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第五辑

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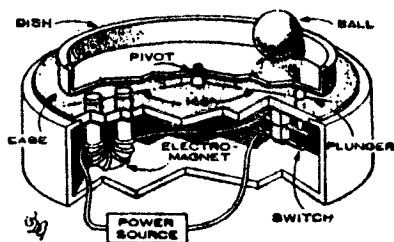
Contents

1. Rocking Motor for Simple Agitation 1
(简易搅拌振动机)
2. Human Pathfinders 3
(人类的探路者)
3. The Sahara Desert 7
(撒哈拉沙漠)
4. Soyabean Chicken and Seaweed Chips, Please!.....13
(请用豆鸡、海藻块!)
5. Polymers for the Future20
(未来的聚合物)
6. City and Suburb (Exploring an Ecosystem)25
(城市和郊区(探索生态系统))
7. Structures of Scientific English (2)33
(科技英语结构(2))
8. Have 的这几种用法你知道吗?.....40
9. 医学英语对话 (2).....42

Rocking Motor for Simple Agitation

This toy-like device is an advanced, yet ultra-simple, electric motor. Unlike conventional motors, it has a rocking orbital motion that could be useful for agitating laboratory or photographic chemicals.^① The heavy ball acts as a rolling flywheel to move the steel dish around its central pivot (see diagram). When the ball's weight tilts the dish over the plunger, it briefly closes the switch, activating the electromagnet 140 degrees away.^② This attracts the ball toward itself, thus opening the switch.^③

The constantly repeating cycle keeps the ball circling around the dish at about 45 rpm as the dish rolls around on its rim. If the dish is properly balanced, the motor can even be self-starting.



词 汇

rock [rɒk] *v.* 振动, 摇动
agitation [ædʒɪ'teɪʃən] *n.* 搅拌
toy-like ['tɔɪ laɪk] *a.* 玩具式的
ultra-simple ['ʌltrə 'sɪmpl] *a.* 极简单的
conventional [kən'venʃənl] *a.* 普通的, 一般的

orbital ['ɔ:bɪtl] *a.* 轨道的
agitate ['ædʒɪteɪt] *v.* 搅拌, 搅动
photographic [fəʊtə'græfɪk] *a.* 摄影的
chemical ['kemɪkl] *n.* 化学制品, 化学药品
flywheel ['flaɪhwɪ:l] *n.* 飞轮

pivot ['pɪvət] *n.* 枢(轴)

tilt [tɪlt] *v.* (使)倾斜

plunger ['plʌndʒə] *n.* 柱塞,圆柱

briefly ['brɪ:flɪ] *ad.* 简单的,简短的

switch [swɪtʃ] *n.* 开关

activate ['æktɪveɪt] *v.* 使…活动,驱动

electromagnet [ɪ'lekt'rəʊ'mæɡ-nɪt] *n.* 电磁

cycle ['saɪkl] *n.* 循环

circle ['sɜ:kəl] *v.* (围绕…)旋转

roll [rəʊl] *v.* 转动

rim [rɪm] *n.* 垫圈

balance ['bæləns] *v.* 使…保持平衡

短 语

(to) *act as* 起…作用

(to) *tilt over* 使(向)…倾斜

注 释

- ① Unlike conventional motors, it has ... or photographic chemicals. 本句是主从复合句。其中的 *that could be useful ... photographic chemicals* 是定语从句,修饰 *motion*。
- ② *activating the electromagnet 140 degrees away* 是现在分词短语作状语,说明结果。
- ③ *thus opening the switch* 是结果状语。这种“*thus + 现在分词*”的结构,在书面语中常见,表示句中谓语动词所做动作引起的结果。

参考译文

简易搅拌振荡机

这个玩具式的装置是一种先进而极其简单的电动机。与普通马达不同,这种电动机具有轨道振动运动,这种运动对实验室的或摄影用的化学药品的搅拌是有用的。沉重的滚珠起着运转的飞轮的作用,使钢盘环绕着中心枢轴运转(见图)。滚珠的重量使钢盘向圆柱倾斜时,便会很快地关闭开关,将电磁驱至 140 度以外,电磁将滚珠朝本身吸去,从而启动开关。

如此不断地反复循环，使得滚珠以每分钟大约 45 转的速度围绕钢盘不断旋转，就象钢盘在垫圈上转动一样。如果钢盘能恰当地保持平衡，此电动机甚至还能自动启动。

(欣 荣 注译)

Human Pathfinders

Beyond our sheltering atmosphere lie the great stretches of space.^① Space is airless and seems to be completely empty. But it is not exactly true that it is empty because it is flooded with invisible radiation.^②

Men in space must take their own air with them in order to breathe. They must be protected from the extreme heat when the sun is shining on their ship and from extreme cold when the ship lies in the shadow of the earth or moon. They must learn to live in "free fall", the weightless condition in an orbiting ship where there is no feeling of up or down.^③ Only when the ship's rocket blasts does there seem to be any up or down^④ — then the force of the blast makes the back end of the ship seem like a floor. The rest of the time, the astronauts drift in their cabin like goldfish in a bowl.

Before the first men went into space, some scientists wondered if people could stand such strange conditions.^⑤ Some thought that the astronauts might be very confused by the silence and loneliness and the floating weightless condition in an orbiting space ship. Others thought the human bones and heart might be damaged if astronauts were in free fall for

a long time. The heart might be weakened by having too little work to do and might not be able to stand the strain of coming back to earth. There were also those who feared that the bones would begin to lose calcium, as happens when a person lies in bed for weeks.^⑥ And — who could tell? — there might be other types of damage that no one would expect.

However, a larger number of scientists felt that conditions in a space ship would not seriously harm astronauts — at least in short flights.

But what about the difficulty of getting men into space? Could engineers check on all the things that could go wrong and build spacecraft safe enough for human passengers? No one could be sure in 1961. Very so often a rocket would blow up in flames on the launching pad. Spacecraft got into orbit and then, when some electrical part failed, went dead.^⑦ There was the question of building a ship light enough to get into space but strong enough to stand radiation, collisions with meteorites the size of sand grains, and the heat and vibrations of the return to earth.^⑧

词 汇

pathfinder [pɑ:θ'faɪndə] *n.* 探

路者

shelter ['ʃeltə] *v.* 庇护, 隐护

stretch [stretʃ] *n.* 范围, 伸展

flood [flʌd] *v.* 淹没, 充满

invisible [ɪn'vɪzəbl] *a.* 看不见的

radiation [,reɪdi'eɪʃən] *n.* 辐射

线, 辐射

breathe [bri:ð] *v.* 呼吸

protect [prə'tekt] *v.* 保护

weightless ['weɪtlɪs] *a.* 失重的

orbiting ['ɔ:bitɪŋ] *a.* 在轨道上运行的

blast [blɑ:st] *v. & n.* 引发

astronaut ['æstrənɔ:t] *n.* 宇宙航行员

drift [drɪft] *v.* 游荡, 漂流

cabin ['kæbɪn] *n.* 船舱

goldfish ['gəʊdfɪʃ] *n.* 金鱼

bowl [bəʊl] *n.* 盆子

stand [stænd] (stood, stood) v.

经受

confuse [kən'fju:z] v. 混乱, 慌

乱

loneliness [ˈləʊnlɪnis] n. 寂寞

floating [ˈfləʊtɪŋ] n. 飘浮

damage [ˈdæmɪdʒ] v. 损害, 损伤

weaken [ˈwi:kən] v. 衰弱

strain [streɪn] n. 紧张, 应变

calcium [ˈkælsiəm] n. 钙

harm [hɑ:m] v. 损害

check [tʃek] v. 检查

spacecraft [ˈspeɪskrɑ:ft] n. 宇宙飞船

passenger [ˈpæsɪndʒə] n. 乘客

blow [bləʊ] (blew, blown) v. 炸裂, 吹

flame [fleɪm] n. 火焰

launching pad [ˈlɔ:ntʃɪŋ pæd] n. 发射台

collision [kəˈlɪʒən] n. 碰撞

meteorite [ˈmi:tjəraɪt] n. 陨石

vibration [vaɪˈbreɪʃən] n. 震动

短 语

(to) be flooded with 充满

(to) be protected from 防御

free fall 失重状态

orbiting ship 沿轨道飞行的飞船

(to) check on 检查

(to) go wrong 出毛病

(to) blow up 炸毁

every so often 时时

(to) go dead 失灵

注 释

① Beyond our sheltering atmosphere ... of space.

这是倒装句, 主语 the great stretches of space 置于谓语动词 lie 之后。

② But it is not exactly true ... invisible radiation.

句中第一个 it 为先行词, 作形式主语, 代替后面 that 引导的主语从句; 在 it is empty 和 it is flooded with ... 中, it 是代词, 指 space.

③ They must learn to live ... of up or down.

the weightless condition in an orbiting ship 为 free fall 的同位语, 关系副词 where 引导的定语从句 there is no feeling of up or down 修饰 orbiting ship.

④ Only when the ship's rocket... any up or down:

only when 引导时间状语从句,意思是“只有当…时”,用来加强语气,放在句首,主句的谓语就得倒装,所以用助动词 does 开头,原句型为“there is”,这里用 seems to be,表示“好象有”之意,any up or down 为主语。

- ⑤ if people could stand such strange conditions: if = whether,意思是“是否”。它是连接词,引导宾语从句。可译为:人们是否能够经受得了这种奇怪状态。
- ⑥ There were also those ... for weeks.
who feared ... for weeks 为定语从句,修饰 those, those = those people; as happen when ... 中, as 为关系代词,引导一非限制性定语从句,补充说明 that 引导的宾语从句; when ... for weeks 为时间状语从句,修饰 happens.
- ⑦ Spacecraft got into orbit ... went dead.
went 是 go 的过去式,这里的意思是“变得”,作联系动词用。
- ⑧ There was the question of ... the return to earth.
light enough 及 strong enough 为两个并列的形容词组,作 ship 的定语;动词不定式短语 to get into space 及 to stand the radiation ... to earth 均为结果状语。

参考译文

人类的探路者

在庇护我们的大气层以外是寥廓无际的太空。太空里没有空气,似乎完全是空的。不过说太空是空的并不确切,因为它充满了看不见的辐射线。

太空人必须随身携带空气以便呼吸。他们还必须装上防护装置以免受到在太阳直射宇宙飞船时产生的极度高热以及飞船处于地球或月球阴影里时的极度严寒的伤害。他们必须学会在沿轨道飞行的宇宙飞船里失重的条件下生活,那儿感觉不到上升和下降。只有当飞船的火箭引发时,才似乎有些上升或下降的感觉,那时爆炸力使飞船的尾部似乎象地面。其余的时间宇航员在座舱里飘荡就象金魚在盆里一样。

在第一批宇航员进入太空之前，有些科学家怀疑人们能否经受得了这种奇怪的状态。有些人认为宇航员也许会因太空的寂寞和孤独以及在轨道上运行的太空船中漂浮的失重条件而感到惊慌失措。另一些人则认为宇航员长期处于失重状态会引起骨骼和心脏的损伤。心脏会由于工作太少而变得衰弱，因而会承受不了返回地球时的应力。还有些人耽心，象卧床数星期的病人那样，骨头会开始失钙。可谁能知道呢？也许还有许多意想不到的损伤呢！

然而，大多数科学家觉得宇宙飞船中的条件不会严重损伤宇航员——至少在短期飞行中不会。

可是，把人送至太空有什么样的困难呢？工程师能不能把可能出的差错都检查出并建造出把人安全送往太空的宇宙飞船呢？1961年还无人知道。常常在发射台上火箭在火焰中炸毁。宇宙飞船进入轨道后，如果电器部分失灵，联系就会中断。还有制造宇宙飞船的问题，它既要轻得可以进入太空，又要坚固得能经受得住太阳的辐射、与砂粒般大小的陨石碰撞，以及经受返回地球时所产生的高温与震动。

(王桂喜 注译)

The Sahara Desert

The best-known desert plain and perhaps the most typical desert is the Sahara, which extends across Africa from the Atlantic to the Red Sea, a distance of 3,200 miles. The breadth of this desert zone averages 1,100 miles, and altogether the desert covers an area as large as the whole of the continent of Europe. Its mean height is 1,500 feet. It might, therefore, be considered a plateau rather than a plain except for the fact that there is no low ground to contrast with the general level of the

sands. Strange though it may seem, only about an eighth of the Sahara's surface is made up of sand; most of it is soil and rock.

A group of lofty mountains, extending along the middle of the Sahara from north to south, divides it into eastern and western portions. The western part is a wilderness of sand blown by the winds. Toward the west the sand is carried into the ocean; toward the south it moves into the Niger and Senegal rivers, in such amounts as gradually to alter their courses. The eastern Sahara is also a waste of sand, but numerous plateaus of rock and clay and a fair number of mountains break the monotony of the plains. There is a steady drift of sand toward the southwest.

So hot and dry is the Sahara that it is almost uninhabitable in far the greater part of its extent. The lack of water is fatal to most forms of life. Even the fly and the flea cannot survive the heat and the drought, and the only creatures that abound in the desert are scorpions, lizards, vipers and ants.

The Sahara is subject to great extremes of temperature. Readings as high as 136 degrees Fahrenheit have been recorded. In the cool season, however, the mercury may drop to 40 degrees or so; there may be frost, particularly in the western areas and in the highlands of the central regions. In summer, the relative humidity may fall to the extraordinarily low mark of 5 per cent, even in the vicinity of oases. In the cool season, it may reach 47 per cent. Even in the hot season, the temperature may drop 50 degrees and more at night. The air is so dry that heat radiates rapidly away from the sands that have been warmed by the sun during the day.

Wherever water rises from the earth or reaches the desert

from the hills, an oasis — a little island of green — is created, standing out in startling contrast to the glaring sands of the surrounding desert.^④ Oases are quite numerous in the Sahara. They are so located that in various regions they form a line across the desert, and it is possible to travel by stages for long distances. The desert soil is exceedingly fertile; it requires only water to make it blossom like the rose. Unfortunately, the supply of water to the oases is often capricious. At times there is a severe drought; occasionally the streams that lead to the desert from the hills become raging floods, which may wash away the trees and the crops.

The most familiar plant of the oasis, of course, is the date palm, whose fruit — the date — provides a highly concentrated food. Sometimes dates are eaten as they are plucked from the tree; sometimes they are pounded and pressed into cakes. They are not by any means the only food crop that the oases of the Sahara Desert supply. Apricots, peaches, pomegranates, oranges and various other fruits are abundant. Certain grain crops, including corn, wheat and barley, may thrive in the oases; clover flourishes under irrigation.

Much of the Sahara Desert in southern Tunisia and northern Algeria is below sea level. In fact, it was once the site of a sea, which was called the Bay of Triton by ancient Greek writers living before the Christian era. A volcanic eruption cut this bay off from the Mediterranean. It eventually dried up in the fierce heat, leaving only a few scattered salt lakes. The shores of the Bay of Triton were once a veritable garden of Eden, and the soil of this area is still potentially very fertile.

词 汇

Sahara [sə'hɑ:rə] *n.* 撒哈拉(北非)

desert ['dezət] *n.* 沙漠, 荒漠

plain [plein] *n.* 平原

Atlantic [ət'læntik] *n.* 大西洋

continent ['kɒntinənt] *n.* 大陆

breadth [bredθ] *n.* 宽度

Europe ['juərəp] *n.* 欧洲

plateau ['plætəu] *n.* 高原

wilderness ['wildənɪs] *n.* 荒野

Niger ['naɪdʒə] *n.* 尼日尔(非洲中西部河名)

Senegal [ˌseni'gəʊl] *n.* 塞内加尔

alter ['ɔ:lteɪ] *v.* 改变

monotony [mə'nɒtəni] *n.* 单调

fatal ['feɪtl] *a.* 致命的

flea [fli:] *n.* 蚤

survive [sə'vaɪv] *v.* 还活着

drought [draut] *n.* 旱

creature ['kri:tʃə] *n.* 生物

abound [ə'baʊnd] *v.* 丰富

scorpion ['skɔ:pjən] *n.* 蝎子

lizard ['lɪzəd] *n.* 蜥蜴

viper ['vaɪpə] *n.* 毒蛇

ant [ænt] *n.* 蚁

Fahrenheit ['færənhaɪt] *n.* 华氏温度

mercury ['mɜ:kjuri] *n.* 汞

humidity [hju:'mɪdɪti] *n.* 湿度

vicinity [vɪ'sɪnɪti] *n.* 附近

oasis [əu'eɪsɪs] (*pl.* oases [əu-

'eɪsɪ:z]) *n.* 绿洲

radiate ['reɪdi'eɪt] *v.* 辐射

fertile ['fɜ:taɪl] *a.* 肥沃的

capricious [kə'prɪʃəs] *a.* 反复无常的

palm [pɑ:m] *n.* 棕榈

pluck [plʌk] *v.* 拔; 摘

pound [paʊnd] *v.* 捣碎

apricot ['eɪprɪkət] *n.* 杏

peach [pi:tʃ] *n.* 桃

pomegranate ['pɒmgrænɪt] *n.* 石榴

barley ['bɑ:li] *n.* 大麦

thrive [θraɪv] *v.* 兴旺; 繁茂

flourish ['flʌrɪʃ] *v.* 茂盛

Tunisia ['tju:nɪsiə] *n.* 突尼斯

Algeria [æl'dʒɜ:riə] *n.* 阿尔及利亚

bay [beɪ] *n.* 湾

Triton ['traɪtɒn] *n.* 半人半鱼的海神

Greek [gri:k] *a.* 希腊的

Christian ['krɪstjən] *a.* 基督的

volcanic [vɒl'kænik] *a.* 火山的

eruption [ɪ'rʌpjən] *n.* 爆发

Mediterranean [ˌmedɪtə'reɪnjən] *n.* 地中海

scattered ['skætəd] *a.* 分散的

veritable ['verɪtəbl] *a.* 真正的

Eden ['i:dn] *n.* 伊甸园; 乐园

短 语

rather than 而不(是)

except for 除了

(to) be made up of 由…组成

a fair number of 相当多的

(to) be subject to 从属于, 经受

in the vicinity of 在…附近

at times 时常, 有时

(to) wash away 冲走

by any means 无论如何

注 释

- ① **Strange though it may seem, only about an eighth of the Sahara's surface is made up of sand.**

这是主从复合句。让步状语从句在前, 主句在后。从句的语序为部分倒装, *strange* 是句中的表语, *though* 是引导从句的连接词, 主语 *it* 指主句所包含的意思。

- ② **... toward the south it moves into the Niger and Senegal rivers, in such amounts as gradually to alter their courses.**

句中 *such ... as to* (接不定式动词) 意为“如此的…以致”, 后面是表示结果的状语。

- ③ **So hot and dry is the Sahara that it is almost uninhabitable in far the greater part of its extent.**

这是主从复合句。主句的语序是倒装的, 谓语在前, 主语在后。后面的 *that* 是连接词, 引导一个结果状语从句。从句中 *in ... extent* 为介词短语, 作状语, 其中的 *far* 是副词, 用于强调 *greater* 的程度。

- ④ **Wherever water rises from the earth or reaches the desert from the hills, an oasis — a little island of green — is created, standing out in startling contrast to the glaring sands of the surrounding desert.**

这是主从复合句。其中 *wherever* 是连词, 引导一个地点状语从句。*standing out ... the surrounding desert* 是一个现在分词短语, 作表示方式的状语, 修饰主句的谓语。

参考译文

撒哈拉沙漠

最有名而且也许是最典型的沙漠平原是撒哈拉。撒哈拉大沙漠横跨非洲，从大西洋一直延伸到红海，距离为3,200英里。整个沙漠地区的平均宽度为1,100英里，覆盖总面积相当于整个欧洲大陆。其平均高度为1,500英尺。因此，我们也可以把它看作是高原，而不看作是平原。不过，那里没有足以和沙层的一般高度形成鲜明对照的低地。听起来似乎会觉得奇怪的是：撒哈拉沙漠的表面只有大约八分之一是由沙粒组成的，大部分地区则是土壤和岩石。

在撒哈拉沙漠的中部，有一系列高山从北往南伸展，把整个地区分成东西两部分。西部是一片由风沙造成的荒地。沙粒向西吹入海洋，也往南移动，大量进入尼日尔河和塞内加尔河，致使河流逐渐改道。东部也是一片由沙粒组成的荒地，但有许多由岩石和粘土组成的高原，还有相当多的高山，点缀着单调的平原。沙粒不断向西南方向漂移。

撒哈拉沙漠灼热、干燥，绝大部分地区几乎无人居住。对于大部分生物来说，缺水是一个致命的因素。即使是苍蝇和蚤子也无法在其高温和干旱的条件下生存。只有蝎子、蜥蜴、毒蛇和蚂蚁之类的小爬虫才能在这片沙漠中得到繁殖。

撒哈拉地区温差极大。据记录，最高温度曾达华氏136度。可是，在凉季，气温能下降到40度左右。也会有霜冻，特别是在西部地区以及中部的高原地区。夏天，相对湿度极低，即使是在绿洲地区，也可能下降到5%。在凉季，湿度可达47%。即使在热季，晚上的温度也可能下降50多度。空气非常干燥，以致白天被太阳晒热了的沙层迅速向外散发热量。

在那些有地下水上升或是有山水流入的地方，便会呈现绿洲（绿色的小岛），和周围沙漠中耀眼的沙粒形成鲜明的对照。撒哈拉沙漠有不少绿洲。它们的分布是这样的：在许多地区，它们排列成行，横穿沙漠。

这样,人们就有可能分段地作长距离旅行。沙漠土特别肥沃,只要有水,这些绿洲便会象盛开的玫瑰花那样放出异彩。不幸的是,绿洲中供水的情况经常是变化无常的。有时是严重的干旱;有时,从山丘通向沙漠的河流汇成汹涌的洪水,会把树木和庄稼都冲走。

绿洲中最常见的植物当然要数枣椰子了。这种树的果子——枣椰子——提供一种高度浓缩食物。有时,枣椰子从树上采下后就吃,有时则捣碎后压成饼子。它们绝不是撒哈拉沙漠绿洲所能提供的唯一可供食用的作物。杏、桃、石榴、橘以及其他各种水果都很丰富。某些粮食作物,包括玉米、小麦和大麦,也能在绿洲茁壮成长;在有水灌溉的情况下,三叶草长得也很茂盛。

突尼斯南部和阿尔及利亚北部的许多沙漠地区处在海平面以下。事实上,过去这里曾是海洋,生活在公元前的古希腊作家称之为“人鱼海湾”。一次火山爆发把这个海湾从地中海分割出来。由于气候酷热,终于干涸,只剩下几个分散的盐湖。人鱼海湾的海岸地区过去一度是名符其实的乐园;如今,这里的土壤就其潜力而言依然是十分肥沃的。

(王 韬 注译)

Soyabean Chicken and Seaweed Chips, Please!

By 1980, the population of the world is expected to be at least 4,500 million, and by the year 2000 it may be 7,000 million. This great increase in world population, or “demographic explosion” as it has been called,^① will cause many problems: shortage of housing, shortage of facilities and psychological stress. But the biggest problem of all will be the shortage of food. In 1973, in West and Central Africa and in Pakistan,