in.
 - receiving
 - sending
 - making
 - communicating
- By modern reckoning it will be more like the 14th or 15th.
 - belief
 - opinion
 - calculation
 - working
- We talk of having a sense of balance.
 - refer to
 - speak of
 - debate about
 - speculate on

5 We may sometimes crave peace and quiet.

- A choose
- B desire
- C enjoy
- D demand

SECTION 3

BEYOND HUMAN PERCEPTION

Para 1 On a sunny day in the scrubland of the Californian Chaparral, a bee approaches what appears to us a plain yellow flower. As it lands, it follows brightly marked runways on the petals. A short distance away, a hunting rattlesnake homes in on a small rodent, to our eyes completely hidden among the vegetation. Evening falls. Under kitchen floorboards nearby, a nest of baby house mice have been left for a few minutes by their mother. They feel cold, and start calling for her — a cacophony of ultrasonic distress calls which we cannot hear, but which bring the mother scurrying back to the nest. In the next room, someone changes the TV channel. A goldfish, swimming peacefully around its bowl, sees a beam of red light shoot across from the remote control to the TV set. Outside, a moth stops dead in its flight and tumbles steeply to the ground, just avoiding being caught by a bat.

Para 2 Human beings are simply not equipped to pick up any of the stimuli that provoked these responses. Many insects, for example, can see ultraviolet light. The runways followed by bees as they land on flowers are ultraviolet patterns that lead them to nectar. Rattlesnakes, on the other hand, can sense infrared radiation, or warmth. They belong to a group of snakes that are known as 'pit vipers' because they have additional sensory 'pits' situated between the eyes and the nostrils. The pits enable them to locate prey by the warmth it gives off. Goldfish, like many freshwater fish, can see light far into the red of the spectrum. This is because they live in rivers and streams that turn a rusty red from the presence of fallen leaves. They cannot, however, detect the infrared radiation 'seen' by pit vipers.

Para 3 The mouse and the moth, which take evasive action from the echo-locating squeaks of the bat, hear ultrasonic sound, as do dogs responding to dog whistles. At the other end of the sound spectrum, below the range of human hearing, elephants hear and communicate with very low frequency sound — infrasound. The extremes of animals' sensory abilities reveal to them aspects of the world of which we remain completely unaware.

STEREO EQUIPMENT

Para 4 The circles of feathers around an owl's eyes do not, as you might expect,

● help it to see; they help it to hear. Known as facial discs, the circles have tightly packed feathers around their rims. The feathers channel high-frequency sounds, such as the squeak of a mouse, into the owl's ears, which lie behind the discs. They perform essentially the same function as the fleshy external ears of mammals such as rabbits and cats.

Para 5 With their enormous eyes, owls are particularly well-equipped for hunting in dim light. But their remarkable vision cannot help them in the complete darkness they encounter under trees at night. They then have to rely on their extremely acute hearing. Owls locate sounds much as we do; a sound from the right reaches the right ear fractionally before it reaches the left, and their brains analyse this tiny difference to give the direction of the sound. In the same way, some species of owl can sense the exact height a sound is coming from, as one of their ears is higher than the other. Owls turn their heads to balance a sound in both ears — this gives them the precise direction of a sound, and allows them to pinpoint their prey with complete accuracy in total darkness.

Para 6 As if all this was not enough, owls have extremely soft plumage, allowing them to make their final gilding assault in almost complete silence. A mouse scuttling through the undergrowth has very little chance of escape.

EXERCISE 1

(a) Choose the most suitable heading for each of the six paragraphs of the text. Then put them in the correct order.

- A Ultraviolet light and infrared radiation
- B The feathers around owls' eyes
- C Owls' plumage
- D Animals' supersenses
- E Ultrasonic sound
- F Owls' acute hearing

(b) Decide whether the following statements are true or false.

- | | | |
|--|---|---|
| 1 Moths pretend to be dead to avoid being caught by other animals. | T | F |
| 2 Humans and animals can see ultraviolet light. | T | F |
| 3 Mice and moths use echo-location to 'see' at night. | T | F |
| 4 Owls' ears are located around their eyes. | T | F |
| 5 An owl picks up sounds originating from the left with its right ear. | T | F |

(c) Choose the best ending for each of the following sentences.

- 1 'home in on' (line 3) means
 - A fly towards