北京大学试用教材

英语

（4）

修订本

杜秉正　　毕金献　　编

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Lesson One

The Age of Automation

Science and technology have come to pervade every aspect of our lives and, as a result, society is changing at a speed which is quite unprecedented. There is a great technological explosion around us, generated by science. This explosion is already freeing vast numbers of people from their traditional bondage to nature, and now at last we have it in our power to free mankind once and for all from the fear which is based on want. Now, for the first time, man can reasonably begin to think that life can be something more than a grim struggle for survival. But even today, in spite of the high standard of living which has become general in some countries, the majority of people in the world still spend nearly all their time and energy in a never-ending struggle with nature to secure the food and shelter they need. Even in this elementary effort millions of human beings each year die unnecessarily and wastefully from hunger, disease, or flood.

Yet, in some countries, science and technology have made it possible for us to have a plentiful supply of food, produced by only a fraction of the labour that was necessary even a few decades ago. In the United States, for instance, one man on the land produces more than enough food to feed fifteen men in the cities, and,

in fact, there is a surplus of food grown even by this small proportion of the American labour force. We have considerably extended our expectation of life. We have enriched our lives by creating physical mobility through the motor-car, the jet aeroplane, and other means of mechanical transport; and we have added to our intellectual mobility by the telephone, radio, and television. Not content with these advances, we are now thrusting forward to the stars, and the conquest of space no longer strikes us as Wellsian or Jules Vernian. And with the advent of the new phase of technology we call automation, we have the promise both of greater leisure and of even greater material and intellectual riches.

But this is not inevitable. It depends on automation being adequately exploited. We shall need to apply our scientific and technological resources to literally every aspect of our society, to our commerce, our industry, our medicine, our agriculture, our transportation.

It is fascinating and encouraging to observe the development of this immense process, a process in which man appears all the time to be engaged in the act of creating an extension of himself. In his new technological successes this appears particularly true. He is extending his eyes with radar; his tongue and his ear through telecommunications; his muscle and body structure through mechanization. He extends his own energies by the generation and transmission of power and his nervous system and his thinking and decision-making faculties through automation. If this observation is accurate, as I believe it is, the implications are far-reaching. It might

be reasonable to conclude that the direction of modern science and technology is towards the creation of a series of machine-systems based on man as a model.

Notes

Wellsian and Jules Vernian：是后缀-ian(＝an)附在人名后构成含有"…的"意义的形容词。

Wellsian 意为"Wells 的"；Jules Vernian 意为"Jules Verne 的"。

Jules Verne 儒勒·凡尔纳(1828—1905)是法国著名科学幻想小说作家。他的《从地球到月球》(1865)及其续集《环游月球》(1870)叙述三个人乘坐一颗炮弹，从地球的吸力区过渡到月球的吸力区，环游月球一周之后又回到地球，溅落在海洋面上。书中许多大胆的设想，已为今日人类的实践所证实(参看第 20 课阅读材料"Mister Imagination")。

H. G. Wells 威尔斯(1866—1946)是英国著名科学幻想小说家。他著有《月球上的第一批人》(1901)，描写地球上的人第一次登上月球时，发现月球居民身体各部分畸形发展，以适应他们从事的劳动。小说借此讽刺，这都是资本主义社会不合理的劳动分工造成的。威尔斯认为他的科学幻想小说和凡尔纳的小说不同。他说："这位伟大的法国作家对科学发明的预见和我的幻想在文学上毫无共同之处，他的作品几乎完全是描写技术改革和发明的实际可能性，并作出了许多卓越的预言。"威尔斯认为自己的作品"所指的却不是实现科学假设的可能性"，它的实质在于通过幻想来揭露和讽刺现实生活中的不合理现象和矛盾冲突，并且指出在人剥削人的社会制度下，先进的科学技术和发明创造并不都能造福人类。

Exercises

I. Answer the following questions according to the text:

1. Why is our society changing at an amazing speed?

2. What is the result of the great technological explosion?

3. How do the majority of people in the world live?

4. What is meant by "elementary effort"?

5. Why is it possible for people in some countries to produce food by much less labour now than a few decades ago?

6. How have we added to our intellectual mobility?

7. What do you mean by this statement: "It depends on automation being adequately exploited"?

8. What is the great process that fascinates and encourages us?

9. How does man extend his eyes, his nervous system, and his muscle and body structure?

10. What is the direction of modern science and technology?

I. Put in suitable expressions from the list below:

for instance, something more than, in spite of, as a result, to free from, to depend on, once and for all, for the first time, to be engaged in, content with, to thrust forward to, all the time

1. ____, we have the promise of greater material and intellectual riches.

2. With the advent of technology, it is possible that the majority of people ____ their traditional bondage to nature.

3. In order to end hunger ____, we must apply scientific and technological resources to our agriculture.

4. This country has ____ secured the food and shelter they need.

5. As the standard of living is being raised, life seems to be ____ a hard struggle with nature to get a plentiful supply of food.

6. ____ a great technological explosion around us, millions of human beings in the world die of hunger and disease each year.

7. They are ____ their new technological success.

8. People are extending their expectation of life ____.

9. We ____ studying how to add to intellectual mobility through radio and television.

10. While we have enriched our lives, we ____ the conquest of space.

Ⅲ. Replace the italicized words or expressions by those listed below:

to free, expectation, to add to, to extend, implication, to strike, fascinating, unprecedented, to pervade, immense, to generate, reasonable

1. A bottle of ammonia opened in one corner of a closed room, the odor soon *gets into every part of* the room.
2. Science and technology are advancing at an *extraordinary* speed.
3. This book written by Jules Verne is so *interesting* that I can't put it down.
4. How does this new technological success *appear to* you?
5. The *significance* of automation cannot be too much estimated.
6. With the advent of mechanization we can have an *enormous* supply of food.
7. Science *may bring about* a great technological explosion around us.
8. Man *can enlarge* his muscle and body structure through mechanization.
9. We *have increased* our intellectual mobility by the telephone, radio, and television.
10. Now we have power *to liberate* man from the fear based on want.

Ⅳ. Translate the following

A. into English:

我们生活在自动化时代。随着科学的发展，在我们周围爆发了技术的突飞猛进。尽管世界上大多数人为了获得生活所必需的东西仍然在和自然作艰苦的搏斗，但我们有理由相信，人类一定会摆脱饥饿和疾病。汽车、喷气飞机和其他机械化交通工具使人的活动更加迅速，而电话、无线电和电视又促进我们的智力活动。现代科学和技术正在走向创造一系列以人为模型的机械体系。

B. into Chinese:

1. Yet, in some countries, science and technology have made it possible for us to have a plentiful supply of food, produced by only a fraction of

the labour that was necessary even a few decades ago.

2. It is fascinating and encouraging to observe the development of this immense process, a process in which man appears all the time to be engaged in the act of creating an extension of himself.
3. Christopher Cockerell's craft can establish transport networks in large areas with poor communications such as Africa or Australia: it can become a 'flying fruit-bowl', carrying bananas from the plantations to the ports; giant hovercraft liners could span the Atlantic; and the railway of the future may well be the hovertrain, riding on its air cushion over a single rail, which it never touches, at speeds up to 300 m. p. h. —the possibilities appear unlimited.

Reading Material

Hovercraft

Many strange new means of transport have been developed in our century, the strangest of them being perhaps the hovercraft. In 1953, a former electronics engineer in his fifties, Christopher Cockerell, who had turned to boat-building on the Norfolk Broads, suggested an idea on which he had been working for many years to the British Government and industrial circles. It was the idea of supporting a craft on a 'pad', or cushion, of low-pressure air, ringed with a curtain of higher pressure air. Ever since, people have had difficulty in deciding whether the craft should be ranged among ships, planes, or land vehicles—for it is something in between a boat and an aircraft. As a shipbuilder, Cockerell was trying to find a solution to the problem of the wave resistance which wastes a

good deal of a surface ship's power and limits its speed. His answer was to lift the vessel out of the water by making it ride on a cushion of air, no more than one or two feet thick. This is done by a great number of ring-shaped air jets on the bottom of the craft. It 'flies', therefore, but it cannot fly higher—its action depends on the surface, water or ground, over which it rides.

The first tests on the Solent in 1959 caused a sensation. The hovercraft travelled first over the water, then mounted the beach, climbed up the dunes, and sat down on a road. Later it crossed the Channel, riding smoothly over the waves, which presented no problem.

Since that time, various types of hovercraft have appeared and taken up regular service—cruises on the Thames in London, for instance, have become an annual attraction. But we are only at the beginning of a development that may transform sea and land transport. Christopher Cockerell's craft can establish transport networks in large areas with poor communications such as Africa or Australia; it can become a 'flying fruit-bowl', carrying bananas from the plantations to the ports; giant hovercraft liners could span the Atlantic; and the railway of the future may well be the 'hovertrain', riding on its air cushion over a single rail, which it never touches, at speeds up to 300 m. p. h. —the possibilities appear unlimited.

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the Norfolk Broads: 英国英格兰东部的湖沼

the Solent['səulənt]: Wight 岛和英格兰本土间的海峡

the Channel['tʃænl]: 这里指英吉利海峡 (the English Channel), 介于英、法之间.

Thames[temz]: 泰晤士河. 在英国南部. 伦敦位于其畔.

Comprehension Questions

Choose the best answer to each of the following statements based on the passage above.

1. Hovercraft is ____.
   A. a type of aircraft
   B. a kind of ship
   C. a form of land vehicle
   D. a new means of transport
2. The idea of making a hovercraft was put forward by Cockerell when he ____.
   A. was an electronics engineer
   B. became a shipbuilder
   C. was working for the British Government
   D. became a well-known figure in industrial circles
3. The chief purpose of building a hovercraft was ____.
   A. to save power and increase speed
   B. to lift the vessel out of the water
   C. to make it ride on a cushion of air
   D. to cause it to fly high above the water surface
4. The first trial of the hovercraft ____.
   A. was very sensible
   B. became a sensitive event
   C. stirred general excited interest
   D. turned out to be unexpected
5. The supposed "hovertrain", mentioned in the last paragraph, is now called "Maglev" (Magnetically Levitated Vehicle), which ____.

A. is lifted by air cushion

B. runs along a single rail

C. is suspended by magnets

D. floats above the earth surface

Lesson Two

Persistence of Vision

One of the properties of the human eye is known as 'persistence of vision'. When a flash of light falls on the retina, the impression of light in the brain persists for some time—about 1/10th of a second—after the actual light has ceased. There are many examples of this to be seen on Bonfire Night and at firework displays; the catherine wheel looks like a complete circle of light, but as it slowly comes to rest (or, perhaps, sticks on its pin) we realize that it is only a single jet of sparks, and when a single spark jumps from the bonfire itself we 'see' a streak of light which we know is really only a bright spot of light seen in a succession of different positions. It is this persistence of vision, or slowness of the eye to follow quick changes of light, that makes possible the presentation of moving pictures at the cinema and on television.

At the cinema we see successive photographs projected on a screen at the rate of twenty-four frames per second. (A FRAME is the technical term used in the cinema to describe the individual pictures in the series printed on a length of cine film.) A revolving shutter is arranged to black out the projector light during the period when one frame is replaced by the next, the film itself moving through the projector in a series of jerks. Each frame is shown for a

short period (about 1/48th of a second), then the light is cut off for a period during which the eye carries on the impression until the next frame appears. This is then presented with whatever change of position has occurred due to any movement in the scene, and so we get the effect of a continuously moving picture.

The eye is able, however, to detect the momentary blackouts caused by the shutter when they occur at the rate of twenty-four per second, and a slight flicker is created. To overcome this flicker, an extra blade is fitted to the shutter so that the frequency of the blackouts is raised from twenty-four to forty-eight per second. Thus, each picture is seen twice by the eye, the effect of the shutter blackouts is reduced, and 'flickerless' reproduction is obtained.

To achieve the modern miracle of 'seeing at a distance', as in television, similar principles to those used in the cinema are employed. A series of pictures, each slightly different, is presented to the eye in sequence so that the eye can see a moving replica of a scene hundreds of miles away. However, while the film projector in the cinema can present the picture instantaneously, using a beam of light a hundred or more feet long, it is not possible to transmit complete pictures instantaneously over distances when using wires or radio signals.

The eye requires hundreds of thousands of nerves connected to the retina to transmit picture signals to the brain in order that we may see. It is obviously impossible for a television system to copy the eye's method of transmission—although it was actually suggested many years ago as a possibility—so other methods had to