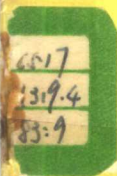


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# 通俗科技英语

## 文选

南京大学外文系公共英语教研室编



# 通俗科技英语文选

第九辑

南京大学外文系公共英语教研室编

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## Coal: Liquid Gold?

If we could cheaply and efficiently liquefy coal—our most abundant fossil-energy resource—the fuel could replace much of the oil and gas we now rely on.<sup>①</sup> It could be blended into present refinery crude stock, used for home heating and industrial power, maybe even used as a chemical feedstock in the manufacture of plastics and drugs.<sup>②</sup> But although coal has been liquefied for years (Germany did it in World War II and the South Africans do it today), it is still an expensive and poorly understood process. The Department of Energy therefore has a program to build pilot and demonstration plants to evaluate different coal-liquefaction processes. In the photo, the engineers are working with a reactor, adding a coal slurry to the reactor's preheater.<sup>③</sup> To liquefy coal, you must first crush it, mix it with liquids, preheat the slurry to about 450 degrees C, and pump it under pressure into a reactor. Here catalysts help convert<sup>④</sup> the coal into a liquid, and noncombustible minerals and pollutants are removed.

### 词 汇

**efficiently** [i'fiʃəntli] *ad.* 有效地  
**liquefy** ['likwifai] *v.* (使)液化  
**abundant** [ə'bʌndənt] *a.* 丰富的  
**fossil** ['fɒsl] *n.* 化石  
**refinery** [ri'fainəri] *n.* 提炼厂  
**crude** [kru:d] *a.* 未加工的

**stock** [stɒk] *n.* 原料, 材料  
**feedstock** ['fi:dstɒk] *n.* (送入机器或加工厂的)原料  
**process** ['prəuses; 美 'prɒses] *n.* 工艺, 工序; 过程  
**program** ['prəʊgrəm] *n.* 计划,

## 方案

**pilot** ['pailət] *a.* 试验性的

**evaluate** [i'vælju:et] *v.* 评价

**liquefaction** [ˌlikwi'fækʃən] *n.*

液化

**reactor** [ri(:)'æktə] *n.* [化]反应

器

**slurry** ['slə:ri] *n.* 浆

**preheater** ['pri:'hi:tə] *n.* 预热器

**preheat** ['pri:'hi:t] *v.* 预热

**catalyst** ['kætəlist] *n.* [化]催化  
剂

**noncombustible** [ˌnɒnkəm'bas-  
təbl] *a.* 不燃的

**pollutant** [pə'ljutənt] *n.* 污染物  
质

## 短 语

(to) *rely on* 依赖, 依靠

(to) *convert ... into* 把...变成

(to) *mix ... with* 把...和...混合

## 注 释

- ① we now *rely on*: 是省略了关系代词的定义从句, 修饰 the oil and gas.
- ② It could be blended into ..., used for home heating and industrial power, maybe even used as ... drugs.  
这里有两个 *used*, 前面均省略了 *could be*, 和 *could be blended* 一样作谓语动词。
- ③ adding a coal slurry to the reactor's preheater: 现在分词短语作状语, 表示伴随情况。
- ④ help convert: *convert* 作 *help* 的宾语, 前面省略了小品词 *to*.

## 参考译文

### 煤: 液态黄金?

如果我们能廉价而有效地把煤——我们最丰富的化石能源——液化, 它就能代替我们目前所依赖的石油和天然气中的很大一部分。它可能被调制成目前炼油厂的原料, 作家庭取暖及工业动力之用, 或许还

能用来作为制造塑料和药物的化学原料。但是，尽管煤的液化工作已进行了多年(第二次世界大战中德国人尝试过，而如今南非人在做)，它的费用还很昂贵，而且人们对其工艺仍然不甚了解。因此能源部筹划建立试验性的示范工厂，以便对各种不同的煤液化工艺进行评价。照片中的工程师们正在使用反应器工作，往反应器的预热器里添煤浆。为了使煤液化，你得先碾碎它，把它和液体混合，把浆液预热到大约450°C，然后用压力泵把它压入反应器。在反应器里，催化剂帮助煤液化，而不燃矿物及污染物则被清除掉。

(文 良)

## The Bottom of the Sea

The light of the sun cannot reach the ocean bottom because the ocean is so deep. But the scientist knows what the bottom of the sea is like,<sup>①</sup> even though he cannot see it with his eyes.

The scientist has many tools which help him find out what the bottom of the sea is like. He has a camera that he can lower into the water. Underwater cameras have taken pictures of the ocean bottom where it is almost a mile deep.<sup>②</sup> He has a tool that shoots sounds at the ocean bottom. The ocean bottom sends the sounds back to him just as a wall sends an echo back.<sup>③</sup> With this tool, the scientist can find out how deep the ocean is.<sup>④</sup> He has a tool that can take a deep bite into the ocean floor.<sup>⑤</sup> With this tool he can find out what the ocean bottom is made of.

Red clay covers most of the floor of the sea. On the ocean bottom are also the remains of small animals that floated and swam in the upper level of the sea. When the animals died, they sank to the bottom. The floor of the ocean has mountain chains that

are higher and longer than any mountains of land. There is a great chain of mountains that runs under the ice at the North Pole.

The floor of the ocean has valleys that are steeper and deeper than any valleys on land. There is a great, deep valley in the floor of the Atlantic Ocean between North America and Europe.

The floor of the ocean has canyons that look like river canyons.<sup>①</sup> There are undersea canyons that are bigger than the Grand Canyon of the Colorado River.

The floor of the Pacific Ocean is covered with dead volcanoes and sunken islands. Some of the sunken islands have coral reefs around them. The corals died when the islands sank, because corals cannot live in deep water. Scientists know that these corals lived about 100 million years ago. So they know that the islands sank to the floor of the Pacific Ocean 100 million years ago.

## 词 汇

lower ['ləʊə] *v.* 放低

underwater ['ʌndəwɔ:tə] *a.* 水中的

clay [klei] *n.* 粘土, 泥土

remains [ri'meinz] *n.* 余物, 遗骸

chain [tʃein] *n.* 连脉

run [rʌn] *v.* 蔓延, 奔驰

canyon ['kæniən] *n.* 峡谷

Grand [grænd] Canyon *n.* [美] 大峡谷

Colorado [ˌkɒlə'reɪdəu] *n.* 美国西部一州

coral ['kɒrəl] *n.* 珊瑚

reef [ri:f] *n.* 暗礁

## 短 语

(to) look like 看上去象

(to) be covered with ... 覆盖着...

## 注 释

① ...what the bottom of the sea is like...



- 这是宾语从句,连接代词 *what* 在从句中作介词 *like* 的宾语。
- ② Underwater cameras...a mile deep.  
where...deep 是定语从句,修饰主句中的 *ocean bottom*.
- ③ The ocean bottom...an echo back.  
连接词 *just as* 引导的是方式状语从句,修饰主句的谓语动词 *sends back* 是副词,作状语。
- ④ ...how deep the ocean is.  
这是宾语从句。在这里表语随 *how* 提到主语之前,但主语与谓语动词不能颠倒。
- ⑤ He has a tool that can take a deep bite into the ocean floor.  
that...floor 是限制性定语从句,关系代词 *that* 在从句中作主语。
- ⑥ The floor of the ocean has canyons that look like river canyons.  
that ... canyons 是限制性定语从句,关系代词 *that* 在从句中作主语。*look* 是连系动词,介词短语 *like river canyons* 作表语。

## 参考译文

### 海 底

阳光照不到海底,因为海太深。然而,科学家却知道海底是什么样子,尽管他不可能用眼睛看到海底。

科学家有许多工具来帮助他发现海底是什么样子。他有一架可以放进水里去的照相机。水下照相机已拍摄了很多大约有一英里深的海底照片。他还有向海底发出声音的工具。海底把声音送回给科学家,就象墙发出回声一样。科学家用这种工具能发现海有多深。他还有一种工具能深深刺透海底。科学家用这种工具能知道海底是由什么构成的。

海底大部分由红粘土覆盖着。海底上还有许多曾在海面上漂游的小动物的遗骸。这些动物死了以后,就沉到海底。海底有许多比陆地上任何山脉又高又长的山脉。在北极的冰下面贯穿着一条巨大的山脉。

海底也有许多比陆地上任何山谷又陡又深的山谷。在北美和欧洲之间的大西洋洋底，有一条大而深的山谷。

海底有许多和陆地上的河谷一样的峡谷。有些海底峡谷比科罗拉多河大峡谷还要大。

太平洋底布满了死火山和下沉的岛屿。有一些下沉的岛屿周围有珊瑚礁。岛屿下沉时，珊瑚就死了，因为珊瑚不能在深水中生存。科学家知道这些珊瑚大约生存在一亿年以前，因此他们知道这些岛屿是在一亿年以前沉到太平洋海底的。

(傅玉华)

## The First Living Things

There were no living things on the young earth. There was no water. Living things need water. Nothing could live on the young earth's hot crust.

Then, as the earth cooled, the rain came. The rain washed gases out of the blanket of air around the earth. The rain washed salt and other chemicals out of the rocks. The rain carried the gases and chemicals into the warm sea.

The sea with the gases and other things in it was like a big pot of soup cooking in the hot sun.<sup>①</sup> Everything kept mixing together in the water.<sup>②</sup> The cooking and the mixing made new chemicals. Some of the new chemicals became the first living things.

The first living things were tinier than the diatoms and dinoflagellates. Other chemicals in the sea were their food. But the living things in the sea kept changing for a long, long time. Out of the changes came new animals and plants.<sup>③</sup> Some animals

could move around by themselves. Some had legs and tails. Some could breathe air. They could live out of the sea.

By this time, some of the plants could live on land. So, when the air-breathing animals crawled out of the sea, they had food to eat. The living things on land kept changing, too. Out of millions of years of changing came snakes, birds, furry animals and even man.<sup>④</sup> Living things of long ago left their footprints behind just as you do when you walk in the wet sand. When living things in the ocean died, they fell to the muddy ocean bottom. Mud piled up on top of them. The animals and plants rotted. But their prints were still in the mud. Then the mud changed to rock. Some of the rocks were pushed out of the sea when new mountains were made. The prints in the rocks are fossils. Fossils of shell animals and of algae have been found in the rocks. These fossils make scientists think that life began in the sea.<sup>⑤</sup>

## 词 汇

**living things** 生物  
**crust** [krast] *n.* 地壳  
**blanket** ['blæŋkit] *n.* 覆盖物, 毯子  
**diatom** ['daɪətəm] *n.* 硅藻  
**dinoflagellate** [ˌdaɪnə'flædʒəleɪt] *n.* 鞭毛虫(藻)

**muddy** ['mʌdi] *a.* 泥泞的  
**mud** [mʌd] *n.* 泥, 泥浆  
**pile** [paɪl] *v.* 堆  
**rot** [rɒt] *v.* 腐烂  
**print** [prɪnt] *n.* 痕迹  
**shell** [ʃel] *n.* 壳, 甲壳, 贝  
**algae** ['ældʒi:] *n.* 海藻, 藻类

## 短 语

**out of** 出自, 来自  
**for a long, long time** 很久很久

**(to) pile up** 堆起

## 注 释

- ① The sea with the gases and other things in it was like a big pot of soup cooking in the hot sun.  
这是主谓表结构的简单句。介词短语 with ... things 作定语, 修饰 sea, 介词短语 like a big pot of soup 作表语, 现在分词短语 cooking ... sun 作定语, 修饰 soup.
- ② Everything kept mixing ... water.  
kept 在这里是联系动词, 现在分词短语 mixing ... water 作表语。
- ③ Out of the changes came new animals and plants.  
这是倒装句。主语 animals and plants 放在谓语动词 came 的后面。
- ④ Out of ... man. 这句句型与上句相同。
- ⑤ These fossils make scientists think that life began in the sea.  
不定词短语 think ... sea 作宾语补语, 不定词在 make 后面要省略 to, 短语中包含一个由 that 引导的宾语从句。

## 参考译文

### 最初的生物

早期的地球上是没有生物的。那时没有水。生物需要水。什么东西都不能够在早期地球的灼热地壳上生存。

后来, 由于地球冷却了, 就下了雨。雨水把气体从地球周围空气层中冲刷了出来。雨水把盐和其他化学物从岩石中冲刷出来。雨水再把这些气体和化学物带进了暖和的大海。

含有气体和其他东西的海就象在炎热的太阳下蒸煮的一大锅汤。各种东西继续在水里混合着。烧煮和混合产生出新的化学物质。有一些新的化学物就变成了最初的生物。

最初的生物比硅藻和鞭毛藻还要小。海里其他的化学物成了它们的食物。但是, 海里的生物很长很长期地不断变化。就从这些变化中, 产生了新的动物和植物。有些动物能够独自到处运动。有些有腿

和尾巴。有些能够呼吸空气。它们都能离开海生存。

那时,有些植物能够在陆地上生存。因此,当那些呼吸空气的动物从海里爬出来时,它们就有食物吃了。陆地上的生物也不断地变化,从几百万年的变化中,就产生出了蛇,鸟,毛皮动物,甚至人。很久以前的生物留下了它们的足迹,就象你在潮湿的沙地上行走时留下了足迹一样。海里的生物死了以后,就掉入海底的污泥中。污泥堆集在它们上面。这些动物和植物腐烂了,但是它们的痕迹仍然留在污泥中。然后,污泥变成了岩石。有些岩石在新的造山运动中被推出海面。岩石中留下的痕迹就是化石。在岩石中已经发现了贝壳动物和海藻类的化石。这些化石使得科学家认为生物最初出在海里。

(凡 平)

## Seed Dispersal

When we plant seeds, we take care that they are well spaced out, so that the plants are not crowded when they grow.<sup>①</sup> This makes sure that each seed gets enough light, air, water and food.

Nature, also tries to make sure that seeds are scattered over a wide area, away from the parent plant. This is important for two reasons. The first is that if the parent plant is destroyed, the young ones have a better chance of staying alive.<sup>②</sup> The second is that the young plants will not fight to take away from the parent plant and each other, the things they need to live.<sup>③</sup>

In nature, the scattering of seeds is largely a matter of luck. Most of the seeds fall in places which are not all right for healthy growth. Large numbers of them cannot stay alive for long.

They must get four things from the place around them: (i) the right soil, (ii) the right temperature, (iii) enough water, and (iv) enough of the other things they require for growth, e.g. air and light.④

## 词 汇

**dispersal** [dis'pə:səl] *n.* 散布  
**parent** ['pæərənt] *n.* 母体

**right** [rait] *a.* 适当的, 恰当的

## 短 语

(to) **take care** 小心, 留神

(to) **make sure** 弄确实, 保证

(to) **space ... out** 把...分隔开

(to) **take ... away** 拿走, 夺去

## 注 释

- ① we take care that they are well spaced out, so that the plants are not crowded when they grow:  
that ... out 是宾语从句, so that ... grow 是目的状语从句, 修饰 are spaced out, 其中又包含一状语从句 when they grow.
- ② that if the parent plant is destroyed, the young ones have a better chance of staying alive:  
这是个表语从句, 其中包含一个条件状语从句 if ... destroyed, 修饰 have. staying 是动名词, 作 of 的宾语, 它又带一个表语 alive.
- ③ that the young plants will not fight to take away from the parent plant and each other, the things they need to live:  
在这个表语从句中, 动词不定式短语 to take ... live 作状语, 修饰谓语动词 fight. the things 是 to take away 的宾语。定语从句 (which) they need to live 修饰 the things.
- ④ enough of ... air and light:  
enough 是名词, (which) they require for growth 是定语从句, 修饰 things.

## 参考译文

### 种子的散布

当我们播种时,便小心地把它适当散开,使植物生长时不致挤在一起。这是为了保证使每粒种子都能够得到充分的阳光、空气、水分和食物。

大自然也努力确使种子离开母体植物,分散到广阔的区域中去。这一点是很重要的,理由有二。第一,如果母体毁灭了,幼体有一个较好的生存机会。第二,幼体将不会为母体和其他幼体夺去它们生存所必需的东西而进行竞争。

在自然界中,种子的散布,多半是碰运气的。绝大多数种子落在不适于健康成长的地方。大量的种子不能生存很久。它们必须从它们周围的地方得到四种东西:(1)适当的土壤,(2)适当的温度,(3)充足的水分和(4)它们生长所需要的其他足够东西,如空气和阳光。

(雨 花)

### The Latest Applications of the Laser Technique

Atoms, which are a few hundred millionths of an inch in diameter, are too small to be observed even by the most powerful microscopes. But scientists at the Oak Ridge National Laboratory have developed a laser technique that can unerringly count atoms one at a time. Researchers believe this mysterious method will help them in a variety of practical investigations.

Every atom consists of a nucleus surrounded by orbiting electrons. Scientists know the wavelengths of the electrons. By tuning their lasers to the proper wavelengths, they can knock an

electron out of orbit and detect it with a geiger counter. Because of slight differences in energy, only one electron is knocked out of an atom by each laser beam. Consequently, each electron counted means one atom counted. Adding up the atoms tells scientists how much of any element exists in a sample.

The laser technique has many promising applications. It may help researchers learn whether the earth's atmosphere is growing warmer. By measuring atoms of argon-39 in the ocean, they can estimate how much carbon dioxide is being absorbed from the air. Unless removed by the oceans,<sup>①</sup> the carbon dioxide added to the atmosphere by the burning of coal and oil could lead to higher temperatures. Astrophysicists may also use the method to solve the mystery why the sun appears to be emitting fewer of the subatomic particles called neutrinos than theory predicts.<sup>②</sup> Counting the atoms struck by solar neutrinos could provide more precise figures. Thus, researchers will know if past measurements were wrong—or whether the sun doesn't behave as physicists think it should.<sup>③</sup>

## 词 汇

**laser** ['leɪzə] *n.* 莱塞, 激光  
**diameter** [daɪ'æmɪtə] *n.* 直径  
**powerful** ['paʊəfʊl] *a.* 高倍的  
**microscope** ['maɪkrəskəʊp] *n.* 显微镜  
**Oak Ridge National Laboratory**  
*n.* 橡树岭国家实验室  
**unerringly** ['ʌn'ə:rɪŋli] *ad.* 没有偏差地, 准确地  
**mysterious** [mɪ'stɪəriəs] *a.* 神秘的, 不可思议的

**orbit** ['ɔ:bit] *v.* 沿轨道运行  
**wavelength** ['weɪvlɛŋθ] *n.* 波长  
**tune** [tju:n] *v.t.* 调谐, 调整  
**geiger counter** ['gaɪɡə 'kaʊntə] *n.* 盖革计数器  
**beam** [bi:m] *n.* 光束  
**sample** ['sɑ:mpl] *n.* 样品; 试样  
**promising** ['prɒmɪsɪŋ] *a.* 有指望的, 有希望的  
**argon** ['ɑ:gɒn] *n.* 氩  
**astrophysicist** ['æstrə'fɪzɪsɪst] *n.*



天体物理学家  
subatomic ['sabə'tɒmɪk] *a.* 亚原  
子的

neutrino [nju:'tri:nəu] *n.* 中微子  
predict [pri'dɪkt] *v.* 预见  
solar ['səʊlə] *a.* 太阳的

## 短 语

*a variety of* 各种各样的  
*(to) knock ... out of* 碰撞...出

*because of* 由于  
*(to) lead to* 导致

## 注 释

- ① Unless removed by the oceans: removed 前省掉了 it is, it 指 the carbon dioxide.
- ② Astrophysicists may also use the method ... theory predicts.  
名词从句 why ... theory predicts 作 mystery 的同位语, 其中又有 than 连接的一个比较状语从句, 修饰 fewer.
- ③ Thus, researchers will know if past measurements were wrong—or whether the sun doesn't behave as physicists think it should.  
if = whether, if ... wrong 为名词从句作 know 的宾语, whether ... should 也是 know 的宾语; as 是连接词, 意思是“如, 象”, 引导方式状语从句, it should 为 think 的宾语从句, 省略 behave.

## 参考译文

### 激光技术的最新应用

原子的直径只有一英寸的亿分之几, 这太小了, 即使用倍数最高的显微镜也难以观察得到。但是橡树岭国家实验室的科学家已研制成能准确无误地一次计数一个原子的激光技术。研究人员确信这个神秘的方法对他们进行各项实际的研究工作会有所帮助。

原子由原子核及包围着它的按轨道运行的电子组成。科学家知道电子的波长。他们把激光调至适当的波长, 就能从轨道上击出一个电子, 这个电子还能用盖革计数器计数。由于原子中所含能量的细微差