

现代科技英语选读

SCIENCE AND TECHNOLOGY
IN EVERYDAY LIFE

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FUTURE CITY IN THE SEA

Dr. Athelestan Spilhaus, a prominent American meteorologist and oceanographer, feels that the solution to many of today's problems of energy, ecology, and population may be an ocean-based industrial community, surrounded by undersea farms and oilfields. *The farms would provide raw material for the community's factories and the oilfields would supply the fuel.*①

*The community development as envisioned by Dr. Spilhaus would have an airport, nuclear power plant, deep water harbor for giant oil tankers, and an oil refinery.*② It would provide new space for those industries that are necessary but which are "ecologically dirty." The ocean-based industrial community would be close enough to the crowded centers of world commerce for convenience but distant enough to reduce the ^{hazard} hazards of air, noise, and water pollution. On this economic base a city should prosper with benefits such as housing for workers, service industries, hotels, recreational facilities, etc.

The artificial industrial island would be self-sufficient and through a system of conduits could easily provide

power, products, and even garbage disposal ^{垃圾处理} for the mainland. Organic waste would be converted to nutrients for fish farms. Sea water heated in the process of cooling nuclear power plants would provide a greenhouse effect for aquaculture, such as hydroponics.

Is Dr. Spilhaus's idea only a dream? Perhaps. But off-shore oil drilling rigs are now common; oil tankers are being loaded far from port at buoys connected to land by pipelines; a floating nuclear plant is planned for construction off the coast of New Jersey; Hawaii is increasing the size of an airport by building a runway on a coral reef; and a sea port off the coast of Texas has been proposed.

The conception of Dr. Spilhaus's vision of an ocean-based industrial community presents an artistic projection of things to come. A frogman is completing a hookup between submerged pipelines and a submarine tanker in order to load oil produced from wells near the floating city. Divers are on their way to work at their jobs in seaweed and fish farms or undersea laboratories. *Inside huge pylons is an underwater hotel which is insulated from the noise of the airport above the surface by the sea water itself.*③

GLOSSARY

artificial *adj.* made by humans, not natural 人造

	的, 假的
buoy <i>n.</i>	a float placed in water as a marker
	浮标, 浮坞
conduit <i>n.</i>	channel or pipe for carrying water, fluids; tube for enclosing electric wire or cable
	管道
coral <i>n.</i>	hard, shell-like substance, usually white or red, formed in the sea from the bones of very small sea animals
	珊瑚
drill <i>v.</i>	to make a hole using a device called a 'drill'
	钻孔
ecology <i>n.</i>	science of relationships between organisms and their environments
	生态学
envision <i>v.</i>	to picture in the mind
	想象, 预想
facility <i>n.</i>	that which makes it easier to do something
	设备
frogman <i>n.</i>	swimmer provided with breathing apparatus and other equipment for working underwater
	蛙人(穿戴蛙式配备的人)
fuel <i>n.</i>	any substance that is burned to make heat or power
	燃料
garbage <i>n.</i>	waste; unwanted or spoiled food
	废料
hazard <i>n.</i>	danger; peril; risk
	危险, 灾难
hookup <i>n.</i>	connection of a mechanism with a

source of power 用钩钩住

meteorologist *n.*

scientist who studies the weather and weather conditions 气象学家

nuclear *adj.*

atomic; using or derived from the energy of the nuclei (central region) of the atom 原子核的

nutrient *n.*

something that nourishes and helps to grow like food 营养品; 养料

oceanographer *n.*

scientist who studies the ocean and its phenomena 海洋学家

pipeline *n.*

pipe for the transporting of water or petroleum products 管道, 管线

pollution *n.*

making soil, water, or the atmosphere dirty by discharge of poisonous substances 污染

pylon *n.*

steel tower 钢塔, 钢架

recreational *adj.*

pertaining to activities or play designed to refresh a person mentally or physically 文娱的

reef *n.*

strip of rock, sand, or coral that rises up to or near the surface of a body of water 礁石, 暗礁

refinery *n.*

industrial plant for purifying a crude substance, such as petroleum 炼油厂

rig *n.*

any special equipment for a particular purpose 成套器械, 打(油)井机

runway *n.*

strip of level ground on which aircraft

	land or take off 跑道
✓ seaweed <i>n.</i>	any of a variety of underwater plants 海藻
self-sufficient <i>adj.</i>	able to provide for oneself without the help of others 自给自足的
✓ submerge <i>v.</i>	to sink or go down into water 潜入水中
✓ tanker <i>n.</i>	ship with large tanks, used to carry liquids 油轮; 油箱

NOTES

1. The farm *would* provide raw material for the community's factories and the oil-fields *would* supply the fuel.

本文中多次出现 *would* 一词,均系情态动词,是虚拟语气,表示作者的意愿或主见。

2. The community development *as envisioned by Dr. Spilhaus* would have an airport...

本句中由 *as* 引导的从句可以写作: *as it was envisioned by Dr. Spilhaus*。这类从句常常省去一些成分,甚至永远不用表示出“缺”的部分。又如:

The records are not so good *as (they are) compared with Olympic standards*. (省略主语和动词 *be*)

这些记录和奥林匹克的水准比起来就不算很好。

Each chapter contains a glossary of vocabulary items above the 3,000-word level *as (it is) denoted by the*

Ladder Book Word List. (省略主语和动词 be)

按照《循序渐进丛书词汇表》三千词汇水平以上的标准，每章附有术语汇编。

3. *Inside huge pylons is an underwater hotel which is insulated from the noise of the airport above the surface by the seawater itself.*

这是个倒装句。由于修辞需要，把句子的谓语放在比较长的主语的前面，本句主语 *hotel* 后面有很长的从句修饰它，如果不用倒装结构，句子就显得头重脚轻。

本书中多次出现类似的倒装句。例如：

Out of this requirement has developed a new branch of medicine called neonatology, which is concerned with the first three months of life.

出自这种需要，被称为新生婴儿学的新兴医学学科得到了发展，它与人生的最初三个月有关。

【译文】

一 未来的海上城市

美国杰出的气象学家、海洋学家阿瑟尔斯坦·斯皮尔霍斯博士认为，建立海洋工业基地可以解决当今能源危机、环境污染、人口过剩等许多问题。在这基地周围设有海水养殖场和海底油田。这些养殖场可为基地的工厂提供原料，油田可为之供应燃料。

斯皮尔霍斯博士所设想的未来工业基地，有机场、原子能发电厂，供大型油轮停泊的深水港和炼油厂。这一基地还为那些必

不可少的而又会引起环境污染的工厂提供新的场所。为方便起见，基地离繁华的世界商业中心相当近，然而又保持足够的距离，以减少空气、噪音和水的污染。在这个经济基础上，城市应该办好各项福利设施，如工人住宅、服务性工业、旅馆和娱乐设施等。

这种人造工业岛区是自给自足的。通过一系列管道，它很容易地为大陆提供能源、产品，甚至处理垃圾。有机废料可转化为鱼场所需的养料。原子发电厂冷却过程中加温的海水可为水产养殖(如海水栽培)起温室般的作用。

斯皮尔霍斯博士的设想难道只是个梦想吗？或许是的。但是目前近海石油钻探机已是很普遍了；油轮在远离港口的浮标处装油，这些浮标处有管道与大陆相连接；新泽西州沿海的水上核动力工厂正在筹建；夏威夷州正在珊瑚礁石上建造跑道，扩展飞机场，在得克萨斯州沿海建设海上港口的方案已经提了出来。

斯皮尔霍斯博士所设想的海上工业基地，提出了艺术高超的未来美景规划。一个蛙人正在安装水下管道和海底储油罐之间的接头，以便装载海上城市附近油井中生产的石油。潜水员正前往海生植物养殖场、渔场或海底实验室工作。在大铁塔内是一座海底旅社，由海水本身将其与水面机场的噪音相隔绝开。

FACTUAL QUESTIONS

Answer the following questions based on the information found in the reading:

1. Who is Dr. Athelstan Spilhaus? What does he feel

may be the answer to many modern problems regarding energy, ecology, and population?

2. What is the purpose of farms in an ocean-based community? of oilfields?
3. What are some of the industries that Dr. Spilhaus's ocean-based community would contain?
4. How would the dangers of pollution be reduced in an oceanbased industrial community?
5. For what reasons should an ocean-based city experience economic prosperity?
6. What would make the artificial community self-sufficient? How would hydroponics be made possible?
7. What developments in modern technology seem to show that Dr. Spilhaus's dream may some day be a reality?
8. What kind of jobs would frogmen have in an ocean-based community?
9. What purpose would pylons serve in the dream community?
10. What serves to insulate underwater buildings from noise?

MANUAL MARVEL

Scientists at Temple University in Philadelphia, Pennsylvania, have successfully tested a new electro-mechanical arm on a number of patients. *The artificial arm approaches an ideal in the science of prosthetics because it responds to directions from the brain in much the same way as does a natural limb.*① *It replaces the cumbersome harness-and-pulley arrangement common to other man-made prosthetic aids.*② *The device makes possible eight different limb movements ranging from elbow bending to finger manipulation.*③

To prepare a patient for the electro-mechanical arm, the scientist marks the location of the chest, shoulder, and back muscles which control arm movement, and then attaches electrodes to the area designated. Tiny electrical impulses generated by the brain travel the spinal cord to the nerve endings in the muscles. The electrodes pick up the signals and decode the brain's command. Ten contact heads in the unit worn around the waist of the amputee receive thought waves, which are amplified 100 times to provide the power necessary for motion. Four small

motors carry out the orders.

GLOSSARY

amplify <i>v.</i>	to increase in size or power 放大
amputee <i>n.</i>	one who has had a limb (or limbs) removed by surgery 断肢患者
cumbersome <i>adj.</i>	not convenient; difficult to use 不方便, 笨重
decode <i>v.</i>	to change from symbols into plain language 译(电报等)
designate <i>v.</i>	to indicate by some mark, sign or name 指明, 标示
electrode <i>n.</i>	any terminal connecting a conventional conductor of electricity with a non-conventional one 电极
ending <i>n.</i>	end; extremity 末端
harness <i>n.</i>	device made of long pieces of leather and metal rings used to fasten something to the body 挽具, 夹具
impulse <i>n.</i>	force that starts an action 刺激; 脉冲
limb <i>n.</i>	arm or leg 肢体
manipulation <i>n.</i>	controlling or moving with the hands 操作
prosthetics <i>n.</i>	branch of surgery specializing in artificial parts of the body 修复术
pulley <i>n.</i>	wheel and rope device used to increase

	the mechanical advantage of an
	applied force 滑轮
spinal cord	that part of the central nervous
	system enclosed by the backbone 脊髓

NOTES

1. The artificial arm approaches as ideal in the science of prosthetics because it responds to directions from the brain in much the same way as *does a natural limb*.

由 as 引导的从句中, does 用来代替主句中的谓语 responds to, 以免重复。这句相当于: as a natural limb responds to directions from the brain.

2. It replaces the cumbersome *harness-and-pulley* arrangement *common to other man-made prosthetic aids*.

1) harness-and-pulley 和 man-made 为复合形容词。

这种形容词在现代英语中颇为常见。

2) 形容词短语 *common to the other man-made prosthetic aids* 作后置定语, 修饰 arrangement.

3. The device *makes possible eight different limb movements ranging from elbow bending to finger manipulation*.

make something possible 意为“使某事成为可能”。这是复合宾语结构。本句中宾语较长, 故与其补语 possible 交换位置。

【译文】

二 奇异的假手臂

宾夕法尼亚州费城坦普尔大学的科研人员，已经在一些病人身上试验成功一种新型的电子机械臂。这使修复术趋于完美，因为这种假臂几乎与天生的手臂一样，可接受大脑的指挥。这种假臂不采用常见的笨重的滑轮夹具式假肢。它可以做由肘部弯曲到手指操作八种不同的肢节动作。

科研人员准备为一个病人安装电子机械臂时，先要在他的胸部、肩部和背部等控制手臂运动的肌肉部位作上标记，然后在所示的部位按上电极。大脑发出微弱的电波，通过脊髓到达肌肉的神经末梢。这些电极检取这些信号并将大脑的指令编译处理。挂在断肢患者腰部的装置有十个接头，接受这些脑电波，并将其放大一百倍，以提供足以驱动假臂的功率。由四只小马达执行这些指令。

FACTUAL QUESTIONS

Answer the following questions based on the information found in the reading:

1. Where is Temple University? What work have scientists there been doing in prosthetics?
2. What are some of the advantages of the new electro-mechanical arm? How many limb movements can it make?

3. How is an amputee prepared for the electro-mechanical arm?
4. What is the job of the electrodes?
5. What is the purpose of the electrical unit that the patient wears around his waist?
6. How is power supplied to cause motion?
7. Does the new device have any motors?

UNIQUE AIRCRAFT

As he drives along a California freeway in his gleaming red sports car pulling a silver trailer, Moulton B. Taylor knows that if the traffic gets a bit heavy he can "get away from it all" quickly.① He can simply pull off the highway and, in a matter of a few minutes, convert his car into an airplane!②

Designer Taylor's car has all the comforts of an ordinary sports car: bucket seats, padded dashboard, fiberglass body, special steering wheel, and carpeting on the floor. But by removing a few pins and bolts from the odd-looking trailer (which is really a pair of wings, tail, and propeller) and attaching the sections to the car with the same pins and bolts, Taylor can convert his sports car into an "aerocar." Then by shifting the drive from the retractable wheels to the propeller, he has the "aerocar" ready to take off.

The process of changing from sports car to aerocar is done in 12 simple steps—each one taking less than 30 seconds—and can be completed in fewer than five minutes.