

通信科技英语

文选

南京大学外文系公共英语教研室编



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TONGSU KEJI YINGYU WENXUAN

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How Do We Breathe?

It's a wonderfully reliable process. At rest, we breathe gently, barely aware that we're breathing at all^①. Over a day, a man takes 17,300 breaths, a woman 28,800, each gulping and releasing^② 2,300 gallons of air in the process. (Women, on average, have smaller lungs.)

If we exert ourselves even a bit, the respiratory system instantly responds, furiously filling and emptying our lungs. We credit the lungs for carrying out the task, but we do so wrongly, since these two large organs don't provide the motive force. That^③ comes from the diaphragm, which uses pneumatics to make the whole system work.

To get air into the lungs, the diaphragm contracts and drops, increasing both the lungs' volume and that of the chest cavity. With more room^④, the air already inside the lungs is under less pressure than the surrounding atmosphere, and air from outside will rush in to correct the imbalance. A solitary breath is thus drawn.

To take an unusually deep breath, not only does the diaphragm drop, but^⑤ the rib cage expands, which increases the volume of the lungs even more.

When you exhale, the diaphragm relaxes upward and the rib cage contracts. To force air out of the lungs, the muscles of the abdomen contract sharply, pushing the abdominal organs against the diaphragm, which in turn expels the air.

词 汇

gulp [gʌlp] *vt.* 吞, 吸

on average 平均

respiratory system [ris'paɪəətə-ri'sistim] 呼吸系统

furiously ['fjuəriəsli] *ad.* 猛烈地, 迅速地

credit sb. for doing sth. 相信某人能做某事

diaphragm ['daɪəfrəm] *n.* 横膈

pneumatics [nju'mætiks] *n.* 气体力学

imbalance [im'bæləns] *n.* 不平衡

solitary ['solitəri] *a.* 单独的, 单个的

rib cage 肋骨架

exhale [eks'heil] *vt.* 呼出, 呼气

abdomen ['æbdəmən] *n.* 腹

expel [iks'pel] *vt.* 排出

注 释

- ① **barely ... at all**: **barely** = **hardly**, 是半否定词, 与 **at all** 构成强调, 表示“几乎一点都不”。
- ② **each gulping and releasing**: 独立分词结构, **each** 指 **man**, 作分词短语的逻辑主语。
- ③ **That**: 指示代词, 指 **the motive force**。
- ④ **room**: 空间, 不是“房间”。
- ⑤ **not only does the diaphragm drop, but**: **but** = **but also**; 句子因以否定词 **not** 开头, 谓语要倒装, 可以在主语前加 **does**。

参考译文

人们怎样呼吸?

呼吸这个过程是确实确实的, 然而当人们休息时, 呼吸轻微, 竟然一点都意识不到自己是在呼吸。每个男子每天呼吸一万七千三百次, 每个女子每天呼吸两万两千八百次。在呼吸过程中, 每人吸进和呼出的空气为两千三百加仑。(一般说来, 妇女的肺要小些。)

如果人们稍稍用力, 呼吸系统就会立即作出反应, 肺会剧烈地充气 and 排气。人们以为是肺在执行着呼吸的任务。但是这个看法是不正确

的,因为肺这两大器管并不能产生原动力。原动力来自横膈,横膈利用气体力学的原理使整个呼吸系统工作。

为了把空气吸进肺里,横膈收缩并下降,这样就增加了两肺和胸腔的容量。当肺有更多的空间时,在肺里的空气受到的压力就会比周围的大气压小,外界的空气就迅速地进入肺里,从而使原来的不平衡达到平衡,这就是一次吸气的过程。

若作一次特别深的呼吸,不但横膈要下降,而且肋骨架还要扩张,从而肺的容量就增加得更大了。

呼气时,横膈向上放松,肋骨架收缩。为了迫使空气排出肺外,腹部肌肉急剧收缩,使腹部器官顶压横膈,横膈接着就迫使空气排出。

(许雪琴 熊 和)

Can Foods Beat Cancer?

A substance found in everyday vegetables may one day play a significant role in preventing — maybe even curing — a number of forms of cancer.

Scientists have long known that certain foods such as mushrooms, garlic and onions contain a metal called selenium, which causes the body to produce impressive quantities of the chemical glutathione. What they are only now discovering, however, is that as glutathione levels rise, the incidence of cancer falls.

In a recent study, Dr. Daniel Couri of Ohio State University treated laboratory rats with two powerful carcinogens and later fed some of the animals doses of selenium. Those that consumed the metal developed far fewer tumors than those that did not. Selenium apparently caus-

es the body to produce several types of glutathione, which fights cancer either by denying malignancies molecular bits of oxygen or by chemically “handcuffing” a carcinogen and ushering it out of the body through the digestive tract.

Where these discoveries will lead is still uncertain. Although selenium or glutathione-based drugs designed to fight cancer may one day be synthesized, some think that a high-selenium diet may be the best way to exploit the substances’ anticancer properties. Couri cautions, however, that either approach can be perilous: excessive selenium intake may have dangerously toxic effects.

Before either course of action can be selected, extensive additional research must still be conducted. Couri believes that selenium and glutathione are not simple substances and consequently will certainly not yield simple answers. “I think there’s a lot more to it.” he says, “We just don’t know yet.”

词 汇

selenium [si'li:njəm] <i>n.</i> 硒	癌物
impressive [im'presiv] <i>a.</i> 大量的	malignancy [mə'lignənsi] <i>n.</i> 恶性
glutathione [ˌglʊtə'θaɪəʊn] <i>n.</i> 谷胱甘肽	性肿瘤
Ohio [əu'haɪəʊ] <i>n.</i> 俄亥俄州(美国)	handcuff ['hændkʌf] <i>vt.</i> 控制
carcinogen [kɑ:'sinədʒən] <i>n.</i> 致癌物	usher (out) ['ʌʃə] <i>vt.</i> 引出
	perilous ['perɪləs] <i>a.</i> 危险的
	yield [jɪld] <i>vt.</i> 产生

注 释

- ① deny malignancies molecular bits of oxygen: deny 后是双宾结构, malignancies 为间接宾语, molecular bits of oxygen 为直

接宾语,意思是:使恶性肿瘤一点儿氧都得不到。

- ② the best way to exploit ... properties: 不定词短语作定语,修饰way; exploit = make use of

参考译文

食物能战胜癌症吗?

在我们日常食用的蔬菜中,发现有一种物质,这种物质也许有朝一日能在预防——甚至治愈——某些癌症方面,发挥重大作用。

科学家们早就知道,某些物质如蘑菇、大蒜和洋葱等含有一种名叫硒的金属。硒能使身体产生大量化学制剂谷胱甘肽。然而,他们也只能刚刚才发现下列现象:即每当谷胱甘肽含量有所增加时,癌症的发病率就会降低。

俄亥俄州立大学的丹尼尔·库里博士把两种强烈的致癌物质注入一些实验鼠体内,然后再给其中一部分老鼠喂服几剂硒药。服用硒药的老鼠身上长出的肿瘤要远远少于未服药的鼠。看来,硒可使身体产生若干种谷胱甘肽。这些谷胱甘肽或者使恶性肿瘤得不到任何氧气,或者能以化学手段来“束缚”住致癌物质,并通过消化道将其排出体外,从而战胜癌症。

这些发现将会产生什么结果迄今仍然是难以肯定的。虽然硒,或以谷胱甘肽为主剂的抗癌药物也许有朝一日能够人工合成,但是有些人仍然认为食用含硒量高的食物也许是利用硒金属抗癌特性的最佳办法。然而,库里警告,说这两种方法都是危险的,过多地摄入硒类物质可能会使人中毒。

在选择任何一种方法之前,还必须进行广泛的研究工作。库里认为硒和谷胱甘肽不是什么简单的物质,因此也就绝不可能得出简单的结论。他说,“我认为里面大有文章,只不过我们目前还不知道罢了”。

(许雪琴 蒋琳)

Why Do Vampire Bats Suck Blood?

Unlike its fictional counterpart^①, this common flying mammal of the southwestern U.S., Central America and South America is not a ruthless and terrifying mankiller. Nor is it an enormous creature, as it is so often portrayed. It is tiny — only about three inches long. It does not “suck” blood — it licks up the liquid like a kitten with a saucer of milk. It is true that this bat will lick up a little human blood now and then; a foot protruding from beneath a blanket is a tempting target. But there is no evidence that anyone has ever died from the bite of a healthy vampire. In any case, the creature much prefers dining on wild animals or on such domestic substitutes as cows, pigs and sheep.

Alighting softly on its victim, the bat slices a shallow cut with its razor-sharp teeth. As blood flows from the wound, the bat licks it up. A chemical in the creature's saliva prevents the blood from coagulating until the bat has had its fill^②. This usually means about an ounce of blood a day — an amount rarely missed by the victim unless it is visited by many bats^③.

Why does the creature eat blood? Nobody knows how it got started, but now its system is so specialized — it has a super-efficient kidney, for instance — that it can't eat anything else^④. To its benefit, few liquids^⑤, if any, are more nourishing than blood.

词 汇

vampire ['væmpaɪə] *n.* 蝙蝠
suck [sʌk] *vt.* 吸
counterpart ['kauntəpɑ:t] *n.* 对
 应的人或物
mammal ['mæməl] *n.* 哺乳动物
portray [pɔ'trei] *vt.* 描写
kitten ['kitn] *n.* 小猫
protrude [prə'tru:d] *vt.* 突出, 伸

出
tempt [tempt] *vt.* 引诱
alight [ə'lait] *vi.* (鸟)飞落
saliva [sə'li:və] *n.* 唾液
coagulate [kəu'ægjuleit] *vi. vt.*
 凝结
 have one's fill 吃饱

注 释

- ① **counterpart**: 对应物, 文中指 bat. 本文有多处采用替换词代替上文中出现过的词以避免重复. 又如: the creature = the bat; 上文用 wild animals, 下文用 domestic substitutes, substitutes = animals; the victim = the animal attacked by the bat.
- ② **prevents ... its fill: prevent ... from** 意思是“使...不”, 该句意思为: 使血液不凝结直到蝙蝠吃饱为止.
- ③ **an amount rarely missed ... many bats**: 为 an ounce of blood a day 的同位语; rarely missed = hardly felt 几乎感觉不出; victim 及 it 均指 the animal attacked.
- ④ **it can't eat anything else: = it can only eat blood.**
- ⑤ **if any**: 插入语, = if there are any liquids, 用于加强语气, 意思是“根本不会有任何汁液”.

参考译文

蝙蝠为什么吸血?

这个常见于美国西南部、中美洲和南美洲的飞行哺乳动物蝙蝠并不象小说中的蝙蝠是凶残可怕的刽子手, 也不是通常描绘的庞然大物. 它身体短小, 仅长三英寸左右. 也不吸血——只象小猫喝盘中的牛奶

那样舐血。蝙蝠时常喝一点人血也确有其事——毯子下露出的脚是颇有诱惑力的目标。但没有证据证明有谁曾因被健康的蝙蝠咬了一口而死去的。总之，蝙蝠一般更偏爱野生动物的血或牛、猪、羊之类家畜的血。

蝙蝠轻轻地飞落到它要吸食的动物身上，然后用剃刀般锋利的牙在该动物身上浅浅地划开一道口子。当血从伤口流出时，蝙蝠便将血舐干。蝙蝠的唾液中含有一种能阻止血液凝固的化学物质，这样它就可尽兴喝血。这常意味着被吸血的动物一天要被喝掉一盎斯的血——若不是许多蝙蝠一起来喝，这点损失一般动物是感觉不出来的。

那么蝙蝠为什么要喝血呢？无人知晓这是怎样开始的。然而现在蝙蝠的身体系统已经很专门化了，例如，它有一个超效肾脏，因而它非血不吃了。就蝙蝠本身而言，可说没有什么比血更富有营养了。

116

(丘丽光)

Probing a New Source of Power

Over the past 11 years a 20 ft long spacecraft has been circling the Earth, logging 1.6 billion miles, and firing its engines in an experiment to determine the efficiency and reliability of a new type of space propulsion — ion-electric propulsion^①.

As tests were brought to an end recently, engineers at Lewis Research Centre in Cleveland reported that the ion engines were capable of reducing the cost and extending the useful lifetime of future space vehicles.^②

The project and spacecraft were called SERT 2, for Space Electric Rocket Test 2.

The craft carried an engine that produced thrust not

through chemical reactions, as in the case of conventional rockets, but through the discharge of ions.

In such a propulsion system, solar panels produce electricity, which is then used to strip electrons from a fuel (usually mercury). The resulting positively-charged ions are accelerated through a chamber and out a nozzle.

The primary advantage of ion propulsion, its developers say^③, is that with a small amount of fuel a spacecraft can be steadily propelled for years.

The engines should be lightweight and relatively inexpensive.

Engineers of the US National Aeronautics and Space Administration suggested that such engines could be used to boost communications satellites from where^④ they are left by the space shuttle, about 150 miles out in space, to^⑤ their desired 22,300-mile-high synchronous orbit.

They have also been studied for use in steering deep-space probes to the outer planets or in rendezvous missions to asteroids and comets.

词 汇

log [lɒg] *vt.* 航行

propulsion [prə'pʌlʃən] *n.* 推进,
推进器

ion ['aɪən] *n.* 离子

Cleveland ['kli:vələnd] *n.* 克利夫
兰(美国城市)

thrust [θrʌst] *n.* 推进

in the case of 就...来说, 在...情
况下

discharge [dis'ʃɑ:ʒ] *n.* 放出, 发

射

panel ['pænl] *n.* 配电盘

strip [stri:p] *vt.* 夺去

mercury ['mɜ:kjuri] *n.* 水银

positively-charged ['pɒzətɪvli-'ʃɑ:-
ʒɪd] *a.* 带正电荷的

nozzle ['nɒzl] *n.* 喷嘴, 排气管

propel [prə'pel] *vt.* 推进, 推动

aeronautics [ˌæərə'nɒtɪks] *n.* (用
作单数) 航空学

boost [bu:st] *vt.* 推, 提高

space shuttle 航天飞机

synchronous ['sɪŋkrənəs] *a.* 同步的

steer ['stiə] *vt.* 操纵, 掌舵

rendezvous mission ['rɒndivʊ: mɪʃən] 宇宙飞船会合的任务

asteroid ['æstərɔɪd] *n.* (火星和木星轨道间的) 小行星

comet ['kɒmɪt] *n.* 彗星

注 释

- ① to determine ... ion-electric propulsion: 动词不定式短语作定语, 修饰前面的 experiment.
- ② of future space vehicles: 修饰 the cost and extending the useful lifetimes.
- ③ its developers say: 插入语.
- ④ where: 在...的地方, 引导宾语从句.
- ⑤ to: 与 from 构成搭配, 即 from ... to.

参考译文

探索宇航新能源

在过去的 11 年中, 一艘 20 英尺长的宇宙飞船一直在围绕地球运转, 航程长达 16 亿英里, 同时发动机也一直开动着, 以进行测定一种新型空间推进器, 即电离子推进器的效率和可靠性的实验。

最近实验已经结束, 美国克利夫兰市刘易斯研究中心的工程师报道说, 离子发动机能够降低未来空间运载工具的成本, 并延长其使用寿命。

这一研究项目以及宇宙飞船, 统称“SERT-2”, 即指“空间电推火箭试验二”。

这种飞船载有的发动机的推力并不象普通火箭那样来自化学反应, 而是来自离子的放电。

在这一推进系统中, 太阳配电盘产生电流, 该电流又用来去除燃料 (通常是从汞) 中的电子。由此所产生的带正电荷的离子通过腔室加速

并从喷嘴喷出。

离子推进器的发明者说,这种推进器的主要优点是:用少量燃料便能连续几年恒定地推进宇宙飞船。

这种发动机应该是重量轻,价格较便宜。

美国国家航空和航天局的工程师建议,这种发动机可以用来进一步推进通讯卫星,把它们由航天飞机运送到的地方,即空间大约150英里的地方,再推进到所期望的22,300英里高的同步轨道上去。

对于这些发动机能否用于对外行星进行远空探索,或者用于通向小行星和彗星的宇宙飞船的会合飞行,工程师也已进行了研究。

(王 寅)

What Is Memory?

For a long time, scientists thought that memory was electrical in nature. When we learn something new, the nerves in the brain make new pathways. Scientists thought that electrical impulses constantly flashed along these pathways. Experiments with hamsters showed that this was wrong. Memory is not the flashing of impulses along a pathway. It is the pathway itself. We constantly receive messages from all of our senses, perhaps fifteen million million in a lifetime. We remember best things that happened when we were young, things that happened when we were excited, and things that were especially interesting or meaningful to us. After we learn something new, the nerves in our brains show electrical changes. Some scientists believe that chemicals cause these changes. The nerves may add or lose one or two atoms. The dendrites and ax-

ons of our nerves receive and send messages. The dendrites receive impulses and send them to the body of the cell. The cell sends impulses to other cells through the axons. These impulses are electrical in nature, but chemical in origin. To learn more, scientists need to study single nerve cells, but these are very, very small.

In 1957, Holgar Hyden of Sweden learned how to study one cell at a time. He made some very small tools. He learned to work with them under a microscope. With this equipment, he was able to take a single nerve cell, or neuron, from a rat's brain. He took the nucleus from the cell. Then he took the rest of the cell apart, piece by piece. In this way, he could study each separate piece of the neuron. For three years, Hyden and his assistants studied neurons. Their tests showed that chemicals were involved in learning and in memory. As the rats learned, their neurons produced more ribonucleic acid, or RNA. And they produced different kinds of RNA. The RNA produced proteins. Hyden concluded that proteins hold and produce memories.^①

The work of other scientists gave similar results. Two American scientists also studied rats. They put one group in a room with only a little light. These rats only ran around, ate, and slept. The scientists put another group of rats in a room with a lot of light. They gave the rats things to do and learn. After eighty days, they killed the rats and studied their brains. The brains of the second group were heavier than the brains of the first group — almost 5% heavier. Their neurons also had more protein.

Dr. McConnell of the United States studied planariums.